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Junos® OS

Chassis-Level Feature Guide

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Junos® OS Chassis-Level Feature Guide

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About the Documentation

IN THIS SECTION

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- Using the Examples in This Manual | **xxiii**
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- Requesting Technical Support | **xxviii**

Use this guide to configure several properties of the router and many PIC-level features at the **[edit chassis]** hierarchy level. You can also configure support for aggregated devices, chassis-level alarms, external clock synchronization, and other features at the chassis level. Some of these features are platform-specific, while others are common across all routers.

Documentation and Release Notes

To obtain the most current version of all Juniper Networks® technical documentation, see the product documentation page on the Juniper Networks website at https://www.juniper.net/documentation/.

If the information in the latest release notes differs from the information in the documentation, follow the product Release Notes.

Juniper Networks Books publishes books by Juniper Networks engineers and subject matter experts. These books go beyond the technical documentation to explore the nuances of network architecture, deployment, and administration. The current list can be viewed at https://www.juniper.net/books.

Using the Examples in This Manual

If you want to use the examples in this manual, you can use the **load merge** or the **load merge relative** command. These commands cause the software to merge the incoming configuration into the current candidate configuration. The example does not become active until you commit the candidate configuration.

If the example configuration contains the top level of the hierarchy (or multiple hierarchies), the example is a *full example*. In this case, use the **load merge** command.

If the example configuration does not start at the top level of the hierarchy, the example is a *snippet*. In this case, use the **load merge relative** command. These procedures are described in the following sections.

Merging a Full Example

To merge a full example, follow these steps:

1. From the HTML or PDF version of the manual, copy a configuration example into a text file, save the file with a name, and copy the file to a directory on your routing platform.

   For example, copy the following configuration to a file and name the file **ex-script.conf**. Copy the **ex-script.conf** file to the **/var/tmp** directory on your routing platform.

   ```
   system {
       scripts {
           commit {
               file ex-script.xsl;
           }
       }
   }
   interfaces {
       fxp0 {
           disable;
           unit 0 {
               family inet {
                   address 10.0.0.1/24;
               }
           }
       }
   }
   ```

2. Merge the contents of the file into your routing platform configuration by issuing the **load merge** configuration mode command:

   ```
   [edit]
   user@host# load merge /var/tmp/ex-script.conf
   load complete
   ```

Merging a Snippet

To merge a snippet, follow these steps:

1. From the HTML or PDF version of the manual, copy a configuration snippet into a text file, save the file with a name, and copy the file to a directory on your routing platform.

   For example, copy the following snippet to a file and name the file **ex-script-snippet.conf**. Copy the **ex-script-snippet.conf** file to the **/var/tmp** directory on your routing platform.

   ```
   commit {
     file ex-script-snippet.xsl; }
   ```

2. Move to the hierarchy level that is relevant for this snippet by issuing the following configuration mode command:

   ```
   [edit]
   user@host# edit system scripts
   [edit system scripts]
   ```

3. Merge the contents of the file into your routing platform configuration by issuing the **load merge relative** configuration mode command:

   ```
   [edit system scripts]
   user@host# load merge relative /var/tmp/ex-script-snippet.conf
   load complete
   ```

For more information about the **load** command, see CLI Explorer.

Documentation Conventions

Table 1 on page xxvi defines notice icons used in this guide.

Table 1: Notice Icons

Icon	Meaning	Description
	Informational note	Indicates important features or instructions.
	Caution	Indicates a situation that might result in loss of data or hardware damage.
	Warning	Alerts you to the risk of personal injury or death.
	Laser warning	Alerts you to the risk of personal injury from a laser.
	Tip	Indicates helpful information.
	Best practice	Alerts you to a recommended use or implementation.

Table 2 on page xxvi defines the text and syntax conventions used in this guide.

Table 2: Text and Syntax Conventions

Convention	Description	Examples
Bold text like this	Represents text that you type.	To enter configuration mode, type the **configure** command: user@host> **configure**
`Fixed-width text like this`	Represents output that appears on the terminal screen.	`user@host>` **show chassis alarms** `No alarms currently active`
Italic text like this	• Introduces or emphasizes important new terms. • Identifies guide names. • Identifies RFC and Internet draft titles.	• A policy *term* is a named structure that defines match conditions and actions. • *Junos OS CLI User Guide* • RFC 1997, *BGP Communities Attribute*

Table 2: Text and Syntax Conventions *(continued)*

Convention	Description	Examples
Italic text like this	Represents variables (options for which you substitute a value) in commands or configuration statements.	Configure the machine's domain name: [edit] root@# **set system domain-name** *domain-name*
Text like this	Represents names of configuration statements, commands, files, and directories; configuration hierarchy levels; or labels on routing platform components.	• To configure a stub area, include the **stub** statement at the **[edit protocols ospf area area-id]** hierarchy level. • The console port is labeled **CONSOLE**.
< > (angle brackets)	Encloses optional keywords or variables.	**stub <default-metric *metric*>;**
| (pipe symbol)	Indicates a choice between the mutually exclusive keywords or variables on either side of the symbol. The set of choices is often enclosed in parentheses for clarity.	**broadcast | multicast** **(*string1* | *string2* | *string3*)**
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	**rsvp { # Required for dynamic MPLS only**
[ ] (square brackets)	Encloses a variable for which you can substitute one or more values.	**community name members [*community-ids*]**

Indention and braces ({ })	Identifies a level in the configuration hierarchy.	[edit]
		routing-options {
		  static {
		  route default {
		  nexthop *address*;
		  retain;
		  }
		  }
		}

; (semicolon)	Identifies a leaf statement at a configuration hierarchy level.	
GUI Conventions		

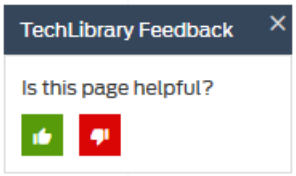
Table 2: Text and Syntax Conventions *(continued)*

Convention	Description	Examples
Bold text like this	Represents graphical user interface (GUI) items you click or select.	• In the Logical Interfaces box, select **All Interfaces**. • To cancel the configuration, click **Cancel**.
> (bold right angle bracket)	Separates levels in a hierarchy of menu selections.	In the configuration editor hierarchy, select **Protocols>Ospf**.

Documentation Feedback

We encourage you to provide feedback so that we can improve our documentation. You can use either of the following methods:

- Online feedback system—Click TechLibrary Feedback, on the lower right of any page on the Juniper Networks TechLibrary site, and do one of the following:



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- Search for known bugs: https://prsearch.juniper.net/
- Find product documentation: https://www.juniper.net/documentation/
- Find solutions and answer questions using our Knowledge Base: https://kb.juniper.net/
- Download the latest versions of software and review release notes: https://www.juniper.net/customers/csc/software/
- Search technical bulletins for relevant hardware and software notifications: https://kb.juniper.net/InfoCenter/
- Join and participate in the Juniper Networks Community Forum: https://www.juniper.net/company/communities/
- Create a service request online: https://myjuniper.juniper.net

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Creating a Service Request with JTAC

You can create a service request with JTAC on the Web or by telephone.

- Visit https://myjuniper.juniper.net.
- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the USA, Canada, and Mexico).

For international or direct-dial options in countries without toll-free numbers, see https://support.juniper.net/support/requesting-support/.

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CHAPTER

Overview

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Chassis-Level Features Overview

The Junos Software enables you to configure several properties of the router and many PIC-level features at the **[edit chassis]** hierarchy level. Some of the features are specific to M Series, MX Series, J Series, or T Series routers, while some others are common across all routers.

To configure router chassis properties, you can include the configuration statements available at the **[edit chassis]** hierarchy level.

NOTE: Statements at the **[edit chassis redundancy]** hierarchy level are described in the *JUNOS High Availability Configuration Guide*.

NOTE: The configuration statements at the **[edit chassis lcc]** hierarchy level apply only to a routing matrix based on a TX Matrix router or a TX Matrix Plus router. For information about a routing matrix composed of a TX Matrix router and T640 routers, see *TX Matrix Router and T640 Router Configuration Overview* and the *TX Matrix Router Hardware Guide*. For information about a routing matrix composed of a TX Matrix Plus router and T1600 or T4000 routers, see *TX Matrix Plus Router Configuration Overview* and the *TX Matrix Plus Router Hardware Guide*.

NOTE: The **sanity-poll** configuration statements at the **[edit chassis fpc *slot-number*]** hierarchy level apply only to T Series routers. You can also configure **sanity-poll** for routing matrix based on a TX Matrix router or TX Matrix Plus router at the hierarchy level **[edit chassis lcc *number* fpc *number*]**.

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CHAPTER

MX Series MPCs

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Understanding MX Series MPCs

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MPC1 on MX Series Routers Overview

In Junos OS Release 10.2 and later, MX960, MX480, MX240, MX2008, MX2010, and MX2020 routers support the Modular Port Concentrator (MPC) MPC1 . This MPC provides scalability in bandwidth, subscribers, and services capabilities of the routers.

The MPC interoperates with existing MX Series line cards, including Dense Port Concentrators (DPCs) and Modular Port Concentrators (MPCs).

Starting in JunosOS Release 18.3R1, on MX240, MX480, and MX960 routers, the MIC-MACSEC-20GE with SFP/SFP+ ports are supported on MPC1 line card.

The MIC-MACSEC-20GE includes MACSEC-enabled ports with 256-bit encryption (GCM-AES-256 and GCM-AES-XPN-256). For more information, refer to *Interface Naming Conventions for MIC-MACSEC-20GE*.

MPC Name	MPC Model Number	First Junos OS Release on MX240, MX480, and MX960 Routers	First Junos OS Release on MX2008 Routers	First Junos OS Release on MX2010 Routers	First Junos OS Release on MX2020 Routers
MPC1	MX-MPC1-3D	10.2	15.1F7	12.3	12.3
MPC1E	MX-MPC1E-3D	11.2R4	15.1F7	12.3	12.3
MPC1 Q	MX-MPC1-3D-Q	10.2	15.1F7	12.3	12.3
MPC1E Q	MX-MPC1E-3D-Q	11.2R4	15.1F7	12.3	12.3

The following are some of the key features of the MPC:

- Contains two slots for Modular Interface Cards (MICs) labeled PIC0/1 and PIC2/3 .
- Supports LAN-PHY mode with the throughput of 10.31 Gbps and WAN-PHY mode with the throughput of 9.95 Gbps
- Supports small form-factor pluggable plus (SFP+) transceivers. For a list of supported transceivers, see the *MX Series Interface Module Reference*.
- Supports intelligent oversubscription services.
- Supports one full-duplex, 16-Gigabit Ethernet tunnel interface for each Packet Forwarding Engine.

For information about the supported and unsupported Junos OS features for this MPC, see “Protocols and Applications Supported by MX Series MPCs” in the *MX Series Interface Module Reference*.

MPC2 on MX Series Routers Overview

In Junos OS Release 10.2 and later, MX240, MX480, MX960, MX2008, MX2010, and MX2020 routers support a new Modular Port Concentrator (MPC), MPC2. This MPC is a fixed-port MPC. On MX2020 and MX2010 routers, MPC2 is housed in an adapter card (ADC). MPC2 is available in the following models: MX-MPC2-3D(MPC2), MX-MPC2-3D-Q(MPC2 Q), and MX-MPC2-3D-EQ(MPC2 EQ). This MPC provides scalability in bandwidth, subscribers, and services capabilities of the routers.

Starting in JunosOS Release 18.3R1, on MX240, MX480, and MX960 routers, the MIC-MACSEC-20GE with SFP/SFP+ ports are supported on MPC2 and MPC2E line cards.

The MIC-MACSEC-20GE includes MACSEC-enabled ports with 256-bit encryption (GCM-AES-256 and GCM-AES-XPN-256). For more information, refer to *Interface Naming Conventions for MIC-MACSEC-20GE*.

MPC Name	MPC Model Number	First Junos OS Release on MX240, MX480, and MX960 Routers	First Junos OS Release on MX2008 Routers	First Junos OS Release on MX2010 Routers	First Junos OS Release on MX2020 Routers
MPC2	MX-MPC2-3D	10.1	15.1F7	12.3	12.3
MPC2E	MX-MPC2E-3D	11.2R4	15.1F7	12.3	12.3
MPC2 Q	MX-MPC2-3D-Q	10.1	15.1F7	12.3	12.3
MPC2E Q	MX-MPC2E-3D-Q	11.2R4	15.1F7	12.3	12.3
MPC2 EQ	MX-MPC2-3D-EQ	10.1	15.1F7	12.3	12.3
MPC2E EQ	MX-MPC2E-3D-EQ	11.2R4	15.1F7	12.3	12.3
MPC2E P	MX-MPC2E-3D-P	12.2	15.1F7	12.3	12.3
MPC2E NG	MX-MPC2E-3D-NG	14.1R4, 14.2R3 and Junos Continuity 15.1	15.1F7	14.1R4, 14.2R3 and Junos Continuity 15.1	14.1R4, 14.2R3 and Junos Continuity 15.1
MPC2E NG Q	MX-MPC2E-3D-NG-Q	14.1R4, 14.2R3 and Junos Continuity 15.1	15.1F7	14.1R4, 14.2R3 and Junos Continuity 15.1	14.1R4, 14.2R3 and Junos Continuity 15.1

The following are some of the key features of the MPC:

- Contains two slots for Modular Interface Cards (MICs) labelled PIC0/1 and PIC2/3 .
- Supports line-rate throughput of up to 80 Gbps
- Supports LAN-PHY mode with the throughput of 10.3125 Gbps and WAN-PHY mode with the throughput of 9.953 Gbps

- Supports small form-factor pluggable plus (SFP+) transceivers. For a list of supported transceivers, see the *MX Series Interface Module Reference*.
- Supports intelligent oversubscription services.

For information about the supported and unsupported Junos OS features for this MPC, see *Protocols and Applications Supported on MPCs for MX Series Routers*.

16-Port 10-Gigabit Ethernet MPC on MX Series Routers (16x10GE 3D MPC) Overview

In Junos OS Release 10.1 and later, MX960, MX480, and MX240 routers support the 16-port 10-Gigabit Ethernet MPC (16x10GE 3D MPC) with model numbers MPC-3D-16XGE-SFPP-R-B and MPC-3D-16XGE-SFPP. This MPC provides scalability in bandwidth, subscribers, and services capabilities of the routers.

The following are some of the key features of the 16x10GE 3D MPC:

- Contains 16 built-in 10-Gigabit Ethernet ports in groups of four each. It does not contain separate slots for Modular Interface Cards (MICs).
- Supports LAN-PHY mode with the following throughput:
  - 120 Gbps on Junos release 11.3 and earlier (SCB)
  - 160 Gbps on Junos release 11.4 and later (SCBE)
  - 160 Gbps on Junos release 13.3 and later (SCBE2)

  NOTE: The 16x10GE 3D MPC does not support WAN-PHY mode.

- Supports small form-factor pluggable transceivers of the SFP+ standard. For a list of supported SFPs, see the *MX Series Interface Module Reference*.
- Supports an effective line rate of twelve 10-Gigabit Ethernet ports. If all sixteen 10-Gigabit Ethernet ports are used, the line card is oversubscribed in the ratio of 4:3.
- Supports intelligent oversubscription services.
- Supports one full-duplex 10-Gigabit Ethernet tunnel interface for each Packet Forwarding Engine.

For information about the supported and unsupported Junos OS features for this MPC, see “Protocols and Applications Supported by MX Series MPCs” in the *MX Series Interface Module Reference*.

Configuring the Number of Active Ports on 16-Port MPCs of MX Series Routers

You can disable a sub-set of the physical ports available on the Packet Forwarding Engines of the 16x10GE 3D MPC, and for PICs installed in MPC3, MPC4, MPC5, and MPC6.

Two of the most common reasons for disabling ports are explained below.

- **Ensure guaranteed bandwidth by preventing oversubscription**—The 16x10GE 3D MPC supports one 10-Gigabit Ethernet tunnel interface for each Packet Forwarding Engine. The effective line-rate bandwidth of the MPC is 12 ports because of an oversubscription ratio of 4:3. Therefore, configuring a tunnel interface might further result in the Packet Forwarding Engines being oversubscribed. To prevent such oversubscription and to ensure a guaranteed bandwidth, include the **number-of-ports** configuration statement to disable one or two ports per Packet Forwarding Engine.
- **Enable Switch Control Board (SCB) redundancy**—For maximum bandwidth capabilities (12-port line-rate bandwidth), the 16x10GE 3D MPC uses all the available SCBs (three SCBs for an MX960 router, two SCBs for an MX480 or MX240 router) actively in the chassis.

  If SCB redundancy (2+1 SCBs on an MX960 router or 1+1 SCB on an MX480 or MX240 router) is required, ports on the line card can be disabled by setting the number of usable ports per line card to *8*. In such a case, the third and fourth ports (ports 0/2-3, 1/2-3, 2/2-3, 3/2-3) on every Packet Forwarding Engine are disabled.

To configure the number of active ports on the 16x10GE 3D MPC, include the **number-of-ports** *active-ports* configuration statement at the **[edit chassis fpc *slot-number*]** hierarchy level:

```
[edit chassis fpc slot-number]
number-of-ports (8 | 12);
```

To configure the number of active ports on a PIC in an MPC3, MPC4, MPC5, or MPC6, include the **number-of-ports** *active-ports* configuration statement at the **[edit chassis fpc *slot-number* pic *pic-number*]** hierarchy level:

```
[edit chassis fpc slot-number pic pic-number]
number-of-ports (8 | 12);
```

Specify either 8 or 12 ports using this statement. When eight active ports are configured, two ports per Packet Forwarding Engine are disabled, and the LEDs on the MPC are set to **yellow**. When you specify 12 active ports, one port per Packet Forwarding Engine is disabled and the corresponding LED is set to **yellow**. When you do not include this statement in the configuration, all 16 default ports on the MPC are active.

NOTE:

- Committing the configuration after including the **number-of-ports** *active-ports* configuration statement brings down the Ethernet interfaces for all the ports on the MPC before the ports configuration becomes active.
- A minimum of one high-capacity fan tray is necessary for meeting the cooling requirements of the MPC. The Junos OS generates a chassis **yellow** alarm recommending fan tray upgrade for optimal performance, if the MX router chassis contains an old fan tray.

For more information about the 16x10GE 3D MPC, see the *MX Series Interface Module Reference*.

MPC3E on MX Series Routers Overview

MX960, MX480, MX240, and MX2020 routers support the MPC3E (MX-MPC3E-3D) with two MIC slots. The MPC provides the connection between the customer's Ethernet interfaces and the routing fabric of the MX Series chassis.

The MPC3E supports these MICs as field-replaceable units (FRUs):

- *100-Gigabit Ethernet MIC with CFP* (model number MIC3-3D-1X100GE-CFP)
- *100-Gigabit Ethernet MIC with CXP* (model number MIC3-3D-1X100GE-CXP)
- *10-Gigabit Ethernet MIC with SFP+ (10 Ports)* (model number MIC3-3D-10XGE-SFPP)
- 2-port *40-Gigabit Ethernet MIC with QSFP+* (model number MIC3-3D-2X40GE-QSFPP)
- 20-port Enhanced *Gigabit Ethernet MIC with SFP (E)* (model number MIC-3D-20GE-SFP-E)

The MPC3E also supports these legacy MICs:

- 20-port *Gigabit Ethernet MIC with SFP* (model number MIC-3D-20GE-SFP)
- 2-port *10-Gigabit Ethernet MICs with XFP* (model number MIC-3D-2XGE-XFP)
- 20-port Gigabit Ethernet MIC with SFP/SFP+ (model number MIC-MACSEC-20GE)

Starting in JunosOS Release 18.3R1, on MX240, MX480, and MX960 routers, the MIC-MACSEC-20GE with SFP/SFP+ ports are supported on MPC3 and MPC3E line cards.

The MIC-MACSEC-20GE includes MACSEC-enabled ports with 256-bit encryption (GCM-AES-256 and GCM-AES-XPN-256). For more information, refer to *Interface Naming Conventions for MIC-MACSEC-20GE*.

The MPC3E requires the Enhanced MX Switch Control Board (SCBE) for fabric redundancy. You can also continue to use existing SCBs without fabric redundancy. The MPC interoperates with existing MX Series line cards, including Dense Port Concentrators (DPCs) and Modular Port Concentrators (MPCs).

You can also configure the 100-Gigabit Ethernet MIC (MIC3-3D-1X100GE-CFP) to interoperate with routers using the 100-Gigabit Ethernet PIC (Type 4 1X100GE PIC for STFPC4 FPC) by using the **forwarding-mode** statement with the **sa-multicast** option at the **[edit chassis fpc slot pic slot]** hierarchy level. For more information, see "Configuring 100-Gigabit Ethernet MICs to Interoperate with Type 4 100-Gigabit Ethernet PICs (PD-1CE-CFP-FPC4) Using SA Multicast Mode" on page 74.

The MPC3E is based on a new Juniper Networks chipset for increased scalability for bandwidth, subscribers, and service capabilities of the routers.

The MPC3E supports these key features:

- 100-Gigabit Ethernet interfaces
- Two separate slots for MICs
- The following MICs:
  - MIC3-3D-1X100GE-CFP
  - MIC3-3D-1X100GE-CXP
  - MIC3-3D-10XGE-SFPP
  - MIC3-3D-2X40GE-QSFP
  - MIC-3D-20GE-SFP
  - MIC-3D-20GE-SFP-E
  - MIC-3D-2XGE-XFP
  - MIC-3D-8OC3OC12-4OC48
  - MIC-3D-4OC3OC12-1OC48
  - MIC-3D-1OC192-XFP
  - MIC-3D-8DS3-E3
- Up to 100 Gbps per MIC slot
- Up to 200 Gbps aggregate WAN bandwidth connectivity for the two MIC slots; the line card is oversubscribed in the ratio of 1.5:1.
- Up to four full-duplex tunnel interfaces on the line card
- Intelligent oversubscription services
- Configuration of Virtual Chassis ports in an MX Series Virtual Chassis member router

The MPC3E supports all MX Series Virtual Chassis features, including Layer 2 and IEEE 802.3ad link aggregation features. An MX Series Virtual Chassis configuration does not currently support the Spanning Tree Protocol (STP).

NOTE: On the MX960 router, FPC slot 0 and slot 11 are not NEBS compliant beyond 104°F (40°C) with MPC3E-3D-NG and MPC3E-3D-NG-Q. This is a cooling restriction.

For more information about supported Junos OS features on the MPC3E, see *Protocols and Applications Supported by the MPC3E on MX Series Routers* in the *MX Series Interface Module Reference*.

The MPC3E supports feature parity with the following software features:

- Basic Layer 2 features and virtual private LAN service (VPLS) functionality
- Layer 3 routing protocols
- MPLS
- Multicast forwarding
- Firewall filters and policers
- Intelligent hierarchical policers
- Per unit scheduling
- Class-of-service (CoS) support
- Synchronous Ethernet
- Tunnel support
- Interoperability with existing DPCs and MPCs
- Unified in-service software upgrade (ISSU)

For information about the supported and unsupported Junos OS features for this MPC, see *Protocols and Applications Supported by the MPC3E on MX Series Routers* in the *MX Series Interface Module Reference*.

Starting from Junos OS Release 13.3R1, the following encapsulations are supported on the MIC-3D-8OC3OC12-4OC48, MIC-3D-4OC3OC12-1OC48, MIC-3D-1OC192-XFP, and the MIC-3D-8DS3-E3 on MPC3E:

- Cisco High-Level Data Link Control (Cisco HDLC)
- Flexible Frame Relay
- Frame Relay
- Frame Relay for CCC
- Frame Relay for TCC

- MPLS fast reroute
- MPLS circuit cross-connect (CCC)
- MPLS translational cross-connect (TCC)
- Point-to-Point Protocol (PPP) (default encapsulation)
- PPP for CCC
- PPP for TCC
- PPP over Frame Relay

Note that the aggregated SONET is supported only for Cisco HDLC and PPP encapsulations.

MPC4E on MX Series Routers Overview

In Junos OS Release 12.3R2 and later, MX2020, MX2010, MX960, MX480, and MX240 routers support a new MPC, MPC4E. MPC4E is a fixed-configuration MPC that provides scalability in bandwidth and services capability of the routers. MPC4E is available in two models—MPC4E-3D-32XGE-SFPP and MPC4E-3D-2CGE-8XGE.

Type of MPC4E	Ports	Interfaces	Optical Transceiver Support	Initial Release
MPC4E-3D-32XGE-SFPP	32 built-in 10-Gigabit Ethernet ports	10-Gigabit Ethernet interfaces	10GBASE-LR, 10GBASE-SR, 10GBASE-ER, 10GBASE-ZR	12.3R2
MPC4E-3D-2CGE-8XGE	2 built-in 100-Gigabit Ethernet ports and 8 built-in 10-Gigabit Ethernet ports	10-Gigabit Ethernet and 100-Gigabit Ethernet interfaces	100GBASE-LR4, 100GBASE-SR10, 10GBASE-LR, 10GBASE-SR, 10GBASE-ER, 10GBASE-ZR	12.3R2

NOTE: Both models of MPC4E are supported on the MX2020, MX2010, MX960, MX480, and MX240 routers with both normal-capacity and high-capacity power supplies and fan trays.

MPC4E does not support legacy SCBs. It interoperates with existing MX Series line cards, including Dense Port Concentrators (DPCs) and Modular Port Concentrators (MPCs).

MPC4E is a fixed-configuration MPC and does not contain separate slots for Modular Interface Cards (MICs). It contains two Packet Forwarding Engines (PFEs)—**PFE0** hosts **PIC0** and **PIC1** while **PFE1** hosts **PIC2** and **PIC3**.

You can also configure the MPC4E to interoperate with routers that use the 100-Gigabit Ethernet PIC (Type 4 PIC on Type 4 FPC) by using the **forwarding-mode** statement with the **sa-multicast** option at the **[edit chassis fpc *slot* pic *slot*]** hierarchy level. For more information, see "Configuring MPC4E (MPC4E-3D-2CGE-8XGE) to Interoperate with 100-Gigabit Ethernet PICs on Type 4 FPC Using SA Multicast Mode" on page 77.

MPC4E supports:

- Forwarding capability of up to 130 Gbps per Packet Forwarding Engine.
- Small form-factor pluggable (SFP) and C form-factor pluggable (CFP) transceivers for connectivity.
- Up to 260 Gbps of full-duplex traffic.
- Intelligent oversubscription services.
- WAN-PHY mode on 10-Gigabit Ethernet interfaces on a per-port basis.
- Up to four full-duplex tunnel interfaces on each MPC4E.

> **NOTE:** By default on MX480 routers, only 5 out of the 6 line-card slots can be populated with MPC4Es. By default on MX960 routers, only 10 out of the 11 line-card slots can be populated with MPC4Es. This is a power restriction of default operating mode which supports operation at 55°C ambient temperature. You can insert other line-cards in the remaining slots as long as the power budget is not exceeded. However, if ambient-temperature is configured to 25°C or 40°C, all the 6 slots of an MX480 can be populated with MPC4E, and all the 11 slots of an MX960 can be populated with MPC4E. For more information about power requirements, see *Power Requirements for an MX480 Router*, and *Power Requirements for an MX960 Router*.
>
> Also, on the MX960 router, FPC slot 0 and FPC slot 11 are not NEBS compliant beyond 104°F (40°C). This is a cooling restriction.

For more information about the supported and unsupported Junos OS software features for this MPC, see *Protocols and Applications Supported on the MPC4E for MX Series Routers* in the *MX Series Line Card Guide*.

MPC5E on MX Series Routers Overview

In Junos OS Release 13.3R2 and later, MX2020, MX2010, MX960, MX480, and MX240 routers support a new MPC, MPC5E. MPC5E is a fixed-port MPC. On MX2020 and MX2010 routers, MPC5E is housed in an adapter card (ADC). MPC5E is available in the following models:

Type of MPC5E	Ports	Interfaces	Optical Transceiver Support	Initial Release
MPC5E-40G10G	6 built-in 40-Gigabit Ethernet ports and 24 built-in 10-Gigabit Ethernet ports	40-Gigabit Ethernet and 10-Gigabit Ethernet interfaces	40GBASE-SR4, 40GBASE-LR4, 10GBASE-LR, 10GBASE-SR, 10GBASE-ER, 10GBASE-ZR	13.3R2
MPC5EQ-40G10G	6 built-in 40-Gigabit Ethernet ports and 24 built-in 10-Gigabit Ethernet ports	40-Gigabit Ethernet and 10-Gigabit Ethernet interfaces	40GBASE-SR4, 40GBASE-LR4, 10GBASE-LR, 10GBASE-SR, 10GBASE-ER, 10GBASE-ZR	13.3R2
MPC5E-100G10G	2 built-in 100-Gigabit Ethernet ports and 4 built-in 10-Gigabit Ethernet ports	100-Gigabit Ethernet and 10-Gigabit Ethernet interfaces	100GBASE-SR10, 100GBASE-LR4, 100GBASE-ER4, 10GBASE-LR, 10GBASE-SR, 10GBASE-ER, 10GBASE-ZR	13.3R3
MPC5EQ-100G10G	2 built-in 100-Gigabit Ethernet ports and 4 built-in 10-Gigabit Ethernet ports	100-Gigabit Ethernet and 10-Gigabit Ethernet interfaces	100GBASE-SR10, 100GBASE-LR4, 100GBASE-ER4, 10GBASE-LR, 10GBASE-SR, 10GBASE-ER, 10GBASE-ZR	13.3R3

MPC5E supports the enhanced Switch Control Board (MX-SCBE) and MX-SCBE2 on MX240, MX480, and MX960 routers. MPC5E does not support the legacy SCB (MX-SCB). MPC5E supports the Switch Fabric Board (SFB) on MX2010 and MX2020 routers.

On MX240, MX480, and MX960 routers, the number of MPC5Es that can be supported depends on the power entry module (PEM) type. There are no such restrictions for MX2010 and MX2020 routers.

NOTE: On MX960 routers, all the MPC slots work with chassis temperature of up to 40°C (104°F). However, when the chassis temperature exceeds 40°C (104°F), slots **0** and **11** do not work with MPC3E-3D-NG, MPC3E-3D-NG-Q, MPC4E, and MPC5E.

MPC5E interoperates with existing MPCs but does not interoperate with existing DPCs, except the Multiservices DPC (MS-DPC). MX series routers do not support tunnel services PICs. MPC5E provides support for inline tunnel interfaces and supports the following tunnel types:

- Generic Routing Encapsulation (GRE) Tunnels
- Multicast Tunnels (MT)
- IP-IP Tunnels
- Protocol Independant Multicast (PIM) E tunnels
- Virtual loopback Tunneling (VT)
- Logical Tunnelling (LT)

> **NOTE:** On MX240, MX480, and MX960 routers, MPC5E powers on only if the **network-services** mode on the router is configured to either **enhanced-ip** or **enhanced-ethernet**. On the MX2010 and MX2020 routers, **enhanced-ip** is the only **network-services** mode supported.

MPC5E supports:

- Forwarding capability of up to 130 Gbps per Packet Forwarding Engine
- *Flexible Queuing Mode* using an add-on license
- Intelligent oversubscription services
- Optical Channel Transport Network services
- Quad small form-factor pluggable plus transceivers (QSFP+) and small form-factor pluggable transceivers (SFP) for connectivity
- Up to 240 Gbps of full-duplex traffic
- WAN-PHY mode on 10-Gigabit Ethernet interfaces on a per-port basis

For more information about the supported and unsupported Junos OS software features for this MPC, see *Protocols and Applications Supported by the MPC5E for MX Series Routers* in the *MX Series Interface Module Reference*.

Guidelines for Identifying Active PICs on MPC5E (MPC5E-40G10G)

MPC5E contains two Packet Forwarding Engines (PFEs) and 4 fixed port PICs. On MPC5E-100G10G, the **PFE0** hosts **PIC0** and **PIC1** while **PFE1** hosts **PIC2** and **PIC3**. All the PICs can be powered on and used.

On the MPC5E-40G10G, the **PFE0** hosts **PIC0** and **PIC2** while **PFE1** hosts **PIC1** and **PIC3**. Only a maximum of two PICs (**PIC0** or **PIC2** and **PIC1** or **PIC3**) can be powered on. The remaining PICs are required to be kept powered off.

This topic describes the guidelines to consider while identifying active PICs on the MPC5E (MPC5E-40G10G):

- By default, (i.e. without any CLI configuration), **PIC0 (12x10GE)** and **PIC1 (12x10GE)** are powered ON while **PIC2 (3x40GE)** and **PIC3 (3x40GE)** shall be powered OFF.
- At least one PIC on every PFE should be configured in power OFF state. **PIC0** and **PIC2** belong to **PFE0** and **PIC1** and **PIC3** belong to **PFE1** .
- If you configure an invalid PIC combination, the default PICs (**PIC0** and **PIC1**) will be powered ON. Also, a syslog message is displayed to indicate the invalid PIC combination selected. When you configure an invalid PIC combination, and commit the change, the commit succeeds and a commit failure message is not displayed.

Table 3 on page 49 lists the active PICs on MPC5E-40G10G based on the configuration.

Table 3: MPC5E-40G10G Active PICs

CLI Configuration	PIC Selection
Default (i.e no CLI configuration)	Online: **PIC0** and **PIC1** Offline: **PIC2** and **PIC3**
PIC1 ,**PIC2** , and **PIC3** powered off	Online: **PIC0** Offline: **PIC1**, **PIC2**, and **PIC3**
PIC0 ,**PIC2** , and **PIC3** powered off	Online: **PIC1** Offline: **PIC0**, **PIC2**, and **PIC3**
PIC0 ,**PIC1** , and **PIC3** powered off	Online: **PIC2** Offline: **PIC0**, **PIC1**, and **PIC3**
PIC0 ,**PIC1** , and **PIC2** powered off	Online: **PIC3** Offline: **PIC0**, **PIC1**, and **PIC2**
PIC2 and **PIC3** powered off	Online: **PIC0** and **PIC1** Offline: **PIC2** and **PIC3**

Table 3: MPC5E-40G10G Active PICs *(continued)*

CLI Configuration	PIC Selection
PIC1 and **PIC2** powered off	Online: **PIC0** and **PIC3** Offline: **PIC1** and **PIC2**
PIC0 and **PIC3** powered off	Online: **PIC1** and **PIC2** Offline: **PIC0** and **PIC3**
PIC0 and **PIC1** powered off	Online: **PIC2** and **PIC3** Offline: **PIC0** and **PIC1**
Invalid PIC Configuration (All other combinations of PICs powered off)	Online: **PIC0** and **PIC1** Offline: **PIC2** and **PIC3** **NOTE:** Default PIC configuration is selected for all invalid PIC configurations.

MPC6E on MX Series Routers Overview

In Junos OS Release 13.3R2 and later, MX2020 and MX2010 routers support a new MPC, MPC6E (model number: MX2K-MPC6E). MPC6E is a 100-Gigabit Ethernet MPC that provides increased port density and performance to MX Series routers in broadband access networks for services such as Layer 3 peering, VPLS and Layer 3 aggregation, and video distribution.

MPC6E supports two MIC slots and each MIC slot supports a single MIC. The MPC can have any of the following MICs:

- 4-port 100-Gigabit Ethernet MIC with CXP
- 2-port 100-Gigabit Ethernet MIC with CFP2
- 24-port 10-Gigabit Ethernet MIC with SFPP (non-OTN)
- 24-port 10-Gigabit Ethernet MIC with SFPP OTN

Based on the MICs used, the following MPC6E models are supported:

Type of MPC6E	Ports	Interfaces	Initial Release
MX2K-MIC6-24XE	24 built-in 10-Gigabit Ethernet ports	10-Gigabit Ethernet interfaces	13.3R2
MX2K-MIC6-4CE-CXP	4 built-in 100-Gigabit Ethernet ports	100-Gigabit Ethernet interfaces	13.3R2
MX2K-MIC6-24XE-OTN	24 built-in 10-Gigabit Ethernet ports with OTN	10-Gigabit Ethernet interfaces	13.3R3
MX2K-MIC6-2CE-CFP2	2 built-in 100-Gigabit Ethernet ports with OTN	100-Gigabit Ethernet interfaces	13.3R3

MPC6E supports:

- Two Packet Forwarding Engines for each MIC slot.
- Forwarding capability of up to 130 Gbps per Packet Forwarding Engine.
- Two separate slots for MICs (MIC6-10G and MIC6-100G).
- Up to 520 Gbps of full-duplex traffic for the two MIC slots.
- Intelligent oversubscription services.
- WAN-PHY mode on 10-Gigabit Ethernet interfaces on a per-port basis.

MPC6E supports the following software features:

- Basic Layer 2 features and virtual private LAN service (VPLS) functionality, except for Operation, Administration, and Maintenance (OAM)
- Layer 3 routing protocols
- MPLS
- Multicast forwarding
- Firewall filters and policers
- Class of service (CoS)
- Tunnel service
- Interoperability with existing MPCs
- Internet Group Management Protocol (IGMP) snooping with bridging, integrated routing and bridging (IRB), or VPLS
- Intelligent hierarchical policers
- Layer 2 trunk port
- MPLS fast reroute (FRR) VPLS instance prioritization
- Synchronous Ethernet

The following features are not supported on MPC6E:

- Fine-grained queuing and input queuing
- Active flow monitoring and services
- Virtual Chassis support

For more information about the supported and unsupported Junos OS software features for this MPC, see *Protocols and Applications Supported by the MPC6E for MX2000 Routers* in the *Interface Reference Module Guide*.

MPC7E (Multi-Rate) on MX Series Routers Overview

In Junos OS Release 15.1F4 and later, MX2020, MX2010, MX960, MX480, and MX240 routers support the rate-selectable MPC MPC7E (Multi-Rate) (model number: MPC7E-MRATE). The MPC7E-MRATE is a fixed-configuration MPC that provides scalability in bandwidth and services capability of the routers.

The main features of the MPC7E-MRATE are the following:

- Line-rate throughput of up to 480 Gbps on MX240, MX480, and MX960 routers.
- Line-rate throughput of up to 400 Gbps on the MX2000 line of routers.

- Twelve ports that can each be configured as a 40-Gigabit Ethernet port or as four 10-Gigabit Ethernet ports by using a breakout cable. The ports support quad small-form factor pluggable plus (QSFP+) transceivers.
- Four ports—0/2, 0/5, 1/2, and 1/5—out of the twelve ports can be configured as 100-Gigabit Ethernet ports.
- By default, the ports are configured as 10-Gigabit Ethernet ports.
- You can configure different combinations of port speeds as long as the aggregate capacity per group of six ports labeled 0/0 through 0/5 does not exceed 240 Gbps. Similarly, aggregate capacity per group of the other six ports labeled 1/0 through 1/5 must not exceed 240 Gbps.

For information about the supported and unsupported Junos OS features for this MPC, see *Protocols and Applications Supported by the MPC7E for MX Series Routers* in the *MX Series Line Card Guide*.

MPC7E-MRATE Gigabit Ethernet Interface Naming Convention

The MPC7E-MRATE is a fixed-configuration MPC and does not contain separate slots for Modular Interface Cards (MICs). It contains two PICs, PIC 0 and PIC 1. Each PIC has six physical quad small form-factor pluggable plus (QSFP+) ports that support 100-Gbps, 10-Gbps, or 40-Gbps port speeds. You use the 4x duplex LC breakout cables and fiber-optic 40-gigabit and 100-gigabit QSFP+ transceivers to achieve these speeds.

> **TIP:** You can issue the **show chassis pic fpc-slot *fpc-slot-number* pic-slot *pic-slot-number* command to view the supported speeds on each port.**

Each of the six ports of PIC 0 and PIC 1 supports 10-Gigabit and 40-Gigabit Ethernet interfaces. However, only ports 2 and 5 on both the PICs support 100-Gigabit Ethernet interfaces. The 40 and 100 Gigabit Ethernet interfaces configured on the MPC7E-MRATE follow the naming convention et-*fpc-slot*/*pic-slot*/*port-number*. For example, **et-0/0/2** indicate a 40-Gigabit or 100-Gigabit Ethernet interface configured on port 2 of PIC 0 of the MPC7E-MRATE that is installed in the FPC slot 0.

You can configure four 10-Gigabit Ethernet interfaces on each port. Therefore, the 10 Gigabit Ethernet interfaces configured on the MPC7E-MRATE follow the naming convention xe-*fpc-slot*/*pic-slot*/*port-number*:*channel-number*. Channel numbers 0 to 3 are used to indicate the four logical ports that are enabled by the use of the 4x duplex LC breakout cables. Therefore, the four 10-Gigabit Ethernet interfaces that are configured on port 2 of PIC 0 of an MPC7E-MRATE that is installed in the FPC slot 0 is as follows:

- **xe-0/0/2:0**
- **xe-0/0/2:1**

- **xe-0/0/2:2**
- **xe-0/0/2:3**

MPC7E-MRATE Rate-Selectability Overview

You can choose to configure all supported ports of the PIC to operate at the same speed or configure all the ports at different supported speeds. For example, you can choose to configure:

- All the ports of the PIC at 10-Gbps speed.
- All the ports of the PIC at 40-Gbps speed.
- Ports 2 and 5 of the PIC at 100-Gbps speed.
- Ports 0, 1, 3, 4 of the PIC at 10-gigabit or 40-gigabit speed and ports 2 and 5 at 100-gigabit speed.

To configure all ports to operate at the same speed, you configure rate selectability at the *PIC level*. When you configure rate selectability at the PIC level, all the ports of the PIC that support the configured speed operate at that speed. Additionally, you can configure the number of active ports that operate at the configured speed. That is, for example, if you want only two ports of the PIC to operate at 40-gigabit speed, you can configure the PIC to operate at 40-gigabit speed and enable the two ports that you want to operate at that speed. The remaining four ports of the PIC are automatically disabled. Configuring rate selectability at the PIC level helps you configure the operating speed of the PIC easily.

To configure different ports of the PIC to operate at different supported speeds, you configure rate selectability at the *port level*. You configure each port of the PIC to operate at a specific supported speed. Only the ports that are configured are enabled, while the other ports are automatically disabled. Configuring rate selectability at the PIC level provides you the flexibility of operating the ports of the PIC at different supported speeds. For example, you can configure four 10-Gigabit Ethernet interfaces on port 0, one 40-Gigabit Ethernet interface on port 1, and one 100-Gigabit Ethernet interface on port 2.

NOTE:

- Ensure that you connect optics to the ports according to the speeds that you configure. That is, you have to use 4x duplex LC breakout cables to configure 10-Gigabit Ethernet interfaces, fiber-optic 40-gigabit QSFP+ transceivers to configure 40-Gigabit Ethernet interfaces, and fiber-optic 100-gigabit QSFP28 transceivers to configure 100-Gigabit Ethernet interfaces.
- If rate selectability is not configured, each port of the MPC7E-MRATE operates as four 10-Gigabit Ethernet interfaces.

For more information about how to configure rate selectability, see *Configuring Rate Selectability on MPC7E (Multi-Rate) to Enable Different Port Speeds*.

SEE ALSO

Protocols and Applications Supported by the MPC7E for MX Series Routers

Configuring Rate Selectability on MPC7E (Multi-Rate) to Enable Different Port Speeds

MPC7E (Multi-Rate)

Interface Naming Overview

pic-mode | **480**

speed | **541**

number-of-ports | **457**

MPC7E 10G on MX Series Routers Overview

Starting with Junos OS Release 15.1F5, MX2020, MX2010, MX960, MX480, and MX240 routers support the Modular Port Concentrator (MPC) MPC7E 10G (MPC7E-10G). This is a fixed-configuration MPC with forty 10-Gbps Ethernet ports. To use the MPC7E 10G MPC on Junos OS Release 15.1F5, you must download and install the Junos Continuity software package for Junos OS Release 15.1F5.

NOTE:

- On MX2000 line of routers, MPC7E 10G is plugged into an adapter card. Therefore, to use the MPC7E 10G MPC on MX2000 line of routers, the adapter card must be installed on the routers.
- To operate MPC7E 10G on MX240, MX480, and MX960 routers, the routers must be equipped with high-capacity power supply, high-capacity fan tray, and Enhanced Switch Control Board SCBE2.

The main features of the MPC7E-MRATE are the following:

- Line-rate throughput of up to 400 Gbps on MX240, MX480, MX960, MX2010, and MX2020 routers.
- Forty 10-Gigabit Ethernet ports. The ports support small-form factor pluggable plus (SFP+) transceivers.
- Support maximum transmission units (MTUs) from 256 bytes through 16,000 bytes.
- Supports Hyper mode to speed up packet processing.
- Supports Flexible queuing using an add-on license to support 32,000 queues per line card, including queues on both ingress and egress interfaces. You can use an additional license to support up to 512,000 queues.

NOTE: On MX240, MX480, and MX960 routers, MPC7E 10G powers on only if the **network-services** mode on the router is configured as either **enhanced-ip** or **enhanced-ethernet**. On MX2000 routers, no additional configuration is required because by default the router operates in **enhanced-ip** mode.

For information about the supported and unsupported Junos OS features for this MPC, see *Protocols and Applications Supported by the MPC7E for MX Series Routers* in the *MX Series Line Card Guide*.

MPC8E on MX Series Routers Overview

In Junos OS Release 15.1F5 and later, MX2020 and MX2010 routers support *MPC8E* (model number: MX2K-MPC8E), a new Modular Port Concentrator (MPC) with two Modular Interface Card (MIC) slots that provide a maximum bandwidth of 960 Gbps. . Each MIC slot on MPC8E supports a 12-port rate selectable MIC (MIC-MRATE). MPC8E has four Packet Forwarding Engines, each providing a maximum bandwidth of 240 Gbps.

NOTE: To use the MPC8E MPC on Junos OS Release 15.1F5, you must download and install the Junos Continuity software package for Junos OS Release 15.1F5.

MPC8E plugs into the chassis and provides the fabric interface. The MX2000 line of routers can support eight Switch Fabric Boards (SFBs) and eight Enhanced Switch Fabric Boards (SFB2s) but not both at the same time. However, during an upgrade from SFB to SFB2, the MX2000 line of routers support both SFB and SFB2 at the same time for the duration of the upgrade.

Starting in Junos OS Release 17.4R1, MIC-MACSEC-MRATE with MACsec is supported on MPC8E to extend MACsec capabilities on MX2000 line of routers (MX2020, MX2010, MX2008). The MACsec feature increases the Data Center (DC) security and also for DC to DC secured connectivity. MIC-MACSEC-MRATE MIC enable 40G and 100G MACsec capability to the MPC8E. . Each MPC supports two MIC-MACSEC-MRATE MICs. On an MPC8E, each MIC supports 48 10-Gigabit Ethernet, 12 40-Gigabit Ethernet, or 4 100-Gigabit Ethernet MACsec-capable interfaces, or a combination.

NOTE: Compared to other MICs, MIC-MACSEC-MRATE takes longer time (around 4 minutes) to boot as it is required to bring up two MICs in serial.

MPC8E supports:

- Line-rate throughput of up to 960 Gbps on the MX2000 line of routers.
- MIC-MRATE MICs with QSFP+ transceivers that support rate selectability at the port level and at the MIC level.
- Configuration of 4 ports out of the 12 MIC-MRATE ports as 100-Gigabit Ethernet ports.
- Configuration of PIC-based tunnel interfaces from the Junos OS CLI.
- Maximum transmission unit (MTU) size of 16,000 bytes for transit traffic.

MPC8E supports the following software features:

- Dynamic power management for effective utilization of available power.
- Inline flow monitoring for higher scalability and performance.
- Flexible queuing using an add-on license to support 32,000 queues per line card, including queues on both ingress and egress interfaces. You can use an additional license to support up to 512,000 queues per slot or 1,000,000 queues per slot.
- Hyper mode to speed up packet processing.
- MACsec MIC MRATE support for MX2000 line of routers. See Understanding Media Access Control Security (MACsec) on MX Series Routers for more details.

For more information about the supported and unsupported Junos OS features on MPC8E, see *Protocols and Applications Supported by the MPC8E and MPC9E on the MX2010 and MX2020 Routers* in the *MX Series Interface Module Reference*.

Upgrading MPC8E to Provide Increased Bandwidth

In Junos OS Release 16.1R1 and later, you can upgrade MPC8E to provide an increased bandwidth of 1600 Gbps (1.6 Tbps) by using an add-on license. After you purchase the license and perform the upgrade, MPC8E provides a bandwidth of 1.6 Tbps, which is equivalent to the bandwidth that MPC9E provides. However, the MPC continues to be identified as MPC8E.

NOTE: After you upgrade MPC8E to provide a bandwidth of 1.6 Tbps, the power consumption by MPC8E increases and is equivalent to the power that MPC9E consumes. See *MPC8E* for more information.

After you purchase the add-on license, you upgrade the bandwidth by using the **set chassis fpc *slot* bandwidth 1.6T** command. You can disable this feature by using the **delete chassis fpc *slot* bandwidth 1.6T** command.

NOTE: When you modify the bandwidth of MPC8E and commit the configuration, the MPC automatically reboots . For instance, if you upgrade MPC8E to provide a bandwidth of 1.6 Tbps and commit the configuration, the MPC automatically reboots. Also, if you disable the feature on MPC8E (to provide a bandwidth of 960 Gbps) and commit the configuration, the MPC automatically reboots.

MPC9E on MX Series Routers Overview

In Junos OS Release 15.1F5 and later, the MX2000 line of routers support a new modular MPC, MPC9E (MX2K-MPC9E). MPC9E has two Modular Interface Card (MIC) slots. MPC9E has four Packet Forwarding Engines, each with forwarding capacity of up to 400 Gbps. MPC9E supports only the 12-port, rate-selectable MIC (MIC-MRATE).

NOTE: To use the MPC9E MPC on Junos OS Release 15.1F5, you must download and install the Junos Continuity software package for Junos OS Release 15.1F5.

Starting in Junos OS Release 17.4R1, MIC-MACSEC-MRATE with MACsec is supported on MPC9E to extend MACsec capabilities on MX2000 line of routers (MX2020, MX2010, MX2008). The MACsec feature increases the Data Center (DC) security and also for DC to DC secured connectivity. Each MPC supports two MIC-MACSEC-MRATE MICs. On an MPC9E, each MIC supports 48 10-Gigabit Ethernet, 12 40-Gigabit Ethernet, or 8 100-Gigabit Ethernet MACsec-capable interfaces, or a combination.

NOTE: Compared to other MICs, MIC-MACSEC-MRATE MIC takes longer time (around 4 minutes) to boot as it is required to bring up two MICs in serial.

MPC9E plugs into the chassis and provides the fabric interface. MX2000 line of routers can support eight Switch Fabric Boards (SFB) and eight Enhanced Switch Fabric Boards (SFB2) but not both at the same time. However, during an upgrade from SFB to SFB2, the MX2000 line of routers support both SFB and SFB2 at the same time for the duration of the upgrade.

- Line-rate throughput of up to 1.6 Tbps on the MX2000 line of routers.
- MIC-MRATE MICs with QSFP+ transceivers that support rate selectability at the port level and at the MIC level.
- Configuration of 8 ports out of the 12 MIC-MRATE ports as 100-Gigabit Ethernet ports.

- Configuration of PIC-based tunnel interfaces from the Junos OS CLI.
- Maximum transmission unit (MTU) size of 16,000 bytes for transit traffic.

MPC9E supports the following software features:

- Dynamic power management for effective utilization of available power.
- Inline flow monitoring for higher scalability and performance.
- Flexible queuing using an add-on license to support 32,000 queues per line card, including queues on both ingress and egress interfaces. You can use an additional license to support up to 512,000 queues per slot or 1,000,000 queues per slot.
- Hyper mode to speed up packet processing.
- MACsec MIC MRATE support for MX2000 line of routers. See Understanding Media Access Control Security (MACsec) on MX Series Routers for more details.

For more information about the supported and unsupported Junos OS features for this MPC, see *Protocols and Applications Supported by the MPC8E and MPC9E on the MX2010 and MX2020 Routers* in the *MX Series Interface Module Reference*.

MX10003 MPC on MX10003 Router Overview

In Junos OS Release 17.3R1 and later, the MX10003 router supports a new Modular Port Concentrator (MPC), MX10003 MPC. Each MPC supports a Multi-Rate 12xQSFP28 Ethernet Modular Interface Card (MIC) (model numbers: JNP-MIC1 (in Junos OS Release 17.3R1) and JNP-MIC1-MACSEC (in Junos OS Release 17.3R2)) and the fixed-port PIC (6xQSFPP). The router provides two dedicated line-card slots for MPCs. MPCs install into the line-card slots. The fixed-port PIC is mapped to PIC 0, and each Packet Forwarding Engine is mapped to two ports in PIC 0. The Multi-Rate 12xQSFP28 Ethernet MIC is mapped to PIC 1, and each Packet Forwarding Engine is mapped to four ports in PIC 1. On the MIC all 12 ports are active and are capable of running in 40-Gigabit Ethernet, 100-Gigabit Ethernet, and 4x10-Gigabit Ethernet mode.

The MX10003 MPC supports:

- Line-rate throughput of up to 1.2 Tbps on the MX10003 routers.
- MICs with QSFP+/QSFP28 transceivers that are rate-selectable at the port level and at the MIC level.
- Configuration of all 12 ports of the MIC as 100-Gigabit Ethernet ports.
- Configuration of PIC-based tunnel interfaces from the Junos OS CLI.
- Maximum transmission unit (MTU) size of 16,000 bytes for transit traffic.

The MX10003 MPC supports the following software features:

- Dynamic power management for effective utilization of available power.
- Inline flow monitoring for higher scalability and performance.
- Hyper mode to speed up packet processing.

MPC and MIC Lane LED Scheme Overview

LEDs on the interface cards display the status of the ports. On some MICs and MPC that have multiple ports and supports multiple port speed, it is not feasible to have an individual LED display for each port on an interface card. Hence, a shared LED display is introduced—the lane LEDs.

The MX10003 MPC includes this new LED lane display. The Multi-Rate 12xQFSP28 MIC and the fixed-port PIC (6xQFSPP) have separate lane LEDs.

The lane LEDs of the MIC are located on the MIC itself, whereas the lane LEDs of the PIC are located on the MPC.

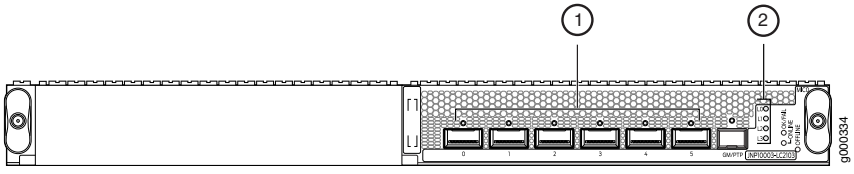
The following interface cards support lane LEDs:

- *MX10003 MPC (Multi-Rate)*
- *Line card (MX10K-LC2101)*
- *Multi-Rate Ethernet MIC*

You can select a port operating in a breakout mode for an individual lane display, either periodically or when the **request chassis port-led** command is executed. Similar to the port status LEDs, the lane LED supports 4 states defined by the color or the LED status—OFF, GREEN, AMBER, and RED.

Figure 1 on page 60 illustrates the port LED and lane LED displays on the MPC.

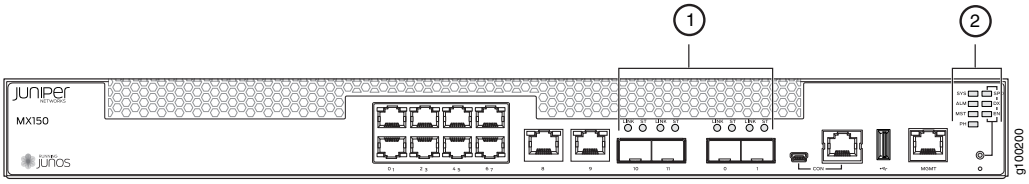
Figure 1: Port LED and Lane LED display on the MPC



1—Port LEDs	2—Lane display LEDs

Figure 2 on page 61illustrates the port LED and lane LED displays for the MPC.

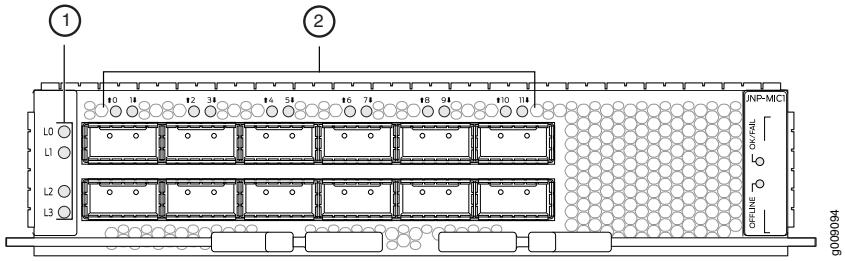
Figure 2: Port LED and Lane LED display on the JNP10K-LC2101 MPC



1–Lane display LEDs	2–Port LEDs

Figure 3 on page 61 illustrates the port LED and lane LED displays for the MIC.

Figure 3: Port LED and Lane LED display on the MIC



1–Lane display LEDs	2–Port LEDs

The following port LED display modes are defined:

- Normal—The port status LED represents port state or a breakout port state. By default, the port status display mode is Normal.
- Lane display—An array of lane status LEDs displays the status of each individual lane for the selected port. The lane display is ON when the software cycles through ports for lane status display. One port is selected at a time, and the display mode for that particular port switches to lane display mode. The other ports remain in normal display mode.
- Port location—The port location mode is ON when a remote operator initiates a port location command for a port or a group of ports. The **request chassis port-led** command temporarily overrides periodic software port selection for the lane display; all ports on an interface card that are not selected for port location switch to Normal mode, and selected ports switch to port location mode. If only one port is selected for port location, then the corresponding lane LEDs are applicable. However, if the selected port is in breakout mode, then all lane LEDs are applicable. If not in breakout mode, only lane 0 LED displays the port status. If more than one port is selected for port location, then the lane LEDs are disabled.

The following factors trigger a change in the port LED color:

- Change in the port state. For example, loss of signal (LOS) to no LOS, remote fault, or local fault
- Pluggable insertion or removal

- Change in configuration
- Activation or deactivation of port location feature
- Selection of breakout port for lane display

NOTE: Ports with all individual links in *Up* state are skipped and are not considered for lane display, thereby reducing the time needed to cycle through all the ports.

Table 4 on page 62 summarizes the state and color rules for the port LEDs. These rules help in determining the port LED color. When port location mode is activated, the port LED state or color can be determined from the Port Location ON column. If the breakout port is selected for the lane status display, then port LED state or color can be determined from the Lane Display column.

Table 4: Port LED State and Color Rules

Pluggable Inserted	Breakout Configuration State	Explicitly Disabled	Port State	Normal	Port Location ON	Lane Display
Yes	No breakout	No	Up	Green	Blinking green	-
Yes	No breakout	No	Down; loss of signal (LOS) detected	Off	Blinking green	-
Yes	No breakout	No	Down; transceiver hardware failure	Red	Blinking red	-
Yes	No breakout	No	Down; any other fault other than LOS and transceiver hardware failure	Amber	Blinking amber	-
ANY	No breakout	Yes	Port disabled by CLI	Amber	Blinking amber	-
No	Any	No	Anything except disabled port; however, transceiver not present	Off	Blinking green	-
Yes	Breakout	No	All breakout ports are UP	Green	Blinking green	Blinking green
Yes	Breakout	No	All breakout ports are down with LOS	Off	Blinking green	Blinking green

Table 4: Port LED State and Color Rules *(continued)*

Pluggable Inserted	Breakout Configuration State	Explicitly Disabled	Port State	Normal	Port Location ON	Lane Display
Yes	Breakout	No	Hardware failure; transceiver initialization error at the port level (not individual lane)	Red	Blinking red	Blinking red
Yes	Breakout	Any	In all other cases the port LED color is amber	Amber	Blinking amber	Blinking amber

The following factors trigger a change in the lane LED color:

- A breakout port is selected for a lane display.
- Port location mode is activated for a port on a given interface card.

Table 5 on page 63 summarizes the state and color rules for the lane LEDs.

Table 5: Lane LED Color Rules

Pluggable Inserted	Breakout Configuration State	Explicitly Disabled	Port State	Order	LED Color
Yes	Breakout	No	Up	1	Green
Yes	Breakout	No	Down; loss of signal (LOS) detected	2	Off
Yes	Breakout	No	Down; transceiver hardware failure	3	Red
Yes	Breakout	No	Down; fault other than LOS and transceiver hardware failure	4	Amber
Yes	Breakout	Yes	Breakout port is disabled in the CLI	5	Amber

JNP10K-LC2101 MPC on MX10008 Routers Overview

In Junos OS Release 18.2R1 and later, MX10008 routers support a new MPC, JNP10K-LC2101. JNP10K-LC2101 is a fixed-configuration MPC that provides increased port density and performance to the MX10008 routers. JNP10K-LC2101 does not contain separate slots for Modular Interface Cards (MICs) and has six Packet Forwarding Engines.

MX10008 routers support eight JNP10K-LC2101 MPCs. By default, each JNP10K-LC2101 MPC provides a maximum bandwidth of 2.4Tbps. JNP10K-LC2101 has six Packet Forwarding Engines, each providing a maximum bandwidth of up to 400 Gbps, which cannot be oversubscribed. JNP10K-LC2101 MPC plugs into the chassis and provides the fabric interface. The MX10008 router supports six Switch Fabric Boards (SFBs).

The MX10008 router supports only **enhanced-ip** and **enhanced-ethernet** network services mode. The default network services mode is **enhanced-ip**.

JNP10K-LC2101 supports:

- Multi-rate ports. The ports on the JNP10K-LC2101 MPC support multiple port speeds such as 10Gbps, 40 Gbps, and 100 Gbps. Hence, they are known as multi-rate ports. All ports support all port speeds. To view the port speed information for each port, use the **show chassis pic fpc-slot *fpc-slot-number* pic-slot *pic-slot-number*** command.
- PIC-based tunnel configuration
- Maximum Transmission Unit (MTU) size of 16000 bytes for transit traffic.
- Dynamic Power Management for effective utilization of available power.
- Flexible queuing supports 128,000 queues per line card, including queues on both ingress and egress interfaces. You can use an additional license to support up to 256,000 queues or 1,500,000 queues per slot.

For more information about the supported and unsupported Junos OS features on JNP10K-LC2101, see *Protocols and Applications Supported by the JNP10K-LC2101 on the MX10008 Routers* in the *MX Series Interface Module Reference*.

Downgrading JNP10K-LC2101 to Provide Decreased Bandwidth

You can downgrade the JNP10K-LC2101 MPC to provide a decreased bandwidth of 1.44Tbps. After you perform the downgrade, JNP10K-LC2101 provides a bandwidth of 1.44Tbps. Each of the six Packet Forwarding Engines now provide a maximum bandwidth of up to 240 Gbps, which cannot be oversubscribed.

You can downgrade the bandwidth by using the **set chassis fpc slot bandwidth 1.44T** command. You can disable this feature by using the **delete chassis fpc slot bandwidth 1.44T** command.

NOTE: When you modify the bandwidth of JNP10K-LC2101 and commit the configuration, the MPC automatically reboots . For instance, if you downgrade JNP10K-LC2101 to provide a bandwidth of 1.44 Tbps and commit the configuration, the MPC automatically reboots. Also, if you disable the feature on JNP10K-LC2101 (to provide a bandwidth of 2.4Tbps) and commit the configuration, the MPC automatically reboots.

MX204 Router Overview

Starting with Release 17.4R1, Junos OS supports the MX204 Universal Routing Platform (model number: JNP204 [MX204]). The MX204 chassis is a monolithic system— that is, it does not have separate Switch Processor Mezzanine Boards and line cards. All the router components including Packet Forwarding Engines and WAN interfaces are managed by the CPU subsystem (consisting of an eight-core Broadwell CPU). The MX204 delivers a throughput of up to 400 Gbps.

The MX204 router is a fixed-configuration router, and supports one fixed Routing Engine. It contains a total of twelve fixed ports, in two groups of four and eight, respectively. The set of four ports (referred to as the PIC 0 ports) are rate selectable and can be configured at 10-Gbps (by using a breakout cable), 40-Gbps, or 100-Gbps speed. However, not all the ports support all the three speeds. The set of eight ports (referred to as PIC 1 ports) operate at a fixed speed of 10-Gbps. The four rate-selectable ports support QSFP28 and QSFP+ transceivers, whereas the eight 10-Gigabit Ethernet ports support SFP+ transceivers.

See *MX204 Router Rate-Selectability Overview* and *Supported Active Physical Rate-Selectable Ports to Prevent Oversubscription on MX204 Router* for more details.

MX204 LED Scheme Overview

LEDs on the interface cards display the status of the ports. In MX204 router, there are four port LEDs per port. Each port provides an individual status LED with four states signaled by the color/LED state: OFF, GREEN, AMBER, RED.

The following port LED display modes are defined:

- Normal—Represents the normal working mode of the LED. By default, the port status display mode is Normal.
- Port location—The port location mode is ON when a remote operator initiates a port location command for a port or a group of ports.

The following factors trigger a change in the port LED color:

- Change in the port state. For example, loss of signal (LOS) to no LOS, remote fault, or local fault
- Pluggable insertion or removal
- Change in configuration
- Activation or deactivation of port location feature

Table 6 on page 66 summarizes the state and color rules for the port LEDs. These rules help in determining the port LED color. When port location mode is activated, the port LED state or color can be determined from the Port Location ON column.

> **NOTE:** In MX204 router, there are four port LEDs per port. On PIC 0, if the port operates at the speed of 40-Gbps or 100-Gbps, then the first LED of PIC 1 will be ON and the other three LEDs will be OFF. And, if the port operates at the speed of 10-Gbps, then all the LEDs will be ON.

Table 6: Port LED State and Color Rules

Pluggable Inserted	Explicitly Disabled	Port State	Normal	Port Location ON
Yes	No	Up	Green	Blinking green
Yes	No	Down; loss of signal (LOS) detected	Off	Blinking green
Yes	No	Down; transceiver hardware failure	Red	Blinking red
Yes	No	Down; any other fault other than LOS and transceiver hardware failure	Amber	Blinking amber
ANY	Yes	Port disabled by CLI	Amber	Blinking amber
No	No	Anything except disabled port; however, transceiver not present	Off	Blinking green

MPC10E-15C-MRATE Overview

Starting with Junos OS Release 19.1R1, the MX240, MX480 and MX960 routers support MPC10E-15C-MRATE (15x100GE) line card. This fixed-port line card is capable of delivering a bandwidth of up to 1.5 Tbps per MPC slot. It supports three MICs (one per Packet Forwarding Engine), each of which

can deliver a throughput of up to 500 Gbps. Each MIC comprises five ports that support 100 Gbps (the default), 40 Gbps, and 10 Gbps speeds through the use of QSFP28+ and QSFP+ optics. You can enable 10 Gbps speed (four 10 Gbps channels) by using breakout cables.

MPC10E-15C-MRATE supports a maximum transmission unit (MTU) starting from 256 bytes to 16,000 bytes for transit traffic, and from 256 bytes to 9,500 bytes for host bound packets.

The MPC10E-15C-MRATE line card supports both hyper mode and normal mode. However, the default mode for MPC10E is hyper mode. For more details about hypermode, see *Understanding the Hyper Mode Feature on Enhanced MPCs for MX Series Routers and EX9200 Switches*.

NOTE:

- The MPC10E-15C-MRATE is powered on only if the MX Series router has an enhanced Switch Control Board (SCBE3) installed.
- The MPC10E-15C-MRATE is powered on only if the router operates in **enhanced-ip** or **enhanced-ethernet** mode.
- The MPC10E-15C-MRATE will be powered on only when the MX Series router is installed with enhanced Fan Trays.
- The MPC10E-15C-MRATE will be supported only when the MX Series router is installed with Enhanced PEMs.
- On MX960 routers with enhanced Midplane on the slot 1, the MPC10E-15C-MRATE will not be powered on.

NOTE:

Fabric Management on MPC10E-15C-MRATE

The MPC10E line cards function only if the MX router has an SCBE3 installed. The MPC10E-15C-MRATE supports the following two fabric redundancy modes:

- redundant mode
- increased bandwidth mode

On MX Series routers with MPC10E-15C-MRATE, the default fabric redundancy mode is increased bandwidth mode. To configure the MPC10E-15C-MRATE to function in redundant fabric mode, use the existing **redundancy-mode redundant** statement at the [edit chassis fabric] hierarchy level. To configure the MPC10E-15C-MRATE to function in increased bandwidth mode, use the **redundancy-mode increased-bandwidth** statement at the [edit chassis fabric] hierarchy level. In a redundant configuration,

an MPC10E line card provides a fabric bandwidth of up to 1 Tbps. In a non-redundant configuration, an MPC10E-15C-MRATE supports a fabric bandwidth of up to 1 Tbps (with four fabric planes) and 1.5 Tbps fabric bandwidth when all six fabric planes are used.

Fabric bandwidth supported by MPC10E-15C-MRATE with SCBE3 is as follows:

Number of Active Fabric Planes	Fabric Bandwidth Per PFE	Fabric Bandwidth Per MPC
1	83.71G	251.14G
2	167.43G	502.28G
3	251.14G	753.42G
4	334.85G	1004.56G
5	418.57G	1255.69G
6	502.28G	1506.84G

MPC10E line cards support fabric hardening. It supports configuration of per fpc **bandwidth-degradation** and per fpc **blackhole-action**.

Release History Table

Release	Description
18.3R1	Starting in JunosOS Release 18.3R1, on MX240, MX480, and MX960 routers, the MIC-MACSEC-20GE with SFP/SFP+ ports are supported on MPC1 line card.
18.3R1	Starting in JunosOS Release 18.3R1, on MX240, MX480, and MX960 routers, the MIC-MACSEC-20GE with SFP/SFP+ ports are supported on MPC2 and MPC2E line cards.
18.3R1	Starting in JunosOS Release 18.3R1, on MX240, MX480, and MX960 routers, the MIC-MACSEC-20GE with SFP/SFP+ ports are supported on MPC3 and MPC3E line cards.
17.4R1	Starting in Junos OS Release 17.4R1, MIC-MACSEC-MRATE with MACsec is supported on MPC8E to extend MACsec capabilities on MX2000 line of routers (MX2020, MX2010, MX2008).
17.4R1	Starting in Junos OS Release 17.4R1, MIC-MACSEC-MRATE with MACsec is supported on MPC9E to extend MACsec capabilities on MX2000 line of routers (MX2020, MX2010, MX2008).
13.3R2	In Junos OS Release 13.3R2 and later, MX2020, MX2010, MX960, MX480, and MX240 routers support a new MPC, MPC5E.
13.3R2	In Junos OS Release 13.3R2 and later, MX2020 and MX2010 routers support a new MPC, MPC6E (model number: MX2K-MPC6E).

RELATED DOCUMENTATION

- *Understanding Rate Selectability*
- *MX Series Interface Module Reference*.
- *Tunnel Interface Configuration on MX Series Routers Overview*
- *Calculating Power Requirements for MX240 Routers*
- *Calculating Power Requirements for MX480 Routers*
- *Calculating Power Requirements for MX960 Routers*
- *Calculating AC Power Requirements for MX2010 Routers*
- *Calculating DC Power Requirements for MX2010 Routers*
- *Calculating AC Power Requirements for MX2020 Routers*

Calculating DC Power Requirements for MX2020 Routers

10-Gigabit Ethernet OTN Options Configuration Overview

100-Gigabit Ethernet OTN Options Configuration Overview

Junos Continuity Software User Guide (Junos OS Release 14.1R4 and Later Releases)

3

CHAPTER

Line Card Interoperability

Configuring Line Card Interoperability | 73

Configuring Line Card Interoperability

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Interoperability of Type 3 FPCs and Type 4 FPCs with Type 5 FPCs

Support for interoperability of Type 3 FPCs, Type 4 FPCs, and T640-FPC4-1P-ES with Type 5 FPCs is now possible with fabric notification translation. This feature is supported on T4000 routers.

Basic packet forwarding, IPv4, IPv6, MPLS, and multicast (dataplane) are currently supported through this feature.

Configuring 100-Gigabit Ethernet MICs to Interoperate with Type 4 100-Gigabit Ethernet PICs (PD-1CE-CFP-FPC4) Using SA Multicast Mode

To configure a 100-Gigabit Ethernet MIC (MIC3-3D-1X100GE-CFP) to interoperate with Juniper Networks Type 4 100-Gigabit Ethernet PICs (model number PD-1CE-CFP-FPC4), you can use the **forwarding-mode** statement with the **sa-multicast** option at the **[edit chassis fpc *slot* pic *slot*]** hierarchy level.

SA multicast mode uses the multicast bit in the source MAC address for packet steering. By default, the SA multicast bit is set to 0 for all packets sent by the 100-Gigabit Ethernet MIC. The egress packet flow is the traffic flowing from the 100-Gigabit Ethernet MIC to the 100-Gigabit Ethernet PIC. Since no VLAN tags are available, the SA multicast bit is sent on the outgoing packets. At the other end, the 100-Gigabit Ethernet PIC looks at the bit and forwards the packets to either Packet Forwarding Engine 0 or 1. The ingress packet flow is the traffic flowing from a 100-Gigabit Ethernet PIC to a 100-Gigabit Ethernet MIC. When the 100-Gigabit Ethernet PIC is sending out a packet, the multicast bit is set based on the Packet Forwarding Engine packet received. The multicast bit is then transmitted and the MPC3E sees the multicast bit on ingress.

NOTE: The SA multicast bit is ignored by MPC3E while learning the source MAC addresses.

Configuring 100-Gigabit Ethernet MICs

The interoperability mode between the 100-Gigabit Ethernet MIC and the 100-Gigabit Ethernet PIC is configured on a PIC basis. The MPC3E has two MIC slots. A 100-Gigabit Ethernet MIC installed in slot 0 corresponds to **pic 0**, and the MIC installed in slot 1 corresponds to **pic 2**.

NOTE: The configuration is valid only on PIC 0 and PIC 2.

To configure SA multicast mode on a Juniper Networks 100-Gigabit Ethernet MIC in MPC 0, PIC 0 for interconnection with another Juniper Networks 100-Gigabit Ethernet PIC, use the **set chassis fpc *slot* pic *slot* forwarding-mode sa-multicast** command, as follows:

```
[edit chassis fpc slot pic slot]
forwarding-mode {
   sa-multicast;
}
```

You can use the **show forwarding-mode** command to view the resulting configuration, as follows:

```
[edit chassis fpc slot pic slot]
user@host# show forwarding-mode
```

Configuring 100-Gigabit Ethernet PIC (PD-1CE-CFP-FPC4)

The default packet steering mode for the 100-Gigabit Ethernet PIC (PD-1CE-CFP-FPC4)is SA multicast bit mode. There is no SA multicast configuration required on the 100-Gigabit Ethernet PIC to enable this mode.

NOTE: SA multicast mode can be configured, but it is not necessary.

The 100-Gigabit Ethernet PIC uses a Type 4 FPC and two 50 Gpbs Packet Forwarding Engines to achieve 100 Gbps throughput. The 50 Gpbs physical interfaces are created when the 100-Gigabit Ethernet PIC is installed. The two physical interfaces are visible and configuration is allowed on both physical interfaces. The physical interfaces on the 100-Gigabit Ethernet PIC should be configured in static LAG mode without enabling Link Aggregation Control Protocol (LACP). This ensures that a single 100-Gigabit aggregated interface is visible on the link connecting to the 100-Gigabit Ethernet MIC instead of two independent 50 Gpbs interfaces.

When the PIC is in aggregated Ethernet mode, the two physical interfaces on the same PIC are aggregated into one AE physical interface. When the PIC is configured with two physical interfaces, it creates the physical interfaces **et-*fpc*/*pic*/0:0** and **et-*fpc*/*pic*/0:1** where *fpc* is the FPC slot number and *pic* is the PIC slot number. The example shows how to configure two physical interfaces for PIC 0 in FPC 5:

```
chassis {
    aggregated-devices {
        ethernet {
            device-count 1;
        }
    }
}
interfaces {
    et-5/0/0:0 {
        gigether-options {
            802.3ad ae0;
        }
    }
    et-5/0/0:1 {
        gigether-options {
            802.3ad ae0;
        }
```

```
    }
  }
```

Interoperability Between MPC4E (MPC4E-3D-2CGE-8XGE) and 100-Gigabit Ethernet PICs on Type 4 FPC

You can enable interoperability between the MPC4E (MPC4E-3D-2CGE-8XGE) and the 100-Gigabit Ethernet PIC (PD-1CE-CFP-FPC4) by:

- Enabling source address (SA) multicast bit steering mode on the MPC4E.
- Configuring the two 50-Gigabit Ethernet physical interfaces on the 100-Gigabit Ethernet PIC PD-1CE-CFP-FPC4 as one aggregated Ethernet physical interface.

SA multicast mode uses the multicast bit in the source MAC address for packet steering. By default, the SA multicast bit is set to 0 for all packets sent by the MPC4E. The egress packet flow is the traffic flowing from the MPC4E to the 100-Gigabit Ethernet PIC. Because no VLAN tags are available, the SA multicast bit is sent on the outgoing packets. At the other end, the 100-Gigabit Ethernet PIC checks the multicast bit and forwards the packets to either Packet Forwarding Engine 0 or Packet Forwarding Engine 1. The ingress packet flow is the traffic flowing from the 100-Gigabit Ethernet PIC to the MPC4E. When the 100-Gigabit Ethernet PIC sends out a packet, the multicast bit is set based on the packet received from the Packet Forwarding Engine. The multicast bit is then transmitted and the MPC4E checks the multicast bit on ingress.

The 100-Gigabit Ethernet PIC uses a Type 4 FPC and two 50-Gbps Packet Forwarding Engines to achieve a throughput of 100 Gbps. The 50-Gbps physical interfaces are created when the 100-Gigabit Ethernet PIC is plugged in. The two physical interfaces are visible and configuration is allowed on both physical interfaces. The physical interfaces on the 100-Gigabit Ethernet PIC must be configured in static LAG mode without enabling Link Aggregation Control Protocol (LACP). This ensures that a single 100-Gigabit Ethernet aggregated interface is visible on the link connecting to the MPC4E instead of two independent 50-Gbps interfaces.

Configuring MPC4E (MPC4E-3D-2CGE-8XGE) to Interoperate with 100-Gigabit Ethernet PICs on Type 4 FPC Using SA Multicast Mode

IN THIS SECTION

- Configuring SA Multicast Bit Steering Mode on MPC4E | 77
- Configuring Two 50-Gigabit Ethernet Physical Interfaces on the Ethernet PIC as One Aggregated Ethernet Interface | 78

You can enable interoperability between the MPC4E and the 100-Gigabit Ethernet PIC by performing the following tasks:

Configuring SA Multicast Bit Steering Mode on MPC4E

The interoperability mode between the MPC4E and the 100-Gigabit Ethernet PIC is configured on a PIC basis. MPC4E-3D-2CGE-8XGE is a fixed-configuration MPC and does not contain separate slots for Modular Interfaces Cards (MICs). MPC4E contains two Packet Forwarding Engines—**PFE 0** hosts **PIC 0** and **PIC 1** and **PFE 1** hosts **PIC 2** and **PIC 3**.

NOTE: This configuration is valid only on **PIC 1** and **PIC 3**.

To configure SA multicast mode on **PIC 1** of an MX480 router with MPC4E for interconnection with the 100-Gigabit Ethernet PIC:

1. To specify the forwarding mode as **sa-multicast**, include the **forwarding-mode** statement at the **[edit chassis fpc *slot* pic *slot*]** hierarchy level.

   ```
   [edit chassis]
   user@host # set fpc 3 pic 1 forwading-mode sa-multicast
   ```

2. To verify that the forwarding mode is set to **sa-multicast**, issue the following command:

   ```
   [edit chassis fpc 3 pic 1]
   user@host # show forwarding-mode
   ```

Configuring Two 50-Gigabit Ethernet Physical Interfaces on the Ethernet PIC as One Aggregated Ethernet Interface

When the PIC is in aggregated Ethernet mode, the two physical interfaces on the same PIC are aggregated into one aggregated Ethernet physical interface. When the PIC is configured with two physical interfaces, it creates the physical interfaces et-x/y/0:0 and et-x/y/0:,1 where *x* is the FPC slot number and *y* is the PIC slot number.

The default packet steering mode for the 100-Gigabit Ethernet PIC is SA multicast bit mode. No SA multicast configuration is required on the 100-Gigabit Ethernet PIC to enable this mode.

NOTE: SA multicast mode can be configured, but it is not necessary.

1. To specify the number of aggregated Ethernet interfaces to be created:

```
[edit chassis aggregated-devices ethernet]
user@host # set device-count 2
```

2. To specify the members to be included within the aggregated Ethernet bundle:

```
[edit interfaces]
user@host # set et-4/3/0:0 gigether-options 802.3ad ae0
user@host # set et-4/3/0:1 gigether-options 802.3ad ae0
```

3. Verify the configuration at the interface.

```
[edit]
user@host # show interfaces
```

```
..
et-4/3/0:0 {
gigether-options {
802.3ad ae0;
}
}
et-4/3/0:1 {
gigether-options {
802.3ad ae0;
}
```

```
}
```

Interoperability Between MPC7E-MRATE and 100-Gigabit Ethernet PICs on Type 4 FPC

You can enable interoperability between the MPC7E (MPC7E-MRATE) and the 100-Gigabit Ethernet PIC (PD-1CE-CFP-FPC4) by:

- Enabling source address (SA) multicast bit steering mode on the MPC7E
- Configuring the two 50-Gigabit Ethernet physical interfaces on the 100-Gigabit Ethernet PIC PD-1CE-CFP-FPC4 as one aggregated Ethernet physical interface.

SA multicast mode uses the multicast bit in the source MAC address for packet steering. By default, the SA multicast bit is set to 0 for all packets sent by the MPC7E. The egress packet flow is the traffic flowing from the MPC to the 100-Gigabit Ethernet interface. Because no VLAN tags are available, the SA multicast bit is sent on the outgoing packets. At the other end, the 100-Gigabit Ethernet interface checks the multicast bit and forwards the packets to either Packet Forwarding Engine 0 or Packet Forwarding Engine 1. The ingress packet flow is the traffic flowing from the 100-Gigabit Ethernet interface to the MPC7E. When the 100-Gigabit Ethernet interface sends out a packet, the multicast bit is set based on the packet received from the Packet Forwarding Engine. The multicast bit is then transmitted and the MPC7E checks the multicast bit on ingress.

The 100-Gigabit Ethernet PIC uses a Type 4 FPC and two 50-Gbps Packet Forwarding Engines to achieve a throughput of 100 Gbps. The 50-Gbps physical interfaces are created when the 100-Gigabit Ethernet PIC is plugged in. The two physical interfaces are visible and configuration is allowed on both physical interfaces. The physical interfaces on the 100-Gigabit Ethernet PIC must be configured in static LAG mode without enabling Link Aggregation Control Protocol (LACP). This ensures that a single 100-Gigabit Ethernet aggregated interface is visible on the link connecting to the MPC7E instead of two independent 50-Gbps interfaces.

Configuring MPC7E-MRATE to Interoperate with 100-Gigabit Ethernet PICs on Type 4 FPC Using SA Multicast Mode

IN THIS SECTION

- Configuring SA Multicast Bit Steering Mode on MPC7E | 80
- Configuring Two 50-Gigabit Ethernet Physical Interfaces on the Ethernet PIC as One Aggregated Ethernet Interface | 81

You can enable interoperability between the MPC7E (MPC7E-MRATE) and the 100-Gigabit Ethernet PIC by performing the following tasks:

Configuring SA Multicast Bit Steering Mode on MPC7E

The interoperability mode between the MPC7E (MPC7E-MRATE) and the 100-Gigabit Ethernet PIC is configured on a PIC basis. MPC7E is a fixed-configuration MPC and does not contain separate slots for Modular Interfaces Cards (MICs). MPC7E contains two Packet Forwarding Engines—**PFE 0** hosts **PIC 0** and **PFE 1** hosts **PIC 1** .

To configure SA multicast mode on **FPC13**,**PIC 1** of MPC7E-MRATE for interconnection with the 100-Gigabit Ethernet PIC:

1. To specify the forwarding mode as **sa-multicast**, include the **forwarding-mode** statement at the **[edit chassis fpc *slot* pic *slot*]** hierarchy level.

```
[edit chassis]
user@host # set fpc 13 pic 1 forwading-mode sa-multicast
```

2. To verify that the forwarding mode is set to **sa-multicast**, issue the following command:

```
[edit chassis fpc 13 pic 1]
user@host # show forwarding-mode
```

Configuring Two 50-Gigabit Ethernet Physical Interfaces on the Ethernet PIC as One Aggregated Ethernet Interface

When the PIC is in aggregated Ethernet mode, the two physical interfaces on the same PIC are aggregated into one aggregated Ethernet physical interface. When the PIC is configured with two physical interfaces, it creates the physical interfaces et-x/y/0:0 and et-x/y/0:,1 where *x* is the FPC slot number and *y* is the PIC slot number.

The default packet steering mode for the 100-Gigabit Ethernet PIC is SA multicast bit mode. No SA multicast configuration is required on the 100-Gigabit Ethernet PIC to enable this mode.

NOTE: SA multicast mode can be configured, but it is not necessary.

1. To specify the number of aggregated Ethernet interfaces to be created:

```
[edit chassis aggregated-devices ethernet]
user@host # set device-count 2
```

2. To specify the members to be included within the aggregated Ethernet bundle:

```
[edit interfaces]
user@host # set et-4/3/0:0 gigether-options 802.3ad ae0
user@host # set et-4/3/0:1 gigether-options 802.3ad ae0
```

3. Verify the configuration at the interface.

```
[edit]
user@host # show interfaces
```

```
..
et-4/3/0:0 {
gigether-options {
802.3ad ae0;
}
}
et-4/3/0:1 {
gigether-options {
802.3ad ae0;
}
```

```
}
```

Interoperability Between MPC8E (MX2K-MPC8E) and 100-Gigabit Ethernet PICs on Type 4 FPC

You can enable interoperability between the MPC8E (MX2K-MPC8E) and the 100-Gigabit Ethernet PIC (PD-1CE-CFP-FPC4) by:

- Enabling source address (SA) multicast bit steering mode on the MPC8E.
- Configuring the two 50-Gigabit Ethernet physical interfaces on the 100-Gigabit Ethernet PIC PD-1CE-CFP-FPC4 as one aggregated Ethernet physical interface.

SA multicast mode uses the multicast bit in the source MAC address for packet steering. By default, the SA multicast bit is set to 0 for all packets sent by the MPC8E. The egress packet flow is the traffic flowing from the MPC to the 100-Gigabit Ethernet Interface. Because no VLAN tags are available, the SA multicast bit is sent on the outgoing packets. At the other end, the 100-Gigabit Ethernet Interface checks the multicast bit and forwards the packets to either Packet Forwarding Engine 0 or Packet Forwarding Engine 1. The ingress packet flow is the traffic flowing from the 100-Gigabit Ethernet Interface to the MPC8E. When the 100-Gigabit Ethernet Interface sends out a packet, the multicast bit is set based on the packet received from the Packet Forwarding Engine. The multicast bit is then transmitted and the MPC8E checks the multicast bit on ingress.

The 100-Gigabit Ethernet PIC uses a Type 4 FPC and two 50-Gbps Packet Forwarding Engines to achieve a throughput of 100 Gbps. The 50-Gbps physical interfaces are created when the 100-Gigabit Ethernet PIC is plugged in. The two physical interfaces are visible and configuration is allowed on both physical interfaces. The physical interfaces on the 100-Gigabit Ethernet PIC must be configured in static LAG mode without enabling Link Aggregation Control Protocol (LACP). This ensures that a single 100-Gigabit Ethernet aggregated interface is visible on the link connecting to the MPC8E instead of two independent 50-Gbps interfaces.

Configuring MPC8E to Interoperate with 100-Gigabit Ethernet PICs on Type 4 FPC Using SA Multicast Mode

IN THIS SECTION

- Configuring SA Multicast Bit Steering Mode on MPC8E | 83
- Configuring Two 50-Gigabit Ethernet Physical Interfaces on the Ethernet PIC as One Aggregated Ethernet Interface | 84

You can enable interoperability between the MPC8E (MX2K-MPC8E) and the 100-Gigabit Ethernet PIC by performing the following tasks:

Configuring SA Multicast Bit Steering Mode on MPC8E

The interoperability mode between the MPC8E and the 100-Gigabit Ethernet PIC is configured on a PIC basis. MPC8E (MX2K-MPC8E) is a modular MPC that contains two slots for Modular Interfaces Cards (MICs). MPC8E contains four Packet Forwarding Engines—**PIC 0** hosts **PFE 0** and **PFE 1**. **PIC 1**hosts **PFE 2** and **PFE 3**.

To configure SA multicast mode on **FPC 7**,**PIC 1** of MPC8E for interconnection with the 100-Gigabit Ethernet PIC:

1. To specify the forwarding mode as **sa-multicast**, include the **forwarding-mode** statement at the **[edit chassis fpc *slot* pic *slot*]** hierarchy level.

   ```
   [edit chassis]
   user@host # set fpc 7 pic 1 forwading-mode sa-multicast
   ```

2. To verify that the forwarding mode is set to **sa-multicast**, issue the following command:

   ```
   [edit chassis]
   user@host # show fpc 7 pic 1 forwarding-mode
   ```

   ```
   sa-multicast;
   ```

Configuring Two 50-Gigabit Ethernet Physical Interfaces on the Ethernet PIC as One Aggregated Ethernet Interface

When the PIC is in aggregated Ethernet mode, the two physical interfaces on the same PIC are aggregated into one aggregated Ethernet physical interface. When the PIC is configured with two physical interfaces, it creates the physical interfaces et-x/y/0:0 and et-x/y/0:,1 where *x* is the FPC slot number and *y* is the PIC slot number.

The default packet steering mode for the 100-Gigabit Ethernet PIC is SA multicast bit mode. No SA multicast configuration is required on the 100-Gigabit Ethernet PIC to enable this mode.

NOTE: SA multicast mode can be configured, but it is not necessary.

1. To specify the number of aggregated Ethernet interfaces to be created:

```
[edit chassis aggregated-devices ethernet]
user@host # set device-count 2
```

2. To specify the members to be included within the aggregated Ethernet bundle:

```
[edit interfaces]
user@host # set et-4/3/0:0 gigether-options 802.3ad ae0
user@host # set et-4/3/0:1 gigether-options 802.3ad ae0
```

3. Verify the configuration at the interface.

```
[edit]
user@host # show interfaces
```

```
..
et-4/3/0:0 {
gigether-options {
802.3ad ae0;
}
}
et-4/3/0:1 {
gigether-options {
802.3ad ae0;
}
```

```
}
```

Interoperability Between MPC9E (MX2K-MPC9E) and 100-Gigabit Ethernet PICs on Type 4 FPC

You can enable interoperability between the MPC9E (MX2K-MPC9E) and the 100-Gigabit Ethernet PIC (PD-1CE-CFP-FPC4) by:

- Enabling source address (SA) multicast bit steering mode on the MPC9E.
- Configuring the two 50-Gigabit Ethernet physical interfaces on the 100-Gigabit Ethernet PIC PD-1CE-CFP-FPC4 as one aggregated Ethernet physical interface.

SA multicast mode uses the multicast bit in the source MAC address for packet steering. By default, the SA multicast bit is set to 0 for all packets sent by the MPC9E. The egress packet flow is the traffic flowing from the MPC9E to the 100-Gigabit Ethernet Interface. Because no VLAN tags are available, the SA multicast bit is sent on the outgoing packets. At the other end, the 100-Gigabit Ethernet Interface checks the multicast bit and forwards the packets to either Packet Forwarding Engine 0 or Packet Forwarding Engine 1. The ingress packet flow is the traffic flowing from the 100-Gigabit Ethernet Interface to the MPC9E. When the 100-Gigabit Ethernet interface sends out a packet, the multicast bit is set based on the packet received from the Packet Forwarding Engine. The multicast bit is then transmitted and the MPC9E checks the multicast bit on ingress.

The 100-Gigabit Ethernet PIC uses a Type 4 FPC and two 50-Gbps Packet Forwarding Engines to achieve a throughput of 100 Gbps. The 50-Gbps physical interfaces are created when the 100-Gigabit Ethernet PIC is plugged in. The two physical interfaces are visible and configuration is allowed on both physical interfaces. The physical interfaces on the 100-Gigabit Ethernet PIC must be configured in static LAG mode without enabling Link Aggregation Control Protocol (LACP). This ensures that a single 100-Gigabit Ethernet aggregated interface is visible on the link connecting to the MPC9E instead of two independent 50-Gbps interfaces.

Configuring MPC9E to Interoperate with 100-Gigabit Ethernet PICs on Type 4 FPC Using SA Multicast Mode

IN THIS SECTION

- Configuring SA Multicast Bit Steering Mode on MPC9E | 86
- Configuring Two 50-Gigabit Ethernet Physical Interfaces on the Ethernet PIC as One Aggregated Ethernet Interface | 87

You can enable interoperability between the MPC9E (MX2K-MPC9E) and the 100-Gigabit Ethernet PIC by performing the following tasks:

Configuring SA Multicast Bit Steering Mode on MPC9E

The interoperability mode between the MPC9E and the 100-Gigabit Ethernet PIC is configured on a PIC basis. MPC9E (MX2K-MPC9E) is a modular MPC that contains two slots for Modular Interfaces Cards (MICs). MPC9E contains four Packet Forwarding Engines—**PIC 0** hosts **PFE 0** and **PFE 1**. **PIC 1** hosts **PFE 2** and **PFE 3**.

To configure SA multicast mode on **FPC 19**, **PIC 1** of MPC9E for interconnection with the 100-Gigabit Ethernet PIC:

1. To specify the forwarding mode as **sa-multicast**, include the **forwarding-mode** statement at the **[edit chassis fpc *slot* pic *slot*]** hierarchy level.

   ```
   [edit chassis]
   user@host # set fpc 19 pic 1 forwading-mode sa-multicast
   ```

2. To verify that the forwarding mode is set to **sa-multicast**, issue the following command:

   ```
   [edit chassis]
   user@host # show fpc 19 pic 1 forwarding-mode
   ```

   ```
   sa-multicast;
   ```

Configuring Two 50-Gigabit Ethernet Physical Interfaces on the Ethernet PIC as One Aggregated Ethernet Interface

When the PIC is in aggregated Ethernet mode, the two physical interfaces on the same PIC are aggregated into one aggregated Ethernet physical interface. When the PIC is configured with two physical interfaces, it creates the physical interfaces et-x/y/0:0 and et-x/y/0:,1 where *x* is the FPC slot number and *y* is the PIC slot number.

The default packet steering mode for the 100-Gigabit Ethernet PIC is SA multicast bit mode. No SA multicast configuration is required on the 100-Gigabit Ethernet PIC to enable this mode.

NOTE: SA multicast mode can be configured, but it is not necessary.

1. To specify the number of aggregated Ethernet interfaces to be created:

```
[edit chassis aggregated-devices ethernet]
user@host # set device-count 2
```

2. To specify the members to be included within the aggregated Ethernet bundle:

```
[edit interfaces]
user@host # set et-4/3/0:0 gigether-options 802.3ad ae0
user@host # set et-4/3/0:1 gigether-options 802.3ad ae0
```

3. Verify the configuration at the interface.

```
[edit]
user@host # show interfaces
```

```
..
et-4/3/0:0 {
gigether-options {
802.3ad ae0;
}
}
et-4/3/0:1 {
gigether-options {
802.3ad ae0;
}
```

```
}
```

RELATED DOCUMENTATION

- *T4000 FPCs Supported*
- *T4000 PICs Supported*
- *forwarding-mode (100-Gigabit Ethernet)*
- *sa-multicast (100-Gigabit Ethernet)*

4

CHAPTER

Fabric Management

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Fabric Fault Handling | **104**

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Fabric Plane Management

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Fabric Plane Management on AS MLC Modular Carrier Card

The Application Services Modular Line Card (AS MLC) provides high application throughput and storage space, and is designed to run services on the MX240, MX480, and MX960 routers. The AS MLC consists of the following components:

- Application Services Modular Carrier Card (AS MCC)
- Application Services Modular Processing Card (AS MXC)
- Application Services Modular Storage Card (AS MSC)

The AS MCC plugs into the chassis and provides the fabric interface.

An MX960 router can support three Switch Control Boards (SCBs) or six fabric planes. The AS MCC supports six fabric planes. An MX240 or MX480 router can support upto two SCBs or two fabric planes. The AS MCC at any time can provide connectivity to only six of the eight fabric planes. Fabric planes 1 and 5, and 3 and 7 use shared physical links. So between fabric planes 1 and 5 only one plane can be active. Similarly between fabric planes 3 and 7, only one plane can be active.

This behavior impacts the output of fabric-related monitoring commands on MX240 and MX480 routers with AS MCCs.

The **show chassis fpc pic-status** command displays the output for an MX480 router with an AS MCC:

```
user@host>show chassis fpc pic-status
```

```
Slot 2   Online       MPC Type 1 3D Q
  Slot 1   Online       AS-MCC
  PIC 0  Online       AS-MSC
  PIC 2  Online       AS-MXC
Slot 4   Offline      MPC 3D 16x 10GE
Slot 5   Offline      AS-MCC
```

In the **show chassis fpc pic-status** command output, **Slot 1 and 5** are AS MCC, **PIC 0** is the AS MSC, and **PIC 2** is the AS MXC.

The **show chassis fabric fpcs** command displays the output on an MX480 router with an AS MCC.

`user@host`**show chassis fabric fpcs**

```
FPC 2
  PFE #0
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
FPC 4
  PFE #0
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Links ok
      Plane 5: Links ok
      Plane 6: Links ok
      Plane 7: Links ok
  PFE #2
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Links ok
      Plane 5: Links ok
      Plane 6: Links ok
      Plane 7: Links ok
```

```
FPC 5
  PFE #0
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Unused
      Plane 6: Plane enabled
      Plane 7: Unused
```

In the **show chassis fabric fpcs** command output, **FPC 5** is the AS MCC.

The **show chassis fabric plane** command displays the output on an MX480 router with an AS MCC.

`user@host>`**show chassis fabric plane**

```
Fabric management PLANE state
Plane 0
  Plane state: ACTIVE
      FPC 2
          PFE 0 :Links ok
      FPC 4
          PFE 0 :Links ok
          PFE 2 :Links ok
      FPC 5
          PFE 0 :Links ok
Plane 1
  Plane state: ACTIVE
      FPC 2
          PFE 0 :Links ok
      FPC 4
          PFE 0 :Links ok
          PFE 2 :Links ok
      FPC 5
          PFE 0 :Links ok
Plane 2
  Plane state: ACTIVE
      FPC 2
          PFE 0 :Links ok
      FPC 4
          PFE 0 :Links ok
          PFE 2 :Links ok
```

```
      FPC 5
          PFE 0 :Links ok
Plane 3
  Plane state: ACTIVE
      FPC 2
          PFE 0 :Links ok
      FPC 4
          PFE 0 :Links ok
          PFE 2 :Links ok
      FPC 5
          PFE 0 :Links ok
Plane 4
  Plane state: ACTIVE
      FPC 2
          PFE 0 :Links ok
      FPC 4
          PFE 0 :Links ok
          PFE 2 :Links ok
      FPC 5
          PFE 0 :Links ok
Plane 5
  Plane state: ACTIVE
      FPC 2
          PFE 0 :Links ok
      FPC 4
          PFE 0 :Links ok
          PFE 2 :Links ok
      FPC 5
          PFE 0 :Unused
Plane 6
  Plane state: ACTIVE
      FPC 2
          PFE 0 :Links ok
      FPC 4
          PFE 0 :Links ok
          PFE 2 :Links ok
      FPC 5
          PFE 0 :Links ok
Plane 7
  Plane state: ACTIVE
      FPC 2
          PFE 0 :Links ok
      FPC 4
          PFE 0 :Links ok
```

```
        PFE 2 :Links ok
    FPC 5
        PFE 0 :Unused
```

In the **show chassis fabric plane** output, **FPC 5** is the AS MCC.

The term **Unused** in the output for the **show chassis fabric fpcs** and **show chassis fabric plane** command indicates that one fabric plane from each pair that share physical links (1 and 5, and 3 and 7) is inactive.

See *Junos OS System Basics and Services Command Reference* for more information.

Fabric Plane Management on MPC4E

MPC4E is a fixed-configuration MPC that provides scalability in bandwidth and services capability of routers. MPC4E is supported on MX240, MX480, MX960, MX2010 and MX2020 routers. The MPC4E plugs into the chassis and provides the fabric interface.

By default, MX240 and MX480 routers with MPC4E support four active fabric planes each. However, this default fabric redundancy mode, also known as redundant fabric mode, makes the MPC run in reduced bandwidth state. In increased bandwidth mode, the MX240 and MX480 routers with MPC4E support six active fabric planes each. You can increase the number of active fabric planes by changing the mode from redundant fabric mode to increased bandwidth mode. To configure the MPC4E to function in increased bandwidth mode, use the existing **redundancy-mode increased-bandwidth** statement at the **[edit chassis fabric]** hierarchy level.

If you do not configure the fabric redundancy mode, MPC4E functions in redundant fabric mode. To configure the redundant fabric mode, use the existing **redundancy-mode redundant** statement at the **[edit chassis fabric]** hierarchy level.

An MX960 router can support three Enhanced MX Switch Control Boards (SCBEs) or six fabric planes. MX240 and MX480 routers can support up to two SCBEs or four fabric planes each. MX2020 routers can support eight Switch Fabric Boards (SFBs) or 24 fabric planes.

At any given time, on MX240 and MX480 routers, MPC4E can provide connectivity to only six of the eight fabric planes. Fabric planes 1 and 5 and fabric planes 3 and 7 use shared physical links. So, among fabric planes 1 and 5, only one plane can be active. Similarly, among fabric planes 3 and 7, only one plane can be active.

On MX240 and MX480 routers with MPC4E, if the fabric redundancy mode is not configured, then fabric planes 0, 1, 2, and 3 are online and active and fabric planes 4, 5, 6, and 7 are spare. If you configure the increased bandwidth mode, then the fabric planes 0, 1, 2, 3, 4, and 6 are active and fabric planes 5 and 7 are spare.

On MX960 routers with MPC4E, if you configure increased bandwidth mode, then fabric planes 0, 1, 2, 3, 4, and 5 are online. When MPC4E is plugged into an MX960 router, it does not have any fabric redundancy.

MX2020 routers with MPC4E do not support the existing **redundancy-mode** statement. Of the 24 fabric planes, all 24 planes are active.

Fabric Plane Management on MPC7E

IN THIS SECTION

- Fabric Hardening | **97**
- Limiting Traffic Disruption by Detecting Packet Forwarding Engine Destinations That Are Unreachable over the Fabric | **97**

The two variants of MPC7E—MPC7E-MRATE and MPC7E 10G—provide scalability in bandwidth and services capability of routers. The two MPCs are supported on MX240, MX480, and MX960 routers. The MPCs plug into the chassis and provide the fabric interface.

NOTE: The MPC7E-MRATE and MPC7E-10G MPCs are supported only on MX-SCBE2.

An MX960 router can support three Enhanced Switch Control Boards (SCBE2s)—two planes on each SCB and make up a total of six fabric planes. MX240 and MX480 routers can support up to two SCBE2—four fabric planes on each SCBE2 make up a total of eight planes. However, the MX240 and MX480 routers have only six active planes. The remaining two are redundant.

By default, MX240, MX480, and MX960 routers support four active fabric planes each. However, this default fabric redundancy mode, also known as *redundant fabric mode*, makes the MPC run in reduced bandwidth state. In *increased bandwidth mode*, the MX240, MX480, and MX960 routers support six active fabric planes each. You can increase the number of active fabric planes by changing the mode from *redundant fabric mode* to *increased bandwidth mode* mode. To configure the MPC7E to function in increased bandwidth mode, use the existing **redundancy-mode increased-bandwidth** statement at the **[edit chassis fabric]** hierarchy level. An MPC working with reduced fabric bandwidth can affect the routing process, resulting in reduced throughput. You can enable increased fabric bandwidth of the active SCBE2 for optimal and efficient performance and traffic handling.

On MX240 and MX480 routers, if the fabric redundancy mode is not configured, then fabric planes 0, 1, 2, and 3 are online and active and fabric planes 4, 5, 6, and 7 are redundant. If you configure the increased bandwidth mode, then the fabric planes 0, 1, 2, 3, 4, and 6 are active and fabric planes 5 and 7 are redundant.

On MX960 routers with MPC7E, if you configure increased bandwidth mode, then fabric planes 0, 1, 2, 3, 4, and 5 are active.

The following sections describe the fabric management features supported on the MPC7E MPCs in MX240, MX480, and MX960 routers.

Fabric Hardening

Fabric hardening is the process of controlling bandwidth degradation to prevent traffic black hole. Fabric hardening can be configured with two CLI configuration statements, **per fpc bandwidth-degradation** and **per fpc blackhole-action**. The two statements give you more control over what threshold of bandwidth degradation to react to, and what corrective action to take. The **per fpc bandwidth-degradation** statement determines how the MPC reacts when it reaches a specified bandwidth degradation percentage. The **per fpc blackhole-action** statement determines how the MPC responds to a 100 percent fabric degradation scenario. This statement is optional and overrides the default fabric hardening procedures.

Limiting Traffic Disruption by Detecting Packet Forwarding Engine Destinations That Are Unreachable over the Fabric

The router is able to detect unreachable destination Packet Forwarding Engines and limit the time for which traffic is disrupted. The router signals neighboring routers when it cannot carry traffic because of the inability of some or all source Packet Forwarding Engines to forward traffic to some or all destination Packet Forwarding Engines on any fabric plane, after interfaces have been created. This inability to forward traffic results in a traffic disruption by the router. When the router detects unreachable Packet Forwarding Engine destinations, it attempts to recover from the condition causing the disruption. If the recovery attempt fails, the system turns off the interfaces, thereby ending the disruption and initiating the recovery process.

The recovery process consists of the following steps:

1. Fabric plane restart phase: The MPC restarts the fabric planes one by one.
2. Fabric plane and MPC restart phase: The router restarts both the fabric planes and the MPCs. If there are unreachable MPCs that are unable to initiate high-speed links to the fabric after reboot, traffic disruption is limited because no interfaces are created for these MPCs.
3. MPC offline phase: When previous attempts at recovery fail, the router makes the MPCs that contribute to the traffic black-hole condition offline and turns off the interfaces.

Fabric Plane Management on JNP10K-LC2101

JNP10K-LC2101 is a fixed-configuration MPC that provides increased port density and performance to MX10008 routers. JNP10K-LC2101 plugs into the chassis and provides the fabric interface.

An MX10008 router has six Switch Fabric Boards (SFBs). JNP10K-LC2101 has six Packet Forwarding Engines, each having 24 connections to the fabric (24 planes, or 4 connections per SFB). MX10008 routers with JNP10K-LC2101 will have 24 planes active when all the six SFBs are populated. However, in case of a failure of one SFB, the line rate can be achieved with 20 planes. The fabric supports a link speed of 25 Gbps.

The MX10008 SFB also supports fabric hardening. Fabric hardening is the process of controlling bandwidth degradation to prevent traffic black hole. The following key CLI commands are available for fabric hardening:

- **set chassis fpc *slot-number* fabric bandwidth-degradation percentage**—Configures the FPC to take a specific action once bandwidth degradation reaches a certain percentage to avoid causing a traffic black hole in the chassis.
- **set chassis fabric degraded detection-enable**—Enables detection of an FPC with degraded fabric.
- **set chassis fabric degraded action-fpc-restart-disable**—Disables line card restarts to limit recovery actions from a degraded fabric condition.

In MX10008 SFBs, fabric fault handling is supported per plane. Fabric fault handling per plane results in increased granularity, which helps identify, isolate, and repair faults. If an SFB has a single faulty plane, the other three planes can continue to operate. There is no need to take the entire SFB offline. For example, if a plane encounters a training failure error, the line card isolates that faulty plane; while the other planes continue to operate. Also, any cyclic redundancy check (CRC) errors on any link on the SFB are indicated on the plane, not on SFB.

Example: Configuring Fabric Redundancy Mode on MPC4E

IN THIS SECTION

- Requirements for Configuration of the Fabric Redundancy Mode on MPC4E | **99**
- Overview | **99**
- Configuring Increased Bandwidth Mode | **99**
- Verification | **100**

Requirements for Configuration of the Fabric Redundancy Mode on MPC4E

This example uses the following hardware and software components:

- Junos OS Release 12.3 R2 or later for MX Series routers
- A single MX480 router with MPC4E

Overview

This example provides information about configuring the fabric redundancy mode on an MX480 router with MPC4E. You can configure the MPC4E to function in redundant fabric mode or increased bandwidth mode. If you do not configure the mode, the MPC4E, by default, functions in redundant fabric mode. In redundant fabric mode, the number of active fabric planes is 4. If you configure the MPC4E to function in increased bandwidth mode, the number of active fabric planes increases to 6.

Configuring Increased Bandwidth Mode

Step-by-Step Procedure

In this example, you configure increased bandwidth mode on an MX480 router with MPC4E. The existing fabric mode on the MX480 router is redundant fabric mode. To configure the fabric mode, perform the following tasks:

1. Verify the existing fabric mode of the router by using the **show chassis fabric mode** command.

   `user@host >` **show chassis fabric mode**

   ```
   Fabric Operating Mode :
              Redundant Fabric
   ```

2. View the number of active fabric planes by using the **show chassis fabric summary** command.

   `user@host >` **show chassis fabric summary**

   ```
   Plane   State    Uptime
    0      Online   2 hours, 58 minutes, 22 seconds
    1      Online   6 seconds
    2      Online   32 seconds
    3      Online   2 hours, 58 minutes, 23 seconds
    4      Spare    31 seconds
    5      Spare    21 seconds
    6      Spare    18 seconds
    7      Spare    9 seconds
    Note:
   ```

```
For FPC slots with MPC Type 4 or MCC:
  Fabric planes 1 and 5, 3 and 7 use shared physical links.
  Those slots may run in a reduced bandwidth in case both
  plane 1 and 5, or both 3 and 7 are active.
```

3. In configuration mode, go to the **[edit chassis]** hierarchy level and set the fabric mode to **increased-bandwidth** as follows:

```
[edit chassis]
user@ host #set fabric redundancy-mode increased-bandwidth
```

Results

In **redundant fabric** mode, the number of active fabric planes is 4 while the number of spare planes is also 4. In **increased-bandwidth** mode, the number of active planes is 6 while the number of spare planes is 2.

NOTE: Fabric planes 1 and 5 and fabric planes 3 and 7 use shared physical links. So, among fabric planes 1 and 5, only one plane can be active. Similarly, among fabric planes 3 and 7, only one plane can be active.

Verification

IN THIS SECTION

- Verifying the Fabric Redundancy Mode of the Router | **100**
- Verifying the Number of Active Fabric Planes | **101**

To verify that the fabric mode of the MX480 router with MPC4E, perform the following tasks:

Verifying the Fabric Redundancy Mode of the Router

Purpose

To verify that the fabric redundancy mode of the MX480 router with MPC4E has been modified to **increased-bandwidth**.

Action

To view the fabric mode of the router, use the **show chassis fabric mode** command.

`user@host >` **show chassis fabric mode**

```
Fabric redundancy mode: Increased Bandwidth
```

Meaning

The MX480 router with MPC4E is functioning in increased bandwidth mode.

Verifying the Number of Active Fabric Planes

Purpose

To verify that the number of active fabric planes is 6.

Action

To view the number of active fabric planes, use the **show chassis fabric summary** command.

`user@host >` **show chassis fabric summary**

```
Plane   State    Uptime
 0      Online   2 hours, 55 minutes, 49 seconds
 1      Online   2 hours, 55 minutes, 25 seconds
 2      Online   2 hours, 58 minutes, 48 seconds
 3      Online   2 hours, 55 minutes, 50 seconds
 4      Online   2 hours, 55 minutes, 48 seconds
 5      Spare    2 hours, 55 minutes, 40 seconds
 6      Online   2 hours, 55 minutes, 37 seconds
 7      Spare    2 hours, 55 minutes, 29 seconds
 Note:
 For FPC slots with MPC Type 4 or MCC:
   Fabric planes 1 and 5, 3 and 7 use shared physical links.
   Those slots may run in a reduced bandwidth in case both
   plane 1 and 5, or both 3 and 7 are active.
```

Meaning

Number of active planes on the MX480 router with MPC4E is 6 (0, 1, 2, 3, 4, and 6) while the number of spare planes is 2.

Configuring Fabric Redundancy Mode for Active Control Boards on MX Series Routers

You can configure the active control board to be in redundancy mode or in increased fabric bandwidth mode. You can enable increased fabric bandwidth of active control boards for optimal and efficient performance and traffic handling by configuring the active control boards to be in redundancy mode. To configure redundancy mode for the active control board, use the **redundancy-mode redundant** statement at the **[edit chassis fabric]** hierarchy level:

```
[edit chassis fabric]
redundancy-mode {
   redundant;
}
```

When you configure this option, all the FPCs use 4 fabric planes as active planes, regardless of the type of the FPC.

To configure increased bandwidth mode for the active control board, use the **redundancy-mode increased-bandwidth** statement at the **[edit chassis fabric]** hierarchy level:

```
[edit chassis fabric]
redundancy-mode {
   increased-bandwidth;
}
```

In increased fabric bandwidth mode, MX Series routers will use 6 active planes. MX240 and MX480 routers will also use 2 spare planes in addition to the 6 active planes.

Increased fabric bandwidth mode is enabled by default on MX routers with Switch Control Board (SCB). On MX routers with Enhanced SCB—SCBE, regardless of the type of MPC or DPC installed on it, redundancy mode is enabled by default.

Configuring this feature does not affect the system. You can configure this feature without restarting the FPC or restarting the system.

Signaling Neighboring Routers of Fabric Down on T640 and T1600 Routers

In JUNOS OS Release 10.4 and later, T640 and T1600 routers signal neighboring routers if they are unable to carry traffic due to all fabric planes being taken offline for one of the following reasons:

- CLI or button press initiated offline state.

- Automatically taken offline by the SPMB due to high temperature.
- PIO errors or voltage errors detected by the SPMB CPU to the SIBs.

The following scenarios are not supported:

- All PFEs get destination errors on all planes to all destinations, even with the Switch Interface Boards (SIBs) staying online.
- Complete fabric loss caused by destination timeouts, with the SIBs still online.

When chassisd detects all fabric planes are down, the router reboots all the FPCs in the system. When the FPCs come back up, the interfaces will not be created again, since all the fabric planes are down.

Once the user diagnoses and fixes the cause of all fabric planes going down, the user must then online the SIBs. The SIB online process brings up the interfaces.

Fabric down signaling to neighboring routers offers the following benefits:

- FPCs reboot when the control plane connection to the RE times out.
- Extends a simple approach to reboot FPCs when the dataplane blacks out.

When the router transitions from a state where SIBs are online or spare to a state where there are no SIBs in online state, then all the FPCs in the system are rebooted.

An ERRMSG indicates if all fabric planes are down and the FPCs will be rebooted if any fabric planes do not come up in 2 minutes.

An ERRMSG indicates the reason for FPC reboot on fabric connectivity loss.

The chassisd daemon traces when an FPC comes online, but PIC attach is not done due to no fabric plane present.

A warning is issued in the CLI when the last fabric plane is taken offline, that FPCs will reboot. You will need to online the SIBs after fixing the cause of the SIBs not being online. When the first SIB goes online, and link training with the FPCs completes, the interfaces will be created.

Fabric down signaling to neighboring routers functionality is available by default, and no user configuration required to enable it.

No CLI commands or alarms are required for this feature. Alarms indicate an SIBs offline system state to the user.

RELATED DOCUMENTATION

Fabric Fault Handling | **104**

Fabric Grant Bypass | **127**

Fabric Resiliency | 113

Fabric Fault Handling

IN THIS SECTION

- Understanding Fabric Fault Handling on T4000 Router | 105
- Understanding Fabric Fault Handling on PTX5000 Packet Transport Router | 107
- Understanding Fabric Fault Handling on Enhanced Switch Fabric Board (SFB2) | 112

Understanding Fabric Fault Handling on T4000 Router

The T4000 router consists of a Switch Interface Board (SIB) with fabric bandwidth double the capacity of the T1600 router. The fabric fault management functionality is similar to that in T1600 routers. This topic describes the fabric fault handling functionality on T4000 routers.

The fabric fault management functionality involves monitoring all high-speed links connected to the fabric and the ones within the fabric core for link failures and link errors.

Action is taken based on the fault and its location. The actions include:

- Reporting link errors in system log files and sending this information to the Routing Engine.
- Reporting link failures at the Flexible Port Concentrator (FPC) or at the SIB and sending this information to the Routing Engine.
- Marking a SIB in **Check** state.
- Moving a SIB into **Fault** state.

The SIB in T4000 routers forms the core of the fabric with 4:1 redundancy—the redundant SIB becomes active when the active SIB becomes nonfunctional, is deactivated, or is removed. The following are the high-level indications of fabric faults that are monitored by Junos OS:

- An SNMP trap is generated whenever a SIB is reported as **Check** or **Fault**.
- **show chassis alarms**—Indicates that a SIB is in **Check** or **Fault** state.
- **show chassis sibs**—Indicates that a SIB is in **Check** or **Fault** state or that a SIB is in **Offline** state when the SIB initializes (this occurs when the SIB does not power on fully).
- **show chassis fabric fpcs**—Indicates whether any fabric links are in error on the FPCs' side.
- **show chassis fabric sibs**—Indicates whether any fabric links are in error on the SIBs' side.
- The **/var/log/messages** system log messages file at the Routing Engine has error messages with the prefix **CHASSISD_FM_ERROR**.
- The SIBs display the **FAIL** LED.

NOTE:

The fabric planes in the chassis determine whether the chassis is a T640 router, a T1600 router, or a T4000 router. Power entry modules (PEMs), FPCs, or fan trays do not determine chassis personality. Alarms are raised if the old PEMs or fan trays are present in a T4000 chassis. You can identify a router based on its fabric planes:

- If all planes present are F16-based SIBs, the chassis is a T640 chassis.
- If all planes present are SF-based SIBs, the chassis is a T1600 chassis.
- If all planes present are XF-based SIBs, the chassis is a T4000 chassis.

Note that mixing of fabric planes is not a supported configuration except during upgrade. You can change the personality of a chassis without a reboot by changing all the fabric planes and by issuing the **set chassis fabric upgrade-mode** CLI command to check the personality. If you do not issue the **set chassis fabric upgrade-mode** CLI command, the personality does not change until the next boot.

In T4000 routers, you come across the following faults:

- Board-level faults—These faults occur during initialization or during runtime. Power failure during board initialization, high-speed links transmit error, and polled I/O error during runtime are some examples of board-level faults.
- Link-level faults—These faults occur during initialization or during runtime. Link training failure at initialization time (failure of the data plane links between an FPC and a SIB to be trained when the FPC or SIB is initialized), error detected on the channel between the SIB and a Packet Forwarding Engine, cyclic redundancy check (CRC) errors detected at runtime, and Packet Forwarding Engine destination errors are types of link-level faults.
- Faults based on environmental conditions—These faults occur during runtime. Sudden removal of an FPC or a SIB might result in an operator error. When a SIB becomes too hot or when SIB voltages are beyond thresholds, the errors generated are classified into environmental errors.

You can implement one of the following options to handle the faults:

- Log the error and raise an alarm.
- Switch over to the spare plane, if available.
- Continue with a reduced number of parts of a plane.
- Continue with a reduced number of usable planes.
- Use polling-based fault handling.
- Monitor high-speed link errors and manually bring the link down to a suitable threshold.

The polled I/O errors and the link errors are monitored every 500 milliseconds, and the board exhaust temperature and board voltages are monitored every 10 seconds.

Understanding Fabric Fault Handling on PTX5000 Packet Transport Router

IN THIS SECTION

- SIB-Level Faults | **109**
- FPC-Level Faults | **110**

Starting with Junos OS Release 14.1, the PTX5000 Packet Transport Router supports nine Switch Interface Boards (SIBs). Each FPC2-PTX-P1A FPC supports 1Tb per slot capacity, thereby resulting in a fabric bandwidth of 16 terabits per second (Tbps), full-duplex (8 Tbps of any-to-any, nonblocking, half-duplex) switching.

The fabric fault management functionality involves monitoring all high-speed links connected to the fabric and the ones within the fabric core for link failures and link errors.

The faults that occur in a PTX5000 can be broadly categorized into:

- Board faults—Faults that arise in a SIB or in an Flexible Port Concentrator (FPC) during initialization or during runtime, including issues that arise when a router component is accessing the SIB or FPC or issues that arise out of midplane failures.
- Link faults—Faults that occur on high-level links in a router during initialization or during runtime.
- Faults due to environmental conditions—Faults that occur because of overvoltage or over-temperature; faults that occur because of an operator mishandling a SIB or an FPC, and so on.

The router takes action on the basis of the fault category and the fault location. The actions include:

- Reporting link errors in system log files and sending this information to the Routing Engine.
- Displaying the link errors when you run one of the operational commands listed in Table 7 on page 108:

Table 7: List of Operational Mode Commands

Operational mode command	Description
show chassis sibs	Displays Switch Interface Boards (SIBs) status information.
show chassis fabric fpcs <slot *number*>	Displays the fabric state of the specified FPC slot. If no slot number is provided, it displays the status of all FPCs.
show chassis fabric sibs <slot *number*>	Displays the state of the electrical switch fabric link between the SIBs and the FPCs.
show chassis fabric reachability <detail>	Displays the current state of fabric destination reachability.
show chassis fabric unreachable-destinations	Displays the list of destinations that have transitioned from a reachable state to an unreachable state.
show pfe statistics error	Displays Packet Forwarding Engine error statistics.
show chassis fabric topology <sib_slot>	Displays the input-output link topology.
show chassis fabric summary	Displays the state of all fabric planes and the elapsed uptime.

- Reporting link failures at the FPC level or at the SIB level and sending this information to the Routing Engine.
- Reporting link error information in the **show chassis alarms** operational command.
- Moving a SIB into *fault* state.

The following sections explain fabric fault handling functionality on the PTX5000:

SIB-Level Faults

IN THIS SECTION

- Types of Faults That Occur on a SIB | **109**
- Handling SIB-Level Faults | **110**

The following sections give a brief overview on the types of faults that occur on a SIB and how to handle them:

Types of Faults That Occur on a SIB

Board faults and link faults occur on a SIB during initialization and during runtime. Some faults occur because of environmental conditions such as overvoltage or over-temperature, or when an operator mishandles the SIB.

NOTE: Run the operational mode commands listed in Table 7 on page 108 to detect faults.

During SIB initialization and runtime, the following faults might occur:

- Board faults, such as failure of SIBs to power up, ASICs reset failure, Switch Processor Mezzanine Board (SPMB) polled I/O access failure to ASICs, board component failures such as PIC failures, or router component access failures.
- Link faults such as high-level link errors that occur during link training.
- Faults that occur because of environmental conditions or because of mishandling of the SIB by the operator.

Handling SIB-Level Faults

The following list illustrates how the router handles a fault that occurs on a SIB during initialization, during runtime, because of environmental conditions, and because of mishandling of the SIB by the operator:

- To handle a board fault on a SIB during initialization, the chassis daemon (chassisd) marks the SIB to be in *fault* state. After the SIB is marked as faulty, no operation occurs on this SIB.
- To handle a board fault on a SIB during runtime, chassisd logs an error in the system log file, raises an alarm indication error type, and marks the SIB as faulty. After the SIB is marked as faulty, no operation occurs on this SIB.
- To handle a link fault on a SIB during runtime, when a link error comes up during link training, chassisd informs the FPC corresponding to the link on which the error occurred to disable the links to the affected SIB. The chassisd then sends an error message to all the other FPCs in the router to stop using the failed SIB link and a link error alarm is generated. Note that when more than one FPC report errors for a given SIB, the SIB is disabled for all FPCs and no traffic is sent by the Packet Forwarding Engine through the affected SIB.
- To handle a link fault on a SIB during runtime, chassisd marks the SIB as faulty and specifies a reason for the error, and the SIB is disabled.
- In case of an environmental fault—overvoltage or over-temperature—the SIB is immediately taken offline. Note that an error is logged periodically as the temperature or voltage rises, and the SIB is taken offline when it crosses a certain threshold voltage or temperature.
- When a SIB is abruptly removed or dislodged, all the affected Packet Forwarding Engines stop using that plane to reach other Packet Forwarding Engines in the router.

FPC-Level Faults

IN THIS SECTION

- Types of Faults That Occur on an FPC | **110**
- Handling FPC-Level Faults | **111**

The following sections give a brief overview of the types of faults that occur on an FPC and how to handle them:

Types of Faults That Occur on an FPC

Board faults and link faults occur on an FPC during initialization and during runtime. Some faults also occur because of environmental conditions such as overvoltage, over-temperature, or when the operator mishandles the FPC.

NOTE: Run the operational commands listed in Table 7 on page 108 to detect faults.

During FPC initialization and runtime, the following faults might occur:

- Board faults such as failure of FPCs to power up, failure of ASICs to come out of reset phase, PMB polled I/O access failure to ASICs, board component failures such as PIC failure, or router component access failures.
- Link faults such as high-level link errors that occur during link training.
- Faults that occur because of environmental conditions or because of mishandling of an FPC by the operator.

Handling FPC-Level Faults

The following list illustrates how the router handles a fault that occurs on an FPC during initialization, during runtime, because of environmental conditions, and because of mishandling of the FPC by the operator:

- To handle a board fault on an FPC during initialization, chassisd marks the FPC to be in *fault* state. After the SIB is marked as faulty, no operation occurs on this FPC.
- To handle a board fault on an FPC during runtime, chassisd logs an error in the system log file, raises an alarm indication error type, and marks the FPC as faulty. After the FPC is marked as faulty, no operation occurs on this FPC.
- To handle onboard link errors on an FPC during initialization or during runtime, the FPC is taken down and all the affected Packet Forwarding Engines stop using that plane to reach other Packet Forwarding Engines in the router.

  NOTE: No planes are taken down during initialization because the link training process for the fabric is not yet complete.

  Onboard link errors during runtime are resolved on the basis of current configuration; either the FPC is rebooted or the error is logged and the FPC continues with initialization.

- In case of an environmental fault—over voltage or over-temperature—the FPC is immediately taken offline. Note that an error is logged periodically as the temperature or voltage rises, and the FPC is taken offline when it crosses a certain threshold voltage or temperature.
- When an FPC is abruptly removed or dislodged, all the other Packet Forwarding Engines stop sending traffic to the Packet Forwarding Engines in this FPC.

Understanding Fabric Fault Handling on Enhanced Switch Fabric Board (SFB2)

The MX2000 line of routers support Switch Fabric Boards (SFBs) and enhanced SFBs (SFB2s) but not both at the same time. The SFB and SFB2 host three fabric planes each. So, the chassis supports a total of 24 planes. Junos OS Release 15.1F6 and 16.1R1 support fabric fault handling for each plane in both SFB and SFB2. In earlier releases, fabric fault handling is supported for each SFB, not for each plane.

Table 8 on page 112 lists the differences between fabric fault handling per plane and per SFB.

Table 8: SFB Versus SFB2 Fabric Fault Handling

SFB Level (SFB)	Plane Level (SFB and SFB2)
Cyclic redundancy check(CRC) errors on any link on the SFB are indicated on the SFB.	CRC errors on any link on the SFB or SFB2 are indicated on the plane.
On encountering destination errors, the line card isolates the SFB (all 3 planes).	On encountering destination errors, the line card isolates the corresponding plane. Other planes continue to operate.

Fabric fault handling per-plane provides the following benefits:

- Increased granularity, which helps identify, isolate, and repair faults.
- Alarms and log messages provide fault information per plane instead of per SFB, which makes debugging easier.
- If an SFB has a single faulty plane, the other two planes can continue to operate. There is no need to take the entire SFB offline.
- In case of transient errors, while repairing you can isolate a single plane instead of isolating the bouncing the SFB.

To view fabric fault handling information for all 24 planes, use the **extended** option with the existing fabric commands.

Release History Table

Release	Description
14.1	Starting with Junos OS Release 14.1, the PTX5000 Packet Transport Router supports nine Switch Interface Boards (SIBs).

RELATED DOCUMENTATION

Troubleshooting the T4000 SIBs

Troubleshooting the T4000 FPCs

show chassis alarms | **703**

show chassis fabric fpcs | **1271**

show chassis fabric destinations | **1232**

show chassis fabric sibs | **1398**

show chassis sibs | **1733**

PTX5000 Description

FPCs Supported on the PTX5000

PTX5000 Switch Interface Board Description

Fabric Resiliency

IN THIS SECTION

- Fabric Resiliency and Degradation | **114**
- MX Series Routers Fabric Resiliency | **116**
- Detection and Recovery of Fabric-Related Failures Caused by Loss of Connectivity on MX Series Routers | **118**
- Detection and Corrective Actions of Line Cards with Degraded Fabric on MX Series Routers | **121**
- Managing Bandwidth Degradation | **123**
- Disabling Line Card Restart to Limit Recovery Actions from Degraded Fabric Conditions | **124**
- Disabling an FPC with Degraded Fabric Bandwidth | **124**
- Enabling Fabric Header Protection to Prevent Wedges | **125**

Fabric Resiliency and Degradation

IN THIS SECTION

- Packet Forwarding Engine Errors and Recovery on PTX Series Routers | 114
- Packet Forwarding Engine Errors and Recovery on T640, T1600 or TX Matrix Routers | 115

Juniper routers and switches have built in resiliency to tackle failures and error conditions encountered during normal operation. Immediate action is taken by JUNOS software to remedy the failure conditions to minimize traffic loss. No manual intervention is needed. Fabric degradation could be one of the reasons leading to such error conditions. The following sections explain how the PFEs recover in a resilient manner from these failures.

Packet Forwarding Engine Errors and Recovery on PTX Series Routers

Packet Forwarding Engine destinations can become unreachable on PTX Series routers for the following reasons:

- The fabric Switch Interface Boards (SIBs) are offline as a result of a CLI command or a pressed physical button.
- The fabric SIBs are turned offline by the control board because of high temperature conditions.
- Voltage or polled I/O errors in the SIBs are detected by the control board.
- Unexpected link-training errors occur on all connected planes.
- Two Packet Forwarding Engines can reach the fabric but not each other.
- Link errors occur where two Packet Forwarding Engines have connectivity with the fabric but not through a common plane.

Starting with Junos OS Release 13.3, you can use PTX Series routers to configure Packet Forwarding Engine (PFE)-related error levels and the actions to perform when a specified threshold is reached.

If error levels are not defined, a PTX Series router begins the following phases in the recovery process:

1. SIB restart phase: The router attempts to resolve the issue by restarting the SIBs one by one. This phase does not start if the SIBs are functioning properly and a single line card is facing an issue.
2. SIB and line card restart phase: The router restarts both the SIBs and the line card. If there are line cards that are unable to initiate high-speed links to the fabric after reboot, it is not relevant to loss of live traffic as no interfaces are created for these line cards, preventing the system from issues.

3. Line Card offline phase: Because previous attempts at recovery failed, line cards and interfaces are turned off and the system avoids issues and error conditions.

Packet Forwarding Engine Errors and Recovery on T640, T1600 or TX Matrix Routers

Packet Forwarding Engine destinations can become unreachable on T640, T1600 or TX Matrix routers for the following reasons:

- The fabric Switch Interface Boards (SIBs) are offline as a result of a CLI command or a pressed physical button.
- The fabric SIBs are turned offline by the Switch Processor Mezzanine Board (SPMB) because of high temperature conditions.
- Voltage or polled I/O errors in the SIBs are detected by the SPMB.
- All Packet Forwarding Engines receive destination errors on all planes from remote Packet Forwarding Engines, even when the SIBs are online.
- Complete fabric loss is caused by destination timeouts, even when the SIBs are online.

The recovery process consists of the following phases:

1. The router restarts the fabric planes one by one. This phase does not start if the fabric plane is functioning properly and a single line card has issues.
2. Fabric plane and Line Card restart phase: The router restarts both the SIBs and the line cards. If there are line cards that are unable to initiate high-speed links to the fabric after reboot, it is not relevant to loss of live traffic as no interfaces are created for these line cards, preventing the system from issues.
3. Line card offline phase: Because previous attempts at recovery failed, line cards and interfaces are turned off and the system avoids issues and error conditions leading to serious consequences.

> **NOTE:** Starting in Junos OS Release 14.2R6, if a SIB becomes offline because of extreme conditions such as high voltage or high temperature, then as part of the recovery process, the router does not restart the fabric plane for that SIB.

The phased recovery mechanism mentioned above is exhaustive unless there are other errors which could be correlated to these issues.

Starting in Junos OS Release 14.2R6, you can manage fabric degradation in single-chassis systems better by incorporating fabric self-ping and Packet Forwarding Engine liveness mechanisms. Fabric self-ping is a mechanism to detect issues in the fabric data path. Using the fabric self-ping mechanism, every Packet Forwarding Engine ascertains that a packet destined to itself is reaching it when the packet is sent over the fabric path. Packet Forwarding Engine liveness is a mechanism to detect whether a Packet Forwarding Engine is reachable on the fabric plane. To verify that it is reachable, the Packet Forwarding Engine sends

a self-destined packet over the fabric plane periodically. If any error is detected by these two mechanisms, the fabric manager raises a *fabric degraded alarm* and initiates recovery by restarting the line card.

MX Series Routers Fabric Resiliency

MX routers provide intelligent mechanisms to reduce packet loss in hardware failures scenarios.

This topic contains the following sections that describe fabric resiliency options, failure detection methods used, and corrective actions:

- Fabric Connectivity Restoration on page 116
- Line Cards with Degraded Fabric on page 117
- Connectivity Loss Towards a Single Destination Only on page 118
- Redundancy Fabric Mode on Active Control Boards on page 118

Fabric Connectivity Restoration

Packet Forwarding Engine destinations can become unreachable for the following reasons:

- The control boards go offline as a result of a CLI command or a pressed physical button.
- The fabric control boards are turned offline because of high temperature.
- Voltage or polled I/O errors in the fabric.
- All Packet Forwarding Engines receive destination errors on all planes from remote Packet Forwarding Engines, even when the fabrics are online.
- Complete fabric loss caused by destination timeouts, even when the fabrics are online.

When the system detects any unreachable Packet Forwarding Engine destinations, fabric connectivity restoration is attempted. If restoration fails, the system turns off the interfaces to trigger local protection action or traffic re-route on the adjacent routers.

The recovery process consists of the following phases:

1. Fabric plane restart phase: Restoration is attempted by restarting the fabric planes one by one. This phase does not start if the fabric plane is functioning properly and an error is reported by one line card only. An error message is generated to specify that a connectivity loss is the reason for the fabric plane being turned offline. This phase is performed for fabric plane errors only.
2. Fabric plane and line card restart phase: The system waits for the first phase to be completed before examining the system state again. If the connectivity is not restored after the first phase is performed or if the problem occurs again within a duration of 10 minutes, connectivity restoration is attempted

by restarting both the fabric planes and the line cards. If you configure the **action-fpc-restart-disable** statement at the **[edit chassis fabric degraded]** hierarchy level to disable restart of the line cards when a recovery is attempted, an alarm is triggered to indicate that connectivity loss has occurred. In this second phase, three steps are taken:

1. All the line cards that have destination errors on a PFE are turned offline.
2. The fabric planes are turned offline and brought back online, one by one, starting with the spare plane.
3. The line cards that were turned offline are brought back online.

3. Line card offline phase: The system waits for the second phase to be completed before examining the system state again. Connectivity loss is limited by turning the line cards offline and by turning off interfaces because previous attempts at recovery have failed. If the problem is not resolved by restarting the line cards or if the problem recurs within 10 minutes after restarting the line cards, this phase is performed.

The three phases are controlled by timers. During these phases, if an event (such as offlining/onlining line cards or fabric planes) times out, then the phase skips that event and proceeds to the next event. The timer control has a timeout value of 10 minutes. If the first fabric error occurs in a system with two or more line cards, the fabric planes are restarted. If another fabric error occurs within the next 10 minutes, the fabric planes and line cards are restarted. However, if the second fabric error occurs outside of the timeout period of 10 minutes, then the first phase is performed, which is the restart of only the fabric planes.

In cases where all the destination timeouts are traced to a certain line card, for example, one source line card or one destination line card, only that line card is turned offline and online. The fabric planes are not turned offline and online. If another fabric fault occurs within the period of 10 minutes, the line card is turned offline.

By default, the system limits connectivity loss time by detecting severely degraded fabric. No user interaction is necessary.

Line Cards with Degraded Fabric

You can configure a line card with degraded fabric to be moved to the offline state. On an MX960, MX480, or MX240 router, you can configure link errors or bad fabric planes. This configuration is particularly useful in partial connectivity loss scenarios where bringing the line card offline results in faster re-routing. To configure this option on a line card, use the **offline-on-fabric-bandwidth-reduction** statement at the **[edit chassis fpc *slot-number*]** hierarchy level. For more information, see “Detection and Corrective Actions of Line Cards with Degraded Fabric on MX Series Routers” on page 121“Detection and Corrective Actions of Line Cards with Degraded Fabric on MX Series Routers” on page 121.

Connectivity Loss Towards a Single Destination Only

In certain deployments, a line card indicates a complete connectivity loss towards a single destination only, but it functions properly for other destinations. Such cases are identified and the affected line card is recovered. Consider a sample scenario in which the active planes are 0,1,2,3 and the spare planes are 4,5,6,7 in the connection between line card 0 and line card 1. If line card 0 has single link failures for planes 0 and 1 and if line card 1 has single link failures for planes 2 and 3, a complete connectivity loss occurs between the two line cards. Both line card 0 and line card 1 undergo a phased mode of recovery and fabric healing takes place.

Redundancy Fabric Mode on Active Control Boards

You can configure the active control board to be in redundancy mode or in increased fabric bandwidth mode. To configure redundancy mode for the active control board, use the **redundancy-mode redundant** statement at the **[edit chassis fabric]** hierarchy level. In redundancy mode, all the line cards use 4 fabric planes as active planes, regardless of the type of the line card. You can enable increased fabric bandwidth of active control boards for optimal and efficient performance and traffic handling. On an MX960, MX480, or MX240 router, you can use the **redundancy-mode increased-bandwidth** statement at the **[edit chassis fabric]** hierarchy level to enable increased fabric bandwidth mode for the active control board to cause all the available fabric planes to be used. In this mode, the maximum number of available fabric planes are used for MX routers and the MPC3E. On MX960 routers with active control boards, 6 active planes are used, and on MX240 and MX480 routers with active control boards, 8 active planes are used.

Increased fabric bandwidth mode is enabled by default on MX routers with Switch Control Board (SCB). On MX routers with Enhanced SCB—SCBE—and the MPC3E, redundancy mode is enabled by default. For more information, see "Configuring Fabric Redundancy Mode for Active Control Boards on MX Series Routers" on page 102.

Detection and Recovery of Fabric-Related Failures Caused by Loss of Connectivity on MX Series Routers

Connectivity loss in a router occurs when the router is unable to transmit data packets to other neighboring routers, although the interfaces on that router continue to be in the active state. As a result, the other neighboring routers continue to forward traffic to the impacted router, which drops the arriving packets without sending a notification to the other routers.

When a Packet Forwarding Engine in a router is unable to send traffic to other Packet Forwarding Engines over the data plane within the same router, the router is unable to transmit any packets to a neighboring router, although the interfaces are advertised as active on the control plane. Fabric failure can be one of the reasons for the loss of connectivity.

The following fabric failure scenarios can occur:

- Removal of the control board
- High-speed link 2 (HSL2) training failures
- Single link failure on a line card
- Multiple link failures on the same line card or the same fabric plane
- Multiple link failures randomly on a line card or a fabric plane
- Intermittent cyclic redundancy check (CRC) errors
- A complete loss of connectivity for only one destination and not to other destinations

When a line card does not forward traffic due to a certain reason to other line cards within the device, the control protocol on the Routing Engine is unable to detect this condition. The traffic transmission is not diverted to the functional, active line cards and, instead, the packets are continued to be sent to the affected line card and are dropped at that point. The following might be the causes for a line card being unable to forward traffic:

- All the planes in the system are in the **Offline** or **Fault** state.
- All the Packet Forwarding Engines on the line card might have disabled the fabric streams due to destination errors.

If all the Switch Control Boards (SCBs) lose connectivity to the line cards, then all the interfaces are brought down. If a Packet Forwarding Engine of a line card loses complete connectivity to or from the fabric, then that line card is brought down.

System hardware failures can be of the following types:

- A single occurrence or a rare failure for a brief period (such as environmental spikes). This failure is effectively healed without manual intervention by restarting the fabric plane and restarting the line cards and the fabric plane, if necessary.
- Repeated failures that occur frequently.
- A permanent failure.

A recovery from any case of reduced throughput, such as multiple Packet Forwarding Engine destination timeouts on multiple planes is not attempted. Restoration of connectivity is attempted only when all the planes are in the **Offline** or **Fault** state or when the destinations are unreachable on all active planes.

If connectivity loss occurs because of a certain line card, which is either a common source or common destination of the destination timeout, and if you have configured the **action-fpc-restart-disable** statement at the **[edit chassis fabric degraded]** hierarchy level, no recovery action is taken. The **show chassis fabric reachability** command output can be used to verify the status of the fabric and the line card. An alarm is triggered to indicate that the particular line card is causing the connectivity loss.

Fabric-Failure Detection Methods on MX Series Routers

The chassis daemon (chassisd) process detects the removal of a control board. The removal of the control board causes all the active planes that reside on that board to be disabled and a switchover is performed. If the active Routing Engine is also unplugged along with the control board, the detection of the control board removal is delayed until the switchover of the Routing Engine occurs and the reconnection in the primary, backup Routing Engine pair occurs. If the control board is turned offline by specifying the **request chassis cb slot *slot-number* offline** or a pressed physical button to cause a graceful shutdown, a fabric failure does not occur, even if the control board is moved to the offline state.

If active fabric planes are removed because of removal of the control board on the master RE, the line card takes the local action of disabling removed planes. If spare planes are available, line card initiates switchover to spare planes. If an active control board on a backup RE is removed, the master RE performs the switchover. The software attempts to optimize the duration of connectivity loss by disabling all removed planes. The spare planes are transitioned to the online state one by one.

Fabric self-ping is a mechanism to detect any issues in the fabric data path. Each Packet Forwarding Engine forwards fabric data cells that are destined to itself over all active fabric planes. To transmit the data cell, the Packet Forwarding Engine fabric sends the request cells over an active plane and waits for a grant packet. The destination Packet Forwarding Engine sends a grant packet over the same plane on which the request cell is received. When the grant cell is received, the source Packet Forwarding Engine sends the data cell.

The Packet Forwarding Engine fabric contains the capability to detect grant delays. If grants are not received within a certain period of time, a destination timeout is declared. Destination timeout on a certain plane by a Packet Forwarding Engine on two or more line cards is considered as an indication for plane failures. Even if one Packet Forwarding Engine on a line card flashes an error, the line card is considered to be in error. Destination timeouts are noticed when the Packet Forwarding Engine sends traffic actively because requests are sent only for valid data cells. The software takes an appropriate action based on the destination timeout. For self-ping, a data cell is destined to the source Packet Forwarding Engine only.

Fabric ping failure messages are sent to the fabric manager on the Routing Engine, which collates all of the errors reported by all the line cards and takes a corrective action. For example, a ping failure for all links of the same line card might indicate a problem on the line card. Ping failure for multiple line cards for the same fabric plane might indicate a problem with the fabric.

If the Routing Engine determines that a fabric plane is down, based on the information on errors it receives from the line cards or the Packet Forwarding Engines, over a period of 5 seconds, it indicates a fabric failure. The duration of 5 seconds is the period for which the Routing Engine collates the errors from all of the line cards.

Fabric self-ping packets are periodically sent to check the sanity of the fabric links. Self pings are sent at interval of 500 ms. The destination timeout is also checked in intervals of 500 ms. If two timeouts ocur successively, self ping failure is detected. When a destination timeout is received, the Packet Forwarding Engine fabric stops the sending of packets to the fabric. To examine the link condition again, the software

resets the credits to ensure that new requests are sent again. When a self-ping failure occurs, the line card removes the affected plane from sending data to all destinations. This method ensures that self-ping is not attempted to be sent again on the defective plane.

The following guidelines apply to the self-ping capability:

- By default, self pings are not sent on spare fabric planes because spare planes do not carry traffic.
- The size of self-ping packets is large enough to enable the cells to be loaded over all the active fabric planes (maximum of 8 for MX Series routers).
- A detection of received self-ping packets is not performed.
- High priority queue is used to enable self-ping to be sent for oversubscription cases.

Detection and Corrective Actions of Line Cards with Degraded Fabric on MX Series Routers

You can configure a line card with degraded fabric to be moved to the offline state on an MX960, MX480, or MX240 router. Configuring this feature does not affect the system. You can configure this feature without restarting the line card or restarting the system.

The following scenarios can occur when you configure the feature to disable line cards with degraded fabric:

- If a line card has degraded fabric bandwidth and if you configure this capability to turn off such a line card after it has been operating with degraded fabric for some time, the corrective action is still taken.
- If a line card has been brought offline because of fabric errors and this functionality to move the line card to offline state is disabled, the line card is transitioned to the online state automatically.
- If a line card has been brought offline because of fabric errors and this functionality to move the line card to offline state is disabled or configured for some other line card, the line card that was turned offline is transitioned to the online state automatically.
- All the line cards that were brought offline because of degraded fabric, when you configured this setting, are brought back online when you commit any configuration under the **[edit chassis]** hierarchy level. Similarly, a restart of the chassis daemon or the Graceful Routing Engine switchover (GRES) operation also causes the line card that is disabled because of degraded fabric to be moved to the online state.

Degraded fabric indicates that a line card is operating with less than the required number of active fabric planes. If an line card is operating with less than four planes, it is considered to be degraded. This rule applies to all types of line cards and fabric. Degraded condition denotes that good fabric traffic exists at a reduced bandwidth.

The following conditions can result in degradation of fabric:

- The fabric control boards go offline as a result of an unintentional, abrupt power shutdown.
- An application-specific integrated circuit (ASIC) error, which causes a plane of a control board to be automatically turned offline.
- Manually bringing the fabric plane or the control board to the offline state.
- Removal of the control board
- Self-ping failure on any plane.
- HSL2 training failure for active plane.
- If a spare fabric plane has CRC errors, and this spare plane is made online, the link with the CRC error is disabled. This mechanism might cause a degradation in fabric in one direction and might cause a traffic black hole in the other direction.
- When a self-ping or HSL2 training failure occurs, the fabric plane is disabled for a particular line card and it is online for other line cards. This condition can also cause a traffic black hole.

If you need to remove the control board or move a fabric plane to the offline state during a system maintenance, you must enable the functionality to turn the line cards with degraded bandwidth to the offline state (by using the **offline-on-fabric-bandwidth-reduction** statement at the **[edit chassis fpc *slot-number*]** hierarchy level).

The following corrective actions are performed when a traffic black hole or fabric degradation occurs:

- Regardless of whether a spare control board is available or not, self-ping state for each line card is monitored at intervals of 5 seconds at the Routing Engine. Fabric manager uses the following rule to determine the presence of a spare control board:
  - MX960 routers with I-chip or I-chip and Trio-chip-based line cards that contain three control boards
  - MX240 or MX480 routers with I-chip or I-chip and Trio-chip-based line cards that contain two control boards
  - MX960, MX480, or MX240 routers that contain only Trio-based line cards are not considered to contain a spare control board

  If during any such interval of 5 seconds, two line cards indicate a failure for the same plane, a switchover to the spare control board. In this case, the control board that reported errors is turned offline and the spare control board is turned online.
- If a spare control board is available, and if you configure the functionality to disable line cards with degraded fabric, self-ping state for each line card is monitored at intervals of 5 seconds at the Routing Engine. The following conditions can occur:
  - During any 5-second interval, if only one line card indicates a failure for a plane, the fabric Manager waits for the next interval. During the subsequent interval, if no other line card indicates a failure for the same plane, switchover of the control board is performed.

  - During any 5-second interval, if multiple line cards show failures for multiple control boards, the fabric manager waits for the next interval. During the subsequent interval, if the same condition remains, all the failing line cards are turned offline even if the spare control board is present.
  - During any 5-second interval, if any line card shows a failure for multiple planes on multiple control boards, the fabric manager waits for the next interval. During the subsequent interval, if the same condition persists, the line card is turned offline even if the spare control board is present.
- If spare planes are not available, the line card is turned offline when it displays a failure for a single plane or multiple planes. The line card is brought offline only if you previously configured the **offline-on-fabric-bandwidth-reduction** statement at the **[edit chassis fpc *slot-number*]** hierarchy level.

Managing Bandwidth Degradation

Certain errors result in packets being dropped by a system without notification. Other connected systems continue to forward traffic to the affected system, impacting network performance. A severely degraded fabric plane can be one of the reasons here.

By default, Juniper Networks routers attempt to start healing from such situations when the system detects issues with Packet Forwarding Engines. If the healing fails, the system turns off the interfaces, thereby preventing further escalations.

Junos OS software has the ability and the flexibility where a **bandwidth-degradation** configuration is available to detect and respond to fabric plane degradation in ways the user deems fit. Users can configure the router to specify which healing actions the router should take once such a condition is detected.

The **bandwidth-degradation** statement is configured with a percentage and an action. The **percent-age** value can range from 1 to 99, and it represents the percentage of fabric degradation needed to trigger a response from the line card. The **action** attribute determines the type of response the line card performs once fabric degradation reaches the configured percentage.

The statement is only configured with an **action** attribute, which triggers when the percentage of fabric degradation reaches 100 percent.

The following actions can be applied to either configuration statement:

- **log-only**: A message gets logged in the chassisd and message files when the fabric degradation threshold is reached. No other actions are taken.
- **restart**: The line card with a degraded fabric plane is restarted once the threshold is reached.

- **offline**: The line card with a degraded fabric plane is taken offline once the threshold is reached. The line card requires manual intervention to be brought back online. This is the default action if no action attribute configured.
- **restart-then-offline**: The line card with a degraded fabric plane is restarted once the threshold is reached, and if fabric plane degradation is detected again within 10 minutes, the line card is taken offline. The line card requires manual intervention to be brought back online.

> **NOTE:** This feature is available in the Junos OS Release 15.1R1.

Disabling Line Card Restart to Limit Recovery Actions from Degraded Fabric Conditions

You can disable line card restarts to limit recovery actions from a degraded fabric condition. On T640 and T1600 routers, only the fabric plane is restarted. On PTX Series routers, only the Switch Interface Boards (SIBs) are restarted. To disable the restarting of line cards, use the **action-fpc-restart-disable** statement at the **[edit chassis fabric degraded]** hierarchy level:

```
[edit chassis fabric]
degraded {
  action-fpc-restart-disable;
}
```

Whenever a line card restart is disabled, an alarm is raised when there are unreachable destinations present in the router, and you must restart the line cards manually.

To ensure that both the fabric planes (T640 and T1600 routers) or the SIBs (PTX Series routers) and the line cards are restarted during the recovery process, do not configure the **action-fpc-restart-disable** statement at the **[edit chassis fabric degraded]** hierarchy level.

Disabling an FPC with Degraded Fabric Bandwidth

You can bring an FPC with degraded fabric bandwidth offline to avoid causing a traffic black hole in the chassis for an extended time. To configure the option to disable an FPC with degraded bandwidth, use the **offline-on-fabric-bandwidth-reduction** statement at the **[edit chassis fpc *slot-number*]** hierarchy level:

```
[edit chassis]
fpc slot-number {
    offine-on-fabric-bandwidth-reduction;
}
```

The fabric manager checks the number of current active planes periodically. If the number of active planes is lower than the required number of active planes for a particular router, the system waits 10 seconds before it takes any corrective action. If the reduced bandwidth condition persists for an FPC and if this feature has been configured for the FPC, the system brings the FPC offline.

Enabling Fabric Header Protection to Prevent Wedges

Starting in Junos OS Release 17.3R1, you can configure fabric header protection for MPCs to prevent wedges (blackholes).

NOTE: Fabric header protection is not supported on multiservices DPC (MS-DPC) and on MX104 and MX80 routers.

If the internal fabric header of a packet is corrupted, it can result in packet corruption. When the corrupted packets are transmitted within the chassis, from Ingress Packet Forwarding Engine (PFE) to Egress Packet Forwarding Engine (PFE), it can result in application-specific integrated circuit (ASIC) wedges (blackholes). To protect the internal fabric header from corruption, enable fabric header protection. When you enable protection of the fabric header, a 32-byte cyclic redundancy check (CRC) is added to each packet sent from Ingress PFE to the Egress PFE. When the packet is received at the Egress PFE, the CRC is validated and if the check fails, the packet is dropped. This protects the Egress PFE from corrupted packets.

To enable fabric header protection on MPCs to prevent wedges:

1. Enable fabric header protection by including the **fabric-header-crc-enable** statement at the [edit chassis] hierarchy level.

   ```
   [edit chassis]
   user@host# set fabric-header-crc-enable
   ```

2. After enabling fabric header protection, commit the configuration.

   ```
   [edit chassis]
   user@host# commit
   ```

NOTE: After enabling fabric header protection and committing the configuration, the router displays the following warning message after you commit the configuration:

```
[edit]
'chassis'
warning: Chassis configuration for fabric header crc has been changed. A system reboot is mandatory. Please reboot the system NOW. Continuing without a reboot might result in unexpected system behavior. commit complete
```

3. Reboot the router for the configuration to take effect.

```
user@host> request system reboot
```

Release History Table

Release	Description
17.3R1	Starting in Junos OS Release 17.3R1, you can configure fabric header protection for MPCs to prevent wedges (blackholes).
14.2R6	Starting in Junos OS Release 14.2R6, if a SIB becomes offline because of extreme conditions such as high voltage or high temperature, then as part of the recovery process, the router does not restart the fabric plane for that SIB.
14.2R6	Starting in Junos OS Release 14.2R6, you can manage fabric degradation in single-chassis systems better by incorporating fabric self-ping and Packet Forwarding Engine liveness mechanisms.
13.3	Starting with Junos OS Release 13.3, you can use PTX Series routers to configure Packet Forwarding Engine (PFE)-related error levels and the actions to perform when a specified threshold is reached.

RELATED DOCUMENTATION

Fabric Fault Handling | 104

Fabric Grant Bypass | 127

Fabric Plane Management | 91

Fabric Grant Bypass

IN THIS SECTION

- Understanding Fabric Grant Bypass | **128**
- Disabling Fabric Grant Bypass to Control Congestion and Improve Performance | **129**
- Re-Enabling Fabric Grant Bypass | **130**

Understanding Fabric Grant Bypass

Module Port Concentrators (MPCs) contain one, two, or four Packet Forwarding Engines. Each Packet Forwarding Engine handles its forwarding decisions independently. Also, each Packet Forwarding Engine implements fabric queuing and flow control features required to communicate with other Packet Forwarding Engines on the same chassis. Packet Forwarding Engines use the fabric grant bypass feature to communicate with each other. For instance, when a Packet Forwarding Engine wants to send a packet to another Packet Forwarding Engine (on the same MPC or on a different MPC), a request is sent to the Packet Forwarding Engine across the fabric plane. After the request is granted, the source Packet Forwarding Engine sends the packet to the destination Packet Forwarding Engine.

On MX240, MX480, and MX960 routers with Switch Control Boards (SCB, SCBE, and SCBE2), the fabric grant bypass feature is disabled for all MPCs by default. On MX2010 and MX2020 routers with the Switch Fabric Board SFB2, the fabric grant bypass feature is disabled, by default, for all MPCs except MPC1 (MX-MPC1-3D), MPC2 (MX-MPC2-3D), and the 16-port 10-Gigabit Ethernet MPC (MPC-3D-16xGE-SFPP). On MX2010 and MX2020 routers with the Switch Fabric Board SFB, the fabric grant bypass feature is enabled for all MPCs by default. When the fabric grant bypass feature is enabled by default, the source Packet Forwarding Engine has to wait for the fabric plane to grant the request before the packet can be sent to the destination Packet Forwarding Engine. Waiting for the request to be granted can impact system behavior and performance.

Table 9 on page 128 describes the fabric grant bypass behavior on MX Series routers.

Table 9: Fabric Grant Bypass Behavior on MX Series Routers

MX Series Routers	Switch Control Board	Switch Fabric Board	Default Fabric Grant Bypass Behavior
MX240, MX480, and MX960	SCB, SCBE, MX-SCBE2	-	Disabled for all MPCs.
MX2010 and MX2020	-	SFB	Enabled for all MPCs.
MX2010 and MX2020	-	SFB2	Enabled for MPC1 (MX-MPC1-3D), MPC2 (MX-MPC2-3D), and 16-port 10-Gigabit Ethernet MPC (MPC-3D-16XGE-SFPP). Disabled for all other MPCs.

Starting in Junos OS Release 16.1, you can disable the fabric grant bypass feature on the MX2020 and MX2010 routers with SFBs. Disabling the default fabric grant bypass feature controls congestion and thus improves system behavior and performance on these routers. After disabling the feature, you must reboot the router for the changes to take effect.

NOTE: After you disable the fabric grant bypass feature and reboot the router, existing MPCs where the fabric grant bypass feature is enabled by default—such as MPC1 (MX-MPC1-3D), MPC2 (MX-MPC2-3D), and the 16-port 10-Gigabit Ethernet MPC (MPC-3D-16xGE-SFPP)—do not power on.

You can re-enable the fabric grant bypass feature on the MX2020 and MX2010 routers. After enabling the feature, you must reboot the router for the changes to take effect. If the router has existing MPCs where the fabric grant bypass feature is enabled by default—such as MPC1 (MX-MPC1-3D), MPC2 (MX-MPC2-3D), and the 16-port 10-Gigabit Ethernet MPC (MPC-3D-16XGE-SFPP)—these MPCs power on after the reboot.

Disabling Fabric Grant Bypass to Control Congestion and Improve Performance

You can disable the fabric grant bypass feature on the MX2020 and MX2010 routers with SFBs. Disabling the default fabric grant bypass feature controls congestion and thus improves system behavior and performance on MX2010 and MX2020 routers. After disabling the feature, you must reboot the router for the changes to take effect.

NOTE: After you disable the fabric grant bypass feature and reboot the router, existing MPCs on the router where the fabric grant bypass feature is enabled by default—such as MPC1 (MX-MPC1-3D), MPC2 (MX-MPC2-3D), and the 16-port 10-Gigabit Ethernet MPC (MPC-3D-16xGE-SFPP)—do not power on.

To disable fabric grant bypass to control congestion and improve system behavior and performance:

1. Disable fabric grant bypass by including the **fabric disable-grant-bypass** statement at the [**edit chassis**] hierarchy level.

```
[edit chassis]
user@host# set fabric disable-grant-bypass
```

2. After disabling fabric grant bypass, commit the configuration.

```
[edit chassis]
user@host# commit
```

NOTE: After you disable fabric grant bypass and commit the configuration, the router displays the following warning message:

```
[edit]
'chassis'
WARNING: Chassis configuration for fabric grant bypass has been changed. A system reboot is mandatory. Please reboot the system NOW. Continuing without a reboot might result in unexpected system behavior. commit complete
```

3. Reboot the router for the configuration to take effect.

```
user@host> request system reboot
```

To re-enable fabric grant bypass feature on the MX2020 and MX2010 routers, use the **delete chassis fabric disable-grant-bypass** command. After enabling the feature, you must reboot the router for the changes to take effect. If the router has existing MPCs where the fabric grant bypass feature is enabled by default—such as MPC1 (MX-MPC1-3D), MPC2 (MX-MPC2-3D), and the 16-port 10-Gigabit Ethernet MPC (MPC-3D-16xGE-SFPP)—these MPCs power on after the reboot.

Re-Enabling Fabric Grant Bypass

After you disable the fabric grant bypass feature, you can re-enable the feature on the MX2020 and MX2010 routers with SFBs. This is the default behavior on these routers.

NOTE: After you enable the fabric grant bypass feature and reboot the router, existing MPCs on the router where the fabric grant bypass feature is enabled by default—such as MPC1 (MX-MPC1-3D), MPC2 (MX-MPC2-3D), and the 16-port 10-Gigabit Ethernet MPC (MPC-3D-16XGE-SFPP)—power on.

To re-enable fabric grant bypass:

1. Use the **delete** statement with the **fabric disable-grant-bypass** statement at the [**edit chassis**] hierarchy level to enable fabric grant bypass.

```
[edit chassis]
user@host# delete fabric disable-grant-bypass
```

2. After enabling fabric grant bypass, commit the configuration.

```
[edit chassis]
user@host# commit
```

> **NOTE:** After you enable fabric grant bypass and commit the configuration, the router displays the following warning message:
> **[edit]**
> **'chassis'**
> **WARNING: Chassis configuration for fabric grant bypass has been changed. A system reboot is mandatory. Please reboot the system NOW. Continuing without a reboot might result in unexpected system behavior. commit complete**

3. Reboot the router for the configuration to take effect.

```
user@host> request system reboot
```

To disable fabric grant bypass feature on the MX2020 and MX2010 routers, use the **set chassis fabric disable-grant-bypass** command. After disabling the feature, you must reboot the router for the changes to take effect. If the router has existing MPCs where the fabric grant bypass feature is enabled by default—such as MPC1 (MX-MPC1-3D), MPC2 (MX-MPC2-3D), and the 16-port 10-Gigabit Ethernet MPC (MPC-3D-16xGE-SFPP)—these MPCs do not power on after the reboot.

RELATED DOCUMENTATION

Fabric Plane Management | **91**

Fabric Resiliency | **113**

Fabric Fault Handling | **104**

Smooth Upgrade from SFB to SFB2

IN THIS SECTION

- Understanding the Smooth Upgrade Process | 132
- Before you Begin the Smooth Upgrade Process | 134
- Performing a Smooth Upgrade to Enhanced Switch Fabric Board (SFB2) with Minimal Impact on Traffic | 147

Understanding the Smooth Upgrade Process

The MX2000 line of routers support Switch Fabric Board (SFB; model number: MX2000-SFB) and the enhanced Switch Fabric Board (SFB2; model number: MX2000-SFB-S). SFB2 is designed to support higher bandwidth than that provided by SFB on the MX2000 line of routers. For instance, the MX2000 line of routers with SFB support fabric bandwidth of 800 Gbps. However, the MX2000 line of routers with SFB2 can support fabric bandwidth of 1.92 Tbps. A smooth upgrade enables you to upgrade from SFB to SFB2 with minimal traffic impact on the MX2000 line of routers.

NOTE: If you have installed the Junos Continuity software package, you cannot perform a smooth upgrade from Switch Fabric Board (SFB) to Enhanced Switch Fabric Board (SFB2) on MX2010 and MX2020 routers.

This topic explains the smooth upgrade process that takes place when you upgrade from Switch Fabric Board (SFB) to enhanced Switch Fabric Board (SFB2) on MX2000 line of routers.

NOTE: The MX2000 line of routers support either SFB or SFB2 only. The MX2000 line of routers do not support SFB and SFB2 at the same time. However, during an upgrade from SFB to SFB2, the MX2000 line of routers support both SFB and SFB2 at the same time for the duration of the upgrade. But, you must upgrade all 8 SFBs to 8 SFB2s. You cannot replace 4 SFBs with 4SFB2s and retain the other SFBs.

The process of smooth upgrade from SFB and SFB2 includes the following steps:

1. Initiating the smooth upgrade process. When you initiate smooth upgrade, the router can support both SFB and SFB2 at the same time.

2. Performing the smooth upgrade. This step consists of replacing all SFBs with SFB2s.

3. Terminating the smooth upgrade. When you terminate the smooth upgrade process, the router stops supporting SFB and SFB2 at the same time.

A smooth upgrade provides the following benefits:

- The smooth upgrade eliminates network downtime during the smooth upgrade window because of 7+1 fabric redundancy. When one SFB is being upgraded to SFB2, the other seven SFBs are available to handle the traffic.

  NOTE: If multiple SFBs are upgraded at the same time, multiple fabric planes are down at any specified time and so traffic is impacted.

- When multiple fabric boards and planes come online at the same time, you can batch them together and train. This reduces the booting up time and the time taken for the plane to come online.
- On MX2000 line of routers with SFB, fabric grant bypass is enabled by default. Disabling fabric grant bypass helps control congestion and improves performance. On MX2000 line of routers with SFB, you can disable fabric grant bypass by By default, fabric grant bypass is disabled for all MPCs on MX2000 line of routers when they connect to SFB2. Fabric grant bypass is enabled by default on MPC1 (MX-MPC1-3D), MPC2 (MX-MPC2-3D), and the 16-port 10-Gigabit Ethernet MPC (MPC-3D-16xGE-SFPP). When fabric grant bypass is enabled by default, when those MPCs connect to SFB2, fabric grant bypass continues to be enabled and cannot be disabled.

To quickly access the information you need, click the links in Table 10 on page 133.

Table 10: Locating the Information You Need to Work on Smooth Upgrade Process

Task You Need to Perform	Where The Information Is Located
Before You begin	“Before you Begin the Smooth Upgrade Process” on page 134
Perform a Smooth Upgrade	“Performing a Smooth Upgrade to Enhanced Switch Fabric Board (SFB2) with Minimal Impact on Traffic” on page 147

Before you Begin the Smooth Upgrade Process

Before you begin the smooth upgrade from Switch Fabric Board (SFB) to enhanced Switch Fabric Board (SFB2), complete the following tasks:

> **NOTE:** If you have installed the Junos Continuity software package, you cannot perform a smooth upgrade from Switch Fabric Board (SFB) to Enhanced Switch Fabric Board (SFB2) on MX2010 and MX2020 routers.

- Prepare the router and install the version of Junos OS Release (16.1R1 or later) that supports the smooth upgrade process. For more information about how to install or upgrade the version of Junos OS Release, see *Installing the Software Package on a Device with Redundant Routing Engines*.
- Verify that the Switch Fabric Boards and fabric planes are online and operational. At this time, the line cards are connected to SFB.

1. To verify that all the switch fabric boards (SFBs) are online and operational, issue the following command:

   user@host> **show chassis hardware**

```
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                               JN11E0A50AFJ      MX2020
Midplane         REV 01   711-032387   abcd1111          Lower Backplane
Midplane 1       REV 04   711-032386   ABAB9191          Upper Backplane
PMP 1            REV 05   711-032428   ACAJ1526          Upper Power Midplane
PMP 0            REV 04   711-032426   ACAJ1585          Lower Power Midplane
FPM Board        REV 06   760-040242   ABBT8836          Front Panel Display
PSM 0            REV 01   740-050037   1EDB32101E3       DC 52V Power Supply
Module
PSM 1            REV 01   740-033727   1E012130107       DC 52V Power Supply
Module
PSM 2            REV 01   740-050037   1EDB3210162       DC 52V Power Supply
Module
PSM 3            REV 01   740-050037   1EDB32000R6       DC 52V Power Supply
Module
PSM 4            REV 01   740-050037   1EDB313005M       DC 52V Power Supply
Module
PSM 5            REV 01   740-050037   1EDB321016G       DC 52V Power Supply
Module
PSM 6            REV 01   740-050037   1EDB313005F       DC 52V Power Supply
Module
PSM 7            REV 01   740-050037   1EDB313009X       DC 52V Power Supply
Module
PSM 8            REV 01   740-050037   1EDB3130082       DC 52V Power Supply
Module
PSM 9            REV 01   740-050037   1EDB32101HH       DC 52V Power Supply
Module
PSM 10           REV 01   740-050037   1EDB321015G       DC 52V Power Supply
Module
PSM 11           REV 01   740-050037   1EDB32101JW       DC 52V Power Supply
Module
PSM 12           REV 01   740-045050   1E02224000N       DC 52V Power Supply
Module
PSM 13           REV 01   740-050037   1EDB321015C       DC 52V Power Supply
Module
PSM 14           REV 01   740-050037   1EDB321015J       DC 52V Power Supply
Module
PSM 15           REV 01   740-045050   1E022240015       DC 52V Power Supply
Module
PSM 16           REV 01   740-045050   1E02224000L       DC 52V Power Supply
```

```
Module
PSM 17           REV 01   740-050037   1EDB32101EP       DC 52V Power Supply
Module
PDM 1            REV 03   740-045234   1EFA3230588       DC Power Dist Module
PDM 2            REV 03   740-045234   1EFA3230508       DC Power Dist Module
Routing Engine 0 REV 02   740-041821   9009115214        RE-S-1800x4
Routing Engine 1 REV 02   740-041821   9009099720        RE-S-1800x4
CB 0             REV 23   750-040257   CAAR5968          Control Board
CB 1             REV 12   750-040257   CAAD9498          Control Board
SPMB 0           REV 02   711-041855   ABCC1066          PMB Board
SPMB 1           REV      711-041855   ABBS1488          PMB Board
SFB 0            REV 06   711-044466   ABCD4944          Switch Fabric Board
SFB 1            REV 06   711-044466   ABCD4938          Switch Fabric Board
SFB 2            REV 06   711-044466   ABCD5175          Switch Fabric Board
SFB 3            REV 06   711-044466   ABCD5160          Switch Fabric Board
SFB 4            REV 06   711-044466   ABCD4997          Switch Fabric Board
SFB 5            REV 06   711-044466   ABCD5013          Switch Fabric Board
SFB 6            REV 06   711-044466   ABCD5267          Switch Fabric Board
SFB 7            REV 06   711-044466   ABCD4968          Switch Fabric Board
FPC 0            REV 23   750-054901   CAEH6678          MPC3E NG HQoS
  CPU            REV 11   711-045719   CAEA4592          RMPC PMB
  MIC 0          REV 26   750-028392   ZM0999            3D 20x 1GE(LAN) SFP
    PIC 0                 BUILTIN      BUILTIN           10x 1GE(LAN) SFP
      Xcvr 0     REV 01   740-031469   17T446600017      SFP-LX10
      Xcvr 1     REV 01   740-031469   17T446600120      SFP-LX10
      Xcvr 2     REV 01   740-031469   19T446600010      SFP-LX10
      Xcvr 3     REV 01   740-031469   0ZT446600018      SFP-LX10
      Xcvr 4     REV 01   740-031469   19T446600007      SFP-LX10
      Xcvr 5     REV 01   740-031469   18T446600081      SFP-LX10
      Xcvr 6     REV 01   740-031469   18T446600088      SFP-LX10
      Xcvr 7     REV 01   740-031469   18T446600049      SFP-LX10 Xcvr 8
REV 01   740-031469   18T446600002      SFP-LX10
      Xcvr 9     REV 01   740-031469   19T446600008      SFP-LX10
    PIC 1                 BUILTIN      BUILTIN           10x 1GE(LAN) SFP
      Xcvr 0     REV 01   740-031469   18T446600032      SFP-LX10
      Xcvr 1     REV 01   740-031469   09T446600025      SFP-LX10
      Xcvr 2     REV 01   740-031469   19T446600004      SFP-LX10
      Xcvr 3     REV 01   740-031469   18T446600084      SFP-LX10
      Xcvr 4     REV 01   740-031469   18T446600060      SFP-LX10
      Xcvr 5     REV 01   740-031469   17T446600085      SFP-LX10
      Xcvr 6     REV 01   740-031469   17T446600014      SFP-LX10
      Xcvr 7     REV 01   740-031469   17T446600315      SFP-LX10
      Xcvr 8     REV 01   740-031469   18T446600043      SFP-LX10
      Xcvr 9     REV 01   740-031469   0ZT446600017      SFP-LX10
```

```
  MIC 1          REV 19   750-033199   CAAJ1818         1X100GE CFP
    PIC 2                 BUILTIN      BUILTIN          1X100GE CFP
FPC 1            REV 32   750-028467   ZR1986           MPC 3D 16x 10GE
  CPU            REV 10   711-029089   ZT7025           AMPC PMB
  PIC 0                   BUILTIN      BUILTIN          4x 10GE(LAN) SFP+
    Xcvr 0       REV 01   740-021308   AMH0285          SFP+-10G-SR
  PIC 1                   BUILTIN      BUILTIN          4x 10GE(LAN) SFP+
    Xcvr 1       REV 01   740-031980   AHK011H          SFP+-10G-SR
  PIC 2                   BUILTIN      BUILTIN          4x 10GE(LAN) SFP+
    Xcvr 0       REV 01   740-021308   APK0569          SFP+-10G-SR
  PIC 3                   BUILTIN      BUILTIN          4x 10GE(LAN) SFP+
FPC 2            REV 04   750-044444   ZA7865           MPCE Type 2 3D P
  CPU            REV 02   711-038484   ZB2728           MPCE PMB 2G
  MIC 0          REV 07   750-028390   XY2158           3D 40x 1GE(LAN) RJ45
    PIC 0                 BUILTIN      BUILTIN          10x 1GE(LAN) RJ45
    PIC 1                 BUILTIN      BUILTIN          10x 1GE(LAN) RJ45
    PIC 2                 BUILTIN      BUILTIN          10x 1GE(LAN) RJ45
    PIC 3                 BUILTIN      BUILTIN          10x 1GE(LAN) RJ45
  MIC 1
  QXM 0          REV 05   711-028408   ZC3420           MPC QXM
  QXM 1          REV 05   711-028408   ZC3350           MPC QXM
FPC 3            REV 22   750-054564   CADG6972         MPC5E 3D 2CGE+4XGE
  CPU            REV 11   711-045719   CADC7599         RMPC PMB
  PIC 0                   BUILTIN      BUILTIN          2X10GE SFPP OTN
    Xcvr 0       REV 01   740-031980   193363A00483     SFP+-10G-SR
    Xcvr 1       REV 01   740-031980   1YT517101829     SFP+-10G-SR
  PIC 1                   BUILTIN      BUILTIN          1X100GE CFP2 OTN
    Xcvr 0       REV 01   740-052505   XUF0GPX          CFP2-100G-SR10
  PIC 2                   BUILTIN      BUILTIN          2X10GE SFPP OTN
  PIC 3                   BUILTIN      BUILTIN          1X100GE CFP2 OTN
FPC 6            REV 11   750-045372   CABT0840         MPCE Type 3 3D
  CPU            REV 08   711-035209   CABL0889         HMPC PMB 2G
MIC 0          REV 27   750-028392   CABR4723         3D 20x 1GE(LAN) SFP
    PIC 0                 BUILTIN      BUILTIN          10x 1GE(LAN) SFP
      Xcvr 0     REV 01   740-011782   P9229UM          SFP-SX
      Xcvr 1     REV 01   740-011782   P9P0X6V          SFP-SX
      Xcvr 2     REV 01   740-011613   PCE01W5          SFP-SX
      Xcvr 4     REV 01   740-011613   PD63DEN          SFP-SX
      Xcvr 5     REV 02   740-011613   PG12FSF          SFP-SX
      Xcvr 7     REV 01   740-011782   PCL3UDY          SFP-SX
      Xcvr 8     REV 01   740-011613   PE713Z9          SFP-SX
      Xcvr 9     REV 01   740-011613   AM0846SAQA5      SFP-SX
    PIC 1                 BUILTIN      BUILTIN          10x 1GE(LAN) SFP
      Xcvr 0     REV 01   740-011613   P9F16KE          SFP-SX
```

```
    Xcvr 1      REV 01   740-031851   AM1045SU91U       SFP-SX
    Xcvr 4      REV 01   740-011613   PAJ4SY8           SFP-SX
    Xcvr 5      REV 01   740-011782   P9228K7           SFP-SX
  MIC 1         REV 27   750-028392   CABT5724          3D 20x 1GE(LAN) SFP
    PIC 2               BUILTIN      BUILTIN           10x 1GE(LAN) SFP
    Xcvr 0      REV 02   740-011613   AM0925SBG5T       SFP-SX
    Xcvr 1               NON-JNPR     P7K1PUX           SFP-SX
    Xcvr 2      REV 01   740-011613   PFF2DHH           SFP-SX
    Xcvr 4      REV 01   740-011613   PD63DF2           SFP-SX
    Xcvr 5      REV 02   740-011613   AM1033SH3DH       SFP-SX
    Xcvr 6      REV 01   740-011613   PE70W8W           SFP-SX
    Xcvr 9      REV 01   740-011613   PD62W9W           SFP-SX
    PIC 3               BUILTIN      BUILTIN           10x 1GE(LAN) SFP
    Xcvr 0      REV 02   740-013111   9154876           SFP-T
    Xcvr 2      REV 01   740-011613   AM0846SAQ9H       SFP-SX
    Xcvr 5      REV 01   740-011613   AM0820S9T2C       SFP-SX
    Xcvr 9      REV 01   740-011613   AM0805S8LGQ       SFP-SX
FPC 7           REV 27   750-033205   ZL6014            MPCE Type 3 3D
  CPU           REV 07   711-035209   ZK9068            HMPC PMB 2G
  MIC 0         REV 04   750-028392   JR6231            3D 20x 1GE(LAN) SFP
    PIC 0               BUILTIN      BUILTIN           10x 1GE(LAN) SFP
    Xcvr 0      REV 01   740-031851   AM1045SU93A       SFP-SX
    PIC 1               BUILTIN      BUILTIN           10x 1GE(LAN) SFP
    Xcvr 4      REV 01   740-011782   P9P1050           SFP-SX
    Xcvr 9      REV 01   740-011613   PFF2K74           SFP-SX
  MIC 1         REV 19   750-033199   CAAF0016          1X100GE CFP
    PIC 2               BUILTIN      BUILTIN           1X100GE CFP
FPC 11          REV 16   750-037358   CAAL1014          MPC4E 3D 32XGE
  CPU           REV 08   711-035209   CAAS2637          HMPC PMB 2G
  PIC 0
  PIC 1
  PIC 2
  PIC 3                                FPC 12           REV 29   750-031090
 ZA1887           MPC Type 2 3D EQ
  CPU           REV 06   711-030884   YR6876            MPC PMB 2G
FPC 13          REV 36   750-056519   CAFW4205          MPC7E 3D
MRATE-12xQSFPP-XGE-XLGE-CGE
  CPU           REV 16   750-057177   CAFY5688          SMPC PMB
  PIC 0                BUILTIN      BUILTIN
MRATE-6xQSFPP-XGE-XLGE-CGE
    Xcvr 0      REV 01   740-054053   QF3208FT          QSFP+-4X10G-SR
    Xcvr 3      REV 01   740-032986   QB171000          QSFP+-40G-SR4
    Xcvr 5      REV 01   740-058732   1CJQA10700C       QSFP-100GBASE-LR4
  PIC 1                BUILTIN      BUILTIN
```

```
MRATE-6xQSFPP-XGE-XLGE-CGE
    Xcvr 0       REV 01   740-054053   QF3208G2          QSFP+-4X10G-SR
    Xcvr 1       REV 01   740-054053   QF3208G3          QSFP+-4X10G-SR
    Xcvr 2                NON-JNPR     F2M2010439        QSFP-100GBASE-LR4
    Xcvr 3       REV 01   740-046565   QF3300ZQ          QSFP+-40G-SR4
    Xcvr 5       REV 01   740-058734   1ACQ104202U       QSFP-100GBASE-SR4
FPC 14           REV 68   750-044130   ABDC2916          MPC6E 3D
  CPU            REV 12   711-045719   ABDC2710          RMPC PMB
FPC 16           REV 22   750-037355   CABW1289          MPC4E 3D 2CGE+8XGE
  CPU            REV 08   711-035209   CABR9796          HMPC PMB 2G
  PIC 0                   BUILTIN      BUILTIN           4x10GE SFPP
  PIC 1                   BUILTIN      BUILTIN           1X100GE CFP
  PIC 2                   BUILTIN      BUILTIN           4x10GE SFPP
  PIC 3                   BUILTIN      BUILTIN           1X100GE CFP
FPC 17           REV 23   750-037355   CACL2280          MPC4E 3D 2CGE+8XGE
  CPU            REV 10   711-035209   CACK9073          HMPC PMB 2G
  PIC 0                   BUILTIN      BUILTIN           4x10GE SFPP
  PIC 1                   BUILTIN      BUILTIN           1X100GE CFP
  PIC 2                   BUILTIN      BUILTIN           4x10GE SFPP
  PIC 3                   BUILTIN      BUILTIN           1X100GE CFP
FPC 18           REV 23   750-054901   CAEV3700          MPC3E NG HQoS
  CPU            REV 12   711-045719   CAFK4017          RMPC PMB
  MIC 0          REV 19   750-033199   CAAJ9717          1X100GE CFP
    PIC 0                 BUILTIN      BUILTIN           1X100GE CFP
  MIC 1          REV 15   750-033199   ZP6432            1X100GE CFP
    PIC 2                 BUILTIN      BUILTIN           1X100GE CFP
FPC 19           REV 29   750-063414   CAEJ2194          MPC9E 3D
  CPU            REV 02   750-057177   CACN2561          SMPC PMB
  MIC 0          REV 01   750-055992   CADV4595
MRATE-12xQSFPP-XGE-XLGE-CGE
    PIC 0                 BUILTIN      BUILTIN
MRATE-12xQSFPP-XGE-XLGE-CGE
      Xcvr 0     REV 01   740-046565   QF3300ZG          QSFP+-40G-SR4
      Xcvr 1     REV 01   740-046565   QF330122          QSFP+-40G-SR4
      Xcvr 2     REV 01   740-046565   QF33011P          QSFP+-40G-SR4
      Xcvr 3     REV 01   740-046565   QF3300ZU          QSFP+-40G-SR4
      Xcvr 4     REV 01   740-046565   QF3300ZS          QSFP+-40G-SR4
      Xcvr 5     REV 01   740-046565   QF3300ZN          QSFP+-40G-SR4
      Xcvr 6     REV 01   740-046565   QF3300ZP          QSFP+-40G-SR4
   Xcvr 7     REV 01   740-046565   QF3300ZT          QSFP+-40G-SR4
      Xcvr 8     REV 01   740-046565   QF3300ZM          QSFP+-40G-SR4
      Xcvr 9     REV 01   740-046565   QF3300ZR          QSFP+-40G-SR4
      Xcvr 10    REV 01   740-046565   QF330105          QSFP+-40G-SR4
      Xcvr 11    REV 01   740-046565   QF3300ZK          QSFP+-40G-SR4
```

```
  MIC 1          REV 08   750-055992   CAEX1421
MRATE-12xQSFPP-XGE-XLGE-CGE
    PIC 1                 BUILTIN      BUILTIN
MRATE-12xQSFPP-XGE-XLGE-CGE
      Xcvr 6     REV 01   740-046565   QF330100          QSFP+-40G-SR4
ADC 0            REV 19   750-043596   ABCK6658          Adapter Card
ADC 1            REV 17   750-043596   ABCB7201          Adapter Card
ADC 2            REV 05   750-043596   CAAC2076          Adapter Card
ADC 3            REV 13   750-043596   ABBX5549          Adapter Card
ADC 6            REV 17   750-043596   ABCB7226          Adapter Card
ADC 7            REV 01   750-043596   ZV4079            Adapter Card
ADC 11           REV 17   750-043596   ABCD5472          Adapter Card
ADC 12           REV 17   750-043596   ABCB7147          Adapter Card
ADC 13           REV 17   750-043596   ABCD5410          Adapter Card
ADC 16           REV 17   750-043596   ABCB7047          Adapter Card
ADC 17           REV 17   750-043596   ABCD5525          Adapter Card
ADC 18           REV 17   750-043596   ABCD5391          Adapter Card
Fan Tray 0       REV 01   760-042349   ACAY4801          FanTray v2
Fan Tray 1       REV 01   760-042349   ACAY4802          FanTray v2
Fan Tray 2       REV 01   760-042349   ACAY4803          FanTray v2
Fan Tray 3       REV 01   760-042349   ACAY4800          FanTray v2
```

2. To verify that all the fabric planes are available and operational, issue the following command:

   `user@host>` **show chassis fabric plane**

```
Fabric management PLANE state
Plane 0
  Plane state: ACTIVE
      FPC 0
          PFE 0 :Links ok
      FPC 1
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
          PFE 3 :Links ok
      FPC 2
          PFE 0 :Links ok
          PFE 1 :Links ok
      FPC 3
          PFE 0 :Links ok
          PFE 1 :Links ok
      FPC 6
          PFE 0 :Links ok
```

```
      FPC 7
          PFE 0 :Links ok
      FPC 11
          PFE 0 :Links ok
          PFE 1 :Links ok
      FPC 12
          PFE 0 :Links ok
          PFE 1 :Links ok
      FPC 13
          PFE 0 :Links ok
          PFE 1 :Links ok
      FPC 14
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
          PFE 3 :Links ok
      FPC 16
          PFE 0 :Links ok
          PFE 1 :Links ok
      FPC 17
          PFE 0 :Links ok
          PFE 1 :Links ok
      FPC 18
          PFE 0 :Links ok
      FPC 19
          PFE 0 :Links ok
          PFE 1 :Links ok
   PFE 2 :Links ok
          PFE 3 :Links ok
Plane 1
  Plane state: ACTIVE
      FPC 0
          PFE 0 :Links ok
      FPC 1
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
          PFE 3 :Links ok
      FPC 2
          PFE 0 :Links ok
          PFE 1 :Links ok
      FPC 3
          PFE 0 :Links ok
          PFE 1 :Links ok
```

```
      FPC 6
          PFE 0 :Links ok
      FPC 7
          PFE 0 :Links ok
      FPC 11
          PFE 0 :Links ok
          PFE 1 :Links ok
      FPC 12
          PFE 0 :Links ok
          PFE 1 :Links ok
      FPC 13
          PFE 0 :Links ok
          PFE 1 :Links ok
      FPC 14
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
          PFE 3 :Links ok
      FPC 16
          PFE 0 :Links ok
          PFE 1 :Links ok
      FPC 17
          PFE 0 :Links ok
          PFE 1 :Links ok
      FPC 18
          PFE 0 :Links ok
      FPC 19
          PFE 0 :Links ok
   PFE 1 :Links ok
          PFE 2 :Links ok
          PFE 3 :Links ok
...

Plane 7
  Plane state: ACTIVE
      FPC 0
          PFE 0 :Links ok
      FPC 1
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
          PFE 3 :Links ok
      FPC 2
          PFE 0 :Links ok
```

```
        PFE 1 :Links ok
    FPC 3
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 6
        PFE 0 :Links ok
    FPC 7
        PFE 0 :Links ok
    FPC 11
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 12
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 13
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 14
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 16
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 17
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 18
        PFE 0 :Links ok
    FPC 19
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
```

3. To verify that the state of the electrical switch fabric links between the Flexible PIC Concentrators (FPCs) and the Switch Fabric Boards (SFBs) are eligible for carrying traffic, issue the following command:

   user@host>**show chassis fabric fpcs**

```
Fabric management FPC state:
FPC 0
  PFE #0
```

```
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
FPC 1
  PFE #0
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
  PFE #1
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
  PFE #2
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
  PFE #3
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
    Plane 5: Plane enabled
      Plane 6: Plane enabled
```

```
      Plane 7: Plane enabled
FPC 2
  PFE #0
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
  PFE #1
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
...
FPC 19
  PFE #0
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
  PFE #1
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
  PFE #2
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
```

```
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
  PFE #3
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
```

4. To verify the state of all fabric planes and the elapsed time, issue the following command:

   `user@host>` **show chassis fabric summary**

```
Plane   State    Uptime
 0      Online   11 hours, 13 minutes, 27 seconds
 1      Online   11 hours, 13 minutes, 6 seconds
 2      Online   11 hours, 12 minutes, 45 seconds
 3      Online   11 hours, 12 minutes, 24 seconds
 4      Online   11 hours, 12 minutes, 2 seconds
 5      Online   11 hours, 11 minutes, 41 seconds
 6      Online   11 hours, 11 minutes, 20 seconds
 7      Online   11 hours, 10 minutes, 59 seconds

 Note: For extended summary, use
       show chassis fabric summary extended
```

Performing a Smooth Upgrade to Enhanced Switch Fabric Board (SFB2) with Minimal Impact on Traffic

IN THIS SECTION

- Requirements | 147
- Overview | 148
- Configuration | 148
- Verification | 151

This example shows how to perform a smooth upgrade from the Switch Fabric Board (SFB) to the enhanced Switch Fabric Board (SFB2) on the MX2000 line of routers. A smooth upgrade helps reduce network downtime because of 7+1 fabric redundancy. When one SFB is being upgraded to SFB2, the other 7 SFBs are available to handle the traffic.

NOTE: On MX2010 and MX2020 routers, if you have installed the Junos Continuity software package or if the router is not configured to allow multiple versions of the SFBs to coexist, you cannot perform a smooth upgrade from SFB to SFB2.

When not using a smooth upgrade, use one of the following methods to upgrade to SFB2:

- Power off the router, replace the SFB with SFB2, and then power on the router.
- Take both the Routing Engines offline, replace the SFB with SFB2, and then bring both the Routing Engines online.

Requirements

This example uses the following hardware and software components:

- MX2020 router with dual Routing Engines
- 8 Switch Fabric Boards (SFBs)
- 8 enhanced Switch Fabric Boards (SFB2s)
- Junos OS Release 16.1R1 or later release

Before you begin the smooth upgrade, ensure that you:

- Prepare the router and install the version of Junos OS Release that supports the enhanced Switch Fabric Board (SFB2).
- Verify that the existing SFBs are online and operational and also check the status of the fabric planes.

For more information about what you must do before you commence smooth upgrade, see "Before you Begin the Smooth Upgrade Process" on page 134.

Overview

The smooth upgrade process is used to upgrade from Switch Fabric Board (SFB) to enhanced Switch Fabric Board (SFB2) with minimal traffic impact. The existing SFBs are replaced one by one, in any order, by the new SFB2s. Because you are replacing a single SFB at a time, the remaining SFBs handle the traffic and so there is minimal impact to traffic. SFB2 is supported only on MX2020 and MX2010 routers.

Topology

This example shows how to perform a smooth upgrade on an MX2020 router that has eight SFBs. The 8 SFBs are replaced with 8 enhanced switch fabric boards (SFB2). First, initiate the smooth upgrade process and then take a single SFB offline. Replace the SFB with an SFB2, and then bring the SFB2 online. You can then repeat the steps for the other seven SFBs.

After you upgrade all the SFBs to SFB2s, the fabric bandwidth per slot of MPC8E and MPC9E on the MX2020 router is increased from 11 Gbps to 25 Gbps. However, the upgrade does not impact the fabric bandwidth per slot of MPC7.

Configuration

IN THIS SECTION

- Initiating the Smooth Upgrade Process | **148**
- Performing the Smooth Upgrade | **149**
- Terminating the Smooth Upgrade Process | **150**

To upgrade from SFB to SFB2, perform the following tasks:

Initiating the Smooth Upgrade Process

Step-by-Step Procedure

By default, the MX2000 line of routers do not support both SFB and SFB2 at the same time. However, when you initiate the smooth upgrade process, the router can support both SFB and SFB2 at the same time. So, before you replace an SFB with an SFB2, you must initiate the smooth upgrade process.

1. In configuration mode, at the [**edit**] hierarchy level, Initiate the smooth upgrade process for the SFBs.

```
[edit]
user@host# set chassis state sfb-upgrade on
```

2. Commit the changes by using the **commit** statement and exit the configuration mode.

```
[edit]
user@host# commit
```

3. In operational mode, verify that you have initiated the smooth upgrade process.

```
user@host> show configuration chassis
state {
sfb-upgrade on;
}
```

Performing the Smooth Upgrade

Step-by-Step Procedure

1. In operational mode, take the SFBs offline. There is no specific order that needs to be maintained. In this example, you start with the SFB in slot 7 first.

```
user@host> request chassis sfb slot 7 offline
```

2. Verify that the SFB is offline.

```
user@host> show chassis sfb
```

```
Slot  State              Uptime
 0    Online             1 day, 12 hours, 6 minutes, 59 seconds
 1    Online             1 day, 12 hours, 6 minutes, 37 seconds
 2    Online             1 day, 12 hours, 6 minutes, 16 seconds
 3    Online             1 day, 12 hours, 5 minutes, 55 seconds
 4    Online             1 day, 12 hours, 5 minutes, 33 seconds
```

```
5    Online              1 day, 12 hours, 5 minutes, 12 seconds
6    Online              1 day, 12 hours, 4 minutes, 51 seconds
7    Offline              --- Offlined by cli command ---
```

3. Replace the SFB that is offline with the enhanced SFB (SFB2). Minimal traffic loss is expected as only a single SFB is replaced and other seven SFBs are operational and handle the traffic.

4. In operational mode, bring the SFB2 online.

```
user@host> request chassis sfb slot 7 online
```

5. Verify that the SFB2 is online.

```
user@host> show chassis sfb
```

```
Slot  State              Uptime
 0    Online              1 day, 12 hours, 16 minutes, 38 seconds
 1    Online              1 day, 12 hours, 16 minutes, 16 seconds
 2    Online              1 day, 12 hours, 15 minutes, 55 seconds
 3    Online              1 day, 12 hours, 15 minutes, 34 seconds
 4    Online              1 day, 12 hours, 15 minutes, 12 seconds
 5    Online              1 day, 12 hours, 14 minutes, 51 seconds
 6    Online              1 day, 12 hours, 14 minutes, 30 seconds
 7    Online              38 seconds
```

6. Repeat Step 3 through Step 5 for upgrading the other SFBs. We recommend that you upgrade fabric boards one at a time for minimal traffic impact.

Terminating the Smooth Upgrade Process

Step-by-Step Procedure

After all the SFBs are upgraded to the enhanced SFB (SFB2), you can terminate the smooth upgrade process. When the smooth upgrade process is initiated, SFB and SFB2 can coexist on the same router. When you terminate the smooth upgrade process, the router can have only SFB or SFB2 and not both at the same time.

1. In configuration mode, at the [**edit**] hierarchy level, terminate the smooth upgrade process.

NOTE: You can also use the **delete chassis state sfb-upgrade** command to terminate the smooth upgrade process.

```
[edit]
user@host# set chassis state sfb-upgrade off
```

2. Commit the changes by using the **commit** statement and exit configuration mode.

```
[edit]
user@host# commit
```

3. In operational mode, verify that you have initiated the smooth upgrade process.

```
user@host> show configuration chassis
state {
sfb-upgrade off;
}
```

Verification

IN THIS SECTION

- Verifying That the Switch Fabric Board (SFB) is Offline | **151**
- Verifying That the Enhanced Switch Fabric Board (SFB2) is Online | **154**

To confirm that you have upgraded SFB to SFB2 on the MX2020 router, perform these tasks:

Verifying That the Switch Fabric Board (SFB) is Offline

Purpose

To verify that the SFB on a particular slot, for instance slot 1, is offline.

Action

From operational mode, enter the **show chassis fabric fpcs** command.

user@host> **show chassis fabric fpcs**

```
Fabric management FPC state:
FPC 2
  PFE #0
      Plane 0: Plane enabled
      Plane 1: Plane disabled >>>>>
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
FPC 4
  PFE #0
    Plane 0: Plane enabled
      Plane 1: Plane disabled >>>>>>
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
  PFE #1
      Plane 0: Plane enabled
      Plane 1: Plane disabled  >>>>
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
  PFE #2
      Plane 0: Plane enabled
      Plane 1: Plane disabled  >>>>
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
  PFE #3
      Plane 0: Plane enabled
      Plane 1: Plane disabled  >>>>>
      Plane 2: Plane enabled
```

```
    Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
FPC 6
  PFE #0
      Plane 0: Plane enabled
      Plane 1: Plane disabled   >>>>>
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
  PFE #1
      Plane 0: Plane enabled
      Plane 1: Plane disabled   >>>>>
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
FPC 7
  PFE #0
      Plane 0: Plane enabled
      Plane 1: Plane disabled  >>>>>
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
  PFE #1
      Plane 0: Plane enabled
      Plane 1: Plane disabled  >>>>>
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
  PFE #2
```

```
      Plane 0: Plane enabled
      Plane 1: Plane disabled  >>>>>
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
  PFE #3
      Plane 0: Plane enabled
      Plane 1: Plane disabled >>>>>>
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
```

From operational mode, enter the **show chassis fabric summary** command.

`user@host>` **show chassis fabric summary**

```
Plane   State    Uptime
 0      Online   3 minutes, 14 seconds
 1      Offline
 2      Online   1 hour, 56 minutes, 53 seconds
 3      Online   1 hour, 56 minutes, 39 seconds
 4      Online   1 hour, 56 minutes, 25 seconds
 5      Online   1 hour, 56 minutes, 11 seconds
 6      Online   1 hour, 55 minutes, 56 seconds
 7      Online   1 hour, 42 minutes, 28 seconds

 Note: For extended summary, use
       show chassis fabric summary extended
```

Meaning

The SFB in Slot 1 has been taken offline.

Verifying That the Enhanced Switch Fabric Board (SFB2) is Online

Purpose

To verify that the enhanced switch fabric board (SFB2) inserted in the same slot (slot 1) is online.

Action

From operational mode, enter the **show chassis fabric fpcs** command.

```
user@host> show chassis fabric fpcs
```

```
Fabric management FPC state:
FPC 2
  PFE #0
      Plane 0: Plane enabled
      Plane 1: Plane enabled >>>>>>
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
FPC 4
  PFE #0
    Plane 0: Plane enabled
      Plane 1: Plane enabled >>>>>>
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
  PFE #1
      Plane 0: Plane enabled
      Plane 1: Plane enabled  >>>>
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
  PFE #2
      Plane 0: Plane enabled
      Plane 1: Plane enabled  >>>>
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
```

```
  PFE #3
      Plane 0: Plane enabled
      Plane 1: Plane enabled  >>>>>
      Plane 2: Plane enabled
    Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
FPC 6
  PFE #0
      Plane 0: Plane enabled
      Plane 1: Plane enabled   >>>>>
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
  PFE #1
      Plane 0: Plane enabled
      Plane 1: Plane enabled   >>>>>
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
FPC 7
  PFE #0
      Plane 0: Plane enabled
      Plane 1: Plane enabled  >>>>>
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
  PFE #1
      Plane 0: Plane enabled
      Plane 1: Plane enabled  >>>>>
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
```

```
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
  PFE #2
      Plane 0: Plane enabled
      Plane 1: Plane enabled  >>>>>
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
  PFE #3
      Plane 0: Plane enabled
      Plane 1: Plane enabled >>>>>>
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
```

From operational mode, enter the **show chassis fabric summary** command.

`user@host>` **show chassis fabric summary**

```
Plane   State    Uptime
 0      Online   6 minutes, 38 seconds
 1      Online   2 minutes, 12 seconds >>>>
 2      Online   2 hours, 17 seconds
 3      Online   2 hours, 3 seconds
 4      Online   1 hour, 59 minutes, 49 seconds
 5      Online   1 hour, 59 minutes, 35 seconds
 6      Online   1 hour, 59 minutes, 20 seconds
 7      Online   1 hour, 45 minutes, 52 seconds
```

Meaning

The SFB2 that replaced the SFB on slot 1 is online and operational.

RELATED DOCUMENTATION

Understanding Fabric Grant Bypass | 128

Disabling Fabric Grant Bypass to Control Congestion and Improve Performance | 129

5
CHAPTER

Power Management

Managing Power | **161**

Configuring Ambient Temperature | **176**

Managing Power

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- Understanding Power Management on the PTX5000 | 162
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Understanding How Dynamic Power Management Enables Better Utilization of Power

You can use the dynamic power management feature to better utilize the power available in the power entry module (PEM). Whether or not a new hardware component is powered on depends on the availability of power in the PEM. A component is not powered on if the PEM cannot meet the worst-case power requirement for that component. The dynamic power management feature is available in the following Junos OS Releases:

- MX Series routers–Junos OS Release 15.1R1 and later
- EX9200 switches–Junos OS Release 17.2R1 and later

The maximum power that each type of MIC consumes is maintained in a static database. The chassis daemon process (**chassisd**), which manages power budgeting for all line cards, uses this data when budgeting power for MICs. MICs are brought online only after the chassis daemon verifies that the worst-case power required for the MICs and the power required for all the online FRUs are available in the PEM.

In Junos OS Release 15.1R1, for MX Series routers, dynamic power management for MICs is disabled by default. You can enable the feature by enabling the **mic-aware-power-management** statement at the **[edit chassis]** hierarchy level. When dynamic power management is disabled, the chassis daemon checks for the worst-case power requirement of the MPC and the MICs before allocating power for the MPC. Whereas, when **mic-aware-power-management** statement is enabled, the chassis daemon considers the power requirement of only the MPCs. The worst-case power consumption by the MICs is not considered while the chassis daemon budgets power for the MPC. Power budgeting for MICs is done only after the MPC

is powered on and the MICs come online. Every time you disable or enable dynamic power management, you must restart the chassis or the MPC for the changes to take effect.

In Junos OS Release 17.2R1, for EX9200 switches, dynamic power management for MICs is enabled by default.

Starting from Junos OS Release 17.3R1, for MX10003 routers, mic-aware dynamic power management is enabled by default.

Starting from Junos OS Release 18.2R1, for JNP10K-LC2101 MPC on MX10008 routers, dynamic power management is enabled by default. However, dynamic power management for MICs is not supported on JNP10K-LC2101 because JNP10K-LC2101 is a fixed configuration MPC and supports only built-in PICs.

After you enable the dynamic power management feature, use the **set chassis preserve-fpc-poweron-sequence** configuration mode command to preserve the sequence in which MPCs are powered on. This configuration is required to maintain the order in which the MPCs come online after a router or switch restart.

> **NOTE:** In Junos OS Release 15.1F5 and later, dynamic power management is enabled by default on several MPCs. Models include MPC3E-3D-NG, MPC3E-3D-NG-Q, MPC2E-3D-NG, MPC2E-3D-NG-Q, MPC6E, MPC7E-MRATE, and MPC7E-10G on MX240, MX480, MX960, MX2010, and MX2020 and on MPC8E and MPC9E on MX2010, and MX2020 Universal Routing Platforms.

Understanding Power Management on the PTX5000

Starting in Junos OS Release 14.1, the power management feature for PTX5000 routers ensures that at any time, the chassis power requirements do not exceed the available chassis power. The PTX5000 has two PDUs to meet the power requirements of the chassis. Each PDU is capable of providing power to the chassis on its own. In case the power requirement exceeds the individual capacity of a PDU, the required power is provided by both the PDUs and the **No redundant power supply** alarm is triggered. If the system cannot provide power for all the installed FPCs or PICs, the system brings down FPCs or PICs that in can no longer provide power for and the **Insufficient Power - FRU(s) went offline** alarm is raised.

The power management feature provides the following functionality:

- Power management ensures that high-priority FPCs continue to receive power when the system does not have sufficient power to keep all the FPCs online.
- Power management ensures that if a power supply fails, the router can continue to operate normally by keeping high-priority FPCs online and taking low-priority FPCs offline.

- If power supply failure requires power management to power down some components, power management does so by gracefully powering down lower-priority FPCs.

Power management manages power to router components by employing a power budget policy. In its power budget policy, power management:

- Budgets power for each installed router component that requires power. The amount that power management budgets for each component is the maximum power that component might consume under worst-case operating conditions. For example, for the fan tray, power management budgets the amount of power required to run the fans at their maximum speed setting, even if the current fan speed is much lower.
- Manages the router for *N+N* power redundancy, which ensures uninterrupted system operation if one power supply fails.
- Provides power to host subsystem components, such as the Routing Engines, before it provides power to the FPCs.
- Manages the priority of individual FPCs. By assigning different priorities to the FPCs, you can determine which FPCs are more likely to receive power in the event of insufficient power.

Power Priority of FPCs

IN THIS SECTION

- How an FPC's Power Priority Is Determined | **163**
- FPC Priority and FPC Power Allocation | **164**
- FPC Priority and Changes in the Power Budget | **164**

The power priority of FPCs determines:

- The order in which FPCs are allocated power.
- How power is reallocated if there is a change in power availability or demand in an operating router.

This section covers:

How an FPC's Power Priority Is Determined

Using the CLI, you can assign an explicit power priority to an FPC slot. The power priority is determined by the slot number, with the lowest-numbered slots receiving power first. Thus, if you do not explicitly assign priorities to slots, power priority is determined by slot number, with slot 0 having the highest priority. See "Configuring Power-On Sequence to Redistribute the Available Power" on page 172.

FPC Priority and FPC Power Allocation

When a PTX5000 is powered on, power management allocates power to components according to its power budget policy. After power management has allocated power to the host subsystem components, it allocates the remaining available power to the FPCs. It powers on the FPCs in the configured order of priority until all FPCs are powered on or the available power provided by both the PDUs is exhausted. Thus if available power is exhausted before all FPCs receive power, higher-priority FPCs are powered on while lower-priority FPCs remain powered off.

FPCs that have been taken offline are not allocated power.

> **NOTE:** Because power management does not allocate power to an FPC that has been taken offline, that FPC is brought online only when you commit a configuration. You must explicitly use the **request chassis fpc slot *slot-number* online** command to bring an FPC online that was taken offline previously.

If an FPC with a high priority in the priority sequence also has high-power requirement, and if the system does not have the required power available, then the lower priority FPCs with lower power requirements are also not powered on. This is to maintain consistency and also avoid powering off of the lower priority FPC when extra power is available. For example, if an FPC that requires 450 W has a higher priority than an FPC that requires 330 W, then the FPC with the lower power requirement (330 W) is also not powered on if the system does not have the required power to power the FPC that requires 450 W.

FPC Priority and Changes in the Power Budget

In an operating router, power management dynamically reallocates power in response to changes in power availability or demand or changes in FPC priority. Power management uses the configured priority on FPC slots to determine how to reallocate power in response to the following events:

- When a new power supply is brought online, FPCs that were powered off because of insufficient power are powered on in the order of priority.
- When a user changes the assigned power priority of one or more FPCs when power is insufficient to meet the power budget, power management reruns the current power budget policy and powers FPCs on or off based on their priority. As a result, FPCs receive power strictly by the order of priority and previously operating FPCs might no longer receive power.
- When an FPC is installed, Junos OS does not automatically power on and bring the FPC online. This FPC stays in the offline state until the user brings it online through the CLI or by pushing the online button, and only if the available chassis power is more than the budgeted power for this FPC, the FPC becomes operational.

Power Zones

In a PTX5000 equipped with high capacity PDUs and PSMs, there in one common zone that provides power to all FRUs and all FPCs. A high-capacity PDU can support up to eight PSMs and it does not support power zoning, unlike a normal-capacity PDU. All available PDU power is considered as a part of single zone. All PSMs provide power to the common zone. The PSM LEDs on the craft interface are interpreted as described in *PTX5000 Craft Interface LEDs*. After the PDU upgrade from the normal-capacity PDUs to High-Capacity PDUs, the power management converges all power zones into a single common zone. All FRU power is distributed based on the power available in the common zone.

NOTE: Presence of both normal-capacity PDUs and high-capacity PDUs is referred to as mixed-mode of operation and is supported only during the PDU upgrade.

To cater for the increase in the PIC power consumption, the power manager is enhanced to account for the PIC power separately from the FPC. The priority sequence for the PICs follows the priority sequence for the FPCs. That is, PICs installed in high-priority FPCs are given preference over PICs installed in low-priority FPCs. All PICs on an FPC have the same priority.

NOTE: You cannot mix existing PDUs with the High Capacity DC PDU.

Power Supply Redundancy

By default, power management in PTX5000 routers is configured to manage the power supplies for *N+N* redundancy, by which power supplies are held in reserve for backup if the other power supplies are removed or fail.

When power is insufficient to meet the budgeted power requirements, power management raises alarms as follows:

- With power supply redundancy, when one PSM fails, it does not cause FPCs to go offline. Only the **No redundant power supply alarm** is raised. However, with no redundancy, FPCs can go offline depending on the total chassis power available at that time. When an FPC or PIC goes offline due to insufficient power, which is indicated by **No power** in the output of the **show chassis fpc** command, then the **Insufficient Power - FRU(s) went offline** alarm is raised. The alarm gets cleared when there is sufficient power to bring up all the FPCs and PICs. The **Insufficient Power - FRU(s) went offline** alarm is raised when PSMs fail, when PSMs are powered off manually, or any time there is insufficient power for the system to power all the FPCs or PICs in the system.
- When power fails or when a PSM is removed, power management:

- Calculates the total chassis power available from the remaining PSMs for the FPCs.
- Powers off the FPCs based on the priority depending on the power budget for the FPCs and the FRUs and their configured power-on sequence.

  NOTE: In the scenario where the available power is more than the budgeted power required by the FPC but less than its maximum power, the FPC is taken offline and then brought online, but one or more PICs in that FPC are not online.

- When a new PSM is inserted, power management:
  - Checks the power-on sequence of the FPCs and the PICs and brings any offline PICs online when power is available.
  - Powers on the FPCs based on the FPC's budgeted power and its power-on sequence depending on its priority.
  - Maintains the power for high-priority FPCs and their PICs by taking the low-priority FPCs offline when all the FPCs are brought online, depending on the available power.

Power management clears all alarms when sufficient power is available to meet normal operating and reserved power requirements.

T4000 Power Management Overview

Starting with Junos OS Release 12.3, the power management feature is enabled on a Juniper Networks T4000 Core Router. This feature enables you to limit the overall chassis output power consumption. That is, this feature enables you to limit the router from powering on a Flexible PIC Concentrator (FPC) when sufficient output power is not available to power on the FPC during booting or normal operation.

The power management feature is enabled only when six input feeds with 40 amperes (A) each or four input feeds with 60 A each is configured on the router. The power management feature is *not* enabled for any other input feed--current combination. When the power management feature is *not* enabled, Junos OS tries to power on all the FPCs connected to the router.

CAUTION: : If you do not configure the power management feature and the maximum power draw is exceeded by the router during booting or normal operation, FPCs' states might change from Online to Offline or Present, some traffic might drop, or the interfaces might flap.

TIP: Interface flapping occurs when a router alternately announces the state of the interface to be as *up* and *down* in quick sequence.

After you connect the input feeds to the router, you must configure the number of input feeds connected to the router and the amount of current received at the input feeds. Use the **feeds** statement and the **input current** statement at the **[edit chassis pem]** hierarchy level to configure the number of input feeds and the amount of current received at each input feeds, respectively.

NOTE: You can connect three 80 A DC power cables to the six-input DC power supply by using terminal jumpers. When you do this, ensure that you configure the **feeds** statement to have the value **6** and the **input current** statement to have the value **40**. If these configurations are not set, the power management feature is *not* enabled and, therefore, Junos OS tries to power on all the FPCs connected to the router.

When the power management feature is enabled, FPCs connected to the router are powered on based on the power received by the router. If the router receives sufficient power to power on all the FPCs connected to the router, all the FPCs are powered on. If sufficient power is not available, Junos OS limits the number of FPCs brought online. That is, Junos OS uses the total available chassis output power as a factor to decide whether or not to power on an FPC connected to the router.

Of all the supported FPCs of a T4000 router, the T1600 Enhanced Scaling FPC4 (model number: T1600-FPC4-ES) has the greatest power requirement.Table 11 on page 167 compares the FPC connection limits between a six-input feed 40 A connection and a four-input feed 60 A connection when power management is enabled and T1600-FPC4-ES is connected to router.

Table 11: FPC Connection Limit Comparison

Six Input Feeds with 40 A Connection	Four Input Feeds with 60 A Connection
When T1600-FPC4-ES is *not* connected: • All eight FPC slots can be brought online.	When T1600-FPC4-ES is *not* connected: • A maximum of seven other FPCs can be brought online. That is, only seven slots out of the eight FPC slots can be brought online.
When only one T1600-FPC4-ES is connected: • A maximum of seven other FPCs can be brought online. That is, only seven slots out of the eight FPC slots can be brought online.	When only one T1600-FPC4-ES is connected: • A maximum of six other FPCs can be brought online. That is, only six slots out of the eight FPC slots can be brought online.

Table 11: FPC Connection Limit Comparison *(continued)*

Six Input Feeds with 40 A Connection	Four Input Feeds with 60 A Connection
When only T1600-FPC4-ES FPCs are connected: • A maximum of six T1600-FPC4-ES FPCs can be brought online.	More than one T1600-FPC4-ES *cannot* be brought online.

NOTE:

- When the power management feature is enabled, FPC power-on consistency is not maintained across router reboots. That is, the same set of FPCs that were powered on before a reboot might not be powered on after the reboot. Before the router reboot, the FPCs are powered on according to their insertion order in the chassis. After the reboot, the FPCs are powered on according to the FRU power-on sequence configured in the **fru-poweron-sequence** statement at the **[edit chassis]** hierarchy level. If the FRU power-on sequence is not configured, Junos OS uses the ascending order of the slot numbers of the FPCs as the sequence to power on the FPCs.
- Removal of any online FPC from the chassis does not change the state of any other FPC and does not trigger the power management feature to power on the FPCs that were not powered on initially because of the lack of sufficient power. When any online FPC is removed from the chassis, if you need to trigger the power management feature to re-evaluate the situation, you need to reboot or restart the chassis. Alternatively, you can make a configuration change at the **[edit chassis]** hierarchy level and then issue the **commit** command to commit the changes made at the **[edit chassis]** hierarchy level. The power management feature to re-evaluates the situation when a configuration change is committed at the **[edit chassis]** hierarchy level.

Configuring the Six-Input DC Power Supply on T Series Routers

IN THIS SECTION

- Configuring the Six-Input DC Power Supply on an LCC Router in a Routing Matrix | **169**
- Configuring the Six-Input DC Power Supply on T640 and T1600 Routers | **170**
- Configuring the Six-Input DC Power Supply on T4000 Routers | **171**

By default, the six-input DC power supply is configured to have all the six input feeds connected. You can also choose to provide four or five input feeds to the six-input DC power supply. When providing four or five input feeds on standalone routers, you need to configure the **feeds** statement at the **[edit chassis pem]** hierarchy level. When providing four or five input feeds to an LCC router in a routing matrix, you need to configure the **feeds** statement at the **[edit chassis lcc *lcc-number* pem]** hierarchy level.

Starting with Junos OS Release 12.3, the power management feature is enabled on T4000 routers with six-input DC power supply. The power management feature is enabled only when six input feeds with 40 amperes (A) each or four input feeds with 60 A each is configured on the router. To do this, you need to configure the **feeds** and **input-current** statements at the **[edit chassis pem]** hierarchy level.

NOTE:

- Before configuring input feeds for your router, see the *T640 Core Router Hardware Guide*, *T1600 Core Router Hardware Guide*, or *T4000 Core Router Hardware Guide* for special considerations and for the number of input feeds supported by the router.
- The value assigned to the **feeds** statement must be equal to the number of input feeds provided to the power supply. Else, an alarm message is generated to indicate the mismatch.

The following procedures describe how to configure the six-input DC power supply on different routers:

Configuring the Six-Input DC Power Supply on an LCC Router in a Routing Matrix

To configure the six-input DC power supply on an LCC router in a routing matrix:

1. At the **[edit chassis lcc *lcc-number* pem]** hierarchy level, configure the **feeds** statement with the number of input feeds provided to the power supply.

   ```
   [edit chassis lcc lcc-number pem]
   user@host# set feeds number-of-input-feeds
   ```

   For example:

   ```
   [edit chassis lcc 1 pem]
   user@host# set feeds 5
   ```

   NOTE: All power supplies in the router must use the same number of inputs feeds.

2. Verify the configuration by using the **show** command at the **[edit chassis]** hierarchy level:

```
[edit chassis lcc 1 pem]
user@host# show
pem {
    feeds 5;
}
```

Configuring the Six-Input DC Power Supply on T640 and T1600 Routers

To configure the six-input DC power supply on a standalone T640 or T1600 router:

1. At the **[edit chassis pem]** hierarchy level, configure the **feeds** statement with the number of input feeds provided to the power supply.

   ```
   [edit chassis pem]
   user@host# set feeds number-of-input-feeds
   ```

   For example:

   ```
   [edit chassis pem]
   user@host# set feeds 5
   ```

   NOTE: All power supplies in the router must use the same number of inputs feeds.

2. Verify the configuration by using the **show** command at the **[edit chassis]** hierarchy level:

   ```
   [edit chassis]
   user@host# show
   pem {
       feeds 5;
   }
   ```

Configuring the Six-Input DC Power Supply on T4000 Routers

To configure the six-input DC power supply on a T4000 router:

1. At the **[edit chassis pem]** hierarchy level, configure the **feeds** statement with the number of input feeds provided to the power supply.

   ```
   [edit chassis pem]
   user@host# set feeds number-of-input-feeds
   ```

   For example:

   ```
   [edit chassis pem]
   user@host# set feeds 4
   ```

   NOTE: All power supplies in the router must use the same number of inputs feeds.

2. Configure the input current received by the router.

   ```
   [edit chassis pem]
   user@host# set input-current amps-in-each-feed
   ```

   For example, if the router receives 60 A of input current:

   ```
   [edit chassis pem]
   user@host# set input-current 60
   ```

   NOTE: You can connect three 80 A DC power cables to six-input DC power supply by using terminal jumpers. When you do this, ensure that you set the value of the **feeds** statement to **6** and that of the **input current** statement to **40**. If these configurations are not set, the power management feature is *not* enabled. For more information about the power management feature, see "T4000 Power Management Overview" on page 166.

3. Verify the configuration by using the **show** command at the **[edit chassis]** hierarchy level:

   ```
   [edit chassis]
   ```

```
user@host# show
pem {
    feeds 4;
    input-current 60;
}
```

Redistributing the Available Power by Configuring Power-On Sequence

Routers running on Junos OS Release 10.0 and later support an enhanced AC Power Entry Module (PEM) to provide the necessary power infrastructure to support up to twelve higher-capacity DPCs with higher port density and slot capacity. To support the cooling requirements for the enhanced AC PEMs, the routers support enhanced fan trays and fans.

The default behavior for MPC power-on sequence is slot number based, that is, slot 0 is brought online first followed by slot 1, slot 2 up to slot 11. For the scenarios, where it is running a mix of high capacity line cards (for core facing), and low capacity line cards (for access facing) in their system, you can use the **fru-poweron-sequence** option to manually set the MPC power on sequence and hence ensure that the more important core facing line cards are brought online first irrespective of which slots these are in. This approach provides fine control over deterministically bringing up MPCs, however, it is heavy on configuration and entails to follow the discipline in slot to MPC mapping across all the systems.

The Junos OS enables you to configure the power-on sequence for the DPCs on an MX Series router chassis containing the new AC PEM. This enables you to redistribute the available power to the DPCs based on your requirements and the calculated power consumption of the DPCs. To configure the power-on sequence, refer to "Configuring Power-On Sequence to Redistribute the Available Power" on page 172.

Configuring Power-On Sequence to Redistribute the Available Power

You can configure the power-on sequence for the Flexible PIC Concentrators (FPCs) on MX, PTX, and T routers. This configuration enables you to redistribute the available power to the FPCs on the basis of your requirements and the calculated power consumption of the FPCs.

To configure the power-on sequence:

1. At the **[edit chassis]** hierarchy level, configure the **fru-poweron-sequence** statement indicating the order in which the FPCs need to be powered on.

```
[edit chassis]
```

```
user@host# set fru-poweron-sequence fru-poweron-sequence
```

For example:

```
[edit chassis]
user@host# set fru-poweron-sequence “0 2 1”
```

2. Verify the configuration by using the **show** command at the **[edit chassis]** hierarchy level:

```
[edit chassis]
user@host# run show chassis power sequence
fru-poweron-sequence "0 2 1";
```

NOTE:

- If the configured sequence contains invalid numbers, Junos OS considers only the valid numbers in the sequence. The invalid numbers are silently discarded.
- If the power-on sequence is not configured by including the **fru-poweron-sequence** statement, Junos OS uses the ascending order of the slot numbers of the FPCs as the sequence to power on the FPCs.
- Issue the **show chassis power** command to view power limits and usage details for the FPCs.

SEE ALSO

fru-poweron-sequence | 396

Configuring Voltage Level Monitoring of FPCs

IN THIS SECTION

- Enabling Voltage Failure Errors on the FPC | 174
- Disabling Voltage Failure Errors on the FPC | 174

You can monitor the voltage on the flexible PIC concentrator (FPC) at regular intervals. When the voltage falls below 10%, the FPC is offlined.

The faulty FPC is monitored at 500ms intervals. The output of the **show chassis fpc** command shows **Power Failure** for the faulty FPC. The FPC remains in powered down state until the voltage level is normal again.

Enabling Voltage Failure Errors on the FPC

fpc-nmi-volt-fail-knob controls the behavior of the FPC after detecting voltage failure, and to online or offline the FPC based on the voltage level. To enable monitoring the voltage level on the FPC:

1. Navigate to the **[edit chassis]** hierarchy level.
2. Include the **set chassis fpc-nmi-volt-fail-knob enable** statement to enable voltage monitoring on the FPC.

```
[edit chassis]
   {
      fpc-nmi-volt-fail-knob enable;
   }
```

Disabling Voltage Failure Errors on the FPC

To disable monitoring the voltage level on the FPC:

1. Navigate to the **[edit chassis]** hierarchy level.
2. Include the **set chassis fpc-nmi-volt-fail-knob disable** statement to disable voltage monitoring on the FPC.

```
[edit chassis]
   {
      fpc-nmi-volt-fail-knob disable;
   }
```

Release History Table

Release	Description
18.2R1	Starting from Junos OS Release 18.2R1, for JNP10K-LC2101 MPC on MX10008 routers, dynamic power management is enabled by default.
17.3R1	Starting from Junos OS Release 17.3R1, for MX10003 routers, mic-aware dynamic power management is enabled by default.
17.2R1	EX9200 switches–Junos OS Release 17.2R1 and later
17.2R1	In Junos OS Release 17.2R1, for EX9200 switches, dynamic power management for MICs is enabled by default.
15.1R1	MX Series routers–Junos OS Release 15.1R1 and later
15.1R1	In Junos OS Release 15.1R1, for MX Series routers, dynamic power management for MICs is disabled by default.
15.1F5	In Junos OS Release 15.1F5 and later, dynamic power management is enabled by default on several MPCs.
14.1	Starting in Junos OS Release 14.1, the power management feature for PTX5000 routers ensures that at any time, the chassis power requirements do not exceed the available chassis power.

RELATED DOCUMENTATION

Configuring Ambient Temperature | **176**

fru-poweron-sequence | **396**

Configuring Ambient Temperature

IN THIS SECTION

- Understanding How Configuring Ambient Temperature Helps Optimize Power Utilization | 176
- Monitoring the Power Consumption of PTX5000 FPCs by Configuring the Ambient Temperature | 177
- Managing Power Allocated to PTX5000 FPCs on the Basis of Chassis Ambient Temperature Configuration | 181

Understanding How Configuring Ambient Temperature Helps Optimize Power Utilization

The key to managing power in network infrastructure is the efficient utilization of provisioned power. Provisioned power is the minimum power that is required to bring a router or a switch online. Junos OS determines the minimum required power by considering the worst-case power requirement for all the FRUs installed in the device. One of the methods to optimize the provisioned power on MX Series routers or EX9200 switches is to configure the device to operate at a cooler temperature. You can enable a device to operate at a lower operating temperature by configuring a lower ambient temperature.

Ambient temperature is the maximum operating temperature for a device. By configuring an ambient temperature, you can optimize power provisioned for the cooling system and the line cards. The maximum speed at which fans operate depends on the configured ambient temperature. As the fan speed increases, the power consumed by the fans increases. As a result, the device consumes more power when the temperature is high because the fans run faster to maintain the operating temperature of the chassis within the configured limits.

When a router or a switch restarts, the system adjusts the power allocation or the provisioned power for the line cards on the basis of the configured ambient temperature. If enough power is not available, a minor chassis alarm is raised. However, the chassis continues to run with the configured ambient temperature. You can configure a new higher ambient temperature only after you make more power available by adding new power supply modules or by taking a few line cards offline. By using the provisioned power that is saved by configuring a lower ambient temperature, you can bring more hardware components online.

A specific ambient temperature value might not be applicable to a different geographical location, for example, in a colder region. For devices operating in colder regions, you can configure a lower ambient temperature, which helps reduce provisioned power significantly. However, in a region of higher temperature, you might need to configure a higher ambient temperature to ensure smooth functioning of

the device. For example, if the router or switch operates in a colder region, you can set the ambient temperature to 25°C, which reduces the maximum fan speed, thereby reducing the maximum power consumption. Thus, by configuring an appropriate ambient temperature, you can reduce the provisioned power and save cost on network power infrastructure.

You can configure ambient temperature by using the **set chassis ambient-temperature (25C|40C|55C)** statement at the **[edit chassis]** hierarchy level. The default ambient temperature for MX Series routers and EX9200 switches is 40°C.

Monitoring the Power Consumption of PTX5000 FPCs by Configuring the Ambient Temperature

You can configure the ambient temperature of the PTX5000 chassis to manage power allocated to the FPCs. You can set the ambient temperature of the chassis at 25° C, or 40° C. On system initialization, the power manager reads the ambient temperature and allocates power to the FPCs according to the power budget policy at that temperature.

1. To configure the ambient temperature, include the **set chassis ambient-temperature 25|40|55** statement at the **[edit]** hierarchy leve in the configuration mode:

   ```
   [edit]
     user@host# set chassis ambient-temperature 25|40
   ```

2. To verify the ambient temperature of the chassis, use the **show chassis ambient-temperature** command at the **[edit]** hierarchy level in the operational mode:

   ```
   [edit]
     user@host> show chassis ambient-temperature
   ```

   Ambient Temperature: 25C

To verify the power consumption of the FPCs, use the following statements:

1. Use the **show chassis power detail | grep "FPC"** statement at the **[edit]** hierarchy level to view the power consumption of the FPCs.

   user@host> show chassis power detail | grep "FPC"

   ```
   FPC 0                 448
   FPC 1                 419
   FPC 2                 373
   FPC 3                   0
   FPC 4                   0
   FPC 5                   0
   FPC 6                   0
   FPC 7                   0
   ```

   Alternatively use the SNMP MIB command, **show snmp mib walk jnxOperatingFRUPower | grep "\.7\."** to view the power consumption of each FPC:

   user@host> show snmp mib walk jnxOperatingFRUPower | grep "\.7\."

   ```
   jnxOperatingFRUPower.4.1.7.0 = 0
   jnxOperatingFRUPower.7.1.0.0 = 457              < ------  For FPC 0
   jnxOperatingFRUPower.7.2.0.0 = 428              < ------  For FPC 1
   jnxOperatingFRUPower.7.3.0.0 = 381              < ------  For FPC 2
   jnxOperatingFRUPower.15.7.0.0 = 0
   ```

2. Use the **show chassis alarms** statement to view the alarms generated for any of the FPCs:

   `user@host>` **show chassis alarms**

   ```
   Alarm time               Class  Description
   2007-04-08 05:51:12 UTC  Minor  FPC 1, Consumption > 90percent of allocated
   Budget
   2007-04-08 05:51:12 UTC  Minor  FPC 0, Consumption > 90percent of allocated
   Budget
   2007-04-08 05:50:26 UTC  Minor  FPC 0 SIB Link Error
   2007-04-08 05:49:34 UTC  Minor  SIB 0 FPC Link Error
   2007-04-08 05:48:02 UTC  Minor  No Redundant Power for FPC 0-7
   2007-04-08 05:48:01 UTC  Minor  No Redundant Power for Rear Chassis
   2007-04-08 05:48:01 UTC  Minor  No Redundant Power for Fan 0-2
   ```

   If an FPC consumes more than 90% of the allocated power budget, the **Consumption > 90percent of allocated Budget** alarm is raised. FPC power consumption is measured at intervals of 65 seconds.

NOTE: Starting in Junos OS Release 18.4R1, the PTX5000 routers do not raise a chassis alarm in the following events:

- Power consumption by an FPC exceeds 90% of the allocated power budget.
- Power consumption by an FPC exceeds 100% of the allocated power budget (in this case, a system log is registered).

NOTE: If the PTX5000 chassis has redundant power supply modules, and if one PSM fails, the FPCs can still be online. Only the **No redundant power supply** alarm is raised.

If the PTX5000 chassis does not have redundant power supply modules, failure of one PSM can cause the FPCs to go offline, depending on the total chassis power available at that time.

3. When the power consumption of an FPC is more than the allocated budget for three consecutive intervals, the **Consumption > 90percent of allocated Budget** is cleared and **PWR Range Overshoot** alarms is raised for that particular FPC and the ambient temperature is set to the next higher setting.

```
user@host> show chassis alarms
9 alarms currently active
Alarm time               Class  Description
2007-04-08 05:56:38 UTC  Minor  FPC 2, Consumption > 90percent of allocated
Budget
2007-04-08 05:55:33 UTC  Minor  FPC 1, PWR Range Overshoot
2007-04-08 05:53:22 UTC  Minor  FPC 0, PWR Range Overshoot
2007-04-08 05:50:26 UTC  Minor  FPC 0 SIB Link Error
2007-04-08 05:49:34 UTC  Minor  SIB 0 FPC Link Error
2007-04-08 05:48:02 UTC  Minor  No Redundant Power for FPC 0-7
2007-04-08 05:48:01 UTC  Minor  No Redundant Power for Rear Chassis
2007-04-08 05:48:01 UTC  Minor  No Redundant Power for Fan 0-2
```

NOTE: **Consumption > 90percent of allocated Budget** alarms are updated according to the new ambient temperature setting but the chassis ambient temperature is not changed.

user@host> show chassis alarms

```
5 alarms currently active
Alarm time               Class  Description
2007-04-01 04:36:53 UTC  Minor  No Redundant Power for FPC 0-7
2007-04-01 04:36:52 UTC  Minor  No Redundant Power for Rear Chassis
2007-04-01 04:36:51 UTC  Minor  No Redundant Power for Fan 0-2
2007-04-01 04:36:47 UTC  Minor  PDU 1 Absent
```

a. You can verify the temperature by using the **show chassis ambient-temperature** command.

user@host> show chassis ambient-temperature

```
Ambient Temperature: 25C
```

b. Enter the configuration mode and check the configured ambient temperature. Use the **show chassis ambient temperature** operational mode command.

user@host# show chassis ambient temperature

```
Ambient Temperature: 25C
```

This is set to the last configured value.

c. To clear the temperature set for the overshooting condition, use the **request chassis power-manager reset ambient-config** command.

user@host> request chassis power-manager reset ambient-config

Verify the ambient temperature after the reset.

show chassis ambient-temperature

```
Ambient Temperature: 25C
```

4. Verify the active alarms in the chassis by using the **show chassis alarms** command.

user@host> show chassis alarms

```
7 alarms currently active
Alarm time               Class  Description
2007-04-01 04:36:53 UTC  Minor  No Redundant Power for FPC 0-7
2007-04-01 04:36:52 UTC  Minor  No Redundant Power for Rear Chassis
2007-04-01 04:36:51 UTC  Minor  No Redundant Power for Fan 0-2
2007-04-01 04:36:47 UTC  Minor  PDU 1 Absent
```

Managing Power Allocated to PTX5000 FPCs on the Basis of Chassis Ambient Temperature Configuration

The power management feature of the PTX5000 Packet Transport Router is enhanced to manage the power supplied to the FPCs on the router by configuring the ambient temperature of the chassis. You can set the ambient temperature of the chassis at 25° C, or 40° C. On system initialization, the power manager reads the ambient temperature and allocates power to the FPC according to the power budget policy at that temperature. If the actual power consumption of any FPC exceeds the configured value for more than three minutes, the power manager overrides the configured ambient temperature setting of that FPC, and resets its ambient temperature to the next higher level and reallocates power according to the new temperature setting. All the overshooting FPCs remain in the dynamic ambient temperature mode until the next reboot, or until you override it with a CLI command. The power manager then resets the power budget of the FRUs according to the configured ambient temperature setting.

NOTE: If the ambient temperature is not set, then, 55° C is considered as the default ambient-temperature and FPCs are assigned power according to the default ambient temperature.

For example, if the chassis ambient temperature is set to 25° C, the power manager allocates power to the FPCs according to the power budget policy at 25 ° C. If an FPC consumes more than 90% of the allocated power, an alarm—**Consumption > 90percent of allocated Budget**—is raised. If the FPC power consumption exceeds the allocated power for more than three minutes, the **PWR Range Overshoot** alarm is raised and the power manager reallocates power to that FPC according to the next higher temperature setting, that is, 40° C .

NOTE: During the **PWR Range Overshoot** alarm condition, you cannot reconfigure or delete the ambient temperature setting. You can reset the ambient temperature to the earlier setting after clearing the alarm condition by using the **request chassis power-manager reset ambient-config** command.

NOTE: If the PTX5000 chassis has redundant power supply modules, and if one PSM fails, the FPCs can still be online. Only the **No redundant power supply** alarm is raised.

If the PTX5000 chassis does not have redundant power supply modules, failure of one PSM can cause the FPCs to go offline, depending on the total chassis power available at that time.

RELATED DOCUMENTATION

ambient-temperature | 330

show chassis temperature-thresholds | 1796

Understanding How Dynamic Power Management Enables Better Utilization of Power | 161

CHAPTER 6

Managing Errors and Alarms

Managing Errors | **185**

Understanding Chassis Alarms | **198**

Craft Interface | **267**

Managing Errors

IN THIS SECTION

- Configuring FPC Error Levels and Actions | 185
- Example: Configuring FPC Error Detection and Self-Healing on T Series Core Routers | 187
- Managing FPC Errors | 191
- Configuring Sanity Polling | 192
- Configuring the Junos OS to Make a Flexible PIC Concentrator Stay Offline | 195
- Configuring an SFM to Stay Offline | 195
- Resynchronizing FPC Sequence Numbers with Active FPCs when an FPC Comes Online | 196
- Enabling a Routing Engine to Reboot on Hard Disk Errors | 197

Configuring FPC Error Levels and Actions

Starting with Junos OS Release 13.3 or Release 14.2 for M320 routers, you can use MX Series, PTX Series, and T Series routers to configure Packet Forwarding Engine (PFE)-related error levels on FPCs and the actions to perform when a specified threshold is reached. In Junos OS Release 13.2 and earlier, Packet Forwarding Engine errors would disable the FPC. When you use the **error** command, Packet Forwarding Engine errors can be isolated, which reduces the need for a field replacement. Using the **error** command, you can classify errors according to severity, set an automatic recovery action for each severity, and configure the actions to perform when a specified threshold is reached. This command is available at the **[edit chassis fpc slot-number]** and **[edit chassis]** hierarchies.

To configure Packet Forwarding Engine error levels and actions for an FPC:

- (Optional) Configure the fatal error level threshold and action. A fatal error is an error that results in blockage of considerable amount of traffic across modules.

  ```
  [edit chassis fpc fpc-number error]
  user@host# set fatal action action
  user@host# set fatal threshold threshold-level
  ```

  If the severity level of the error is fatal, the action is carried out when the total number of errors reaches the threshold value. After the threshold value is crossed, for every occurrence of the error, an action is carried out.

- (Optional) Configure the major error level threshold and action. A major error is an error that results in continuing loss of packet traffic but does not affect other modules.

  ```
  [edit chassis fpc fpc-number error]
  user@host# set major action action
  user@host# set major threshold threshold-level
  ```

  If the severity level of the error is major, the action is carried out when the total number of errors reaches the threshold value. After the threshold value is crossed, for every occurrence of the error, an action is carried out.

- (Optional) Configure the minor error level threshold and action. A minor error is an error that results in the loss of a single packet but is fully recoverable.

  ```
  [edit chassis fpc fpc-number error]
  user@host# set minor action action
  user@host# set minor threshold threshold-level
  ```

  If the severity level is minor, the action is carried out only once when the total number of errors reaches the threshold value

Starting with Junos OS Release 18.1R3, MX Series routers support configuration of error thresholds and actions at the error scope and error category levels. Use the command **set chassis fpc *fpc-slot* error scope *error-scope* category *category* (fatal | major | minor) threshold *error-threshold* action (alarm | disable-pfe | get-state | offline | log | reset)** to configure a threshold and action for a particular error scope and category at the FPC level. You can also configure these features at the chassis level (at the **[edit chassis]** hierarchy). However, threshold and action configured at the **[edit chassis fpc]** hierarchy overrides the same configuration at the **[edit chassis]** hierarchy.

You can use the command **show chassis fpc errors** to view the error information at the error scope and category level.

For Junos OS Evolved, you can use the following **show** commands to view the error information:

- **show system errors count**—Displays system-wide errors and its count.
- **show system errors active**—Displays current active errors in the system.
- **show system errors active fpc <slot number>** —Displays active errors for the specified FPC.
- **show system errors fru detail**—Displays detailed FRU-specific error.
- **show system errors fru detail fpc <slot number>**—Displays information about detected errors based on the FRU.

If you have configured the action **log** against a particular error threshold, the system logs the event when the error count breaches the set threshold. The following sample syslog messages indicate an error threshold breach and the resultant action being taken:

```
Sep 17 23:12:10  sw-s3-u8-03 fpc0 Error:
/fpc/0/pfe/0/cm/0/PE_Chip/1/PECHIP_CMERROR_OQB_INT_REG_RD_ADDR_ERR (0x21078b),
scope: pfe, category: functional, severity: minor, module: PE Chip, type:
Description for PECHIP_CMERROR_OQB_INT_REG_RD_ADDR_ERR
```

```
Sep 17 23:12:10  sw-s3-u8-03 fpc0 Performing action log for error
/fpc/0/pfe/0/cm/0/PE_Chip/1/PECHIP_CMERROR_OQB_INT_REG_RD_ADDR_ERR (0x21078b) in
module: PE Chip with scope: pfe category: functional level: minor
```

Example: Configuring FPC Error Detection and Self-Healing on T Series Core Routers

IN THIS SECTION

- Requirements | **187**
- Overview | **188**
- Configuration | **188**
- Verification | **190**

This example shows how to configure error detection and self-healing on a Juniper Networks T Series Core Router with Type 5 FPC.

Requirements

This example uses the following hardware and software components:

- Juniper Networks T4000 Core Router with Type 5 FPCs.
- Junos OS Release 13.3 or later.

Before you proceed, ensure that the required connections are complete and the interfaces are functional.

Overview

FPC error detection and self-healing involves configuring a set of actions to be performed on each FPC, when the number of errors for a particular severity increases beyond a user-configured threshold. The error severity is categorized into fatal, major, and minor. Recovery actions include raising an alarm, generating log entries, getting the current state of the FPC, restarting the FPC, taking the FPC offline, and resetting the FPC. For a particular FPC and error severity, you can configure the error threshold to any value within the allowed limits and map the threshold to an action. In this example, you will set these errors on FPC 0 in Juniper Networks T4000 Core Router.

Configuration

IN THIS SECTION

- Configuring the Error Detection and Self-Healing | **188**
- Results | **190**

To configure the error detection and self-healing, you need to set the error severity, threshold values corresponding to each error severity, and actions to be performed when the threshold value is crossed.

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, and then copy and paste the commands into the CLI at the [edit interfaces] hierarchy level.

```
set chassis fpc 0 fatal threshold 1 action reset
set chassis fpc 0 major threshold 1 action alarm
set chassis fpc 0 minor threshold 10 action log
```

Configuring the Error Detection and Self-Healing

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For information about navigating the CLI, see Using the *Using the CLI Editor in Configuration Mode* and the *CLI User Guide*.

- Configure the threshold value and associated action for fatal errors.

  1. Set the error severity to fatal.

     [edit interfaces]

     user@host# set chassis fpc 0 error fatal

  2. Set the threshold value for fatal errors.

     [edit interfaces]

     user@host# set chassis fpc 0 error fatal threshold 1

  3. Set the associated action for fatal errors.

     [edit interfaces]

     user@host# set chassis fpc 0 error fatal threshold 1 action reset

- Configure the threshold value and associated action for major errors.

  1. Set the error severity to major.

     [edit interfaces]

     user@host# set chassis fpc 0 error major

  2. Set the threshold value for major errors.

     [edit interfaces]

     user@host# set chassis fpc 0 error major threshold 1

  3. Set the associated action for major errors.

     [edit interfaces]

     user@host# set chassis fpc 0 error major threshold 1 action alarm

- Configure the threshold value and associated action for minor errors.

  1. Set the error severity to minor.

     [edit interfaces]

     [edit interfaces]

     user@host# set chassis fpc 0 error minor

  2. Set the threshold value for minor errors.

     [edit interfaces]

     user@host# set chassis fpc 0 error minor threshold 10

3. Set the associated action for minor errors.

   [edit interfaces]

   user@host# set chassis fpc 0 error minor threshold 10 action log

Results

The following is the result of the configuration for the fatal severity level.

```
user@host# set chassis fpc 0 error ?
Possible completions:
+ apply-groups         Groups from which to inherit configuration data
+ apply-groups-except  Don't inherit configuration data from these groups
> fatal                FPC Fatal errors (default threshold = 1)
> major                FPC Major Level errors (default threshold = 1)
> minor                FPC Minor Level errors (default threshold = 10)
user@host# set chassis fpc 0 error fatal action ?
Possible completions:
alarm              Raise FPC alarm
get-state          Retreive FPC state for debugging
log                Log occurence to system log file
offline            Offline FPC
offline-pic        Offline PICs associated with PFE on FPC
reset              Reset FPC
user@host# set chassis fpc 0 error fatal action reset
user@host# set chassis fpc 0 error fatal threshold ?
Possible completions:
<threshold>        Error count at which to take the action (0..4294967295)
user@host# set chassis fpc 0 error fatal threshold 1
```

If you are done configuring the devices, enter **commit** from configuration mode.

Verification

IN THIS SECTION

- Verifying the Configured Actions Related to Fatal Severity of FPC Error | **191**

To verify that the configuration is successful and the router in configured with the correct action, use the **show chassis fpc errors** command.

Verifying the Configured Actions Related to Fatal Severity of FPC Error

Purpose

Make sure that the threshold value and the associated action are set for fatal errors.

Action

```
user@host> show chassis fpc errors
```

```
FPC  Level Occurred Cleared Threshold Action-Taken Action
0    Fatal      0       0      1          RESET
    Pfe-State: pfe-0 -ENABLED | pfe-1 -ENABLED | pfe-2 -ENABLED | pfe-3 -ENABLED
| pfe-4 -ENABLED | pfe-5 -ENABLED | pfe-6 -ENABLED | pfe-7 -ENABLED |
```

Meaning

The sample output shows **Fatal** error at FPC **0** with **0** error **Occurred** (no previous occurrences), **0** error **Cleared** (no previous occurrences) with **Threshold** value set to **1** and **Action-Taken** set to **RESET**.

Managing FPC Errors

IN THIS SECTION

- Modifying Severity of an Error | **191**
- Disabling an Error | **192**

On the PTX10001 routers, you can disable an FPC error or modify the severity of the error at the error-id level. The error-id, which uniquely identifies an FPC error, is represented in the uniform resource identifier (URI) format and is composed of a module identifier and an error identifier. If an error occurs, you can find the error-id in the system log messages.

Modifying Severity of an Error

Though you cannot configure a new error severity, you can modify the existing severity of an error. For example, if you do not want to treat a particular error (identified by an error-id) as fatal anymore, you can modify its severity to major or minor as required.

NOTE: You cannot modify the error severity at a group (for example, category) level.

To modify the severity of an error, use the following command:

`user@host#` **set chassis fpc *fpc-slot* error *error-id* severity *new-severity***

See the following example:

`user@host#` **set chassis fpc 3 error "/cpu/0/memory/0/ECC_CORRECTED_ERROR" severity minor**

In the above example, you modified the severity of the error ID **"/cpu/0/memory/0/memory-uncorrected-error"** in FPC 3 to **minor**.

Disabling an Error

To configure the system to stop reporting an error, identify the error-id and disable it. You can find the error-id in the system log messages. To disable an error, use the following command:

`user@host#` **set chassis fpc *fpc-slot* error *error-id* state disable**

See the following example:

`user@host#` **set chassis fpc 3 error "/cpu/0/memory/0/ECC_CORRECTED_ERROR" state disable**

In the above example, you disabled the error **"/cpu/0/memory/0/memory-uncorrected-error"** in FPC 3.

Configuring Sanity Polling

You can configure the **sanity-poll** statement for a particular FPC or FEB or CFEB to start a periodic sanity check for that FPC or FEB or CFEB. The periodic sanity check includes checking for error conditions such as "register sanity issues," "high temperature," "hardware failure," and so on. If you do not configure the **sanity-poll** statement, then sanity polling is disabled.

NOTE: Currently, periodic sanity check is performed only on the routing chip register.

Sanity polling periodically checks for an error condition in an FPC or FEB or CFEB and performs the appropriate actions in case of an error.

- To configure sanity polling for an FPC on T Series routers and M320 routers, include the **sanity-poll** statement and its substatements at the **[edit chassis fpc *slot-number*]** hierarchy level:

```
[edit chassis]
fpc slot-number {
    sanity-poll {
        retry-count number;
        on-error {
            raise-alarm;
            power (cycle | off);
            write-coredump;
        }
    }
}
```

- To configure sanity polling for a FEB on the M120 router, include the **sanity-poll** statement and its substatements at the **[edit chassis feb *slot-number*]** hierarchy level:

```
[edit chassis]
feb slot-number {
    sanity-poll {
        retry-count number;
        on-error {
            raise-alarm;
            power (cycle | off);
            write-coredump;
        }
    }
}
```

- To configure sanity polling for a CFEB on M7i and M10 routers, include the **sanity-poll** statement and its substatements at the **[edit chassis cfeb *slot-number*]** hierarchy level:

```
[edit chassis]
cfeb slot-number {
    sanity-poll {
        retry-count number;
        on-error {
            raise-alarm;
            power (cycle | off);
            write-coredump;
        }
    }
}
```

NOTE: On a TX Matrix or TX Matrix Plus router, you can configure the **sanity-poll** statement at the **[edit chassis lcc *number* fpc *number*]** hierarchy level.

The **sanity-poll** statement comprises the following substatements:

- The **retry-count** statement specifies the number of rechecks to be performed after the occurrence of a particular error condition. If an error exists in all the periodic checks, then sanity polling reports an error and proceeds to perform the appropriate actions (described as options of the **on-error** statement).

  For example, if the periodic sanity check detects an error in the FPC or FEB or CFEB and if you configure the **retry count *number*** to 15, sanity polling does not report the error immediately. Sanity polling checks 15 times for the same error condition. If an error persists in all 15 rechecks, then it reports an error and takes the appropriate actions.

  If you do not configure the **retry-count** statement, then by default, the **sanity-poll** statement rechecks the detected error 10 times before reporting an error condition.

- If sanity polling detects an error condition, the **on-error** statement performs the appropriate actions to eliminate the error.

  The following actions are common to all kinds of error conditions:

  - To generate a chassis alarm, configure the **raise-alarm** statement. The chassis alarm is displayed in the front panel of the chassis.
  - To reboot the FPC or FEB or CFEB after generating a core file, configure the **power cycle** statement. This statement is useful for temporary software errors that are eliminated after reboot.
  - To halt the FPC or FEB or CFEB, configure the **power off** statement. This statement is useful in case of permanent hardware failure.

    CAUTION: The **power off** statement halts the FPC. Ensure that you have backup paths through a different FPC or FEB or CFEB to avoid service outage.

    NOTE: The **power cycle** and **power off** statements are mutually exclusive: You can configure either the **power cycle** or the **power off** action for an error.

  - To trigger the core file, configure the **write-coredump** statement.

You can configure multiple actions for a given FPC or FEB or CFEB. If you do not configure any actions, the **sanity-poll** statement generates only FPC or FEB or CFEB system log messages.

Configuring the Junos OS to Make a Flexible PIC Concentrator Stay Offline

By default, a Flexible PIC Concentrator (FPC) is configured to restart after a system reboot. You can use the **request chassis fpc** operational mode command to take an FPC offline, but on Junos OS the FPC attempts to restart when you enter a **commit** CLI command. To configure an FPC to stay offline and prevent it from restarting, include the **power off** statement at the **[edit chassis fpc *slot-number*]** hierarchy level:

```
[edit chassis fpc slot-number]
power off;
```

To bring an FPC online that is configured to stay offline and configure it to stay online, include the **power on** statement at the **[edit chassis fpc *slot-number*]** hierarchy level:

```
[edit chassis fpc slot-number]
power on;
```

SEE ALSO

Configuring an SFM to Stay Offline | 195

request chassis fpc | 623

Configuring an SFM to Stay Offline

By default, if you use the **request chassis sfm** CLI command to take a Switching and Forwarding Module (SFM) offline, the SFM attempts to restart when you enter a **commit** CLI command. To prevent a restart, you can configure an SFM to stay offline. This feature is useful for repair situations.

To configure an SFM to stay offline, include the **sfm** statement at the **[edit chassis]** hierarchy level:

```
[edit chassis]
sfm slot-number {
    power off;
}
```

- ***slot number***—Slot number in which the SFM is installed.
- **power off**—Take the SFM offline and configure it to remain offline.

For example, the following statement takes an SFM in slot 3 offline:

```
[edit chassis]
sfm 3 power off;
```

Use the **show chassis sfm** CLI command to confirm the offline status:

```
user@host# show chassis sfm
```

```
                Temp    CPU Utilization (%) Memory Utilization (%)
Slot    State   (C)     Total   Interrupt   DRAM (MB)   Heap    Buffer
0       Online  34      2       0           64          16      47
1       Online  38      2       0           64          16      47
2       Online  42      2       0           64          16      47
3       Offline --- Configured power off ---
```

To bring the SFM back online, delete the **edit chassis sfm** statement and then commit the configuration.

Resynchronizing FPC Sequence Numbers with Active FPCs when an FPC Comes Online

On M320, T320, T640, T1600, T4000, TX Matrix, and TX Matrix Plus routers, when you bring a Flexible PIC Concentrator (FPC) online, the sequence number on the FPC may not be synchronized with the other active FPCs in the router, which may result in the loss of a small amount of initial traffic.

To avoid any traffic loss, include the **fpc-resync** statement at the **[edit chassis]** hierarchy level. This ensures that the sequence numbers of the FPC that is brought online is resynchronized with the other active FPCs in the router.

```
[edit chassis]
fpc-resync;
```

NOTE: In order to prevent traffic blackholing, the **fpc-resync** command will have no effect if a single LMNR based FPC and one or more I-chip FPCs exist in the same chassis.

Enabling a Routing Engine to Reboot on Hard Disk Errors

When a hard disk error occurs, a Routing Engine might enter a state in which it responds to local pings and interfaces remain up, but no other processes are responding.

To recover from this situation, you can configure a single Routing Engine to reboot automatically when a hard disk error occurs. To enable this feature, include the **on-disk-failure reboot** statement at the **[edit chassis routing-engine]** hierarchy level.

```
[edit chassis routing-engine]
on-disk-failure {
    disk-failure-action (halt | reboot);
}
```

For dual Routing Engine environments, you can configure a backup Routing Engine to assume mastership automatically, if it detects a hard disk error on the master Routing Engine. To enable this feature, include the **on-disk-failure** statement at the **[edit chassis redundancy failover]** hierarchy level. For information about this statement, see the *High Availability Feature Guide*.

You can configure the Routing Engine to halt (instead of rebooting) when the hard disk fails on the Routing Engine. To configure this feature, include the **disk-failure-action (halt | reboot)** statement at the **[edit chassis routing-engine on-disk-failure]** hierarchy level:

```
[edit chassis routing-engine]
on-disk-failure {
    disk-failure-action (halt | reboot);
}
```

Use the **halt** option to configure the Routing Engine to halt when the hard disk fails. Use the **reboot** option to configure the Routing Engine to reboot when the hard disk fails.

Release History Table

Release	Description
13.3	Starting with Junos OS Release 13.3 or Release 14.2 for M320 routers, you can use MX Series, PTX Series, and T Series routers to configure Packet Forwarding Engine (PFE)-related error levels on FPCs and the actions to perform when a specified threshold is reached.

RELATED DOCUMENTATION

Fabric Resiliency and Degradation | 114

Understanding Chassis Alarms

IN THIS SECTION

- Chassis Alarms | **198**
- Chassis Conditions That Trigger Alarms | **208**
- Configuring Slow Packet Forwarding Engine Alarm | **259**
- User-Defined Alarm Relay Overview | **262**
- Configuring Chassis Alarm Relays | **263**
- Configuring Chassis Alarm Input | **264**
- Configuring Chassis Alarm Output | **266**

Chassis Alarms

Table 12 on page 198 and Table 13 on page 203 list the chassis-related alarms that are displayed when you execute the **show chassis alarms** operational mode command on PTX Series routers.

Table 12: Chassis Alarms for PTX5000 series routers

Message displayed in the output of **show chassis alarms** Command	Description	Class	Solution
Mix of PDUs	Appears when AC PDUs and DC PDUs are installed. Also appears when zoning and non- zoning PDUs are installed.	Minor	Install same type of PDUs in all slots.
Power Manager Non Operational)	Appears when zoning and non- zoning PDUs are installed.	Minor	Install same type of PDUs in all slots.

Table 12: Chassis Alarms for PTX5000 series routers *(continued)*

Message displayed in the output of **show chassis alarms** Command	Description	Class	Solution
No Redundant Power	When backup PDUs are absent or down	Minor	Install backup PDU.
PDU 0/1 Converter Failed	Appears when one or more 36V booster converter fails in PDU (PDU2-PTX-DC).	Major	Check PDU and replace if required.
No redundant power for system	Appears when there is no backup PDUs in the router	Minor	Install backup PDU.
No Power for System	Appears when the router is powered on with only one PSM.	Major	Install backup PDU.
SIB 1 FPC Link Error	Appears when the indicated SIB is down.	Minor	Replace faulty SIB.
SIB 1 Absent	Appears when the indicated SIB is absent.	Major	Replace faulty SIB.
PDU 1 PSM 1 Not OK	Appears when the PSM in the displayed PDU is down.	Major	Replace faulty PSM.
Host x disk drive y smart error	Appears when there is an issue with the internal state of the disk such as, the disk life remaining is below the threshold. • *x*–0 for Host 0 (RE0) and 1 for Host 1 (RE1) • *y*–1 for disk 1 and 2 for disk 2	Minor	Replace the disk.
VMHost x Boot from alternate set	Appears when the Routing Engine is booted from the alternate set.	Minor	Verify logs. As required, recover the Routing Engine by using the command **request vmhost snapshot**

Table 12: Chassis Alarms for PTX5000 series routers *(continued)*

Message displayed in the output of **show chassis alarms** Command	Description	Class	Solution
VMHost RE x host application failed	Appears when one of the vmhost daemon has failed.	Minor	Manual mastership switchover followed by reboot using the command **request vmhost reboot**.
VMHost Boot from alternate disk	Appears when the primary disk is corrupted and unable to launch the guest.	Minor	Recover the disk by using the command **request vmhost snapshot recovery**.
Host 0/1 CPU Temperature Warm	Appears when the Routing Engine CPU temperature is above the TCONTROL threshold. 0 for Host 0 (RE0) and 1 for Host 1 (RE1)	Minor	No recovery action required from the user. Based on the temperature, the fan speed is changed to cool the system, thereby reducing the temperature.
Host 0/1 CPU Temperature Hot	Appears when the Routing Engine CPU temperature is above the PROCHOT threshold. 0 for Host 0 (RE0) and 1 for Host 1 (RE1)	Minor	No recovery action required from the user. Based on the temperature, the fan speed is changed to cool the system, thereby reducing the temperature.
Host 0/1 ECC single bit parity error	Appears when single bit ECC error is above the threshold value. 0 for Host 0 (RE0) and 1 for Host 1 (RE1)	Major	No recovery action required from the user. The count gets reset after 24 hours.
Host 0 ECC 53 parity error	Appears when multiple bit Error Checking and Correction (ECC) error is above the threshold value.	Major	Reboot the router.

Table 12: Chassis Alarms for PTX5000 series routers *(continued)*

Message displayed in the output of **show chassis alarms** Command	Description	Class	Solution
VMHost RE x Disk y Missing	Appears when the disk in the Routing Engine is missing. • *x*–0 for RE0 and 1 for RE1 • *y*–1 for disk 1 and 2 for disk 2	Minor	Check if there is missing or a defective disk. Insert healthy disk. Take a snapshot and recover the disk by using the command **request vmhost snapshot**. See *Disk Recovery Using the VM Host Snapshot* in *Installing, Upgrading, Backing Up, and Recovery of VM Host*
VMHost RE x Disk y Label Missing	Appears when the labels on the disk in the Routing Engine is missing. • *x*–0 for RE0 and 1 for RE1 • *y*–1 for disk 1 and 2 for disk 2	Minor	Reboot the Routing-Engine from healthy disk and recover the impacted disk using the command **request vmhost snapshot**.
VMHost RE x Disk y Wrong Slot	Appears when there is disk swap or pre-lablled disk inserted in wrong slot. • *x*–0 for RE0 and 1 for RE1 • *y*–1 for disk 1 and 2 for disk 2	Minor	If both the disks are in wrong slot, swap the disks and reboot. If only one disk is in wrong slot, recover the disk via snapshot after booting from healthy disk.
VMHost RE x Disk y File System Errors	Appears when there is a file system error. • *x*–0 for RE0 and 1 for RE1 • *y*–1 for disk 1 and 2 for disk 2	Minor	Boot the Routing-engine from healthy disk and recover the impacted disk using the command **request vmhost snapshot**.

Table 12: Chassis Alarms for PTX5000 series routers *(continued)*

Message displayed in the output of **show chassis alarms** Command	Description	Class	Solution
VMHost RE x Disk y Write Rate Threshold Cross	Appears if write rate threshold is crossed. • *x*–0 for RE0 and 1 for RE1 • *y*–1 for disk 1 and 2 for disk 2	Minor	Identify the application that is generating excessive writes and apply configuration changes to prevent excessive writes.
VMHost RE x Disk y Size Incorrect	Appears if the size of the disk is not appropriate for the platform. • *x*–0 for RE0 and 1 for RE1 • *y*–1 for disk 1 and 2 for disk 2	Minor	Insert an disk of the right size and reboot the Routing Engine.
VMHost RE x Disk y Usage Is Above Threshold	Appears when the usage of the disk partition is above the threshold limit. • *x*–0 for RE0 and 1 for RE1 • *y*–1 for disk 1 and 2 for disk 2	Minor	Cleanup the disks using **request vmhost cleanup** command.
VMHost RE x Secure Boot Disabled	Appears when Secure Boot is not enforced in the BIOS.	Medium	Enable Secure Boot in the BIOS.
VMHost RE x Secure BIOS Version Mismatch	Appears when current BIOS version is older than the Last Known good BIOS version.	Medium	Upgrade the BIOS using the **request system firmware** command.

Table 12: Chassis Alarms for PTX5000 series routers *(continued)*

Message displayed in the output of **show chassis alarms** Command	Description	Class	Solution
RE x Mismatch in total memory detected	Appears when total memory for the pair of Routing Engines does not match, possibly because a memory module has failed.	Medium	Check the available RAM size using **show vmhost hardware** command. If the RAM size for the pair of Routing Engines does not match, contact JTAC.

Table 13: Chassis Alarms for PTX10008 and PTX10016 routers

Message displayed in the output of **show chassis alarms** Command	Description	Class	Solution
FPC x need bounce	Appears when port speed configuration needs an FPC reboot for the new speed configuration to take effect. • *x*-FPC slot number.	Minor	Do one of the following to clear the alarm. • Manually reboot the FPC for the new port speed configuration to take effect. • Delete the new port speed configuration that has triggered the alarm. In this case, the new port speed configuration will not take effect.

Table 13: Chassis Alarms for PTX10008 and PTX10016 routers *(continued)*

Message displayed in the output of **show chassis alarms** Command	Description	Class	Solution
PEM *pem-slot* No Power	Appears when both power supplies are not connected and the enable switch is not set correctly.	Major	Check power supply input connection and the enable switch setting. See the dip switch and enable switch settings for your specific power supply model, *Removing and Installing MX10000 Power System Components*.
PEM *pem-slot* feed *feed-slot* no input	Appears when both power supplies are not connected but the enable switch is set to on.	Major	
PEM *pem-slot* feed *feed-slot* Switch Cfg Wrong	Appears when either both power supplies are connected or one of the power supplies is connected but the enable switch is not set correctly.	Major	

Table 14 on page 204 lists the chassis-related alarms that are displayed when you execute the **show chassis alarms** operational mode command on MX Series routers

Table 14: Chassis Alarms for MX series routers

Message displayed in the output of **show chassis alarms** Command	Description	Class	Solution
Host x disk drive y smart error	Appears when there is an issue with the internal state of the disk such as, the disk life remaining is below the threshold. • *x*–0 for Host 0 (RE0) and 1 for Host 1 (RE1) • *y*–1 for disk 1 and 2 for disk 2	Minor	Replace the disk.

Table 14: Chassis Alarms for MX series routers *(continued)*

Message displayed in the output of **show chassis alarms** Command	Description	Class	Solution
VMHost x Boot from alternate set	Appears when the Routing Engine is booted from the alternate set.	Minor	Verify logs. As required, recover the Routing Engine by using the command **request vmhost snapshot**
VMHost RE x host application failed	Appears when one of the vmhost daemon has failed.	Minor	Manual mastership switchover followed by reboot using the command **request vmhost reboot**.
VMHost Boot from alternate disk	Appears when the primary disk is corrupted and unable to launch the guest.	Minor	Recover the disk by using the command **request vmhost snapshot recovery**.
Host 0/1 CPU Temperature Warm	Appears when the Routing Engine CPU temperature is above the TCONTROL threshold. 0 for Host 0 (RE0) and 1 for Host 1 (RE1)	Minor	No recovery action required from the user. Based on the temperature, the fan speed is changed to cool the system thereby reducing the temperature
Host 0/1 CPU Temperature Hot	Appears when the Routing Engine CPU temperature is above the PROCHOT threshold. 0 for Host 0 (RE0) and 1 for Host 1 (RE1)	Minor	No recovery action required from the user. Based on the temperature, the fan speed is changed to cool the system thereby reducing the temperature
Host 0/1 ECC single bit parity error	Appears when single bit ECC error is above the threshold value. 0 for Host 0 (RE0) and 1 for Host 1 (RE1)	Major	No recovery action required from the user. The count gets reset after 24 hours.
Host 0 ECC 53 parity error	Appears when multiple bit ECC error is above the threshold value.	Major	Reboot the router.

Table 14: Chassis Alarms for MX series routers *(continued)*

Message displayed in the output of **show chassis alarms** Command	Description	Class	Solution
Mixed Master and Backup RE types	Appears when dissimilar Routing Engines are present on the chassis.	Major	Both Routing Engines must be of the same model number. Replace one of the Routing Engines.
VMHost RE x Disk y Missing	Appears when the disk in the Routing Engine is missing. • *x*–0 for RE0 and 1 for RE1 • *y*–1 for disk 1 and 2 for disk 2	Minor	Check if there is missing or a defective disk. Insert healthy disk. Take a snapshot and recover the disk by using the command **request vmhost snapshot**. See *Disk Recovery Using the VM Host Snapshot* in *Installing, Upgrading, Backing Up, and Recovery of VM Host*
VMHost RE x Disk y Label Missing	Appears when the labels on the disk in the Routing Engine is missing. • *x*–0 for RE0 and 1 for RE1 • *y*–1 for disk 1 and 2 for disk 2	Minor	Reboot the Routing-Engine from healthy disk and recover the impacted disk using the command **request vmhost snapshot**.
VMHost RE x Disk y Wrong Slot	Appears when there is disk swap or pre-lablled disk inserted in wrong slot. • *x*–0 for RE0 and 1 for RE1 • *y*–1 for disk 1 and 2 for disk 2	Minor	If both the disks are in wrong slot, swap the disks and reboot. If only one disk is in wrong slot, recover the disk via snapshot after booting from healthy disk.

Table 14: Chassis Alarms for MX series routers *(continued)*

Message displayed in the output of **show chassis alarms** Command	Description	Class	Solution
VMHost RE x Disk y File System Errors	Appears when there is a file system error. • *x*–0 for RE0 and 1 for RE1 • *y*–1 for disk 1 and 2 for disk 2	Minor	Boot the Routing-engine from healthy disk and recover the impacted disk using the command **request vmhost snapshot**.
VMHost RE x Disk y Write Rate Threshold Cross	Appears if write rate threshold is crossed. • *x*–0 for RE0 and 1 for RE1 • *y*–1 for disk 1 and 2 for disk 2	Minor	Identify the application that is generating excessive writes and apply configuration changes to prevent the excessive writes.
VMHost RE x Disk y Size Incorrect	Appears if the size of the disk is not appropriate for the platform. • *x*–0 for RE0 and 1 for RE1 • *y*–1 for disk 1 and 2 for disk 2	Minor	Insert an disk of the right size and reboot the Routing Engine.
VMHost RE x Disk y Usage Is Above Threshold	Appears when the usage of the disk partition is above the threshold limit. • *x*–0 for RE0 and 1 for RE1 • *y*–1 for disk 1 and 2 for disk 2	Minor	Cleanup the disks using **request vmhost cleanup** command.
VMHost RE x Secure Boot Disabled	Appears when Secure Boot is not enforced in the BIOS.	Medium	Enable Secure Boot in the BIOS.

Table 14: Chassis Alarms for MX series routers *(continued)*

Message displayed in the output of **show chassis alarms** Command	Description	Class	Solution
VMHost RE x Secure BIOS Version Mismatch	Appears when current BIOS version is older than the Last Known good BIOS version.	Medium	Upgrade the BIOS using the **request system firmware** command.
RE x Mismatch in total memory detected	Appears when total memory for the pair of Routing Engines does not match, possibly because a memory module has failed.	Medium	Check the available RAM size using **show vmhost hardware** command. If the RAM size for the pair of Routing Engines does not match, contact JTAC.

SEE ALSO

show chassis alarms | **703**

Chassis Conditions That Trigger Alarms

Various conditions related to the chassis components trigger yellow and red alarms. You cannot configure these conditions.

- Backup Routing Engine Alarms on page 255
- Chassis Component Alarm Conditions on M5 and M10 Routers on page 209
- Chassis Component Alarm Conditions on M7i and M10i Routers on page 213
- Chassis Component Alarm Conditions on M20 Routers on page 218
- Chassis Component Alarm Conditions on M40 Routers on page 223
- Chassis Component Alarm Conditions on M40e and M160 Routers on page 229
- Chassis Component Alarm Conditions on M120 Routers on page 236
- Chassis Component Alarm Conditions on M320 Routers on page 242
- Chassis Component Alarm Conditions on MX Series 5G Universal Routing Platforms on page 248

- Chassis Component Alarm Conditions for Guest Network Functions (GNFs) on page 257
- For PTX5000 Packet Transport Router chassis component alarm conditions, see the *PTX5000 Packet Transport Router Hardware Guide*
- For T320 Core Router chassis component alarm conditions, see the *T320 Core Router Hardware Guide*
- For T640 Core Router chassis component alarm conditions, see the *T640 Core Router Hardware Guide*
- For T1600 Core Router chassis component alarm conditions,sSee the *T1600 Core Router Hardware Guide*
- For T4000 Core Router chassis component alarm conditions, see the *T4000 Core Router Hardware Guide*
- For TX Matrix chassis component alarm conditions, see the *TX Matrix Router Hardware Guide*
- For TX Matrix Plus chassis component alarm conditions, see the *TX Matrix Plus Router Hardware Guide*

Chassis Component Alarm Conditions on M5 and M10 Routers

Table 15 on page 209 lists the alarms that the chassis components can generate on M5 and M10 routers.

Table 15: Chassis Component Alarm Conditions on M5 and M10 Routers

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Alternative media	The router boots from an alternate boot device, the hard disk. The CompactFlash card is typically the primary boot device. The Routing Engine boots from the hard disk when the primary boot device fails.	Open a support case using the Case Manager link at www.juniper.net/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States).	Yellow
Craft interface	The craft interface has failed.	Replace failed craft interface.	Red

Table 15: Chassis Component Alarm Conditions on M5 and M10 Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Fan trays	One fan tray has been removed from the chassis.	Install missing fan tray.	Yellow
	Two or more fan trays have been removed from the chassis.	Install missing fan trays.	Red
	One fan in the chassis is not spinning or is spinning below required speed.	Replace failed fan tray.	Red
Forwarding Engine Board (FEB)	The control board has failed. If this occurs, the board attempts to reboot.	Replace failed FEB.	Red
Flexible PIC Concentrator (FPC)	An FPC has failed. If this occurs, the FPC attempts to reboot. If the FEB sees that an FPC is rebooting too often, it shuts down the FPC.	Replace failed FPC.	Red
Hot swapping	Too many hot-swap interrupts are occurring. This message generally indicates that a hardware component that plugs into the router's backplane from the front (generally, an FPC) is broken.	Replace failed component.	Red

Table 15: Chassis Component Alarm Conditions on M5 and M10 Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Routing Engine	Error in reading or writing CompactFlash card.	Reformat CompactFlash card and install bootable image. If this fails, replace failed Routing Engine.	Yellow
	System booted from hard disk.	Install bootable image on CompactFlash card. If this fails, replace failed Routing Engine.	Yellow
	CompactFlash card missing in boot list.	Replace failed Routing Engine.	Red
	Hard disk missing in boot list.	Replace failed Routing Engine.	Red
	The Ethernet management interface (**fxp0** or **em0**) on the Routing Engine is down.	• Check the interface cable connection. • Reboot the system. • If the alarm recurs, open a support case using the Case Manager link at https://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States)	Red
Power supplies	A power supply has been removed from the chassis.	Install missing power supply.	Yellow
	A power supply has failed.	Replace failed power supply.	Red

Table 15: Chassis Component Alarm Conditions on M5 and M10 Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Temperature	The chassis temperature has exceeded 55 degrees C (131 degrees F), the fans have been turned on to full speed, and one or more fans have failed.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Yellow
	The chassis temperature has exceeded 65 degrees C (149 degrees F), and the fans have been turned on to full speed.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Yellow
	The chassis temperature has exceeded 65 degrees C (149 degrees F), and a fan has failed. If this condition persists for more than 4 minutes, the router shuts down.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Red
	The chassis temperature has exceeded 75 degrees C (167 degrees F). If this condition persists for more than 4 minutes, the router shuts down.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Red
	The temperature sensor has failed.	Open a support case using the Case Manager link at www.juniper.net/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States).	Red

Chassis Component Alarm Conditions on M7i and M10i Routers

Table 16 on page 213 lists the alarms that the chassis components can generate on M7i and M10i routers.

Table 16: Chassis Component Alarm Conditions on M7i and M10i Routers

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Alternative media	The router boots from an alternate boot device, the hard disk. The CompactFlash card is typically the primary boot device. The Routing Engine boots from the hard disk when the primary boot device fails.	Open a support case using the Case Manager link at https://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States).	Yellow
Compact FEB (CFEB)	For an M7i router, CFEB has failed. If this occurs, the board attempts to reboot.	Replace failed CFEB.	Red
	For an M10i router, both control boards have been removed or have failed.	Replace failed or missing CFEB.	Red
	Too many hard errors in CFEB memory.	Replace failed CFEB.	Red
	Too many soft errors in CFEB memory.	Replace failed CFEB.	Red
	A CFEB microcode download has failed.	Replace failed CFEB.	Red
Fan trays	A fan has failed.	Replace failed fan tray.	Red
	For an M7i router, a fan tray has been removed from the chassis.	Install missing fan tray.	Red
	For an M10i router, both fan trays are absent from the chassis.	Install missing fan tray.	Red

Table 16: Chassis Component Alarm Conditions on M7i and M10i Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
	For a TX Matrix Plus router, fan tray is not matching the ST-SIB-Ls SIB.	Install a Rev.3 fan tray.	Red
Hot swapping	Too many hot-swap interrupts are occurring. This message generally indicates that a hardware component that plugs into the router's midplane from the front is broken.	Replace failed component.	Red
Power supplies	A power supply has been removed.	Insert missing power supply.	Yellow
	A power supply has failed.	Replace failed power supply.	Red
	For an M10i router, only one power supply is operating.	Insert or replace secondary power supply.	Red

Table 16: Chassis Component Alarm Conditions on M7i and M10i Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Routing Engine	Excessive framing errors on console port. An excessive framing error alarm is triggered when the default framing error threshold of 20 errors per second on a serial port is exceeded. This might be caused by a faulty serial console port cable connected to the device.	Replace the serial cable connected to the device. If the cable is replaced and no excessive framing errors are detected within 5 minutes from the last detected framing error, the alarm is cleared automatically.	Yellow
	Error in reading or writing hard disk.	Reformat hard disk and install bootable image. If this fails, replace failed Routing Engine.	Yellow
	Error in reading or writing CompactFlash card.	Reformat CompactFlash card and install bootable image. If this fails, replace failed Routing Engine.	Yellow
	System booted from hard disk. This alarm only applies, if you have an optional CompactFlash card.	Install bootable image on CompactFlash card. If this fails, replace failed Routing Engine.	Yellow
	CompactFlash card missing in boot list.	Replace failed Routing Engine.	Red
	Hard disk missing in boot list.	Replace failed Routing Engine.	Red
	Routing Engine failed to boot.	Replace failed Routing Engine.	Red
			Red

Table 16: Chassis Component Alarm Conditions on M7i and M10i Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
	The Ethernet management interface (**fxp0** or **em0**) on the Routing Engine is down.	• Check the interface cable connection. • Reboot the system. • If the alarm recurs, open a support case using the Case Manager link at https://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States)	

Table 16: Chassis Component Alarm Conditions on M7i and M10i Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Temperature	The chassis temperature has exceeded 55 degrees C (131 degrees F), the fans have been turned on to full speed, and one or more fans have failed.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Yellow
	The chassis temperature has exceeded 65 degrees C (149 degrees F), and the fans have been turned on to full speed.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Yellow
	The chassis temperature has exceeded 65 degrees C (149 degrees F), and a fan has failed. If this condition persists for more than 4 minutes, the router shuts down.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Red
	The chassis temperature has exceeded 75 degrees C (167 degrees F). If this condition persists for more than 4 minutes, the router shuts down.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Red
	The temperature sensor has failed.	Open a support case using the Case Manager link at https://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States).	Red

Chassis Component Alarm Conditions on M20 Routers

Table 17 on page 218 lists the alarms that the chassis components can generate on M20 routers.

Table 17: Chassis Component Alarm Conditions on M20 Routers

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Alternative media	The router boots from an alternate boot device, the hard disk. The CompactFlash card is typically the primary boot device. The Routing Engine boots from the hard disk when the primary boot device fails.	Open a support case using the Case Manager link at https://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States).	Yellow
Craft interface	The craft interface has failed.	Replace failed craft interface.	Red
Fan trays	One fan tray has been removed from the chassis.	Install missing fan tray.	Yellow
	Two or more fan trays have been removed from the chassis.	Install missing fan trays.	Red
	One fan in the chassis is not spinning or is spinning below requires speed.	Replace fan tray.	Red
FPC	An FPC has failed. If this occurs, the FPC attempts to reboot. If the System and Switch Board (SSB) sees that an FPC is rebooting too often, it shuts down the FPC.	Replace failed FPC.	Red

Table 17: Chassis Component Alarm Conditions on M20 Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Hot swapping	Too many hot-swap interrupts are occurring. This message generally indicates that a hardware component that plugs in to the router's backplane from the front (generally, an FPC) is broken.	Replace failed component.	Red

Table 17: Chassis Component Alarm Conditions on M20 Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Routing Engine	Excessive framing errors on console port. An excessive framing error alarm is triggered when the default framing error threshold of 20 errors per second on a serial port is exceeded. This might be caused by a faulty serial console port cable connected to the device.	Replace the serial cable connected to the device. If the cable is replaced and no excessive framing errors are detected within 5 minutes from the last detected framing error, the alarm is cleared automatically.	Yellow
	Error in reading or writing hard disk.	Reformat hard disk and install bootable image. If this fails, replace failed Routing Engine.	Yellow
	Error in reading or writing CompactFlash card.	Reformat CompactFlash card and install bootable image. If this fails, replace failed Routing Engine.	Yellow
	System booted from default backup Routing Engine. If you manually switched mastership, ignore this alarm condition.	Install bootable image on default master Routing Engine. If this fails, replace failed Routing Engine.	Yellow
	System booted from hard disk.	Install bootable image on CompactFlash card. If this fails, replace failed Routing Engine.	Yellow
	CompactFlash card missing in boot list.	Replace failed Routing Engine.	Red
			Red

Table 17: Chassis Component Alarm Conditions on M20 Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
	Hard disk missing in boot list.	Replace failed Routing Engine.	
	The Ethernet management interface (**fxp0** or **em0**) on the Routing Engine is down.	• Check the interface cable connection. • Reboot the system. • If the alarm recurs, open a support case using the Case Manager link at https://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States)	Red
	Routing Engine failed to boot.	Replace failed Routing Engine.	Red
Power supplies	A power supply has been removed from the chassis.	Insert power supply into empty slot.	Yellow
	A power supply has failed.	Replace failed power supply.	Red
SSB	The control board has failed. If this occurs, the board attempts to reboot.	Replace failed control board.	Red

Table 17: Chassis Component Alarm Conditions on M20 Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Temperature	The chassis temperature has exceeded 55 degrees C (131 degrees F), the fans have been turned on to full speed, and one or more fans have failed.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Yellow
	The chassis temperature has exceeded 65 degrees C (149 degrees F), and the fans have been turned on to full speed.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Yellow
	The chassis temperature has exceeded 65 degrees C (149 degrees F), and a fan has failed. If this condition persists for more than 4 minutes, the router shuts down.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Red
	The chassis temperature has exceeded 75 degrees C (167 degrees F). If this condition persists for more than 4 minutes, the router shuts down.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Red
	The temperature sensor has failed.	Open a support case using the Case Manager link at https://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States).	Red

Chassis Component Alarm Conditions on M40 Routers

Table 18 on page 223 lists the alarms that the chassis components can generate on M40 routers.

Table 18: Chassis Component Alarm Conditions on M40 Routers

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Air filter	Change air filter.	Change air filter.	Yellow
Alternative media	The router boots from an alternate boot device, the hard disk. The CompactFlash card is typically the primary boot device. The Routing Engine boots from the hard disk when the primary boot device fails.	Open a support case using the Case Manager link at https://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States).	Yellow
Craft interface	The craft interface has failed.	Replace failed craft interface.	Red
Fan trays	One fan tray has been removed from the chassis.	Install missing fan tray.	Yellow
	Two or more fan trays have been removed from the chassis.	Install missing fan trays.	Red
	One fan in the chassis is not spinning or is spinning below required speed.	Replace fan tray.	Red

Table 18: Chassis Component Alarm Conditions on M40 Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
FPC	An FPC has an out of range or invalid temperature reading.	Replace failed FPC.	Yellow
	An FPC microcode download has failed.	Replace failed FPC.	Red
	An FPC has failed. If this occurs, the FPC attempts to reboot. If the SCB sees that an FPC is rebooting too often, it shuts down the FPC.	Replace failed FPC.	Red
	Too many hard errors in FPC memory.	Replace failed FPC.	Red
	Too many soft errors in FPC memory.	Replace failed FPC.	Red
Hot swapping	Too many hot-swap interrupts are occurring. This message generally indicates that a hardware component that plugs into the router's backplane from the front (generally, an FPC) is broken.	Replace failed component.	Red
Power supplies	A power supply has been removed from the chassis.	Insert power supply into empty slot.	Yellow
	A power supply temperature sensor has failed.	Replace failed power supply or power entry module.	Yellow
	A power supply fan has failed.	Replace failed power supply fan.	Yellow

Table 18: Chassis Component Alarm Conditions on M40 Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
	A power supply has high temperature.	Replace failed power supply or power entry module.	Red
	A 5-V power supply has failed.	Replace failed power supply or power entry module.	Red
	A 3.3-V power supply has failed.	Replace failed power supply or power entry module.	Red
	A 2.5-V power supply has failed.	Replace failed power supply or power entry module.	Red
	A power supply input has failed.	Check power supply input connection.	Red
	A power supply has failed.	Replace failed power supply or power entry module.	Red

Table 18: Chassis Component Alarm Conditions on M40 Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Routing Engine	Excessive framing errors on console port. An excessive framing error alarm is triggered when the default framing error threshold of 20 errors per second on a serial port is exceeded. This might be caused by a faulty serial console port cable connected to the device.	Replace the serial cable connected to the device. If the cable is replaced and no excessive framing errors are detected within 5 minutes from the last detected framing error, the alarm is cleared automatically.	Yellow
	Error in reading or writing hard disk.	Reformat hard disk and install bootable image. If this fails, replace failed Routing Engine.	Yellow
	Error in reading or writing CompactFlash card.	Reformat CompactFlash card and install bootable image. If this fails, replace failed Routing Engine.	Yellow
	System booted from default backup Routing Engine. If you manually switched mastership, ignore this alarm condition.	Install bootable image on default master Routing Engine. If this fails, replace failed Routing Engine.	Yellow
	System booted from hard disk.	Install bootable image on CompactFlash card. If this fails, replace failed Routing Engine.	Yellow
	CompactFlash card missing in boot list.	Replace failed Routing Engine.	Red
			Red

Table 18: Chassis Component Alarm Conditions on M40 Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
	Hard disk missing in boot list.	Replace failed Routing Engine.	
	Routing Engine failed to boot.	Replace failed Routing Engine.	Red
	The Ethernet management interface (**fxp0** or **em0**) on the Routing Engine is down.	• Check the interface cable connection. • Reboot the system. • If the alarm recurs, open a support case using the Case Manager link at https://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States)	Red
SCB	The System Control Board (SCB) has failed. If this occurs, the board attempts to reboot.	Replace failed SCB.	Red

Table 18: Chassis Component Alarm Conditions on M40 Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Temperature	The chassis temperature has exceeded 55 degrees C (131 degrees F), the fans have been turned on to full speed, and one or more fans have failed.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Yellow
	The chassis temperature has exceeded 65 degrees C (149 degrees F), and the fans have been turned on to full speed.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Yellow
	The chassis temperature has exceeded 65 degrees C (149 degrees F), and a fan has failed. If this condition persists for more than 4 minutes, the router shuts down.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Red
	The chassis temperature has exceeded 75 degrees C (167 degrees F). If this condition persists for more than 4 minutes, the router shuts down.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Red
	The temperature sensor has failed.	Open a support case using the Case Manager link at https://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States).	Red

Chassis Component Alarm Conditions on M40e and M160 Routers

Table 19 on page 229 lists the alarms that the chassis components can generate on M40e and M160 routers.

Table 19: Chassis Component Alarm Conditions on M40e and M160 Routers

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Air filter	Change air filter.	Change air filter.	Yellow
Alternative media	The router boots from an alternate boot device, the hard disk. The CompactFlash card is typically the primary boot device. The Routing Engine boots from the hard disk when the primary boot device fails.	Open a support case using the Case Manager link at https://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States).	Yellow
Connector Interface Panel (CIP)	A CIP is missing.	Insert CIP into empty slot.	Red
Craft interface	The craft interface has failed.	Replace failed craft interface.	Red
Fan trays	One fan tray has been removed from the chassis.	Install missing fan tray.	Yellow
	Two or more fan trays have been removed from the chassis.	Install missing fan trays.	Red
	One fan in the chassis is not spinning or spinning below required speed.	Replace fan tray.	Red

Table 19: Chassis Component Alarm Conditions on M40e and M160 Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
FPC	An FPC has an out of range or invalid temperature reading.	Replace failed FPC.	Yellow
	An FPC microcode download has failed.	Replace failed FPC.	Red
	An FPC has failed. If this occurs, the FPC attempts to reboot. If the MCS sees that an FPC is rebooting too often, it shuts down the FPC.	Replace failed FPC.	Red
	Too many hard errors in FPC memory.	Replace failed FPC.	Red
	Too many soft errors in FPC memory.	Replace failed FPC.	Red
Hot swapping	Too many hot-swap interrupts are occurring. This message generally indicates that a hardware component that plugs into the router's backplane from the front (generally, an FPC) is broken.	Replace failed component.	Red
Miscellaneous Control Subsystem (MCS)	An MCS has an out of range or invalid temperature reading.	Replace failed MCS.	Yellow
	MCS0 has been removed.	Reinstall MCS0.	Yellow
	An MCS has failed.	Replace failed MCS.	Red

Table 19: Chassis Component Alarm Conditions on M40e and M160 Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Packet Forwarding Engine Clock Generator (PCG)	A backup PCG is offline.	Set backup PCG online.	Yellow
	A PCG has an out of range or invalid temperature reading.	Replace failed PCG.	Yellow
	A PCG has been removed.	Insert PCG into empty slot.	Yellow
	A PCG has failed to come online.	Replace failed PCG.	Red

Table 19: Chassis Component Alarm Conditions on M40e and M160 Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Routing Engine	Excessive framing errors on console port. An excessive framing error alarm is triggered when the default framing error threshold of 20 errors per second on a serial port is exceeded. This might be caused by a faulty serial console port cable connected to the device.	Replace the serial cable connected to the device. If the cable is replaced and no excessive framing errors are detected within 5 minutes from the last detected framing error, the alarm is cleared automatically.	Yellow
	Error in reading or writing hard disk.	Reformat hard disk and install bootable image. If this fails, replace failed Routing Engine.	Yellow
	Error in reading or writing CompactFlash card.	Reformat CompactFlash card and install bootable image. If this fails, replace failed Routing Engine.	Yellow
	System booted from default backup Routing Engine. If you manually switched mastership, ignore this alarm condition.	Install bootable image on default master Routing Engine. If this fails, replace failed Routing Engine.	Yellow
	System booted from hard disk.	Install bootable image on CompactFlash card. If this fails, replace failed Routing Engine.	Yellow
	CompactFlash card missing in boot list.	Replace failed Routing Engine.	Red
			Red

Table 19: Chassis Component Alarm Conditions on M40e and M160 Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
	Hard disk missing in boot list.	Replace failed Routing Engine.	
	Routing Engine failed to boot.	Replace failed Routing Engine.	Red
	The Ethernet management interface (**fxp0** or **em0**) on the Routing Engine is down.	• Check the interface cable connection. • Reboot the system. • If the alarm recurs, open a support case using the Case Manager link at https://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States)	Red
Power supplies	A power supply has been removed from the chassis.	Insert power supply into empty slot.	Yellow
	A power supply has failed.	Replace failed power supply.	Red

Table 19: Chassis Component Alarm Conditions on M40e and M160 Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Switching and Forwarding Module (SFM)	An SFM has an out of range or invalid temperature reading on SPP.	Replace failed SFM.	Yellow
	An SFM has an out of range or invalid temperature reading on SPR.	Replace failed SFM.	Yellow
	An SFM is offline.	Set SFM online.	Yellow
	An SFM has failed.	Replace failed SFM.	Red
	An SFM has been removed from the chassis.	Insert SFM into empty slot.	Red
	All SFMs are offline or missing from the chassis.	Insert SFMs into empty slots or set all SFMs online.	Red

Table 19: Chassis Component Alarm Conditions on M40e and M160 Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Temperature	The chassis temperature has exceeded 55 degrees C (131 degrees F), the fans have been turned on to full speed, and one or more fans have failed.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Yellow
	The chassis temperature has exceeded 65 degrees C (149 degrees F), and the fans have been turned on to full speed.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Yellow
	The chassis temperature has exceeded 65 degrees C (149 degrees F), and a fan has failed. If this condition persists for more than 4 minutes, the router shuts down.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Red
	The chassis temperature has exceeded 75 degrees C (167 degrees F). If this condition persists for more than 4 minutes, the router shuts down.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Red
	The temperature sensor has failed.	Open a support case using the Case Manager link at https://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States).	Red

Chassis Component Alarm Conditions on M120 Routers

Table 20 on page 236 lists the alarms that the chassis components can generate on M120 routers.

Table 20: Chassis Component Alarm Conditions on M120 Routers

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Air filters	Change air filter.	Change air filter.	Yellow
Alternative media	The router boots from an alternate boot device, the hard disk. The CompactFlash card is typically the primary boot device. The Routing Engine boots from the hard disk when the primary boot device fails.	Open a support case using the Case Manager link at http://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States).	Yellow
Control Board (CB)	A CB Ethernet switch has failed.	Replace failed CB.	Yellow
	A CB has been removed.	Insert CB into empty slot.	Red
	A CB has failed.	Replace failed CB.	Red
Craft interface	The craft interface has failed.	Replace failed craft interface.	Red
Fan trays	One fan tray has been removed from the chassis.	Install missing fan tray.	Yellow
	Two or more fan trays have been removed from the chassis.	Install missing fan trays.	Red
	One fan in the chassis is not spinning or is spinning below required speed.	Replace fan tray.	Red

Table 20: Chassis Component Alarm Conditions on M120 Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Forwarding Engine Boards (FEBs)	A spare FEB has failed.	Replace failed FEB.	Yellow
	A spare FEB has been removed.	Insert FEB into empty slot.	Yellow
	A FEB is offline.	Check FEB. Remove and reinsert the FEB. If this fails, replace failed FEB.	Yellow
	A FEB has failed.	Replace failed FEB.	Red
	A FEB has been removed.	Insert FEB into empty slot.	Red
Host subsystem	A host subsystem has failed.	Replace the host subsystem.	Yellow
	A host subsystem has been removed.	Insert host subsystem into empty slot.	Red
Hot swapping	Too many hot-swap interrupts are occurring. This message generally indicates that a hardware component that plugs into the router's backplane from the front (generally, an FPC) is broken.	Replace failed component.	Red

Table 20: Chassis Component Alarm Conditions on M120 Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Power supplies	A power supply has been removed from the chassis.	Insert power supply into empty slot.	Yellow
	A power supply has a high temperature.	Replace failed power supply or power entry module.	Red
	A power supply input has failed.	Check power supply input connection.	Red
	A power supply output has failed.	Check power supply output connection.	Red
	A power supply has failed.	Replace failed power supply.	Red

Table 20: Chassis Component Alarm Conditions on M120 Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Routing Engine	Excessive framing errors on console port. An excessive framing error alarm is triggered when the default framing error threshold of 20 errors per second on a serial port is exceeded. This might be caused by a faulty serial console port cable connected to the device.	Replace the serial cable connected to the device. If the cable is replaced and no excessive framing errors are detected within 5 minutes from the last detected framing error, the alarm is cleared automatically.	Yellow
	Error in reading or writing hard disk.	Reformat hard disk and install bootable image. If this fails, replace failed Routing Engine.	
	Error in reading or writing CompactFlash card.	Reformat CompactFlash card and install bootable image. If this fails, replace failed Routing Engine.	Yellow
	System booted from default backup Routing Engine. If you manually switched mastership, ignore this alarm condition.	Install bootable image on default master Routing Engine. If this fails, replace failed Routing Engine.	Yellow
	System booted from hard disk.	Install bootable image on CompactFlash card. If this fails, replace failed Routing Engine.	Yellow
	CompactFlash card missing in boot list.	Replace failed Routing Engine.	Red
			Red

Table 20: Chassis Component Alarm Conditions on M120 Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
	Hard disk missing in boot list.	Replace failed Routing Engine.	
	Routing Engine failed to boot.	Replace failed Routing Engine.	Red
	The Ethernet management interface (**fxp0** or **em0**) on the Routing Engine is down.	• Check the interface cable connection. • Reboot the system. • If the alarm recurs, open a support case using the Case Manager link at https://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States)	Red

Table 20: Chassis Component Alarm Conditions on M120 Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Temperature	The chassis temperature has exceeded 55 degrees C (131 degrees F), the fans have been turned on to full speed, and one or more fans have failed.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Yellow
	The chassis temperature has exceeded 65 degrees C (149 degrees F), and the fans have been turned on to full speed.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Yellow
	The chassis temperature has exceeded 65 degrees C (149 degrees F), and a fan has failed. If this condition persists for more than 4 minutes, the router shuts down.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Red
	Chassis temperature has exceeded 75 degrees C (167 degrees F). If this condition persists for more than 4 minutes, the router shuts down.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Red
	The temperature sensor has failed.		Red

Table 20: Chassis Component Alarm Conditions on M120 Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
		Open a support case using the Case Manager link at https://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States).	

Chassis Component Alarm Conditions on M320 Routers

Table 21 on page 242 lists the alarms that the chassis components can generate on M320 routers.

Table 21: Chassis Component Alarm Conditions on M320 Routers

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Air filters	Change air filter.	Change air filter.	Yellow
Alternative media	The router boots from an alternate boot device, the hard disk. The CompactFlash card is typically the primary boot device. The Routing Engine boots from the hard disk when the primary boot device fails.	Open a support case using the Case Manager link at https://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States).	Yellow
Control Board (CB)	A CB has been removed.	Insert CB into empty slot.	Yellow
	A CB temperature sensor alarm has failed.	Replace failed CB.	Yellow
	A CB has failed.	Replace failed CB.	Red

Table 21: Chassis Component Alarm Conditions on M320 Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
CIP	A CIP is missing.	Insert CIP into empty slot.	Red
Craft interface	The craft interface has failed.	Replace failed craft interface.	Red
Fan trays	One fan tray has been removed from the chassis.	Install missing fan tray.	Yellow
	Two or more fan trays have been removed from the chassis.	Install missing fan trays.	Red
	One fan in the chassis is not spinning or is spinning below required speed.	Replace fan tray.	Red
FPC	An FPC has an out of range or invalid temperature reading.	Replace failed FPC.	Yellow
	An FPC microcode download has failed.	Replace failed FPC.	Red
	An FPC has failed. If this occurs, the FPC attempts to reboot. If the CB sees that an FPC is rebooting too often, it shuts down the FPC.	Replace failed FPC.	Red
	Too many hard errors in FPC memory.	Replace failed FPC.	Red
	Too many soft errors in FPC memory.	Replace failed FPC.	Red

Table 21: Chassis Component Alarm Conditions on M320 Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Hot swapping	Too many hot-swap interrupts are occurring. This message generally indicates that a hardware component that plugs into the router's backplane from the front (generally, an FPC) is broken.	Replace failed component.	Red
Power supplies	A power supply has been removed from the chassis.	Insert power supply into empty slot.	Yellow
	A power supply has failed.	Replace failed power supply.	Red

Table 21: Chassis Component Alarm Conditions on M320 Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Routing Engine	Excessive framing errors on console port. An excessive framing error alarm is triggered when the default framing error threshold of 20 errors per second on a serial port is exceeded. This might be caused by a faulty serial console port cable connected to the device.	Replace the serial cable connected to the device. If the cable is replaced and no excessive framing errors are detected within 5 minutes from the last detected framing error, the alarm is cleared automatically.	Yellow
	Error in reading or writing hard disk.	Reformat hard disk and install bootable image. If this fails, replace failed Routing Engine.	Yellow
	Error in reading or writing CompactFlash card.	Reformat CompactFlash card and install bootable image. If this fails, replace failed Routing Engine.	Yellow
	System booted from default backup Routing Engine. If you manually switched mastership, ignore this alarm condition.	Install bootable image on default master Routing Engine. If this fails, replace failed Routing Engine.	Yellow
	System booted from hard disk.	Install bootable image on CompactFlash card. If this fails, replace failed Routing Engine.	Yellow
	CompactFlash card missing in boot list.	Replace failed Routing Engine.	Red

Table 21: Chassis Component Alarm Conditions on M320 Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
	Hard disk missing in boot list.	Replace failed Routing Engine.	Red
	Routing Engine failed to boot.	Replace failed Routing Engine.	Red
	A spare SIB is missing.	Insert spare SIB in to empty slot.	Yellow
	The Ethernet management interface (**fxp0** or **em0**) on the Routing Engine is down.	• Check the interface cable connection. • Reboot the system. • If the alarm recurs, open a support case using the Case Manager link at https://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States)	Red

Table 21: Chassis Component Alarm Conditions on M320 Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Switch Interface Board (SIB)	A SIB has failed.	Replace failed SIB.	Yellow
	A spare SIB has failed.	Replace failed SIB.	Yellow
	A SIB has an out of range or invalid temperature reading.	Replace failed SIB.	Yellow
	A SIB is missing.	Insert SIB into empty slot.	Red
	A SIB has failed.	Replace failed SIB.	Red
	The chassis temperature has exceeded 55 degrees C (131 degrees F), the fans have been turned on to full speed, and one or more fans have failed.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Yellow

Table 21: Chassis Component Alarm Conditions on M320 Routers *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Temperature	The chassis temperature has exceeded 65 degrees C (149 degrees F), and the fans have been turned on to full speed.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Yellow
	The chassis temperature has exceeded 65 degrees C (149 degrees F), and a fan has failed. If this condition persists for more than 4 minutes, the router shuts down.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Red
	Chassis temperature has exceeded 75 degrees C (167 degrees F). If this condition persists for more than 4 minutes, the router shuts down.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Red
	The temperature sensor has failed.	Open a support case using the Case Manager link at https://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States).	Red

Chassis Component Alarm Conditions on MX Series 5G Universal Routing Platforms

Table 22 on page 249 lists the alarms that the chassis components can generate on MX Series 5G Universal Routing Platforms.

Table 22: Chassis Component Alarm Conditions on MX Series 5G Universal Routing Platforms

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Air filters	Change air filter.	Change air filter.	Yellow
Alternative media	The router boots from an alternate boot device, the hard disk. The CompactFlash card is typically the primary boot device. The Routing Engine boots from the hard disk when the primary boot device fails.	Open a support case using the Case Manager link at https://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States).	Yellow
Craft interface	The craft interface has failed.	Replace failed craft interface.	Red
Dense Port Concentrators (DPC)s	A DPC is offline.	Check DPC. Remove and reinsert the DPC. If this fails, replace failed DPC.	Yellow
	A DPC has failed.	Replace failed DPC.	Red
	A DPC has been removed.	Insert DPC into empty slot.	Red
Fan trays	A fan tray has been removed from the chassis.	Install missing fan tray.	Red
	One fan in the chassis is not spinning or is spinning below required speed.	Replace fan tray.	Red
	A higher-cooling capacity fan tray is required when an MPC is installed on the chassis.	Upgrade to a high-capacity fan tray.	Yellow
Host subsystem	A host subsystem has been removed.	Insert host subsystem into empty slot.	Yellow
	A host subsystem has failed.	Replace failed host subsystem.	Red

Table 22: Chassis Component Alarm Conditions on MX Series 5G Universal Routing Platforms *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Hot swapping	Too many hot-swap interrupts are occurring. This message generally indicates that a hardware component that plugs into the router's backplane from the front (generally, an FPC) is broken.	Replace failed component.	Red

Table 22: Chassis Component Alarm Conditions on MX Series 5G Universal Routing Platforms *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Power supplies	A power supply has been removed from the chassis.	Insert power supply into empty slot.	Yellow
	A power supply has a high temperature.	Replace failed power supply or power entry module.	Red
	A power supply input has failed.	Check power supply input connection.	Red
	A power supply output has failed.	Check power supply output connection.	Red
	A power supply has failed.	Replace failed power supply.	Red
	Invalid AC power supply configuration.	When two AC power supplies are installed, insert one power supply into an odd-numbered slot and the other power supply into an even-numbered slot.	Red
	Invalid DC power supply configuration.	When two DC power supplies are installed, insert one power supply into an odd-numbered slot and the other power supply into an even-numbered slot.	Red
	Mix of AC and DC power supplies.	Do not mix AC and DC power supplies. For DC power, remove the AC power supply. For AC power, remove the DC power supply.	Red
	Not enough power supplies.	Install an additional power supply.	Red

Table 22: Chassis Component Alarm Conditions on MX Series 5G Universal Routing Platforms *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Routing Engine	Excessive framing errors on console port. An excessive framing error alarm is triggered when the default framing error threshold of 20 errors per second on a serial port is exceeded. This might be caused by a faulty serial console port cable connected to the device.	Replace the serial cable connected to the device. If the cable is replaced and no excessive framing errors are detected within 5 minutes from the last detected framing error, the alarm is cleared automatically.	Yellow
	Error in reading or writing hard disk.	Reformat hard disk and install bootable image. If this fails, replace failed Routing Engine.	Yellow
	Error in reading or writing CompactFlash card.	Reformat CompactFlash card and install bootable image. If this fails, replace failed Routing Engine.	Yellow
	System booted from default backup Routing Engine. If you manually switched mastership, ignore this alarm condition.	Install bootable image on default master Routing Engine. If this fails, replace failed Routing Engine.	Yellow
	System booted from hard disk.	Install bootable image on CompactFlash card. If this fails, replace failed Routing Engine.	Yellow
	CompactFlash card missing in boot list.	Replace failed Routing Engine.	Red
	Hard disk missing in boot list.	Replace failed Routing Engine.	Red

Table 22: Chassis Component Alarm Conditions on MX Series 5G Universal Routing Platforms *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
	Routing Engine failed to boot.	Replace failed Routing Engine.	Red
	The Ethernet management interface (**fxp0** or **em0**) on the Routing Engine is down.	• Check the interface cable connection. • Reboot the system. • If the alarm recurs, open a support case using the Case Manager link at https://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States)	Red
System Control Board (SCB)	An SCB has been removed.	Insert SCB into empty slot.	Yellow
	An SCB temperature sensor alarm has failed.	Replace failed SCB.	Yellow
	An SCB has failed.	Replace failed SCB.	Red

Table 22: Chassis Component Alarm Conditions on MX Series 5G Universal Routing Platforms *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Temperature	The chassis temperature has exceeded 55 degrees C (131 degrees F), the fans have been turned on to full speed, and one or more fans have failed.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Yellow
	The chassis temperature has exceeded 65 degrees C (149 degrees F), and the fans have been turned on to full speed.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Yellow
	The chassis temperature has exceeded 65 degrees C (149 degrees F), and a fan has failed. If this condition persists for more than 4 minutes, the router shuts down.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Red
	Chassis temperature has exceeded 75 degrees C (167 degrees F). If this condition persists for more than 4 minutes, the router shuts down.	• Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan.	Red
	The temperature sensor has failed.	Open a support case using the Case Manager link at https://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States).	Red

Table 22: Chassis Component Alarm Conditions on MX Series 5G Universal Routing Platforms *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Flexible PIC Concentrator (FPC)	FPC <slot number> Major Errors On MX Series routers with MPC1 and MPC2 line cards, a major chassis alarm is raised when the following transient hardware errors occur • CPQ Sram parity error • CPQ RLDRAM double bit ECC error By default, these errors result in the Packet Forwarding Engine interfaces on the FPC being disabled. You can use the **show chassis fpc errors** command to view the default or user-configured action that resulted from the error. You can check the syslog messages to know more about the errors.	To resolve the error, restart the line card. If the error is still not resolved, open a support case using the Case Manager link at https://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States).	Red

Backup Routing Engine Alarms

For routers with master and backup Routing Engines, a master Routing Engine can generate alarms for events that occur on a backup Routing Engine. Table 23 on page 256 lists chassis alarms generated for a backup Routing Engine.

NOTE: Because the failure occurs on the backup Routing Engine, alarm severity for some events (such as Ethernet interface failures) is yellow instead of red.

NOTE: For information about configuring redundant Routing Engines, see the *Junos OS High Availability Library for Routing Devices*.

Table 23: Backup Routing Engine Alarms

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Alternative media	The backup Routing Engine boots from an alternate boot device, the hard disk. The CompactFlash card is typically the primary boot device. The Routing Engine boots from the hard disk when the primary boot device fails.	Open a support case using the Case Manager link at https://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States).	Yellow
Boot Device	The boot device (CompactFlash or hard disk) is missing in boot list on the backup Routing Engine.	Replace failed backup Routing Engine.	Red
Ethernet	The Ethernet management interface (**fxp0** or **em0**) on the backup Routing Engine is down.	• Check the interface cable connection. • Reboot the system. • If the alarm recurs, open a support case using the Case Manager link at https://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States)	Yellow

Table 23: Backup Routing Engine Alarms *(continued)*

Chassis Component	Alarm Condition	Remedy	Alarm Severity
FRU Offline	The backup Routing Engine has stopped communicating with the master Routing Engine.	Open a support case using the Case Manager link at https://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States).	Yellow
Hard Disk	Error in reading or writing hard disk on the backup Routing Engine.	Reformat hard disk and install bootable image. If this fails, replace failed backup Routing Engine.	Yellow
Multibit Memory ECC	The backup Routing Engine reports a multibit ECC error.	• Reboot the system with the board reset button on the backup Routing Engine. • If the alarm recurs, open a support case using the Case Manager link at www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States)	Yellow

Chassis Component Alarm Conditions for Guest Network Functions (GNFs)

Table 24 on page 258 lists the Chassis conditions that trigger alarms on guest network functions (GNFs).

Read more about GNFs in this Junos Node Slicing article.

Table 24: GNF Alarms

Chassis Component	Alarm Condition	Remedy	Alarm Severity
Routing Engine	Mixed Master and Backup RE types This alarm is raised when the GNF Master Routing Engine and GNF Backup Routing Engine have been assigned either mismatching frequencies (with difference above 100 MHz), mismatching numbers of cores, or DRAM.	Correct the differences and then relaunch the corrected GNF Routing Engine.	Yellow
Routing Engine	System Incompatibility with BSYS The alarm is shown when any incompatibilities between BSYS and GNF software versions cause the GNF to go offline.	Make the required changes to the BSYS or GNF software through upgrade.	Red
Routing Engine	Feature Incompatibility with BSYS Indicates a minor incompatibility between BSYS and GNF software versions. This could result in a: • A warning error for the GNF. • A FRU going offline. **NOTE:** Minor incompatibilities do not cause the GNF to go offline.	Make the required changes to the BSYS or GNF software through upgrade.	Yellow

Configuring Slow Packet Forwarding Engine Alarm

On an M Series, an MX Series, a T Series, or a SRX Series router, the Packet Forwarding Engine might not send a resource acknowledgment message to the Routing Engine within a predetermined time of 360 seconds. This delay in receiving resource acknowledgment could be due to a slow or stuck Packet Forwarding Engine on the M Series, MX Series, T Series, or SRX Series router, or on one of the LCCs connected to a TX Matrix, TX Matrix Plus, or TX Matrix Plus router with 3D SIBs.

Starting with Junos OS Release 13.2R1 (also applicable in Junos OS Releases 12.1R6, 12.2R5, 12.3R3, 13.1R2 and later), to display the issue as an alarm in the **show chassis alarms** command output and to append the alarm to the system log messages file, you must enable the slow Packet Forwarding Engine alarm on the router.

The following sections provide more information about the slow Packet Forwarding Engine alarm:

- Enabling Slow Packet Forwarding Engine Alarm | **259**
- Disabling Slow Packet Forwarding Engine Alarm | **260**
- Verifying That the Alarm Output and System Log Messages are Updated | **260**

Enabling Slow Packet Forwarding Engine Alarm

To enable the slow Packet Forwarding Engine alarm, perform the following steps:

> **NOTE:** By default, the slow Packet Forwarding Engine alarm is disabled.

1. In configuration mode, go to the **[edit chassis]** hierarchy level:

```
[edit]
user@host# edit chassis
```

2. Enable the slow Packet Forwarding Engine alarm by configuring the **slow-pfe-alarm** statement.

```
[edit chassis]
user@host# set slow-pfe-alarm
```

Disabling Slow Packet Forwarding Engine Alarm

To disable the slow Packet Forwarding Engine alarm, perform the following steps:

1. In configuration mode, go to the **[edit chassis]** hierarchy level:

```
[edit]
user@host# edit chassis
```

2. Disable the slow Packet Forwarding Engine alarm by deleting the **slow-pfe-alarm** statement.

```
[edit chassis]
user@host# delete slow-pfe-alarm
```

Verifying That the Alarm Output and System Log Messages are Updated

Purpose

To verify that the output of the **show chassis alarms** operational mode command and the system log messages file are updated with the slow Packet Forwarding Engine alarm when:

- The **slow-pfe-alarm** statement is enabled in the **[edit chassis]** hierarchy.
- The Packet Forwarding Engine resource acknowledgment is not received by the Routing Engine within a predetermined time of 360 seconds.

Action

To check the output on an M Series, MX Series, T Series, or a SRX Series router:

1. Verify that the alarm is displayed in the output of the **show chassis alarms** operational mode command.

   `user@host>` **show chassis alarms**

```
1 alarms currently active
Alarm time               Class  Description
2013-02-05 01:12:33 PST  Minor  Potential slow peers are: XDPC2
```

   For field descriptions, see **show chassis alarms**.

2. Verify that the alarm is appended to the system log messages file.

```
/var/log/messages –
... Alarm set: RE color=YELLOW, class=CHASSIS, reason=Potential slow peers are:
```

```
 XDPC2
... Minor alarm set, Potential slow peers are: XDPC2
```

To check the output on a TX Matrix, TX Matrix Plus, or a TX Matrix Plus with 3D SIBs router:

1. Verify that the alarm is displayed in the output of the **show chassis alarms** operational mode command.

   `user@scc>` **show chassis alarms**

```
scc-re0:
--------------------------------------------------------------------------
9 alarms currently active
Alarm time               Class  Description
2013-02-06 00:45:46 PST  Minor  Potential slow peers are: LCC1 LCC0
...
lcc0-re0:
--------------------------------------------------------------------------
4 alarms currently active
Alarm time               Class  Description
2013-02-06 00:44:51 PST  Minor  Potential slow peers are: GFPC4 GFPC3
...
lcc1-re0:
--------------------------------------------------------------------------
4 alarms currently active
Alarm time               Class  Description
2013-02-06 00:45:44 PST  Minor  Potential slow peers are: GFPC10
...
lcc2-re0:
--------------------------------------------------------------------------
No alarms currently active
lcc3-re0:
--------------------------------------------------------------------------
No alarms currently active
```

   For field descriptions, see **show chassis alarms**.

2. Verify that the alarm is appended to the system log messages file.

```
... Alarm set: RE color=YELLOW, class=CHASSIS, reason=Potential slow peers are:
 LCC0 LCC1
... Minor alarm set, Potential slow peers are: LCC0
... Alarm set: RE color=YELLOW, class=CHASSIS, reason=Potential slow peers are:
 GFPC4 GFPC3
```

```
... Minor alarm set, Potential slow peers are: GFPC4 GFPC3
... Alarm set: RE color=YELLOW, class=CHASSIS, reason=Potential slow peers are:
 GFPC10
... Minor alarm set, Potential slow peers are: GFPC10
```

Meaning

The output of **show chassis alarms** operational mode command and the system log messages file are updated as expected when the slow Packet Forwarding Engine alarm is enabled and when the Packet Forwarding Engine resource acknowledgment is not received by the Routing engine within a predetermined time of 360 seconds.

User-Defined Alarm Relay Overview

IN THIS SECTION

- Alarm Contact Port | **262**
- Alarm Input | **263**
- Alarm Output | **263**

The ACX Series router alarm contact port—labeled ALARM on the front panel—allows you to manage sensors and external devices connected to the router in remote unstaffed facilities.

NOTE: Alarm contact port is not applicable on ACX5048 and ACX5096 routers.

Alarm Contact Port

The ACX Series router alarm contact port is a 15-pin D-type dry contact connector for alarms. The alarm contact port is used to generate LED alarms on the router and to turn external devices on or off. You can connect up to four input alarms and two output alarms. The alarm setting is open or closed.

Alarm Input

Alarm input provides dry contacts to connect to security sensors such as door or window monitors. The alarm input—open or closed—is sensed and reported to the management software. You can configure up to four alarm input relay ports (0 through 3) to operate as normally open or normally closed, and to trigger a red alarm condition or a yellow alarm condition or to ignore alarm conditions.

Alarm Output

Alarm output provides dry contacts to connect to external equipment, such as an audible or visual alarm that switches on or off–for example, a bell or a light. The four alarm output relay ports—0 through 3—are set up as follows:

- Ports 0 and 1—These ports can be configured to trigger an alarm when the system temperature goes to the red alarm status and when an alarm input port is triggered.
- Ports 2 and 3—These ports are *not* configured. They are used to indicate system major and minor alarms and are normally open. When a condition triggers an alarm, an alarm message is displayed.

To view the alarm input and output relay information, issue the **show chassis craft-interface** command from the Junos OS command line interface.

SEE ALSO

> *Alarm Contact Port on the ACX2000 Router* (Hardware topic)
>
> Configuring Chassis Alarm Relays | **263**
>
> Configuring Chassis Alarm Input | **264**
>
> Configuring Chassis Alarm Output | **266**
>
> *relay (Chassis Alarm)*

Configuring Chassis Alarm Relays

On ACX Series routers, you can configure alarm relays that can trigger alarms and turn external devices on or off. For example, if the router heats up to more than the critical temperature, the output port is activated and a device connected to the output port—such as a fan—is turned on.

To configure conditions that trigger alarms, include the **relay** statement with the **input** and **output** options at the **[edit chassis alarm]** hierarchy level.

```
[edit chassis alarm]
relay
   input {
      port port-number {
         mode (close | open);
         trigger (ignore | red | yellow);
      }
   }
   output{
      port port-number {
         input-relay input-relay;
         mode (close | open);
         temperature;
      }
   }
```

The following output shows an example configuration of a chassis relay alarm:

```
[edit chassis alarm]
user@host# show
relay {
    input {
        port 1 {
            mode close;
            trigger red;
        }
    }
    output {
        port 0 {
            temperature;
        }
    }
}
```

Configuring Chassis Alarm Input

The ACX Series router alarm contact port—labeled ALARM on the front panel—allows you to manage sensors and external devices connected to the router in remote unstaffed facilities. You can configure up to four alarm input ports (0 through 3) to operate as normally open or normally closed, and to trigger a red alarm condition or a yellow alarm condition or to ignore alarm conditions.

To configure an input alarm:

1. Configure the input port:

   ```
   [edit chassis alarm relay input port port-number]
   ```

   For example, to configure input port zero (0):

   ```
   user@host# edit chassis alarm relay input port 0
   ```

2. Configure the mode in which the input alarm is not active:

   ```
   [edit chassis alarm relay input port port-number mode (close | open)]
   ```

   For example, to configure open mode:

   ```
   [edit chassis alarm relay input port 0]
   user@host# set mode open
   ```

3. Configure the trigger to set off the alarm:

   ```
   [edit chassis alarm relay input port port-number trigger (ignore | red | yellow)]
   ```

   For example, to set off the yellow alarm:

   ```
   [edit chassis alarm relay input port 0]
   user@host# set trigger yellow
   ```

4. Verify the configuration with the **show** command:

   ```
   [edit chassis alarm relay input port 0]
   user@host# show
   mode open;
   trigger yellow;
   ```

5. Commit the configuration with the **commit** command.

To view the alarm input relay information, issue the **show chassis alarms** or **show chassis craft-interface** commands from the Junos OS command line interface.

Configuring Chassis Alarm Output

The ACX Series router alarm contact port—labeled ALARM on the front panel—allows you to manage sensors and external devices connected to the router in remote unstaffed facilities. You can configure up to two alarm output relay ports (0 and 1) to operate as normally open or normally closed, and to trigger an alarm when the system temperature goes to the red alarm status and when an alarm input port is triggered.

NOTE: Ports 2 and 3 are *not* configured. They are used to indicate system major and minor alarms and are normally open. When a condition triggers an alarm, an alarm message is displayed, and the corresponding LED turns on.

To configure an output alarm:

1. Configure the output port:

   ```
   [edit chassis alarm relay output port port-number]
   ```

   For example, to configure output port zero (0):

   ```
   user@host# edit chassis alarm relay output port 0
   ```

2. Configure the trigger to set off the alarm:

   ```
   [edit chassis alarm relay output port port-number (input-relay | mode | temperature)]
   ```

   For example, to set off the alarm when the system temperature goes into the red status:

   ```
   [edit chassis alarm relay output port 0]
   user@host# set temperature
   ```

3. Verify the configuration with the **show** command:

   ```
   [edit chassis alarm relay output port 0]
   user@host# show
   temperature;
   ```

4. Commit the configuration with the **commit** command.

To view the alarm output relay information, issue the **show chassis alarms** or **show chassis craft-interface** command from the Junos OS command line interface.

RELATED DOCUMENTATION

Silencing External Devices Connected to Alarm Relay Contacts | 267

Craft Interface

IN THIS SECTION

- Silencing External Devices Connected to Alarm Relay Contacts | 267
- Configuring the Junos OS to Disable the Physical Operation of the Craft Interface | 267
- Remote Port Identification using LEDs for Cabling Assistance | 268
- Configuring the LCD Panel on EX Series Switches (CLI Procedure) | 268

Silencing External Devices Connected to Alarm Relay Contacts

You can manually silence external devices connected to alarm relay contacts. To silence an external devices, press the alarm cutoff button located on the craft interface front panel of the device.

Silencing the device does not remove the alarm messages from the display (if present on the router or switch) or extinguish the alarm LEDs. In addition, new alarms that occur after an external device is silenced reactivate the external device.

Configuring the Junos OS to Disable the Physical Operation of the Craft Interface

You can disable the physical operation of the craft interface front panel on the router. When you disable the operation of the craft interface, the buttons on the front panel, such as the alarm cutoff button, no longer function. To disable the craft interface operation, include the **craft-lockout** statement at the **[edit chassis]** hierarchy level:

```
[edit chassis]
craft-lockout;
```

SEE ALSO

> *Configuring Junos OS to Determine Conditions That Trigger Alarms on Different Interface Types*
>
> Silencing External Devices Connected to Alarm Relay Contacts | 267

Remote Port Identification using LEDs for Cabling Assistance

With new and higher-density Modular Interface Cards (MICs) and Modular Port Concentrators (MPCs), cabling is complex and can result in wiring mistakes. Remote port identification reduces the complexity by providing an easy way of identifying the ports that must be connected to the cables.Starting in Junos OS Release 16.1, the remote port identification feature is supported on MPC7E-10G, MPC7E-MRATE, MX2K-MPC8E, and MX2K-MPC9E.

Starting in Junos OS Release 18.2, the remote port identification feature is supported on JNP10K-LC2101 on MX10008 routers.

LEDs, used to display the status of the port, can be configured to blink for a small duration of time to identify the port and provide cabling assistance. Depending on the port identification required, you can configure the LED of a specific port, LEDs of all ports, LED of a specific type of port to blink. For instance, on MX2020 routers with MPC8E, you can identify the active ports that support port speeds of 100 Gbps by configuring the LEDs of the specific port to blink. Similarly, you can identify active ports that support port speeds of 10 Gbps and 40 Gbps. You can configure the LED of, for example, active port 9 on the MX2020 router with MPC9E and MIC-MRATE. You can also make the LEDs of all the ports blink, if required.

You can specify the duration of time that a LED blinks. The default duration is 5 minutes (300 seconds). You can also stop the LED from blinking before the duration expires, if required.

To enable port identification on the enhanced MPCs, you can make the LED corresponding to the ports to blink using the **request chassis port-led** command.

Configuring the LCD Panel on EX Series Switches (CLI Procedure)

This topic applies to hardware devices in the EX Series product family, which includes switches and the XRE200 External Routing Engine, that support the LCD panel interface.

The LCD panel on the front panel of EX Series switches displays a variety of information about the switch in the Status menu and provides the Maintenance menu to enable you to perform basic operations such as initial setup and reboot. You can disable these menus or individual menu options if you do not want switch users to use them. You can also set a custom message that will be displayed on the panel.

- Disabling or Enabling Menus and Menu Options on the LCD Panel | **269**
- Configuring a Custom Display Message | **270**

Disabling or Enabling Menus and Menu Options on the LCD Panel

By default, the Maintenance menu, the Status menu, and the options in those menus in the LCD panel are enabled. Users can configure and troubleshoot the switch by using the Maintenance menu and view certain details about the switch by using the Status menu.

If you do not want users to be able to use those menus or some of the menu options, you can disable the menus or individual menu options. You can reenable the menus or menu options.

Issue the **show chassis lcd menu** operational mode command to see the menus or menu options that are currently enabled.

> **NOTE:** On some platforms, you must specify an FPC slot number in these commands. See the *lcd-menu* statement for details.

To disable a menu:

```
[edit]
user@switch# set chassis lcd-menu menu-item menu-name disable
```

To enable a menu:

```
[edit]
user@switch# delete chassis lcd-menu menu-item menu-name disable
```

To disable a menu option:

```
[edit]
user@switch# set chassis lcd-menu menu-item menu-option disable
```

To enable a menu option:

```
[edit]
user@switch# delete chassis lcd-menu menu-item menu-option disable
```

Configuring a Custom Display Message

You can configure the second line of the LCD to display a custom message temporarily for 5 minutes or permanently.

To display a custom message temporarily:

- On an EX3200 switch, a standalone EX3300 switch, a standalone EX4200 switch, a standalone EX4300 switch except EX4300-48MP and EX4300-48MP-S switches, a standalone EX4500 switch, a standalone EX4550 switch, an EX6200 switch, an EX8200 switch, or an XRE200 External Routing Engine:

  ```
  user@switch> set chassis display message message
  ```

- On an EX3300, EX4200, EX4300, EX4500, or EX4550 switch in a Virtual Chassis configuration:

  ```
  user@switch> set chassis display message message fpc-slot slot-number
  ```

To display a custom message permanently:

- On an EX3200 switch, a standalone EX3300 switch, a standalone EX4200 switch, a standalone EX4300 switch except EX4300-48MP and EX4300-48MP-S switches, a standalone EX4500 switch, a standalone EX4550 switch, an EX6200 switch, an EX8200 switch, or an XRE200 External Routing Engine:

  ```
  user@switch> set chassis display message message permanent
  ```

- On an EX3300, EX4200, EX4300 except EX4300-48MP and EX4300-48MP-S, EX4500, or EX4550 switch in a Virtual Chassis configuration:

  ```
  user@switch> set chassis display message message fpc-slot slot-number permanent
  ```

NOTE: The buttons on the LCD panel are disabled when the LCD is configured to display a custom message.

To disable the display of the custom message:

```
user@switch> clear chassis display message
```

You can view the custom message by issuing the **show chassis lcd** command.

Release History Table

Release	Description
18.2	Starting in Junos OS Release 18.2, the remote port identification feature is supported on JNP10K-LC2101 on MX10008 routers.
16.1	Starting in Junos OS Release 16.1, the remote port identification feature is supported on MPC7E-10G, MPC7E-MRATE, MX2K-MPC8E, and MX2K-MPC9E.

RELATED DOCUMENTATION

Configuring Junos OS to Determine Conditions That Trigger Alarms on Different Interface Types

request chassis port-led | **649**

CHAPTER 7

Network Services Mode

Configuring Network Services Mode | 275

Configuring Network Services Mode

IN THIS SECTION

- Network Services Mode Overview | 275
- Configuring Junos OS to Run a Specific Network Services Mode in MX Series Routers | 279
- Feature Restrictions on MX Series Routers Running in Ethernet Network Services Mode or Enhanced Ethernet Network Services Mode | 279
- Limiting the Maximum Number of Logical Interfaces on MX Series Routers With MS-DPCs in Enhanced IP Network Services Mode | 281

Network Services Mode Overview

A network services mode defines how the router chassis recognizes and uses certain modules. You can configure network services modes on MX Series 5G Universal Routing Platforms and on T4000 Core Routers with Type 5 FPCs.

On MX Series 5G Universal Routing Platforms, you can configure IP Network Services mode, Enhanced IP Network Services mode, Ethernet Network Services mode, or Enhanced Ethernet Network Services mode.

You can use either Enhanced IP Network Services mode or Enhanced Ethernet Network Services mode to improve the scaling and performance specific to filters in a subscriber access network that uses statically configured subscriber interfaces. For more information about using enhanced network services modes with firewall filters, see *Firewall Filters and Enhanced Network Services Mode Overview*.

On MX240, MX480, and MX960 routers, the MPC5E and MPC7E line cards power on only if the configured network services mode is **enhanced-ip** or **enhanced-ethernet**. All other MPCs work with any of the network services modes. MX2010 and MX2020 support only **enhanced-ip** and **enhanced-ethernet** network services modes.

NOTE: If Dense Port Concentrators (DPCs) in Ethernet Network Services mode or Enhanced Ethernet Network Services mode are up and running, you cannot configure the system for IP Network Services mode. You must first disable any Ethernet Network Services mode DPCs before switching to IP Network Services mode.

NOTE: When a chassis starts without any functioning FPCs, the Network Services mode defaults to IP Network Services. When the first FPC comes online, the configured Networks Services mode is applied.

NOTE: Starting from Junos OS Release 13.3, you can configure the Enhanced IP Network Services mode and Enhanced Ethernet Network Services mode on MX240, MX480 and MX960 routers with an SCBE2. Specify the **enhanced-ip** option or the **enhanced-ethernet** option at the **[edit chassis network-services]** hierarchy level.

You can configure T4000 Core Routers with Type 5 FPCs to run in Enhanced Network Services mode to enable improved virtual private LAN service (VPLS) MAC address learning. For more information, see **enhanced-mode**.

Table 25 on page 276 explains how different modules function when the MX Series 5G Universal Routing Platform chassis is configured to run in different network services modes.

Table 25: Network Services Mode Functions

Configuration Upon Boot or Configuration Change	Module Function
IP Network Services mode (default; upon boot)	All modules except DPCE-X and DPCE-X-Q are powered on. Starting with Junos OS Release 15.1, you can limit the maximum number of logical interfaces on MX Series routers with MS-DPCs to 64,000 for enhanced IP network services mode. To do this, include the **limited-ifl-scaling** option with the **network-services enhanced-ip** statement at the **[edit chassis]** hierarchy level. Using the **limited-ifl-scaling** option prevents any collision of logical interface indices that can occur in a scenario in which you enable the Enhanced IP Network Services mode on the router which also contains an MS-DPC.

Table 25: Network Services Mode Functions *(continued)*

Configuration Upon Boot or Configuration Change	Module Function
Ethernet Network Services mode (upon boot)	All modules are powered on. However, operating in Ethernet Network Services mode restricts certain BGP protocol functions and does not support Layer 3 VPN, unicast RPF, and source and destination class usage (SCU and DCU) functions. In addition, the number of externally configured filter terms is restricted to 64K. Ethernet Network Services mode provides support for only Layer 2.5 functions.
Enhanced IP Network Services mode (upon boot)	Only MPCs, MS-MPCs, and MS-DPCs are powered on. **NOTE:** Only Multiservices DPCs (MS-DPCs) and MS-MPCs are powered on with the enhanced network services mode options. No other DPCs function with the enhanced network services mode options.
Enhanced Ethernet Network Services mode (upon boot)	Only MPCs, MS-MPCs, and MS-DPCs are powered on. All restrictions for operating in Ethernet Network Services mode apply. **NOTE:** Only Multiservices DPCs (MS-DPCs) and MS-MPCs are powered on with the enhanced network services mode options. No other DPCs function with the enhanced network services mode options.
Change from IP Network Services mode to Ethernet Network Services mode	DPCE-X and DPCE-X-Q modules are powered on. No reboot is required. No impact to MPCs or MS-DPCs.
Change from Ethernet Network Services mode to IP Network Services mode	Invalid modification. No commit occurs. A warning message indicates if any FPCs (along with their slot location) must be offline before switching to other network services. No impact to MPCs or MS-DPCs.
Change from Enhanced IP Network Services mode to Enhanced Ethernet Network Services mode	No reboot is required. No impact to MPCs or MS-DPCs.
Change from IP Network Services mode to Enhanced IP Network Services mode	System reboot is required (PFE/FPCs)
Change from Ethernet Network Services mode to Enhanced Ethernet Network Services mode	Reboot is required.

For details on the Layer 2.5 support for Ethernet Network Services mode, see "Restricted Software Features in Ethernet Network Services Mode" on page 280.

Network Services on SCBE2

The following scenarios are to be noted when you use an MX Series router with an SCBE2:

- You must configure the **set chassis network-services (enhanced-ip | enhanced-ethernet)** configuration command and reboot the router to bring up the FPCs on the router. However, after the router reboots, the MS DPC, the MX FPC, and the ADPC are powered off.
- All the FPCs and DPCs in the router are powered off when you reboot the router without configuring either the enhanced-ip option or the enhanced-ethernet option at the **[edit chassis network-services]** hierarchy level.
- You must reboot the router when you configure or delete the enhanced-ip option or the enhanced-ethernet option at the **[edit chassis network-services]** hierarchy level. The following warning message, which prompts you to reboot the router, is displayed when you configure or delete the enhanced-ip or the enhanced-ethernet configuration statement at the **[edit chassis network-services]** hierarchy level.

```
'chassis'
WARNING: Chassis configuration for network services has been changed. A
system reboot is mandatory. Please reboot the system NOW. Continuing without
a reboot might result in unexpected system behavior.
commit complete
```

- Starting with Junos OS Release 14.2, you must perform a commit synchronization of the settings between dual Routing Engines under some specific conditions. If you configure or remove the **enhanced-ip** or the **enhanced-ethernet** option at the **[edit chassis network-services]** hierarchy level on one of the Routing Engines on a router that contains dual Routing Engines, perform commit synchronization of the settings between the two Routing Engines by entering the **commit synchronize** command at the **[edit system]** hierarchy level. In addition, you must reboot all of the Routing Engines on the router when the enhanced IP network services mode is changed. The reboot is performed to prevent any unexpected system behavior.

NOTE: Dynamic multicast replication mode is supported on SCBE2. Static multicast replication mode is not supported on SCBE2.

NOTE: If a route's next hop is a unicast next hop through integrated routing and bridging (IRB) and the corresponding MAC address is learned over a label-switched interface (LSI), the IRB derives the Layer 2 information from the indirect next hop for the LSI. If you configure the **load-balance per-packet** policy statement, the indirect next hop of the LSI points to a unilist, which has all the member links to load balance the packets toward the MPLS cloud. You should configure the **enhanced-ip** option to enable the unicast next hop for IRB to use the unilist as the Layer 2 forwards next hop and load balance the packets.

Configuring Junos OS to Run a Specific Network Services Mode in MX Series Routers

You can configure MX Series 5G Universal Routing Platforms to run in different network services modes. Each network services mode defines how the chassis recognizes and uses certain modules.

To configure the network services mode of an MX Series router:

1. Access the chassis hierarchy.

```
[edit]
user@host# edit chassis
```

2. Specify the network services mode that you want the router to use.

```
[edit chassis]
user@host# set network-services service
```

Feature Restrictions on MX Series Routers Running in Ethernet Network Services Mode or Enhanced Ethernet Network Services Mode

Table 26 on page 280 lists Junos OS feature restrictions when running in Ethernet Network Services mode or Enhanced Ethernet Network Services mode.

Table 26: Restricted Software Features in Ethernet Network Services Mode

Software Feature	Restriction in Ethernet Network Services Mode
BGP	• Data plane support applies only to Ethernet and MPLS. • BGP only supports the following address families: inet labeled-unicast, inet unicast, inet-vpn unicast, l2vpn, and route-target.
L3VPN	Layer 3 VPNs are supported. You can only include loopback interfaces in the Virtual Routing and Forwarding (VRF) instance. A maximum of two VRFs are supported. Each VRF can handle up to 10,000 routes. The **ping mpls l3vpn** operational mode command is also supported.
Unicast RPF	Unicast reverse-path forwarding is disabled.
Source and destination class usage (SCU and DCU)	Source and Destination Class Usage is disabled.
Filter terms	The number of externally configured filter terms is restricted to 64 KB.
Prefixes	The number of supported prefixes is restricted to 32 K.

NOTE: MX Series routers supporting Layer 2.5 functions work as full-scale routers and they support interior gateway protocol (IGP), multicast routing protocols, and other routing features. The restrictions applicable on these routers are that the number of routes is limited and you cannot use BGP.

Limiting the Maximum Number of Logical Interfaces on MX Series Routers With MS-DPCs in Enhanced IP Network Services Mode

Starting in Junos OS Release 15.1, you can impose a limitation on the maximum number of logical interfaces on MX Series routers with MS-DPCs to be 64,000 for enhanced IP network services mode. To impose that limit, include the **limited-ifl-scaling** option with the **network-services enhanced-ip** statement at the **[edit chassis]** hierarchy level. When network-services is configured as enhanced IP mode, the kernel increases the total number of logical interfaces to 256,000. However, MS-DPC line cards are not capable of handling more than 64,000 logical interfaces globally on a router. Using the **limited-ifl-scaling** option prevents the problem of a collision of logical interface indices that can occur in a scenario in which you enable enhanced IP services mode and an MS-DPC is also present in the same chassis. To support MS-DPCs with enhanced IP mode on the chassis, you must limit the maximum logical interfaces as 64,000, which is performed with the **limited-ifl-scaling** option.

To define the maximum number of logical interfaces on MX Series routers with MS-DPCs as 64,000, include the **limited-ifl-scaling** option with the **network-services enhanced-ip** statement at the **[edit chassis]** hierarchy level.

```
[edit chassis]
network-services enhanced-ip limited-ifl-scaling;
```

When the default network services mode on a router is IP services mode (by using the **network-services ip** statement), the maximum logical interfaces is set as 64,000. When you change the network services mode as enhanced IP, the chassis process sets a general configuration (GENCFG) script to the kernel that increases the maximum logical interfaces as 256,000. When you configure the **limited-ifl-scaling** option with the **network-services enhanced-ip** statement, the chassis process does not generate a message to the kernel to increase the number of logical interfaces. As a result, the kernel retains the maximum number of logical interfaces as 64,000.

If your router chassis is previously configured with enhanced IP services mode and without the **limited-ifl-scaling** option set, and if you later configure the setting to limit the logical interfaces for MS-DPCs, the number of logical interfaces remains as 256,000 and it is not reduced. A cold reboot of the router must be performed in such a case to reduce the logical interfaces after you set the **limited-ifl-scaling** option with the **network-services enhanced-ip** statement. When you enter the **limited-ifl-scaling** option, none of the MPCs are moved to the offline state. All the optimization and scaling capabilities supported with enhanced IP mode apply to enhanced IP mode with the limitation of IFL scaling functionality.

Release History Table

Release	Description
15.1	Starting with Junos OS Release 15.1, you can limit the maximum number of logical interfaces on MX Series routers with MS-DPCs to 64,000 for enhanced IP network services mode.
15.1	Starting in Junos OS Release 15.1, you can impose a limitation on the maximum number of logical interfaces on MX Series routers with MS-DPCs to be 64,000 for enhanced IP network services mode.
14.2	Starting with Junos OS Release 14.2, you must perform a commit synchronization of the settings between dual Routing Engines under some specific conditions.
13.3	Starting from Junos OS Release 13.3, you can configure the Enhanced IP Network Services mode and Enhanced Ethernet Network Services mode on MX240, MX480 and MX960 routers with an SCBE2.

RELATED DOCUMENTATION

Firewall Filters and Enhanced Network Services Mode Overview in the *Junos OS Broadband Subscriber Management and Services Library*.

Configuring Enhanced IP Network Services for a Virtual Chassis

enhanced-mode | **356**

network-services | **451**

8

CHAPTER

Packet Scheduling Mode

Enabling an M160 Router to Operate in Packet Scheduling Mode | 285

Enabling an M160 Router to Operate in Packet Scheduling Mode

By default, packet scheduling is disabled on M160 Routers. To configure a router to operate in packet-scheduling mode, include the **packet-scheduling** statement at the **[edit chassis]** hierarchy level:

```
[edit chassis]
packet-scheduling;
```

To explicitly disable the **packet-scheduling** statement, include the **no-packet-scheduling** statement at the **[edit chassis]** hierarchy level:

```
[edit chassis]
no-packet-scheduling;
```

When you enable packet-scheduling mode, the Packet Director application-specific integrated circuit (ASIC) schedules packet dispatches to compensate for transport delay differences. This preserves the interpacket gaps as the packets are distributed from the Packet Director ASIC to the Packet Forwarding Engine.

Whenever you change the configuration for packet-scheduling, the system stops all SFMs and FPCs and restarts them in the new mode.

NOTE: Packet scheduling is for M160 routers only.

RELATED DOCUMENTATION

Configuring the Junos OS to Support Eight Queues on IQ Interfaces for T Series and M320 Routers

CHAPTER 9

OSS Mapping

Configuring OSS Mapping | 289

Configuring OSS Mapping

IN THIS SECTION

- Configuring OSS Mapping to Represent a T4000 Chassis as a T1600 or a T640 Chassis | 289
- Example: Configuring a T4000 Chassis to Represent a T640 Chassis | 291

Configuring OSS Mapping to Represent a T4000 Chassis as a T1600 or a T640 Chassis

IN THIS SECTION

- Configuring T4000 Chassis as a T1600 Chassis | 289
- Configuring T4000 Chassis as a T640 Chassis | 290
- Disabling the OSS Mapping Feature | 290

You can configure the operations support systems (OSS) mapping feature to represent a T4000 chassis as a T1600 chassis or a T640 chassis. This topic includes the following tasks:

Configuring T4000 Chassis as a T1600 Chassis

To configure a T4000 chassis as a T1600 chassis:

1. In configuration mode, go to the **[edit chassis]** hierarchy level.

```
[edit]
user@T4000# edit chassis
```

2. Configure the OSS mapping feature to map the T4000 chassis to a T1600 chassis.

```
[edit chassis]
user@T4000# set oss-map model-name t1600
```

Configuring T4000 Chassis as a T640 Chassis

To configure a T4000 chassis as a T640 chassis:

1. In configuration mode, go to the **[edit chassis]** hierarchy level.

```
[edit]
user@T4000# edit chassis
```

2. Configure the OSS mapping feature to map the T4000 chassis to a T640 chassis.

```
[edit chassis]
user@T4000# set oss-map model-name t640
```

NOTE: By default, the OSS mapping feature is disabled.

Disabling the OSS Mapping Feature

To disable the OSS mapping feature:

1. In configuration mode, go to the **[edit chassis]** hierarchy level.

```
[edit]
user@T4000# edit chassis
```

2. Disable the OSS mapping feature that maps a T4000 chassis to a T640 chassis.

```
[edit chassis]
user@T4000# delete oss-map model-name t640
```

3. Disable the OSS mapping feature that maps a T4000 chassis to a T1600 chassis.

```
[edit chassis]
user@T4000# delete oss-map model-name t1600
```

NOTE:

- The **set chassis oss-map model-name t640 | t1600** command is applicable only on T4000 routers. You must explicitly set this command when a T1600 chassis or a T640 chassis is upgraded to a T4000 chassis.
- You can execute the **set chassis oss-map model-name t640** command or the **set chassis oss-map model-name t1600** command if the OSS is compatible with either the T640 chassis or the T1600 chassis, respectively.

Example: Configuring a T4000 Chassis to Represent a T640 Chassis

IN THIS SECTION

- Requirements | **291**
- Overview | **291**
- Configuring the T4000 Chassis to Represent a T640 Chassis | **292**
- Verification | **292**

This example shows how to configure OSS mapping feature to represent a T4000 chassis as a T640 chassis. You can extend this concept to configure a T4000 chassis to represent as a T1600 chassis as well.

Requirements

This example uses the following hardware and software components:

- One T4000 router
- Junos OS Release 12.3R3, 13.1R2, 13.2R1, or later

Overview

Operations support systems (OSS) is used by service providers to maintain their networks. When a new router is added or removed from the network, the OSS must be updated to reflect the changes. This process is tedious and time-consuming.

When a T1600 chassis or a T640 chassis is upgraded to a T4000 chassis, the OSS identifies the new chassis as a new networking element and follows a tedious process of qualifying it for the customer's network. The *OSS mapping feature* helps avoid this scenario.

Using the OSS mapping feature, you can map a T4000 chassis to a T1600 chassis or to a T640 chassis with the **set chassis oss-map model-name t640|t1600** configuration command. This configuration command overrides the chassis model name, so that the OSS recognizes the chassis as a known chassis and proceeds without any requalification.

NOTE:

- The **set chassis oss-map model-name t640 | t1600** command is applicable only on T4000 routers. You must explicitly set this command when a T1600 chassis or a T640 chassis is upgraded to a T4000 chassis.
- You can execute the **set chassis oss-map model-name t640** command or the **set chassis oss-map model-name t1600** command, if the OSS is compatible with either the T640 chassis or the T1600 chassis, respectively.

Configuring the T4000 Chassis to Represent a T640 Chassis

Step-by-Step Procedure

To configure the T4000 chassis to represent a T640 chassis by using the OSS mapping feature:

1. In configuration mode, go to the **[edit chassis]** hierarchy level.

```
[edit]
user@T4000# edit chassis
```

2. Configure the OSS mapping feature to map the T4000 chassis to a T640 chassis.

```
[edit chassis]
user@T4000# set oss-map model-name t640
```

Verification

Verifying the OSS Mapping Feature

Purpose

To verify that the OSS mapping feature is working on a T4000 router.

Action

Run the show chassis operational command and verify that the configured known chassis name is displayed when the T4000 chassis is mapped to a T640 chassis.

- Run the **show chassis hardware** operational command:

  user@T4000> **show chassis hardware**

```
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                JN11B3892AHA      T640
Midplane         REV 01   710-027486   RC9848            T-series Backplane
FPM GBUS         REV 13   710-002901   BBAG5143          T640 FPM Board
FPM Display      REV 04   710-021387   BBAL2705          T1600 FPM Display
CIP              REV 06   710-002895   BBAL3705          T-series CIP
PEM 1           REV 03   740-036442   VJ00054          Power Entry Module 6x60
SCG 0            REV 18   710-003423   BBAJ0727          T640 Sonet Clock Gen.
SCG 1            REV 18   710-003423   BBAE3887          T640 Sonet Clock Gen.
Routing Engine 0 REV 06   740-026941   P737F-002705      RE-DUO-1800
Routing Engine 1 REV 06   740-026941   P737F-002675      RE-DUO-1800
CB 0             REV 09   710-022597   EF7371            LCC Control Board
....
```

- Run the **show chassis hardware detail** operational command:

  user@T4000> **show chassis hardware detail**

```
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                JN11B3892AHA      T640
Midplane         REV 01   710-027486   RC9848            T-series Backplane
FPM GBUS         REV 13   710-002901   BBAG5143          T640 FPM Board
FPM Display      REV 04   710-021387   BBAL2705          T1600 FPM Display
CIP              REV 06   710-002895   BBAL3705          T-series CIP
PEM 1           REV 03   740-036442   VJ00054          Power Entry Module 6x60
SCG 0            REV 18   710-003423   BBAJ0727          T640 Sonet Clock Gen.
SCG 1            REV 18   710-003423   BBAE3887          T640 Sonet Clock Gen.
Routing Engine 0 REV 06   740-026941   P737F-002705      RE-DUO-1800
  ad0    3823 MB  SMART CF             201101050335CCFACCFA Compact Flash
  ad1   62720 MB  SMART Lite SATA Drive 2011021700D8789F789F Disk 1
Routing Engine 1 REV 06   740-026941   P737F-002675      RE-DUO-1800
  ad0    3823 MB  SMART CF             201011150208AF59AF59 Compact Flash
  ad1   62720 MB  SMART Lite SATA Drive 2010122700A160026002 Disk 1
CB 0             REV 09   710-022597   EF7371            LCC Control Board
....
```

- Run the **show chassis hardware extensive** operational command:

  user@T4000> **show chassis hardware extensive**

```
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                JN11B3892AHA      T640
Jedec Code:   0x7fb0           EEPROM Version:    0x02
                                S/N:               JN11B3892AHA
Assembly ID:  0x0507           Assembly Version:  00.00
Date:         00-00-0000       Assembly Flags:    0x00
....
```

Verifying the OSS Mapping Feature on SNMP MIBs

Purpose

To verify that the SNMP MIBs are updated with the configured known chassis name.

Action

Run the **show snmp mib** operational commands and verify that the configured known chassis name is displayed in SNMP MIBs when the T4000 chassis is mapped to a T640 chassis:

- Run the **show snmp mib walk system** operational command:

  user@T4000> **show snmp mib walk system**

```
sysDescr.0    = Juniper Networks, Inc. t640 internet router, kernel JUNOS
12.3-...Juniper Networks, Inc.
sysObjectID.0 = jnxProductNameT640
...
```

- Run the **show snmp mib walk jnxBoxAnatomy** operational command:

  user@T4000> **show snmp mib walk jnxBoxAnatomy**

```
jnxBoxClass.0 = jnxProductLineT640.0
jnxBoxDescr.0 = Juniper t640 Internet Backbone Router
jnxBoxSerialNo.0 = JN11B3892AHA
jnxBoxRevision.0
....
```

Meaning

On configuring the OSS mapping feature, the OSS maps the T4000 chassis to a T640 chassis, thereby preventing requalification of the new chassis.

RELATED DOCUMENTATION

oss-map | 465

show chassis oss-map | 1616

10
CHAPTER

Configuration Statements

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account-layer2-overhead (PIC Level)

Syntax

```
account-layer2-overhead;
```

Hierarchy Level

```
[edit chassis fpc slot-number pic pic-number]
```

Release Information
Statement introduced in Junos OS Release 13.2.

Description
Enable the automatic adjustment of Layer 2 overhead in bytes, which is the octet adjustment per packet, based on the encapsulation on the logical interface for the total octet count for ingress and egress traffic on all the interfaces in the PIC.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Accounting of the Layer 2 Overhead Attribute in Interface Statistics*
- *Configuring Layer 2 Overhead Accounting in Interface Statistics*
- *Verifying the Accounting of Layer 2 Overhead in Interface Statistics*

action

Syntax

```
action {
    alarm;
    disable-pfe;
    get-state;
    log;
    offline;
    reset;
}
```

Hierarchy Level

[edit chassis **fpc** *slot-number* **error fatal**]

[edit chassis **fpc** *slot-number* **error major**]

[edit chassis **fpc** *slot-number* **error minor**]

[edit chassis **error fatal**]

[edit chassis **error major**]

[edit chassis **error minor**]

Release Information

Statement introduced for PTX Series routers in Junos OS Release 13.3.
Statement introduced for MX240, MX480, MX960 routers in Junos OS Release 14.2.

Description

Depending on the severity level of an error, you can configure one or more actions for the router to perform. For example, if the severity level of an error is major, you can configure the system to raise an alarm and restart the FPC.

NOTE: You cannot configure **disable-pfe** and **offline** actions at the same time.

Options

alarm—Raise an FPC alarm.

disable-pfe—(PTX routers) Disable Packet Forwarding Engine interfaces on an FPC. (MX240, MX480, MX960, MX2020 routers) Disables the interface associated with the ASIC that raised the error. On

MX Series routers, an MPC can have multiple ASICs handled by a single PFE. Disabling the PFE in such cases, is not the optimal way to handle the error.

get-state—The system starts collecting statistics counters and other data from the affected FPC. The data is written and saved to a file under **/var** on the routing engine.

offline—The system shuts down the affected FPC, thus allowing traffic to be re-routed through interfaces on other FPC in the device.

reset —The system restarts the affected FPC.

log—Log occurrences to the system log file.

Required Privilege Level

interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Fabric Resiliency and Degradation | **114**

show chassis fpc errors | **1564**

Configuring FPC Error Levels and Actions | **185**

action-fpc-restart-disable

Syntax

```
action-fpc-restart-disable;
```

Hierarchy Level

```
[edit chassis fabric degraded]
```

Release Information

Statement added in Junos OS Release 11.4.
Statement introduced in Junos OS Release 12.1 for MX240, MX480, and MX960 routers.
Statement introduced in Junos OS Release 12.1X48R4 for PTX Series Packet Transport Routers.

Description

Allow the user to disable restarting of the FPCs during healing from a degraded fabric condition. The device can automatically recover from degraded fabric conditions by restarting both the fabric planes and the FPCs. If the **action-fpc-restart-disable** statement is configured, the healing attempt is limited to restarting the fabric planes only.

Default

The system will detect a blackholing condition and try to heal the system.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Disabling Line Card Restart to Limit Recovery Actions from Degraded Fabric Conditions | 124

Fabric Resiliency and Degradation | 114

adaptive-services

Syntax

```
adaptive-services {
    service-package {
        extension-provider {
            control-cores control-number;
            data-cores data-number;
            data-flow-affinity {
                hash-key (layer-3 | layer-4);
            }
            forwarding-db-size size;
            object-cache-size size;
            package package-name;
            policy-db-size size;
            syslog {
                facility {
                    severity;
                    destination destination;
                }
            }
            wired-max-processes num-procs;
            wired-process-mem-size mem-size;
        }
        layer-2;
        layer-3;
    }
}
```

Hierarchy Level

```
[edit chassis fpc slot-number pic pic-number]
```

Release Information

Statement introduced before Junos OS Release 7.4.

Description

Enable a service package on adaptive services interfaces.

Options

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level

interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Enabling Service Packages*
- *Multiservices MIC and Multiservices MPC (MS-MIC and MS-MPC) Overview*
- *Configuring MS-MPC-Based, Static HTTP Redirect Services*
- *Configuring MS-MPC-Based, Converged HTTP Redirect Services*

aggregated-ether

Syntax

```
aggregated ether aggregated–ether-group-name;
```

Hierarchy Level

```
[edit chassis synchronization source interfaces ]
```

Release Information
Statement introduced in Junos OS Release 17.2R1.

Description
Specify an aggregated Ethernet group while configuring a member of the group as the clock source. This is an optional setting. Any number of interfaces from an aggregated Ethernet group can be configured as the clock source. If a member from the aggregated Ethernet group is selected as the locked clock source, then all the members of the group will transmit the Do not Use (DNU) ESMC quality level.

Options
aggregated–ether-group-name—aggregated ethernet group name

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Synchronous Ethernet Overview

show chassis synchronization | 1770

aggregate-ports

Syntax

```
aggregate-ports;
```

Hierarchy Level

```
[edit chassis fpc slot-number pic pic-number]
```

Release Information
Statement introduced in Junos OS Release 8.1.

Description
For T Series routers only, specify OC768-over-OC192 mode on the 4-port OC192C PIC. Four OC192 links are aggregated into one OC768 link with one logical interface.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring 4-Port OC192 PIC to Operate in OC768-over-OC192 Mode

aggregated-devices

Syntax

```
aggregated-devices {
    ethernet {
        device-count number;
        lacp {
            link-protection {
                non-revertive;
            }
            system-priority;
        }
    }
    sonet {
        device-count number;
        }
    maximum-links maximum-links-limit;
}
```

Hierarchy Level

```
[edit chassis]
```

Release Information

Statement introduced before Junos OS Release 7.4.
Support for LACP link protection and system priority introduced in Junos OS Release 9.3.

Description

Configure properties for aggregated devices on the router. Aggregate Ethernet links are logical interfaces defined on the device that bundle together multiple physical interfaces into a single interface for the use of redundancy and bandwidth aggregation. When interconnecting devices you can create aggregate ethernet interfaces to bundle together multiple physical ethernet links to increase bandwidth and redundancy between devices.

Link aggregation enables you to group Ethernet interfaces to form a single link layer interface. Link Aggregation Control Protocol (LACP) is supported in chassis cluster deployments, where aggregated Ethernet interfaces and redundant Ethernet interfaces are supported simultaneously.

You must first configure the system to enable configuring the Aggregated Ethernet (ae) Interfaces. By default, Juniper devices do not have any aggregated ethernet interfaces created. To configure the device to support a given number of ae interfaces, you must define it on a per chassis basis using the **set chassis aggregated-devices devices {1-32}** in configuration mode. The number of devices you define will be the

number of aggregated ethernet interfaces that the system will create which can be configured just like any other ethernet interface. Also you can view the interfaces created by using the **show interface terse** command. Once you have defined the number of aggregated ethernet devices on the chassis you can then continue to configure the LAG members on a per ethernet interface basis.

Options

The remaining statements are explained separately.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

> *Configuring Junos OS for Supporting Aggregated Devices*

alarm (chassis)

Syntax

```
alarm {
    interface-type {
        alarm-name (ignore |red | yellow);
    }
}
```

Hierarchy Level

```
[edit chassis],
[edit chassis interconnect-device name],
[edit chassis node-group name]
```

Release Information
Statement introduced before Junos OS Release 7.4.
Statement introduced in Junos OS Release 11.1 for the QFX Series.
Statement introduced in Junos OS Release 12.2 for the ACX Series.
Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

Description

Configure the chassis alarms and whether they trigger a red or yellow alarm, or whether they are ignored. Red alarm conditions light the **RED ALARM** LED on either the router's craft interface or the switch's LCD screen and trigger an audible alarm if one is connected to the contact on the craft interface or LCD screen. Yellow alarm conditions light the **YELLOW ALARM** LED on either the router's craft interface or the switch's LCD screen and trigger an audible alarm if one is connected to the craft interface or LCD screen.

To configure more than one alarm, include multiple ***alarm-name*** lines.

Options

alarm-name—Alarm condition. For a list of conditions, see *Configurable PIC Alarm Conditions*.

ignore—The specified alarm condition does not set off any alarm.

interface-type—Type of interface on which you are configuring the alarm: **atm**, **ethernet**, **sonet**, or **t3**.

red—The specified alarm condition sets off a red alarm.

yellow—The specified alarm condition sets off a yellow alarm.

Required Privilege Level
interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Understanding Alarms

Chassis Conditions That Trigger Alarms | **208**

Chassis Alarm Messages on a QFX3500 Device

Interface Alarm Messages

allow-sram-parity-errors

Syntax

```
allow-sram-parity-errors;
```

Hierarchy Level

[edit chassis fpc *slot-number*]

Release Information
Statement introduced in Junos OS Release 8.0.

Description
(T Series routers only) Allow SRAM parity errors to occur without restarting the FPC.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

atm-cell-relay-accumulation

Syntax

```
atm-cell-relay-accumulation;
```

Hierarchy Level

```
[edit chassis fpc slot-number pic pic-number],
[edit chassis lcc number fpc slot-number pic pic-number] (Routing Matrix)
```

Release Information
Statement introduced before Junos OS Release 7.4.

Description
Configure an Asynchronous Transfer Mode (ATM) Physical Interface Card (PIC) in cell-relay accumulation mode.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

> *Configuring the Junos OS to Use ATM Cell-Relay Accumulation Mode on an ATM1 PIC*

atm-l2circuit-mode

Syntax

```
atm-l2circuit-mode (cell | aal5 | trunk trunk);
```

Hierarchy Level

```
[edit chassis fpc slot-number pic pic-number],
[edit chassis lcc number fpc slot-number pic pic-number] (Routing Matrix)
```

Release Information

Statement introduced before Junos OS Release 7.4.

Description

Configure the ATM2 intelligent queuing (IQ) Layer 2 circuit transport mode.

Default

aal5

Options

aal5—Tunnel a stream of ATM cells encoded with ATM Adaptation Layer (AAL5) over an IP Multiprotocol Label Switching (MPLS) backbone.

cell—Tunnel a stream of ATM cells over an IP MPLS backbone.

trunk *trunk*—Transport ATM cells over an MPLS core network that is implemented on some other vendor switches. Trunk mode can be **UNI** or **NNI**.

NOTE: To determine which vendors support Layer 2 circuit trunk mode, contact Juniper Networks Customer Support.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring the Junos OS to Enable ATM2 Intelligent Queuing Layer 2 Circuit Transport Mode

auto-recovery-disable

Syntax

```
auto-recovery-disable;
```

Hierarchy Level

```
[edit chassis fabric degraded]
```

Release Information
Statement introduced in Junos OS Release 14.2 for TX Matrix Plus routers with 3D SIBs.

Description
Disable the autorecovery option which is used to recover the routing matrix if fabric black-hole condition is detected on links between Packet Forwarding Engines. By default, autorecovery is enabled. If it is disabled, to reenable the autorecovery option, delete the **auto-recovery-disable** statement from the existing configuration.

Required Privilege Level
system—To view this statement in the configuration.
system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

show chassis fabric faults recovery-actions | **1260**

bandwidth (MPC Bandwidth)

Syntax

bandwidth *bandwidth*;

Hierarchy Level

[edit chassis fpc *slot*]

Release Information

Statement introduced in Junos OS Release 16.1 for MPC8E.

Description

Configure the MPC bandwidth.

By default, MPC8E provides a maximum bandwidth of 960 Gbps. You can upgrade MPC8E to provide an increased bandwidth of 1600 Gbps (1.6 Tbps) by using an add-on license. After you purchase the license and configure the **bandwidth 1.6T** statement, MPC8E provides an increased bandwidth of 1.6 Tbps. After you upgrade the MPC, you can use the **show chassis fpc *slot* detail** command to verify the status as shown in the following example:

```
[edit]
user@router# run show chassis fpc 3 detail
Slot 3 information:
  State                                 Online
  Temperature                           29
  Total CPU DRAM                        3200 MB
...

  Max Power Consumption                 1150 Watts
  Configured Bandwidth                  1600 G
  Operating Bandwidth                   1600 G

[edit]
user@router#
```

Options

bandwidth—Configure the MPC to operate at a specified bandwidth. You can specify **1.6T** as the value to configure the MPC to operate at a bandwidth of 1.6 Tbps.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

MPC8E on MX Series Routers Overview | 56

MPC8E

bandwidth (Tunnel Services)

Syntax

```
bandwidth bandwidth-value;
```

Hierarchy Level

```
[edit chassis fpc slot-number pic number tunnel-services]
```

Release Information

Statement introduced in Junos OS Release 8.2.
Statement introduced in Junos OS Release 12.3X54 for ACX Series routers.

Description

(ACX Series, MX Series 5G Universal Routing Platforms and T4000 Core Routers only) Configure the amount of bandwidth in gigabits per second reserved on each Packet Forwarding Engine for tunnel traffic using tunnel services. Configuring the bandwidth creates a virtual tunnel interface that is represented as **lt-*<fpc/pic/port>***.

Options

bandwidth-value—Amount of bandwidth in Gbps to reserve for tunnel traffic using tunnel services:

- On ACX Series routers, the bandwidth values can be **1g** or **10g**.
- On MX Series routers, the bandwidth values can be as follows:
  - **1g**
  - **10g** through **100g** in 10 Gbps increments: **10g**, **20g**, **30g**, **40g**, **50g**, **60g**, **70g**, **80g**, **90g**, **100g**
  - **100g** through **400g** in 100 Gbps increments: **100g**, **200g**, **300g**, **400g**
- On T4000 routers, the bandwidth values can be **10g** through **100g** in 10 Gbps increments: **10g**, **20g**, **30g**, **40g**, **50g**, **60g**, **70g**, **80g**, **90g**, **100g**.

NOTE: The bandwidth that you specify determines the port number of the tunnel interfaces that are created. When you specify a bandwidth of **1g**, the port number is always 10. When you specify any other bandwidth, the port number is always 0.

NOTE: If you specify a bandwidth that is not compatible with the type of DPCs or MPCs and their respective Packet Forwarding Engine, tunnel services are not activated. For example, you cannot specify 1 gigabit per second bandwidth for a Packet Forwarding Engine on a 10-Gigabit Ethernet 4-port DPC or 16x10GE 3D MPC.

When the tunnel bandwidth is unspecified in the Routing Engine CLI, the maximum tunnel bandwidth for MPC3E is 60G.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Example: Configuring Tunnel Interfaces on a Gigabit Ethernet 40-Port DPC*
- *Tunnel Interface Configuration on MX Series Routers Overview*
- *Configuring Tunnel Interfaces on T4000 Routers*
- *Example: Configuring Tunnel Interfaces on a 10-Gigabit Ethernet 4-Port DPC*
- *Example: Configuring Tunnel Interfaces on the MPC3E*
- tunnel-services (Chassis) | **576**

bandwidth-degradation

Syntax

```
bandwidth-degradation {
    action (log-only | restart | offline | restart-then-offline);
    no-fabric-switchover;
    percentage (1-99);
}
```

Hierarchy Level

```
[edit chassis fpc slot-numberfabric]
```

Release Information

Statement introduced in Junos OS Release 15.1.

Description

Configure a FPC to take a specific action once bandwidth degradation reaches a certain percentage to avoid causing a traffic black hole in the chassis.

NOTE: This configuration statement is mutually exclusive with the **offline-on-fabric-bandwidth-reduction** statement. If both statements are configured, the commit check fails and returns an error.

Options

log-only—A message gets logged in the chassisd and message files when the fabric degradation threshold is reached. No other actions are taken.

restart—The FPC with a degraded fabric plane is restarted once the threshold is reached.

offline—The FPC with a degraded fabric plane is taken offline once the threshold is reached. The FPC requires manual intervention to be brought back online. This is the default action if no action attribute configured.

restart-then-offline—The FPC with a degraded fabric plane is restarted once the threshold is reached, and if fabric plane degradation is detected again within 10 minutes, the FPC is taken offline. The FPC requires manual intervention to be brought back online.

Required Privilege Level

interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Managing Bandwidth Degradation | 123

blackhole-action | 325

offline-on-fabric-bandwidth-reduction | 460

blackhole-action

Syntax

```
blackhole-action (log-only | restart | offline | restart-then-offline);
```

Hierarchy Level

```
[edit chassis fpc slot-number fabric]
```

Release Information

Statement introduced in Junos OS Release 15.1.

Description

Configure an FPC to take a specific action when fabric plane degradation reaches 100 percent.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Managing Bandwidth Degradation | 123

bandwidth-degradation | 324

ce1

Syntax

```
ce1 {
   e1 port-number {
      channel-group channel-number timeslots slot-number;
   }
}
```

Hierarchy Level

```
[edit chassis fpc slot-number pic pic-number]
```

Release Information

Statement introduced before Junos OS Release 7.4.

Description

Configure channelized E1 port and channel specifications.

Options

e1 *port-number*—Any valid E1 port number on the host system.

The remaining statements are explained separately.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

> *Configuring the Junos OS to Support Channel Groups and Time Slots for Channelized E1 PICs*

channel-group

Syntax

channel-group *channel-number* timeslots *slot-number*;

Hierarchy Level

[edit chassis fpc *slot-number* pic *pic-number* ce1 e1 *link-number*],
[edit chassis fpc *slot-number* pic *pic-number* ct3 port *port-number* t1 *link-number*],
[edit chassis lcc *lcc-index* fpc *slot-number* pic *pic-number* ce1 e1 *link-number*],
[edit chassis lcc *lcc-index* fpc *slot-number* pic *pic-number* ct3 port *port-number* t1 *link-number*]

Release Information

Statement introduced before Junos OS Release 7.4.

Description

Configure the DS0 channel number.

Options

channel-number—DS0 channel group.

Range: 0 through 7 for DS0 naming, and 0 through 23 for E1 naming.

timeslots *slot-number*—One or more actual time slot numbers allocated.

Range: 1 through 24 for T1 and 1 through 32 for E1

Default: All time slots for T1 and all time slots for E1

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring the Junos OS to Support Channelized DS3-to-DS0 Naming for Channel Groups and Time Slots

Configuring the Junos OS to Support Channel Groups and Time Slots for Channelized E1 PICs

channelization

Syntax

```
channelization;
```

Hierarchy Level

```
[edit chassis fpc slot-number pic pic-number]
```

Release Information
Statement introduced in Junos OS Release 11.4.

Description
Enable the DS3/E3 MIC, MIC-3D-16CHE1-T1-CE, and MIC-3D-8CHOC3-4CHOC12 on MX Series routers with Queuing and Enhanced Queuing MPCs (MX-MPC1-3D-Q, MX-MPC2-3D-Q, MX-MPC2-3D-EQ, MPC2E-3D-NG, and MPC3E-3D-NG) or on MX80 routers to function in channelized mode.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

> *Configuring the Junos OS to Enable Channelization on DS3/E3 MIC*

chassis

Syntax

```
chassis { ... }
```

Hierarchy Level

```
[edit]
```

Release Information
Statement introduced before Junos OS Release 7.4.

Description
Configure router chassis properties.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

ambient-temperature

Syntax

```
chassis ambient-temperature (25C|40C|55C);
```

Hierarchy Level

[edit chassis]

Release Information

Statement introduced in Junos OS Release 14.1 for PTX Series routers.
Statement introduced in Junos OS Release 15.1 for MX Series routers.
Statement introduced in Junos OS Release 17.2R1 for EX9200 switches.
Statement introduced in Junos OS Release 17.3 for MX10003 Universal Routing Platforms.
Statement introduced in Junos OS Release 18.1R1 for EX9251 switches.
Command introduced in Junos OS Release 18.2 for EX9253 Switches.
Command introduced in Junos OS Release 18.2 for MX10008 Universal Routing Platforms.

Description

Set the chassis ambient temperature and instruct the power manager to allocate power to the line cards according to the ambient temperature value.

On system initialization in a PTX Series router, the power manager reads the ambient temperature and allocates power to the line cards according to the power budget policy at that temperature. If the actual power consumption of any line card exceeds the configured value for more than three minutes, the power manager overrides the configured ambient temperature setting of that line card, and resets its ambient temperature to the next higher level and reallocates power according to the new temperature setting. All the overshooting line cards remain in the dynamic ambient temperature mode until the next reboot, or until you override the configured ambient temperature with a CLI command. The power manager then resets the power budget of the FRUs according to the configured ambient temperature setting.

When an MX Series router or an EX9200 switch restarts, the system adjusts the power allocation or the provisioned power for the line cards on the basis of the configured ambient temperature. If enough power is not available, a minor chassis alarm is raised. However, the chassis continues to run with the configured ambient temperature. You can configure a new higher ambient temperature only after you make more power available by adding new power supply modules or by taking a few line cards offline. By using the provisioned power that is saved by configuring a lower ambient temperature, you can bring more hardware components online.

For MX960 Universal Routing Platform and the MX2000 line of routers, a maximum operating temperature of 40°C is recommended at an altitude of up to 6000 feet above sea level. The router can operate up to a maximum temperature of 46°C at sea level and can be set accordingly.

NOTE: If ambient temperature is not set, then the line cards are allocated power according to the default ambient temperature.

Default

- MX Series routers—40°C
- PTX Series routers—40°C
- EX9200 switches—40°C
- EX9251 switches—40°C
- EX9253 switches—40°C

Options

25C —Set the ambient temperature of the chassis to 25°C

40C —Set the ambient temperature of the chassis to 40°C

55C —Set the ambient temperature of the chassis to 55°C

NOTE: Starting in Junos OS Evolved Release 19.1R1, the PTX10003-80C routers do not support configuration of the ambient temperature value **55C**.

Required Privilege Level

chassis—To view this statement in the configuration.
chassis-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Managing Power Allocated to PTX5000 FPCs on the Basis of Chassis Ambient Temperature Configuration | **181**

Monitoring the Power Consumption of PTX5000 FPCs by Configuring the Ambient Temperature | **177**

Understanding How Configuring Ambient Temperature Helps Optimize Power Utilization | **176**

clock-class

Syntax

```
clock-class clock-class-value;
```

Hierarchy Level

```
[edit protocols ptp slave clock-class-to-quality-level-mapping ]
```

Release Information

Statement introduced in Junos OS Release 12.2R2.

Description

Configure the clock class to the set ESMC quality level.

Default

Following are the default clock class values for various clocks:

- Boundary clock–248
- Ordinary clock (master)–52
- Ordinary clock (slave)–255

Required Privilege Level

routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Configuring Hybrid Mode and ESMC Quality Level Mapping*
- *Example: Configuring Hybrid Mode and ESMC Quality Level Mapping*
- *Understanding Hybrid Mode*
- *Precision Time Protocol Overview*
- *Synchronous Ethernet Overview*

clock-class-to-quality-level-mapping

Syntax

```
clock-class-to-quality-level-mapping {
   clock-class clock-class-value;
   {
      quality-level ql-value;
   }
}
```

Hierarchy Level

```
[edit protocols ptp slave]
```

Release Information

Statement introduced in Junos OS Release 12.2R2.

Description

Configure the slave to override the default Precision Time Protocol (PTP) clock class to Ethernet Synchronization Message Channel (ESMC) mapping.

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level

routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Configuring Hybrid Mode and ESMC Quality Level Mapping*
- *Example: Configuring Hybrid Mode and ESMC Quality Level Mapping*
- *Understanding Hybrid Mode*
- *Precision Time Protocol Overview*
- *Synchronous Ethernet Overview*

clock-ipv6-source (slave)

Syntax

```
clock-ipv6-source master-ipv6-address {
    local-ip-address local-ip-address;
}
```

Hierarchy Level

[edit protocols ptp **slave** interface *interface-name* **unicast-mode** transport]

Release Information

Statement introduced in Junos OS Release 16.1.

Description

Configure the IPv6 address of the master.

Options

master-ipv6-address—IPv6 address for the master.

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level

routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Configuring Precision Time Protocol*
- *Example: Configuring Precision Time Protocol*
- *Precision Time Protocol Overview*

clock-source (hybrid)

Syntax

```
clock-source ip-address {
    interface interface1-name;
    interface interface2-name;
}
```

Hierarchy Level

[edit protocols ptp **slave hybrid synchronous-ethernet-mapping**]

Release Information

Statement introduced in Junos OS Release 12.2R2.

Description

Configure the IP address of the PTP master and its possible Synchronous Ethernet source interfaces.

Options

interface *interface1-name*—Synchronous Ethernet interface traceable to the same PTP master clock.

interface *interface2-name*—Synchronous Ethernet interface traceable to the same PTP master clock.

> **NOTE:** You must first configure these interfaces at the **[edit chassis synchronization]** hierarchy level as Synchronous Ethernet sources. For information about configuring the interfaces, see **synchronization (MX Series)**.

Required Privilege Level

routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Configuring Hybrid Mode and ESMC Quality Level Mapping*
- *Example: Configuring Hybrid Mode and ESMC Quality Level Mapping*
- *Understanding Hybrid Mode*

Precision Time Protocol Overview

Synchronous Ethernet Overview

clock-mode

Syntax

```
clock-mode (boundary | ordinary);
```

Hierarchy Level

```
[edit protocols ptp]
```

Release Information

Statement introduced in Junos OS Release 12.2.
Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Metro Routers.
Statement introduced in Junos OS Release 17.3 for the QFX Series.

Description

Configure the clock mode as either boundary clock or ordinary clock. The clock mode determines whether the node is going to act as a slave, master, or both. This attribute is mandatory and has no default value.

Options

boundary—The clock mode of the node is a boundary clock where the clock acts as both master and slave.

> **NOTE:** A boundary clock is not supported on the ACX Series routers for 12.2.

ordinary—The clock mode of the node is a system clock where the clock acts either as a master or as a slave.

Required Privilege Level

routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Configuring Precision Time Protocol*
- *Example: Configuring Precision Time Protocol*
- *Precision Time Protocol Overview*
- *IEEE 1588v2 Precision Timing Protocol (PTP)*

clock-mode (Clock Synchronization)

Syntax

```
clock-mode (auto-select | free-run);
```

Hierarchy Level

```
[edit chassis synchronization]
```

Release Information
Statement introduced in Junos OS Release 11.2R4 for MX Series routers.

Description
Configure the mode of operation to select the clock source from a free-run local oscillator or from an external qualified clock. On MX240, MX480, and MX960 routers with enhanced MPCs, the free-run clock is provided by a local oscillator. On other MX Series routers, the free-run clock is provided by the SCB.

Default
auto-select

Options
auto-select—Select the best external clock source as a clock source.

free-run—Select the free-run local oscillator as a clock source.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization | 552

clock-ipv6-client

Syntax

```
clock-ipv6-client  slave-ip-address;
```

Hierarchy Level

```
[edit protocols ptp master interface interface-name unicast-mode transport ipv4]
```

Release Information
Statement introduced in Junos OS Release 16.1.

Description
Configure the IPv6 address of the slave.

Options
slave-ip-address—The IPv6 address for the slave.

Required Privilege Level
routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Configuring Precision Time Protocol*
- *Example: Configuring Precision Time Protocol*
- *Precision Time Protocol Overview*

convert-clock-class-to-quality-level

Syntax

```
convert-clock-class-to-quality-level;
```

Hierarchy Level

[edit protocols ptp slave]

Release Information

Statement introduced in Junos OS Release 12.2 for ACX Series Universal Metro Routers.
Statement introduced in Junos OS Release 12.2R2 for MX Series 5G Universal Routing Platforms.

Description

Configure the slave to enable it to retrieve Ethernet Synchronization Message Channel (ESMC) information from the Precision Time Protocol (PTP) clock class.

When this option is set, the outgoing quality level depends on the PTP clock class mapping, irrespective of the clock being configured in hybrid mode or pure PTP mode. This is the default mapping mode of the ESMC quality level value to the clock class.

Required Privilege Level

routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Configuring Hybrid Mode and ESMC Quality Level Mapping*
- *Example: Configuring Hybrid Mode and ESMC Quality Level Mapping*
- *Precision Time Protocol Overview*
- *Synchronous Ethernet Overview*
- *Understanding ESMC Quality Level Mapping*
- *Understanding Hybrid Mode*

craft-lockout

Syntax

```
craft-lockout;
```

Hierarchy Level

```
[edit chassis]
```

Release Information
Statement introduced in Junos OS Release 8.1.

Description
Disable the physical operation of the craft interface front panel.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring the Junos OS to Disable the Physical Operation of the Craft Interface | 267

ct3

Syntax

```
ct3 {
    port port-number {
        t1 link-number {
            channel-group channel-number timeslots slot-number;
        }
    }
}
```

Hierarchy Level

```
[edit chassis fpc slot-number pic pic-number]
```

Release Information
Statement introduced before Junos OS Release 7.4.

Description

Configure channelized T3 port and channel specifications.

Options

port *port-number*—Any valid T3 port number on the host system.

t1 *link-number*—T1 link.

Range: 0 through 27

The remaining statements are explained separately.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

> *Configuring the Junos OS to Support Channelized DS3-to-DS0 Naming for Channel Groups and Time Slots*

degraded

Syntax

```
degraded {
    action-fpc-restart-disable;
    degraded-fabric-detection-enable;
    degraded-fpc-bad-plane-threshold number-bad-planes;
}
```

Hierarchy Level

```
[edit chassis fabric degraded]
```

Release Information

Statement introduced in Junos OS Release 11.4.
Statement introduced in Junos OS Release 12.1X48R4 for PTX Series Packet Transport Routers.

Description

Configure options that apply to degraded chassis fabric conditions.

Options

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Fabric Resiliency and Degradation | 114

Disabling Line Card Restart to Limit Recovery Actions from Degraded Fabric Conditions | 124

degraded-fabric-detection-enable

Syntax

```
degraded-fabric-detection-enable;
```

Hierarchy Level

```
[edit chassis fabric degraded]
```

Release Information
Statement introduced in Junos OS Release 12.1X48R4 for PTX Series Packet Transport Routers.

Description
Enable detection of an FPC with degraded fabric.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Fabric Resiliency and Degradation | 114

Disabling Line Card Restart to Limit Recovery Actions from Degraded Fabric Conditions | 124

degraded-fpc-bad-plane-threshold

Syntax

```
degraded-fpc-bad-plane-threshold number-bad-planes;
```

Hierarchy Level

```
[edit chassis fabric degraded]
```

Release Information

Statement introduced in Junos OS Release 12.1X48R4 for PTX Series Packet Transport Routers.

Description

Configure the number of bad planes that indicate an FPC is degraded.

Options

number-bad-planes—Number of bad planes.

Range: 4 through 18

Default: 4

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Fabric Resiliency and Degradation | 114

Disabling Line Card Restart to Limit Recovery Actions from Degraded Fabric Conditions | 124

device-count

Syntax

```
device-count number;
```

Hierarchy Level

```
[edit chassis aggregated-devices ethernet]
[edit chassis aggregated-devices sonet]
```

Release Information

Statement introduced before Junos OS Release 7.4.
Statement functionality updated in Junos OS Release 14.2, as described below.

Description

Configure the number of aggregated logical devices available to the router.

Starting in Junos release 14.2, for MX series routers, aggregated Ethernet interfaces created under a logical system can be individually named. Prior to 14.2, ae interfaces were named automatically (AE1, AE2) etc. upon setting the device count. This change allows administrators to use custom naming schemes. System resources are only allocated for named ae interfaces, regardless of how many were declared in the device count. (In Junos 14.2 and earlier, ae naming occurred automatically up to the number specified for device count, and system resources were allocated whether a given ae interface was used or not.)

Options

number—Set the number of aggregated logical devices that will be available for configuration.

> **NOTE:** Starting with Junos OS Release 13.2, a maximum of 64 aggregated interfaces are supported for link aggregation of SONET/SDH interfaces. In releases before Junos OS Release 13.2, a maximum of 16 aggregated interfaces are supported for link aggregation of SONET/SDH interfaces.
>
> For Junos OS Evolved, you can specify up to 512 aggregated Ethernet devices.

Range: 1 - 496. The upper limit for this value is system specific.
Range: 1 - 512 for Junos OS Evolved.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring Junos OS for Supporting Aggregated Devices

Configuring Aggregated SONET/SDH Interfaces

disable-grant-bypass

Syntax

```
disable-grant-bypass;
```

Hierarchy Level

```
[edit chassis fabric]
```

Release Information

Statement introduced in Junos OS Release 16.1.

Description

Disable the fabric grant bypass feature. This feature is used for communication between Packet Forwarding Engines. For instance, when a Packet Forwarding Engine wants to send a packet to another Packet Forwarding Engine (on the same MPC or on a different MPC), a request is sent to the Packet Forwarding Engine across the fabric plane. Only after the request is granted, can the source Packet Forwarding Engine send the packet to the destination Packet Forwarding Engine. Disabling the default behavior controls congestion and thus improves system behavior and performance on MX2010 and MX2020 routers.

NOTE: After disabling fabric grant bypass feature on the MX2010 and MX2020, you must reboot the router for the changes to take effect. MPC1 (MX-MPC1-3D), MPC2 (MX-MPC2-3D), and the 16-port 10-Gigabit Ethernet MPC (MPC-3D-16XGE-SFP) do not power on after you disable the fabric grant bypass feature and reboot the router.

Default

Enabled for all MPCs on MX2010 and MX2020 routers with Switch Fabric Boards (SFBs). On MX2010 and MX2020 routers with the Switch Fabric Board SFB2, this feature is enabled only on the MPCs, MPC1 (MX-MPC1-3D), MPC2 (MX-MPC2-3D), and the 16-port 10-Gigabit Ethernet MPC (MPC-3D-16XGE-SFP), and disabled on all other MPCs. The feature is disabled on routers with Switch Control Boards (SCBs).

Required Privilege Level

view

RELATED DOCUMENTATION

Understanding Fabric Grant Bypass | 128

Disabling Fabric Grant Bypass to Control Congestion and Improve Performance | 129

Re-Enabling Fabric Grant Bypass | 130

disk-failure-action

Syntax

```
disk-failure-action (halt | reboot);
```

Hierarchy Level

```
[edit chassis routing-engine on-disk-failure]
```

Release Information
Statement introduced in Junos OS Release 9.0.

Description
Configure the Routing Engine to halt or reboot when the Routing Engine hard disk fails.

Options
halt—Specify the Routing Engine to halt.

reboot—Specify the Routing Engine to reboot.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Enabling a Routing Engine to Reboot on Hard Disk Errors | 197

domain

Syntax

```
domain domain-value;
```

Hierarchy Level

```
[edit protocols ptp]
```

Release Information

Statement introduced in Junos OS Release 12.2.
Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Metro Routers.

Description

Configure multiple independent Precision Time Protocol (PTP) domains.

NOTE: Only one PTP domain is supported at any given point in time.

Options

domain-value—The PTP domain value.

Range: 0 through 127

Default: 0

Required Privilege Level

routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Configuring Precision Time Protocol*
- *Example: Configuring Precision Time Protocol*
- *Precision Time Protocol Overview*

dynamic-profile-options

Syntax

```
dynamic-profile-options {
    versioning;
}
```

Hierarchy Level

```
[edit system]
```

Release Information
Statement introduced in Junos OS Release 11.4.

Description
Configure global dynamic profile options.

The remaining statement is explained separately. Search for a statement in CLI Explorer or click a linked statement in the Syntax section for details.

Required Privilege Level
routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Versioning for Dynamic Profiles*

e1

Syntax

```
e1 port-number {
    channel-group channel-number timeslots slot-number;
}
```

Hierarchy Level

```
[edit chassis fpc slot-number pic pic-number ce1]
```

Release Information

Statement introduced before Junos OS Release 7.4.

Description

Configure the channelized E1 port number on the PIC. The range is from **0** through **9**.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring the Junos OS to Support Channel Groups and Time Slots for Channelized E1 PICs

e1-options (Clock Synchronization)

Syntax

```
e1-options {
    framing (g704 | g704-no-crc4);
    line-encoding (ami | hdb3);
    sabit bit;
}
```

Hierarchy Level

```
[edit chassis synchronization interfaces external]
[edit chassis synchronization interfaces (external-0/0 | external-1/0)]
```

Release Information

Statement introduced in Junos OS Release 12.3 for MX Series routers.

Description

Configure the E1 interface options.

Options

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization | 552

egress-policer-overhead

Syntax

```
egress-policer-overhead bytes;
```

Hierarchy Level

```
[edit chassis fpc slot-number pic pic-number]
```

Release Information

Statement introduced before Junos OS Release 11.1.

Description

Add the specified number of bytes to the actual length of an Ethernet frame when determining the actions of Layer 2 policers, MAC policers, or queue rate limits applied to output traffic on the line card. You can configure egress policer overhead to account for egress *shaping* overhead bytes added to output traffic on the line card.

On M Series and T Series routers, this statement is supported on Gigabit Ethernet Intelligent Queuing 2 (IQ2) PICs and Enhanced IQ2 (IQ2E) PICs. On MX Series routers, this statement is supported for interfaces configured on Dense Port Concentrators (DPCs).

NOTE: This statement is not supported on Modular Interface Cards (MICs) or Modular Port Concentrators (MPCs) in MX Series routers.

Options

bytes—Number of bytes added to a packet exiting an interface.

Range: 0–255 bytes

Default: 0

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

egress-shaping-overhead

Policer Overhead to Account for Rate Shaping Overview

Example: Configuring Policer Overhead to Account for Rate Shaping

Configuring a Policer Overhead

CoS on Enhanced IQ2 PICs Overview

enhanced-mode (Network Services)

Syntax

```
enhanced-mode;
```

Hierarchy Level

```
[edit chassis network-services]
```

Release Information

Statement introduced in Junos OS Release 12.3 for T4000 Core Routers with Type 5 FPCs.
Statement introduced in Junos OS Release 15.1F3 and 16.1R2 for PTX5000 routers with third-generation FPCs.
Statement introduced in Junos OS Release 15.1F6 and 16.1R2 for PTX3000 routers with third-generation FPCs.
Statement introduced in Junos OS Release 17.3R1 for PTX1000 routers.

Description

PTX1000, PTX3000 and PTX5000 Routers—When you configure **enhanced-mode** on PTX series routers, the following features are enabled on the router:

- Filter-based generic routing encapsulation (GRE) for IPV4 and IPV6 tunneling.
- **promote gre-key** statement for configuring gre-key as one of the matches in a filter.
- **promote dscp** under **family inet**, and **promote traffic-class** under **family inet6** statements for configuring these as one of the matches in a filter. (Added in Junos OS 17.1 for all PTX Series routers with third-generation FPCs.)
- **gtp-tunnel-endpoint-identifier** statement for including hash calculation for IPv4 or IPv6 packets in the GPRS tunneling protocol–Tunnel end point ID (GTP-TEID) field hash calculations.
- Wider configuration range for Bidirectional Forwarding Detection (BFD) protocol intervals.
- Support for up to two million routes per chassis.
- Support for Layer 3 VPN. The **vrf-table-label** statement is supported. (Added in Junos OS 15.1F5 for PTX5000 routers.)
- Support for destination class usage (DCU) and source class usage (SCU) accounting. (Added in Junos OS 15.1F5 for PTX5000 routers.)

NOTE:

- When you configure the **enhanced-mode** statement, only third-generation FPCs are allowed to be powered on. All other FPCs are powered off and cannot be brought online.
- When you do not configure the **enhanced-mode** statement, third-generation FPCs do not support the advanced features in the preceding list. Third-generation FPC only provide the same functionality as the first-generation and second-generation FPCs.
- After you configure the **enhanced-mode** statement and commit the configuration, the router must reboot.

T4000 Routers—When you configure **enhanced-mode** on T4000 routers, improved virtual private LAN service (VPLS) MAC address learning by supporting up to 262,143 MAC addresses per VPLS routing instance is enabled.

NOTE:

- The **enhanced-mode** statement supports up to 262,143 MAC addresses per VPLS routing instance. However, the MAC address learning limit for each interface remains the same (that is, 65,535 MAC addresses).
- After you configure the **enhanced-mode** statement and committing the configuration, you receive a warning message that prompts you to reboot the router. You must reboot the router and then modify the size of the VPLS MAC address table; otherwise, the improved VPLS MAC address learning does not take effect.
- When the T4000 router reboots after the **enhanced-mode** statement is configured, only the T4000 Type 5 FPCs are online while the remaining FPCs are offline.

Default

PTX Series Routers—By default, the **enhanced-mode** statement is disabled.

T4000 Routers—By default, the improved VPLS MAC address learning feature is disabled.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- Network Services Mode Overview | **275**
- show chassis fpc | **1507**
- *mac-table-size*
- show chassis network-services | **1612**

error

Syntax

```
error {
   (fatal | major | minor) {
      threshold threshold value;
      action (alarm | disable-pfe | offline-pic | log | get-state |offline | reset);
   }
   scope error-scope {
      category category {
         (fatal | major | minor) {
            threshold threshold value;
            action (alarm | disable-pfe | log | get-state |offline | reset);
         }
      }
   }
}
```

Hierarchy Level

[edit chassis]

Release Information

Statement introduced in Junos OS Release 13.3 on MX Series routers.

Description

Configure the threshold at which FPC errors will take the action you configure to be performed by the device. Starting from Junos OS Release 18.1R3, you can configure error thresholds and actions at the error scope and error category levels on MX Series routers.

Some Juniper devices include an internal framework for detecting and correcting FPC errors that can have the potential to affect services. You can classify FPC errors according to severity, set an automatic recovery action for each severity, and set a threshold (i.e., the number of times the error must occur before the action is triggered).

Options

You can configure the threshold for the following severity levels:

NOTE: You cannot configure the severity level of an error. However you can modify the severity of an error by using the error ID. See **error-id**.

- **fatal**—Fatal error on the FPC. An error that results in blockage of considerable amount of traffic across modules is a fatal error.
- **major**—Major error on the FPC. An error that results in continuing loss of packet traffic but does not affect other modules is a major error.
- **minor**—Minor error on the FPC. An error that results in the loss of a single packet but is fully recoverable is a minor error.
- **threshold *threshold-value***—Configure the threshold value at which to take action. If the severity level of the error is fatal, the action is carried out only once when the total number of errors crosses the threshold value. If the severity level of the error is major, the action is carried out once after the occurrence crosses the threshold. If the severity level is minor, the action is carried out as many times as the value specified by the threshold. For example, when the severity level is minor, and you have configured the threshold value as 10, the action is carried out after the tenth occurrence.

  NOTE: You can set the threshold value to 0 for errors with severity level as minor. This implies that no action is taken for that error. You cannot set the threshold value to 0 for errors with severity level as major or fatal.

  Default: The error count for fatal and major actions is 1. The default error count for minor actions is 10.

  Range: 0—429,496,729

The available detection and recovery actions are as follows:

- **alarm**—Raise an alarm.
- **disable-pfe**—Disable the PFE interfaces on the FPC.
- **get-state**—Get the current state of the FPC.
- **log**—Generate a log for the event.
- **offline**—Take the FPC offline.
- **offline-pic**—Take the PIC (installed in the FPC) offline.
- **reset**—Reset the FPC.

NOTE: Starting in Junos OS Evolved Release 19.1R1, the **offline** and **disable-pfe** actions are not available for errors with **minor** severity (under the hierarchy **edit chassis error minor action**).

The available detection and recovery actions are as follows for devices running Junos OS Evolved:

- **alarm**—Raise an alarm.
- **fault**—System goes to fault state but stays up (diagnostics can be run on it).
- **get-state**—Get the current state of the FPC.
- **log**—Generate a log for the event.

> **NOTE:** Starting in Junos OS Release 17.2R1, if you configure the **disable-pfe**, **offline**, **offline-pic** or **reset** action on an MX Series or PTX Series router, the **get-state** action is additionally configured on the router. This means, for example, if you configure the **disable-pfe** action on the router, the router gets both **disable-pfe** and **get-state** actions configured.

- **scope *error-scope***—Group the errors of a particular severity into different scopes. Errors belonging to each error scope is further grouped into categories, before thresholds and actions are defined at the group level. The following scopes are available: **board** and **pfe**.
- **category *category***—Categorize errors into various subgroups under the scope level. An error category helps you group similar errors belonging to a particular scope and define actions for them at once. This feature eliminates the need for configurations against individual error-ids. Some of the error-categories are **functional**, **io** (input/output errors), **storage** (for example, errors related to HDD, SSD, and flash), **memory** (for example, errors related to static RAM), **processing** (for example, CPU-related errors), and **switch**.

Required Privilege Level

interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Fabric Resiliency and Degradation | **114**

Configuring FPC Error Levels and Actions | **185**

fpc error | **381**

show chassis fabric errors | **1264**

show chassis fpc errors | **1564**

error-id

Syntax

```
error-id {
    severity; {
        (fatal | major | minor) {
    }
    state {
        disable;
    }
}
```

Hierarchy Level

[edit chassis fpc *slot* error]

Release Information

Statement introduced in Junos OS Release 18.2R1.

Description

Manage an error by using the error identifier. This feature allows you to disable an error or modify its severity. The **disable** option allows you to stop the error from being reported in the system until the error is enabled again.

An *error-id*, a unique error identifier, is represented as a Uniform Resource Identifier (URI), and is composed of a module identifier and an error identifier. For example, the error-id **"/cpu/0/memory/0/memory-uncorrected-error"** indicates an uncorrectable error under CPU memory module instance **0**.

Options

- **severity**—Apply a new severity to the error ID. You can apply any of the following severities:
  - **fatal**—Fatal error on the FPC. An error that results in blockage of considerable amount of traffic across modules is a fatal error.
  - **major**—Major error on the FPC. An error that results in continuing loss of packet traffic but does not affect other modules is a major error.
  - **minor**—Minor error on the FPC. An error that results in the loss of a single packet but is fully recoverable is a minor error.
- **state**—By default, an error is in "enabled" state.
  - **disable**—Disable an error.

Required Privilege Level

routing—To view this statement in the configuration.

routing-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- Managing FPC Errors | **191**
- Configuring FPC Error Levels and Actions | **185**
- fpc error | **381**
- show chassis fpc errors | **1564**

esmc-transmit

Syntax

```
esmc-transmit {
    interfaces (all | interface-name);
}
```

Hierarchy Level

```
[edit chassis synchronization]
```

Release Information

Statement introduced in Junos OS Release 11.2R4 for MX Series routers.

Description

Enable Ethernet Synchronization Message Channel (ESMC) packet transmission on all the interfaces or on a specific interface.

Options

interface-name—Enable ESMC packet transmission on this interface.

all—Enable ESMC packet transmission on all interfaces.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization | 552

ethernet (Chassis)

Syntax

```
ethernet {
    device-count number;
    lacp {
        link-protection {
            non-revertive;
        }
        system-priority;
    }
}
```

Hierarchy Level

```
[edit chassis aggregated-devices]
```

Release Information

Statement introduced before Junos OS Release 7.4.
Statement introduced in Junos OS Release 11.4 for EX Series switches.

Description

Configure properties for Ethernet aggregated devices on the router.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Configuring Junos OS for Supporting Aggregated Devices*
- *Configuring LACP Link Protection of Aggregated Ethernet Interfaces for Switches*

family

Syntax

```
family {
    inet {
        layer-3;
        layer-4;
        symmetric-hash {
            complement;
        }
    }
    multiservice {
        source-mac;
        destination-mac;
        payload {
            ip {
                layer-3;
                layer-4;
            }
        }
        symmetric-hash {
            complement;
        }
    }
}
```

Hierarchy Level

```
[edit chassis fpc slot-number pic pic-number hash-key]
```

Release Information

Statement introduced in Junos OS Release 9.6.

Description

(MX Series 5G Universal Routing Platforms only) Configure data used in a hash key for a specific protocol family when configuring PIC-level symmetrical load balancing on an 802.3ad Link Aggregation Group.

Options

inet—Configure data used in a hash key for the **inet** protocol family.

multiservice—Configure data used in a hash key for the **multiservice** protocol family.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring PIC-Level Symmetrical Hashing for Load Balancing on 802.3ad LAGs for MX Series Routers

fatal

Syntax

```
fatal {
    threshold threshold-value;
    action {
        alarm;
        disable-pfe;
        get-state;
        log;
        offline;
        reset;
    }
}
```

Hierarchy Level

[edit chassis **fpc** *slot-number* **error**]

[edit chassis]

Release Information

Statement introduced for PTX Series routers in Junos OS Release 13.3.
Statement introduced for MX240, MX480, MX960, and MX2020 routers in Junos OS Release 14.2.

Description

Severity level of the error. An error that results in blockage of considerable amount of traffic across modules is a fatal error. The severity level of an error cannot be configured by a user.

The other statements are explained separately.

Required Privilege Level

interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Fabric Resiliency and Degradation | **114**

Configuring FPC Error Levels and Actions | **185**

feeds (T640, T1600, and T4000 Routers with Six-Input DC Power Supply)

Syntax

```
feeds number-of-input-feeds;
```

Hierarchy Level

```
[edit chassis pem]
[edit chassis lcc lcc-number pem] (Routing Matrix)
```

Release Information

Statement introduced in Junos OS Release 12.1.

Description

Configure the number of input feeds connected to the six-input DC power supply on T640, T1600, or T4000 routers. The value assigned to the **feeds** statement must be equal to the number of input feeds provided to the power supply.

When providing four or five input feeds on standalone routers, you must configure the **feeds** statement at the **[edit chassis pem]** hierarchy level. When providing four or five input feeds to an LCC router in a routing matrix, you must configure the **feeds** statement at the **[edit chassis lcc *lcc-number* pem]** hierarchy level.

NOTE:

- Before configuring input feeds for your router, see the *T640 Core Router Hardware Guide*, *T1600 Core Router Hardware Guide*, or *T4000 Core Router Hardware Guide* for special considerations and for the number of input feeds supported by the router.
- All power supplies in the router must use the same number of inputs feeds.

Options

Range: 4 through 6

Default: 6

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring the Six-Input DC Power Supply on T Series Routers | 168

fib-local

Syntax

```
fib-local;
```

Hierarchy Level

```
[edit chassis fpc fpc-number route-localization]
```

Release Information

Statement introduced in Junos OS Release 11.4.

Description

Configure the Packet Forwarding Engine on an FPC as FIB-local.

NOTE: At least, one Packet Forwarding Engine must be configured as **fib-local** for the commit operation to be successful. If you do not configure **fib-local** for the Packet Forwarding Engine, the CLI displays an appropriate error message and the commit fails.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Example: Configuring Packet Forwarding Engine FIB Localization

fib-remote

Syntax

```
fib-remote;
```

Hierarchy Level

```
[edit chassis fpc fpc-number route-localization]
```

Release Information
Statement introduced in Junos OS Release 11.4.

Description
Configure the Packet Forwarding Engine on an FPC as FIB-remote.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Example: Configuring Packet Forwarding Engine FIB Localization

filter

Syntax

```
filter;
```

Hierarchy Level

```
[edit chassis memory-enhanced]
```

Release Information
Statement added in Junos OS Release 11.1.

Description
Enables storing of firewall filters across multiple static RAM (SRAM) segments, resulting in proper utilization of SRAM segments. This feature is useful in routers with small routing tables and large firewall filters. This statement is supported on T Series routers.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

> *Allocating More Memory for Routing Tables, Firewall Filters, and Layer 3 VPN Labels*

flexible-queuing-mode

Syntax

flexible-queuing-mode;

Hierarchy Level

[edit chassis]

Release Information

Statement introduced in Junos OS Release 14.1R1 for MX Series Routers.

Description

Enable flexible queuing on a non-HQoS MPCE that is installed in an MPC slot. A maximum of up to 32,000 queues are supported per port and per card, including queues on both ingress and egress interfaces.

When flexible queuing is enabled, the non-HQoS MPC is restarted for the changes to take effect and is brought online only if the power required for the queuing component is available in the power entry module (PEM). The MPC remains offline if the PEM cannot meet the power requirement for the queuing component.

You can configure flexible queuing even when a non-HQoS MPC is not present in the chassis. The configuration takes effect when a non-HQoS MPC is installed.

For more information about the MPCs and the Junos OS release that support this feature, see *Flexible Queuing Mode Overview*.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Upgrading non-HQoS MPCs to Support Flexible Queuing*
- *Flexible Queuing Mode Overview*
- MPC3E on MX Series Routers Overview | **42**
- MPC5E on MX Series Routers Overview | **47**
- *Protocols and Applications Supported by the MPC5E for MX Series Routers*

force-switch

Syntax

```
force-switch;
```

Hierarchy Level

```
[edit chassis synchronization source (external | interface-name)]
```

Release Information

Statement introduced in Junos OS Release 11.2R4 for MX Series routers.

Description

For MX Series routers operating with Synchronous Ethernet, force a router to use the clock source. provided that the source is enabled and not locked out. Only one configured source may be force-switched.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization (MX Series) | 552

fpc (M320, T320, T640 and PTX Series Routers)

Syntax

```
fpc slot-number {
    error {
        [fatal | major | minor] {
            threshold threshold-value;
            action (alarm | disable-pfe | offline-pic | log | get-state |offline | reset);
        }
    }
    optical-options {
        expansion-card {
        fpc fpc-slot;
        }
        express-in {
            fpc fpc-slot;
            }
        tca tca-identifier (enable-tca | no-enable-tca) (threshold number | threshold-24hrs number) ;
        wavelength nm{
            switch interface-name{
            }
            wss-express-in fpc-slot;
            }
        }
    }
    pic pic-number {
        ce1 {
            e1 port-number {
                channel-group group-number timeslots slot-number;
            }
        }
        ct3 {
            port port-number {
                t1 link-number {
                    channel-group group-number timeslots slot-number;
                }
            }
        }
        framing (sdh | sonet);
        idle-cell-format {
            itu-t;
            payload-pattern payload-pattern-byte;
        }
```

```
        max-queues-per-interface (8 | 4);
        no-concatenate;
        q-pic-large-buffer (large-scale | small-scale);
    }
}
```

Hierarchy Level

```
[edit chassis]
```

Release Information

Statement introduced before Junos OS Release 7.4.
Error statement introduced for PTX Series routers in Junos OS Release 13.3.

Description

Configure properties for the PICs in individual Flexible PIC Concentrators (FPCs).

Options

slot-number—Slot number in which the FPC is installed.

Range: M320, T640, T1600, T4000, and PTX5000 routers: 0 through 7

Range: PTX3000 routers: 0, 2, 4, 6, 8, 10, 12, 14

> **NOTE:** On PTX1000 routers, the FPC number is always 0.

The remaining statements are explained separately.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Configuring the Junos OS to Enable SONET/SDH Framing for SONET/SDH PICs*
- *Configuring the Junos OS to Enable a SONET PIC to Operate in Channelized (Multiplexed) Mode*
- Configuring FPC Error Levels and Actions | **185**

fpc (MX Series 5G Universal Routing Platforms)

Syntax

```
fpc slot-number {
    inline-services {
        flow-table-size {
            ipv4-flow-table-size units;
            ipv4-flow-table-size  units;
            ipv6-extended-attrib;
        }
        }
    ir-mode (R | IR);
    pic number {
        inline-services {
            bandwidth (1g | 10g);
        }
        port-mirror-instance port-mirroring-instance-name-pic-level;
        tunnel-services {
            bandwidth (1g | 10g)
        }
    }
    port-mirror-instance port-mirroring-instance-name-fpc-level;
}
```

Hierarchy Level

```
[edit chassis]
```

Release Information

Statement introduced in Junos OS Release 8.2.
port-mirror-instance option added in Junos OS Release 9.3.
ipv6-extended-attrib option added in Junos OS Release 14.2 for MX Series routers.

Description

Configure properties for the DPC or MPC and corresponding Packet Forwarding Engines to create tunnel interfaces.

(MX Series Virtual Chassis only) When you configure chassis properties for MPCs installed in a Virtual Chassis member router, statements included at the **[edit chassis member *member-id* fpc slot *slot-number*]** hierarchy level apply to the MPC in the specified slot number only on the specified member router in the Virtual Chassis. Statements included at the **[edit chassis fpc slot *slot-number*]** hierarchy level apply to the MPCs in the specified slot number on *each* member router in the Virtual Chassis.

BEST PRACTICE: To ensure that the statement you use to configure MPC chassis properties in an MX Series Virtual Chassis applies to the intended member router and MPC, we recommend that you always include the **member *member-ID*** option before the **fpc** statement, where ***member-id*** is 0 or 1 for a two-member MX Series Virtual Chassis.

Options

fpc *slot-number*—Specify the slot number of the DPC.

Range: 0 through 11

pic *number*—Specify the number of the Packet Forwarding Engine. Each DPC includes four Packet Forwarding Engines.

Range: 0 through 4

port-mirror-instance *port-mirroring-instance-name-fpc-level*—Associate a port-mirroring instance with the DPC and its corresponding PICs. The port-mirroring instance is configured under the **[edit forwarding-options port-mirroring]** hierarchy level.

The remaining statements are explained separately. Search for a statement in CLI Explorer or click a linked statement in the Syntax section for details.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Configuring Port-Mirroring Instances on MX Series 5G Universal Routing Platforms*
- *Enabling Inline Service Interfaces*
- *Virtual Chassis Components Overview*

fpc (TX Matrix and TX Matrix Plus Routers)

Syntax

```
fpc slot-number {
    pic pic-number {
        atm-cell-relay-accumulation;
        atm-l2circuit-mode (cell | aal5 | trunk trunk);
        framing (sdh | sonet);
        idle-cell-format {
            itu-t;
            payload-pattern payload-pattern-byte;
        }
        max-queues-per-interface (8 | 4);
        no-concatenate;
        no-mcast-replication;
        q-pic-large-buffer (large-scale | small-scale);
    }
}
```

Hierarchy Level

```
[edit chassis lcc number]
```

Release Information

Statement introduced before Junos OS Release 7.4.

Description

On a TX Matrix or TX Matrix Plus router, configure properties for the PICs in individual FPCs.

Options

slot-number—Slot number in which the FPC is installed.

Range: 0 through 7

The remaining statements are explained separately.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

TX Matrix Router and T640 Router Configuration Overview

TX Matrix Plus Router Configuration Overview

Configuring the Junos OS to Enable SONET/SDH Framing for SONET/SDH PICs

TX Matrix Router Chassis and Interface Names

TX Matrix Plus Router Chassis and Interface Names

fpc error

Syntax

```
fpc slot number {
    error {
        (fatal | major | minor) {
            threshold threshold value;
            action (alarm | disable-pfe | offline-pic | log | get-state |offline | reset);
        }
        scope error-scope {
            category category {
                (fatal | major | minor) {
                    threshold threshold value;
                    action (alarm | disable-pfe | log | get-state |offline | reset);
                }
            }
        }
    }
}
```

Hierarchy Level

```
```

```
[edit chassis]
```

Release Information

Statement introduced in Junos OS Release 13.3 on MX Series, PTX Series, and T Series routers.
Statement introduced in Junos OS Release 14.2 on M320 routers.

Description

Configure the threshold at which FPC errors will take the action you configure to be performed by the device. Starting from Junos OS Release 18.1R3, you can configure error thresholds and actions at the error scope and error category levels on MX Series routers.

Some Juniper devices include an internal framework for detecting and correcting FPC errors that can have the potential to affect services. For each FPC on the device, you can classify errors according to severity, set an automatic recovery action for each severity, and set a threshold (i.e., the number of times the error must occur before the action is triggered).

NOTE: On the MX104 routers, Junos does not initiate restart of the system on encountering a Fatal error. Additionally, though you can configure the action 'Disable PFE' for Major errors on the MX104, the router does not disable its only PFE on encountering a Major error.

Options

You can configure the threshold for the following severity levels:

- **fatal**—Fatal error on the FPC. An error that results in blockage of considerable amount of traffic across modules is a fatal error.
- **major**—Major error on the FPC. An error that results in continuing loss of packet traffic but does not affect other modules is a major error.
- **minor**—Minor error on the FPC. An error that results in the loss of a single packet but is fully recoverable is a minor error.

> **NOTE:** You cannot configure the severity level of an error.

- **threshold *threshold-value***—Configure the threshold value at which to take action. If the severity level of the error is fatal or major, the action is carried out when the total number of errors reaches the threshold value. After the threshold value is crossed, for every occurrence of the error, an action is carried out. If the severity level is minor, the action is carried out only once after the total number of errors crosses the threshold value.

  > **NOTE:** You can set the threshold value to 0 for errors with severity level as minor. This implies that no action is taken for that error. You cannot set the threshold value to 0 for errors with severity level as major or fatal.

  Default: The error count for fatal and major actions is 1. The default error count for minor actions is 10.

  Range: 0—429,496,729

  Range(Junos OS Evolved): 0—1024

The available detection and recovery actions are as follows:

- **alarm**—Raise an alarm.
- **disable-pfe**—Disable the PFE interfaces on the FPC.

  > **NOTE:** For PTX Series routers, when an alarm occurs and a **disable-pfe** action is the result, to clear the alarm you must place the FPC offline and then back online.

- **get-state**—Get the current state of the FPC.
- **log**—Generate a log for the event.

- **offline**—Take the FPC offline.
- **offline-pic**—Take the PIC (installed in the FPC) offline.

> **NOTE:** This option is supported only on T Series Routers.

- **reset**—Reset the FPC.

> **NOTE:** Starting in Junos OS Release 17.2R1, if you configure the **disable-pfe**, **offline**, or **reset** action on an MX Series or PTX Series router, the **get-state** action is additionally configured on the router. This means, for example, if you configure the **disable-pfe** action on the router, the router gets both **disable-pfe** and **get-state** actions configured.

- **scope *error-scope***—Group the errors of a particular severity into different scopes. Errors belonging to each error scope is further grouped into categories, before thresholds and actions are defined at the category level. The following scopes are available: **board** and **pfe**.
- **category *category***—Categorize errors into various subgroups under the scope level. An error category helps you group similar errors belonging to a particular scope and define actions for them at once. This feature eliminates the need for configurations against individual error-ids. Some of the error-categories are **functional**, **io** (input/output errors), **storage** (for example, errors related to HDD, SSD, and flash), **memory** (for example, errors related to static RAM), **processing** (for example, CPU-related errors), and **switch**.
- ***error-id***—Use the error ID to disable an error or modify the error severity associated with that error. An *error-id*, which is a unique error identifier, is represented as a Uniform Resource Identifier (URI). For example, **/cpu/0/memory/0/memory-uncorrected-error** is an error ID that indicates an uncorrectable error under CPU memory module instance **0**.

Required Privilege Level

routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- Fabric Resiliency and Degradation | **114**
- Configuring FPC Error Levels and Actions | **185**
- show chassis fabric errors | **1264**
- show chassis fpc errors | **1564**
- error | **359**

fpc-feb-connectivity

Syntax

```
fpc-feb-connectivity {
    fpc number feb (slot-number | none);
}
```

Hierarchy Level

```
[edit chassis]
```

Release Information

Statement introduced in Junos OS Release 8.0.

Description

On the M120 router only, configure a connection between any Flexible PIC Concentrator (FPC) and any Forwarding Engine Board (FEB).

Options

fpc *number*—Specify the FPC slot number.

Range: 0 through 5

feb *slot-number*—Specify the FEB slot number.

Range: : 0 through 5

none—Disconnect the FPC from the FEB.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring the Junos OS to Support FPC to FEB Connectivity on M120 Routers

fpc-offline-on-blackholing

Syntax

```
fpc-offline-on-blackholing;
```

Hierarchy Level

```
[edit chassis fabric degraded]
```

Release Information

Statement introduced in Junos OS Release 14.2 for TX Matrix Plus routers with 3D SIBs.

Description

Take the FPC offline and raise an alarm if a traffic black-hole condition is detected in the routing matrix. By default, FPCs remain online when a traffic black-hole condition is detected.

Required Privilege Level

system—To view this statement in the configuration.
system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

show chassis alarms | 703

fpc-nmi-volt-fail-knob

Syntax

```
fpc-nmi-volt-fail-knob (enable | disable)
```

Hierarchy Level

```
[edit chassis]
```

Release Information
Statement introduced in Junos OS Release 10.4R15, 11.4R8-S2, 11.4R9, 12.1R8, 12.2R6, 12.3R3-S1, 12.3R4, 13.1R3, and 13.2R1

Description
Enable or disable the non maskable interrupt (NMI) for the voltage failure errors on the flexible pic concentrator (FPC).

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration

RELATED DOCUMENTATION

show chassis fpc | 1507

Configuring Voltage Level Monitoring of FPCs | 173

fpc-offline-on-blackholing

Syntax

```
fpc-offline-on-blackholing;
```

Hierarchy Level

```
[edit chassis fabric degraded]
```

Release Information
Statement introduced in Junos OS Release 14.2 for TX Matrix Plus routers with 3D SIBs.

Description
Take the FPC offline and raise an alarm if a traffic black-hole condition is detected in the routing matrix. By default, FPCs remain online when a traffic black-hole condition is detected.

Required Privilege Level
system—To view this statement in the configuration.
system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

show chassis alarms | 703

fpc-nmi-volt-fail-knob

Syntax

```
fpc-nmi-volt-fail-knob (enable | disable)
```

Hierarchy Level

```
[edit chassis]
```

Release Information
Statement introduced in Junos OS Release 10.4R15, 11.4R8-S2, 11.4R9, 12.1R8, 12.2R6, 12.3R3-S1, 12.3R4, 13.1R3, and 13.2R1

Description
Enable or disable the non maskable interrupt (NMI) for the voltage failure errors on the flexible pic concentrator (FPC).

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration

RELATED DOCUMENTATION

show chassis fpc | 1507

Configuring Voltage Level Monitoring of FPCs | 173

fpc-restart

Syntax

```
fpc-restart;
```

Hierarchy Level

```

```

```
[edit chassis fabric degraded]
```

Release Information
Statement added in Junos OS Release 13.2R6.

Description
Allow the user to restart the FPCs when a traffic black-hole condition is detected in the routing matrix. To enable this feature set the **fpc-restart** statement at the **edit chassis fabric degraded** hierarchy level.

Default
FPCs are not restarted when a traffic black-hole condition is detected.

Required Privilege Level
routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Fabric Resiliency and Degradation | **114**

Disabling Line Card Restart to Limit Recovery Actions from Degraded Fabric Conditions | **124**

fpc-resync

Syntax

```
fpc-resync;
```

Hierarchy Level

```
[edit chassis]
```

Release Information
Statement introduced in Junos OS Release 10.2.

Description
(On M320, T320, T640, T1600, T4000, TX Matrix, and TX Matrix Plus routers only) When a Flexible PIC Concentrator (FPC) is brought online, resynchronize the sequence numbers of the FPC with the other active FPCs.

NOTE: In order to prevent traffic blackholing, the **fpc-resync** command will have no effect if a single LMNR based FPC and one or more I-chip FPCs exist in the same chassis.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Resynchronizing FPC Sequence Numbers with Active FPCs when an FPC Comes Online | **196**

TX Matrix Router Hardware Guide

framing

Syntax

```
framing (sdh | sonet);
```

Hierarchy Level

```
[edit chassis fpc slot-number pic pic-number],
[edit chassis lcc number fpc slot-number pic pic-number] (Routing Matrix)
```

Release Information
Statement introduced before Junos OS Release 7.4.

Description
On SONET/SDH PICs only, configure the framing type.

Default
sonet

Options
sdh—SDH framing.

sonet—SONET framing.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring the Junos OS to Enable SONET/SDH Framing for SONET/SDH PICs

framing (E1 Options)

Syntax

```
framing (g704 | g704-no-crc4);
```

Hierarchy Level

```
[edit chassis synchronization interfaces external e1-options]
[edit chassis synchronization interfaces (external-0/0 | external-1/0) e1-options]
```

Release Information
Statement introduced in Junos OS Release 12.3 for MX Series routers.

Description
Configure the framing format for the E1 interface.

Options
g704—Set the G.704 framing format for E1 interfaces.

g704-no-crc4—Set the G.704 framing without CRC4 for E1 interfaces.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization | 552

framing (T1 Options)

Syntax

```
framing (esf | sf);
```

Hierarchy Level

```
[edit chassis synchronization interfaces external t1-options]
[edit chassis synchronization interfaces (external-0/0 | external-1/0) t1-options]
```

Release Information

Statement introduced in Junos OS Release 12.3 for MX Series routers.

Description

Configure the framing format for the T1 interface.

Options

esf—Set the framing format as extended super frame.

sf—Set the framing format as super frame.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization | 552

fru-poweron-sequence

Syntax

```
fru-poweron-sequence fru-poweron-sequence;
```

Hierarchy Level

```
[edit chassis]
```

Release Information

Statement introduced in Junos OS Release 10.0.
Statement introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers.
Statement introduced in Junos OS Release 12.3 for MX2020 Universal Routing Platforms.
Statement introduced in Junos OS Release 12.3 for T640, T1600, and T4000 routers.

Description

(MX Series 5G Universal Routing Platforms only) Configure the power-on sequence for the DPCs in the chassis for routers with the enhanced AC Power Entry Module (PEM).

(T640 routers, T1600 routers, T4000 routers, MX2020 routers, and PTX Series packet transport routers) Configure the power-on sequence for Flexible PIC Concentrators (FPCs) installed in the chassis.

Options

(MX Series 5G Universal Routing Platforms only) ***fru-poweron-sequence***—Power-on sequence for the DPCs in the chassis. The numbers indicate the slot number of the DPCs.

NOTE: If the power-on sequence is not configured by including the **fru-poweron-sequence** statement, Junos OS uses the **/var/log/poweron_seq.log** file to determine the power-on sequence for the last power-on operation for the DPCs and the same sequence is used. If the **/var/log/boot_seq.log** file, is not available, Junos OS uses the ascending order of the slot numbers of the DPCs as the sequence to power on the DPCs.

(T640 routers, T1600 routers, T4000 routers, MX2020 routers, and PTX Series packet transport routers) ***fru-poweron-sequence***—Power-on sequence for the FPCs in the chassis. The numbers indicate the slot number of the FPCs.

NOTE:

- If the configured sequence contains invalid numbers, Junos OS considers only the valid numbers in the sequence. The invalid numbers are silently discarded.
- If the power-on sequence is not configured by including the **fru-poweron-sequence** statement, Junos OS uses the ascending order of the slot numbers of the FPCs as the sequence to power on the FPCs.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Redistributing the Available Power by Configuring Power-On Sequence | 172

Configuring Power-On Sequence to Redistribute the Available Power | 172

global-wait-to-restore

Syntax

```
global-wait-to-restore minutes;
```

Hierarchy Level

```
[edit chassis synchronization]
```

Release Information

Statement introduced in Junos OS Release 14.2.

Description

Use this statement to configure the global time to wait before opening the interface to receive ESMC messages.

When an interface's signal transitions out of the signal fail state, it must be fault-free for the global-wait-to-restore time before it is again considered by the clock selection process.

When the ESMC clock's EEC quality level (QL) mode is enabled, it sends a signal failure to the clock selection process during the global wait-to-restore time. After the global wait-to-restore time ends, a new quality level value is sent to the clock selection process.

To override the global wait-to-restore time on a specific interface, include the **wait-to-restore** statement at the **[edit chassis source interfaces (external-a | external-b | interface *interface-name*)]** hierarchy level.

Options

minutes—Set the time for the port signal to be up before the port is opened to receive and transmit ESMC messages.

Range: 0 through 12 minutes

Default: 5 minutes

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization (MX Series) | **552**

synchronization (PTX Series) | **562**

wait-to-restore | 586

hash-key (Chassis LAG)

Syntax

```
hash-key {
    family {
        inet {
            layer-3;
            layer-4;
            symmetric-hash {
                complement;
            }
        }
        multiservice {
            source-mac;
            destination-mac;
            payload {
                ip {
                    layer-3 (source-ip-only | destination-ip-only);
                    layer-4;
                }
            }
        }
    }
}
```

Hierarchy Level

[edit chassis fpc *slot-number* pic *pic-number*]

Release Information

Statement introduced in Junos OS Release 9.6.

Description

(MX Series 5G Universal Routing Platforms only) Configure data used in a hash key for a PIC for symmetrical load balancing on an 802.3ad Link Aggregation Group.

Options

family—Configure data used in a hash key for a protocol family. This statement has the following suboptions:

- **inet**—Configure data used in a hash key for the **inet** protocol family.
- **multiservice**—Configure data used in a hash key for the **multiservice** protocol family.

Required Privilege Level

interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring PIC-Level Symmetrical Hashing for Load Balancing on 802.3ad LAGs for MX Series Routers

hold-interval (Clock Synchronization)

Syntax

```
hold-interval {
    configuration-change seconds;
    restart seconds;
    switchover seconds;
}
```

Hierarchy Level

[edit chassis **synchronization**]

Release Information

Statement introduced in Junos OS Release 11.2R4 for MX Series routers.

Description

Configure the wait time for clock selection after a change in configuration and after a reboot of the router, and configure the switchover wait time after clock recovery.

Options

configuration-change—Set the wait time for clock selection after a change in configuration.

Range: 15 seconds through 60 seconds

restart—Set the wait time for clock selection after reboot of the router.

Range: 60 seconds through 180 seconds

Default: 120 seconds

switchover—Set the switchover wait time after clock recovery.

Range: 30 seconds through 60 seconds.

Default: 30 seconds

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization | 552

holdover-mode-disable

Syntax

```
holdover-mode-disable;
```

Hierarchy Level

```
[edit chassis synchronization output interfaces external]
[edit chassis synchronization output interfaces (external-0/0 | external-1/0)]
```

Release Information

Statement introduced in Junos OS Release 12.3 for MX Series routers.

Description

Disable the holdover mode on the external output interface—external—on SCBE or on the external output interfaces—external-0/0 and external-1/0—on SCBE2.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization | 552

hold off time

Syntax

hold-off-time *time*;

Hierarchy Level

[**set chassis synchronization** source interfaces]

Release Information

Statement introduced in Junos OS Release 14.2 for MX Series routers.

Description

Enable hold-off time for Synchronous Ethernet interfaces and external clock source interfaces. If an interface goes down, hold-off time delays short signal failures from being sent to the clock selection process to prevent rapid successive switching.

Options

time—Amount of time in milliseconds that a signal is held before being passed to the clock selection process.

Range: 300–1800 milliseconds

Default: 1000 milliseconds

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring Clock Synchronization Interface on MX Series Routers

Ethernet Synchronization Message Channel Overview

hybrid

Syntax

```
hybrid {
   synchronous-ethernet-mapping {
      clock-source ip-address {
         interface interface1-name;
         interface interface2-name;
      }
   }
}
```

Hierarchy Level

[edit protocols ptp slave]

Release Information

Statement introduced in Junos OS Release 12.2R2.

Description

Configure hybrid mode.

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level

routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Configuring Hybrid Mode and ESMC Quality Level Mapping*
- *Example: Configuring Hybrid Mode and ESMC Quality Level Mapping*
- *Understanding Hybrid Mode*
- *Precision Time Protocol Overview*
- *Synchronous Ethernet Overview*

idle-cell-format

Syntax

```
idle-cell-format {
    itu-t;
    payload-pattern payload-pattern-byte;
}
```

Hierarchy Level

```
[edit chassis fpc slot-number pic pic-number idle-cell-format],
[edit chassis lcc number fpc slot-number pic pic-number idle-cell-format] (Routing Matrix)
```

Release Information

Statement introduced before Junos OS Release 7.4.

Description

For ATM2 PICs only, configure the format of the idle cell header and payload bytes.

Options

itu-t—Configure the idle cell header to use the International Telecommunications Union (ITU-T) standard of 0x00000001.

Default: (4 bytes): 0x00000000

payload-pattern-byte—Configure the idle cell payload pattern. The payload pattern byte can range from 0x00 through 0xff.

Default: cell payload (48 bytes)

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring the Junos OS to Enable Idle Cell Format and Payload Patterns for ATM Devices

inet (chassis)

Syntax

```
inet {
    layer-3;
    layer-4;
    symmetric-hash {
        complement;
    }
}
```

Hierarchy Level

```
[edit chassis fpc slot-number pic pic-number hash-key family]
```

Release Information
Statement introduced in Junos OS Release 9.6.

Description
(MX Series 5G Universal Routing Platforms only) Configure data used in a hash key for the **inet** protocol family when configuring PIC-level symmetrical load balancing on an 802.3ad Link Aggregation Group.

Options
layer-3—Include Layer 3 IP data in the hash key.

layer-4—Include Layer 4 IP data in the hash key.

symmetric-hash—Configure symmetric hash key with source and destination ports.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring PIC-Level Symmetrical Hashing for Load Balancing on 802.3ad LAGs for MX Series Routers

ingress-policer-overhead

Syntax

```
ingress-policer-overhead bytes;
```

Hierarchy Level

```
[edit chassis fpc slot-number pic pic-number]
```

Release Information
Statement introduced before Junos OS Release 11.1.
Statement introduced in Junos OS Release 15.1X49-D30 for vSRX.

Description
Add the configured number of bytes to the length of a packet entering the interface.

Configure a policer overhead to control the rate of traffic received on an interface. Use this feature to help prevent denial-of-service (DoS) attacks or to enforce traffic rates to conform to the service-level agreement (SLA). When you configure a policer overhead, the configured policer overhead value (bytes) is added to the length of the final Ethernet frame. This calculated length of frame is used to determine the policer or the rate-limiting action.

Traffic policing combines the configured policy bandwidth limits and the burst size to determine how to meter the incoming traffic. If you configure a policer overhead on an interface, Junos OS adds those bytes to the length of incoming Ethernet frames. This added overhead fills each frame closer to the burst size, allowing you to control the rate of traffic received on an interface.

You can configure the policer overhead to rate-limit queues and Layer 2 and Layer 3 policers, for standalone (SA) and high-avalability (HA) deployments. The policer overhead and the shaping overhead can be configured simultaneously on an interface.

NOTE: vSRX supports policer overhead on Layer 3 policers only.

The policer overhead applies to all interfaces on the PIC. In the following example, Junos OS adds 10 bytes of overhead to all incoming Ethernet frames on ports ge-0/0/0 through ge-0/0/4.

```
set chassis fpc 0 pic 0 ingress-policer-overhead 10
```

NOTE: vSRX only supports **fpc 0 pic 0**. When you commit the **ingress-policer-overhead** statement, the vSRX takes the PIC offline and then back online.

You need to craft the policer overhead size to match your network traffic. A value that is too low will have minimal impact on traffic bursts. A value that is too high will rate-limit too much of your incoming traffic.

In this example, the policer overhead of 255 bytes is configured for ge-0/0/0 through ge-0/0/4. The firewall policer is configured to discard traffic when the burst size is over 1500 bytes. This policer is applied to ge-0/0/0 and ge 0/0/1. Junos OS adds 255 bytes to every Ethernet frame that comes into the configured ports. If, during a burst of traffic, the combined length of incoming frames and the overhead bytes exceeds 1500 bytes, the policer starts to discard further incoming traffic.

```
set chassis fpc 0 pic 0 ingress-policer-overhead 255
set interfaces ge-0/0/0 unit 0 family inet policer input overhead_policer
set interfaces ge-0/0/0 unit 0 family inet address 10.9.1.2/24
set interfaces ge-0/0/1 unit 0 family inet policer input overhead_policer
set interfaces ge-0/0/1 unit 0 family inet address 10.9.2.2/24
set firewall policer overhead_policer if-exceeding bandwidth-limit 32k
set firewall policer overhead_policer if-exceeding burst-size-limit 1500
set firewall policer overhead_policer then discard
```

Options

bytes—Number of bytes added to a frame entering an interface.

Range: 0–255 bytes

Default: 0

```
[edit chassis fpc 0 pic 0]
user@host# set ingress-policer-overhead 10;
```

Required Privilege Level

interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *ingress-shaping-overhead*
- *Policer Overhead to Account for Rate Shaping Overview*
- *Example: Configuring Policer Overhead to Account for Rate Shaping*
- *Configuring a Policer Overhead*
- *CoS on Enhanced IQ2 PICs Overview*

input-current (T4000 Routers)

Syntax

```
input-current amps-in-each-feed;
```

Hierarchy Level

```
[edit chassis pem]
```

Release Information

Statement introduced in Junos OS Release 12.3.

Description

Configure the amount of input current received in each feed. The value assigned to the **input-current** statement must be equal to the input current capability of each feed.

NOTE: Before configuring input current for your router, see the *T4000 Core Router Hardware Guide* for special considerations.

Options

Values:

- 40–Indicates 40 A of input current is received in each feed.
- 60–Indicates 60 A of input current is received in each feed.

Default: 60 A

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring the Six-Input DC Power Supply on T Series Routers | 168

interfaces external

Syntax

```
interfaces {
external/external-0-0/external-1/0 {
    e1-options {
        framing (g704 | g704-no-crc4);
        line-encoding (ami | hdb3);
        sabit bit;
    }
    signal-type (1mhz | 5mhz | 10mhz | 2048khz | t1 | e1);
    t1-options {
        framing (esf | sf);
        line-encoding (ami | b8zs);
    }
    pulse-per-second-enable;
    }
}
```

Hierarchy Level

[edit chassis **synchronization**]

Release Information

Statement introduced in Junos OS Release 12.3 for MX Series routers.

Description

Starting from Junos OS Release 12.3, configure options for the external clock source interface—external—for SCBE.

Starting from Junos OS Release 13.3, configure options for the two external clock source interfaces—external-0/0 and external-1/0—for SCBE2.

Options

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization | 552

ipv6-extended-attrib

Syntax

```
ipv6-extended-attrib;
```

Hierarchy Level

```
[edit chassis fpc slot-number inline-services ipv6 flow-table-size]
```

Description

Enable the inclusion of element ID, 54, fragmentIdentification, and element ID, 64, ipv6ExtensionHeaders, in IPFIX flow templates that are exported to the flow collector

NOTE: Collection of IPv4 fragmentation IDs occurs automatically without having to configure this setting explicitly.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring Inline Active Flow Monitoring Using Routers, Switches or NFX250

ir-mode

Syntax

```
ir-mode (IR | R);
```

Hierarchy Level

```
[edit chassis fpc slot-number]
```

Release Information

Statement introduced in Junos OS Release 14.2.

Description

Configure the license mode of the specified enhanced MPC in an MPC slot as IR or R. Setting the license mode enables you to distinguish between an MPC with an IR license and an MPC with an R license after the MPC is installed on the router.

NOTE: The license mode settings are used only to provide information. You cannot set or alter the license of the MPC when you configure the mode.

Default

The default IR mode is Base. You do not set this configuration statement if Base is the mode of your license. Base mode includes the following features:

- All Layer 2, Layer 2.5, and Layer 3 features.
- Up to 32 Layer 3 routing instances of the virtual routing and forwarding (VRF) instance type.
- Up to 2 million routes in the forwarding information base (FIB), provided there is hardware support. (FIB is also known as forwarding table.)
- Up to 6 million routes in the routing information base (RIB), also known as routing table.

Options

IR—Configure the license mode IR for an MPC installed in a specified MPC slot. Includes the following features:

- All Layer 2, Layer 2.5, and Layer 3 features.
- Up to 32 Layer 3 routing instances of the virtual routing and forwarding (VRF) instance type.

R—Configure the license mode R for an MPC installed in a specified MPC slot. Includes full-scale Layer 2, Layer 2.5, and Layer 3 features. Scale is determined by the hardware capabilities.

Required Privilege Level

interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *License Modes for Enhanced MPCs Overview*
- *Configuring the License Mode for Specific Enhanced MPCs on MX Series Routers*
- *Viewing the License Mode for MPC Cards on MX Series Routers*

lacp

Syntax

```
lacp {
    link-protection {
        non-revertive;
    }
    system-priority priority;
}
```

Hierarchy Level

```
[edit chassis aggregated-devices ethernet]
```

Release Information

Statement introduced in Junos OS Release 9.3.

Description

For aggregated Ethernet interfaces only, configure Link Aggregation Control Protocol (LACP) parameters at the global level for use by LACP at the interface level.

Options

The statements are described separately.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

> *Configuring Junos OS for Supporting Aggregated Devices*

lcc

Syntax

```
lcc number {
    fpc slot-number {
        pic pic-number {
            atm-cell-relay-accumulation;
            atm-l2circuit-mode (cell | aal5 | trunk trunk);
            framing (sdh | sonet);
            idle-cell-format {
                itu-t;
                payload-pattern payload-pattern-byte;
            }
            max-queues-per-interface (8 | 4);
            no-concatenate;
            no-mcast-replication;
        }
    }
    online-expected;
    offline;
    }
    q-pic-large-buffer {
        large-scale;
    }
}
```

Hierarchy Level

```
[edit chassis]
```

Release Information

Statement introduced before Junos OS Release 7.4.

Description

Configure a T640 router (on a routing matrix based on a TX Matrix router) or a T1600 router (on a routing matrix based on a TX Matrix Plus router) or a T4000 router (on a routing matrix based on a TX Matrix Plus router).

Options

number—Specify a T640 router or a T1600 router or a T4000 router on a routing matrix.

Range:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.

- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

The remaining statements are explained separately.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *TX Matrix Router and T640 Router Configuration Overview*
- *Using the Junos OS to Configure a T640 Router Within a Routing Matrix*
- *TX Matrix Plus Router Configuration Overview*
- *Using the Junos OS to Configure a T1600 or T4000 Router Within a Routing Matrix*
- *TX Matrix Router Hardware Guide*
- *TX Matrix Plus Router Hardware Guide*

lcc-mode

Syntax

```
lcc-mode {
    lcc lcc_number{
        mode mode;
    }
}
```

Hierarchy Level

```
[edit chassis]
```

Release Information

Statement introduced in Junos OS Release 13.1 for TX Matrix Plus routers with 3D SIBs.

Description

Set the line-card chassis (LCC) in a routing matrix to function as a T1600 router or a T4000 router. If you set the value of the ***mode*** variable as **empty**, then the line-card chassis goes offline. If the **mode** statement is not configured, then by default the LCC functions as a T1600 router.

Default

If you do not include the **lcc-mode** statement, the LCC functions as a T1600 router.

Options

lcc *number*—On a TX Matrix Plus router, display hardware information for a specified router (line-card chassis) that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

mode *mode*—Configure the LCC to function as a T1600 or a T4000 router. The value of the *mode* variable can be set as **t1600**, **t4000**, or **empty**.

Required Privilege Level

interface-control

RELATED DOCUMENTATION

- *Overview of a Routing Matrix with a TX Matrix Plus Router*
- *Example: Configuring a Routing Matrix with a TX Matrix Plus Router in Mixed Mode*

led-beacon

Syntax

```
led-beacon
```

Hierarchy Level

[edit interfaces *interface-name (with port number)*]

Release Information

Statement introduced in Junos OS Release 15.1F3 and 16.1R2 for PTX5000 routers.
Statement introduced in Junos OS Release 15.1F6 and 16.1R2 for PTX3000 routers.

Description

This command causes the LED for the specified port to flash green. You can use the command to physically locate a specific optic port on the PIC.

NOTE: At the **[edit interfaces *interface-name (with port number)*]** hierarchy level, you must include the port number as part of the interface name. For example, **et-x/y/z(:n)**.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *show interfaces detail*

license-mode

Syntax

```
license-mode IR | R
```

Hierarchy Level

```
[edit chassis fpc slot-number]
```

Release Information

Statement introduced in Junos OS Release 15.1F3 for PTX Series routers with third-generation FPCs.

Description

Configures the FPC's license mode. This can be used to track the number of PICs configured for a specific mode.

Options

IR—Sets the PIC to LSR mode.

R—Sets the PIC to full IP mode.

> **NOTE:** Starting in Junos OS Release 16.1R3 for PTX Series routers, the **IR** and **R** options are used. For previous releases (starting in Junos OS Release 15.1F3) the **lp** (full IP mode) and **lsr** (LSR mode) options are used.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

fpc | 375

limited-ifl-scaling

Syntax

```
limited-ifl-scaling;
```

Hierarchy Level

```
[edit chassis network-services enhanced-ip]
```

Release Information
Command introduced in Junos OS Release 15.1R3 for MX Series routers.

Description
Limits the maximum number of logical interfaces on MX Series routers with MS-DPCs to 64,000 for enhanced IP network services mode.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Limiting the Maximum Number of Logical Interfaces on MX Series Routers With MS-DPCs in Enhanced IP Network Services Mode | **281**

Network Services Mode Overview | **275**

Configuring Enhanced IP Network Services for a Virtual Chassis

line-encoding (E1 Options)

Syntax

```
line-encoding (ami | hdb3);
```

Hierarchy Level

```
[edit chassis synchronization interfaces external e1-options]
[edit chassis synchronization interfaces (external-0/0 | external-1/0) e1-options]
```

Release Information

Statement introduced in Junos OS Release 12.3 for MX Series routers.

Description

Configure the line encoding format on the E1 interface.

Options

ami—Set the line encoding format as automatic mark inversion.

hdb3—Set the line encoding format as high-density bipolar 3 code.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization | 552

line-encoding (E1 Options)

Syntax

```
line-encoding (ami | hdb3);
```

Hierarchy Level

```
[edit chassis synchronization interfaces external e1-options]
[edit chassis synchronization interfaces (external-0/0 | external-1/0) e1-options]
```

Release Information

Statement introduced in Junos OS Release 12.3 for MX Series routers.

Description

Configure the line encoding format on the E1 interface.

Options

ami—Set the line encoding format as automatic mark inversion.

hdb3—Set the line encoding format as high-density bipolar 3 code.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization | 552

line-encoding (T1 Options)

Syntax

```
line-encoding (ami | b8zs);
```

Hierarchy Level

```
[edit chassis synchronization interfaces external t1-options]
[edit chassis synchronization interfaces (external-0/0 | external-1/0) t1-options]
```

Release Information
Statement introduced in Junos OS Release 12.3 for MX Series routers.

Description
Configure the line encoding format on the T1 interface.

Options
ami—Set the line encoding format as automatic mark inversion.

b8zs—Set the line encoding format as 8-bit zero suppression.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization | 552

linerate-mode

Syntax

```
linerate-mode;
```

Hierarchy Level

```
[edit chassis fpc slot-number pic pic-number linerate-mode],
[edit chassis lcc number fpc slot-number pic pic-number linerate-mode] (Routing Matrix)
```

Release Information

Statement introduced in Junos OS Release 10.1.

Description

For 10-port 10-Gigabit Oversubscribed Ethernet (OSE) PICs only, configure the line rate operation.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Junos OS Network Interfaces Library for Routing Devices

link-protection (Protocols LACP)

Syntax

```
link-protection {
    non-revertive;
}
```

Hierarchy Level

```
[edit chassis aggregated-devices ethernet lacp]
```

Release Information

Statement introduced in Junos OS Release 9.3.

Description

Enable LACP link protection at the global (chassis) level.

Options

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring Junos OS for Supporting Aggregated Devices

lite-mode

Syntax

```
lite-mode;
```

Hierarchy Level

```
[edit chassis fpc 0]
```

Release Information
Statement introduced in Junos OS Release 15.1F4 and 16.1R1 for vMX routers.

Description
(vMX routers only) Enables vMX to run in lite mode and disables performance mode. Lite mode needs fewer vCPUs and memory to run at lower bandwidth. If you are using paravirtualized network interfaces such as virtio (for KVM) or VMXNET3 (for VMware) for lab simulation use cases, you can enable lite mode.

NOTE: Make sure you have configured the proper number of vCPUs and memory for your VMs based on your use case. If you have not configured enough vCPUs for performance mode, vMX runs in lite mode.

Starting with Junos OS Release 15.1F6, performance mode is enabled by default for vMX.

NOTE: The FPC reboots if you change this configuration.

Options
lite-mode—Enables lite mode.

To disable lite mode, enable performance mode by including the **performance-mode** statement at the [**edit chassis fpc 0**] hierarchy level.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

performance-mode | 471

major

Syntax

```
major {
    threshold threshold-value;
    action {
        alarm;
        disable-pfe;
        get-state;
        log;
        offline;
        reset;
    }
}
```

Hierarchy Level

[edit chassis **fpc** *slot-number* **error**]

[edit chassis]

Release Information

Statement introduced for PTX Series routers in Junos OS Release 13.3.
Statement introduced for MX240, MX480, MX960, and MX2020 routers in Junos OS Release 14.2.

Description

Severity level of the error. An error that results in continuing loss of packet traffic but does not affect other modules is a major error. The severity level of an error cannot be configured by a user.

The other statements are explained separately.

Required Privilege Level

interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- Fabric Resiliency and Degradation | **114**
- show chassis fpc errors | **1564**
- Configuring FPC Error Levels and Actions | **185**

maximum-ecmp

Syntax

```
maximum-ecmp next-hops;
```

Hierarchy Level

```
[edit chassis]
```

Release Information
Statement introduced in Junos OS Release 10.1.

Description

(M10i routers with Enhanced CFEB, and M320, M120, MX Series, and T Series routers) Configure 16, 32, or 64 ECMP next hops for RSVP or LDP LSPs, or MPLS static LSPs that are configured using **set protocols mpls static-label-switched-path**.

This command is used to control the maximum number of ECMP legs in an NH. This command applies to all protocols, and the maximum configurable ECMP next hops are chassis dependent.

NOTE: MX Series routers with one or more Modular Port Concentrator (MPC) cards and with Junos OS 11.4 or earlier installed, support the configuration of the **maximum-ecmp** statement with only 16 next hops. You should *not* configure the **maximum-ecmp** statement with 32 or 64 next hops. When you commit the configuration with 32 or 64 next hops, the following warning message appears:

Error: Number of members in Unilist NH exceeds the maximum supported 16 on Trio.

Default

16

Options

next-hops—Specify the number of next hops (16, 32, or 64) for RSVP or LDP LSPs, or MPLS static LSPs.

The following types of routes support next hops with up to 64 ECMP gateways:

- RSVP routes in inet tables where multiple RSVP LSPs are created to the same destination. In the case where LSP path protection or FRR is configured, the combination of active, backup and FRR next-hops is a maximum of 64.

- LDP routes in inet.3 and mpls.0 where the associated IGP route contains 64 next-hop gateways.
- ISIS, OSPF, iBGP, eBGP and Static routes in inet and inet6 tables.

NOTE: These routes also include routes in routing-instances (foo.inet.0).

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring ECMP Next Hops for RSVP and LDP LSPs for Load Balancing

maximum-links

Syntax

```
maximum-links maximum-links-limit;
```

Hierarchy Level

```
[edit chassis aggregated-devices]
```

Release Information

Statement introduced in Junos OS Release 11.1 for T Series routers.
Statement introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers.
Statement introduced in Junos OS Release 12.3 for MX Series routers.

Description

Configure the maximum links limit for aggregated devices. Note that for MX Series routers, to set a range of 32 or 64 the router must be running in Enhanced IP mode, which is only supported for Trio-based MPCs and multiservice DPCs (MS-DPCs). For more information on Enhanced IP mode, "Network Services Mode Overview" on page 275.

For MX series routers and PTX series switches, the option for 64 links is only supported for Junos OS release 12.3 and later.

NOTE: This statement is not supported on the MX80, MX104, and PTX1000 routers.

Options

maximum-links-limit—Maximum links limit for aggregated devices.

Range: 16, 32, 64

NOTE: On T-Series routers, the maximum-links supported is 32 in an aggregated Ethernet link.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- Network Services Mode Overview | 275
- *Configuring Junos OS for Supporting Aggregated Devices*
- *Configuring an Aggregated Ethernet Interface*
- network-services | 451

max-queues-per-interface

Syntax

```
max-queues-per-interface (8 | 4);
```

Hierarchy Level

```
[edit chassis fpc slot-number pic pic-number],
[edit chassis lcc number fpc slot-number pic pic-number] (Routing Matrix)
```

Release Information

Statement introduced before Junos OS Release 7.4.
Support for TX Matrix and TX Matrix Plus added in Junos OS Release 9.6.

Description

On IQ, MPC, and DPC interfaces on M120, T320, T640, T1600, TX Matrix, and TX Matrix Plus routers, or on MIC or MPC interfaces on MX Series routers, set the number of egress queues per port to four or eight.

NOTE: If you include the **max-queues-per-interface 8** statement, the configuration at the **[edit class-of-service]** hierarchy level must also support eight queues per interface.

NOTE: When you include the **max-queues-per-interface** statement and commit the configuration, all physical interfaces on the PIC/MIC are deleted and readded. Also, the PIC/MIC is restarted automatically. You should change modes between four queues and eight queues only when there is no active traffic going to the PIC/MIC.

By default, IQ PICs on T Series and M320 routers are restricted to a maximum of four egress queues per interface. If you include the **max-queues-per-interface 4** statement, you can configure all four ports and configure up to four queues per port.

For Quad T3 and Quad E3 PICs and for 4-port OC3c/STM1 Type I and Type II PICs on M320 and T Series routers, when you include the **max-queues-per-interface 8** statement, you can configure up to eight queues on ports 0 and 2. After you commit the configuration, the PIC goes offline and comes back online with only ports 0 and 2 operational. No interfaces can be configured on ports 1 and 3.

NOTE: Starting from Junos OS Release 14.1R8, 14.2R6, 15.1F6, 15.1R3, 15.1R4, and 16.1R1, the restricted queue PICs without the **max-queues-per-interface** configuration boot up with a maximum of eight queues per port and two operational ports (port 0 and 2). PICs with restricted queues include Quad T3 PIC, Quad E3 PIC, 4-port SONET/SDH OC3c/STM1 PIC, and 4-Port OC3 and 1-port OC12 PICs with SFP.

On certain older MPCS (*MPC1 Q*, *MPC1E Q*, *MPC2 Q*, *MPC2E Q*), you can include the **max-queues-per-interface** statement to set the number of queues per logical interface to four or eight. Setting **max-queues-per-interface 4** sets the MPC to have four queues per logical interface and provides twice as many logical interfaces on the MPC as setting **max-queues-per-interface 8**.

NOTE: For consistency, **max-queues-per-interface** should not be set on MPCs starting from Junos OS 14.1X51.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Configuring the Junos OS to Support Eight Queues on IQ Interfaces for T Series and M320 Routers*
- *Configuring Up to 16 Custom Forwarding Classes*
- *Enabling Eight Queues on ATM Interfaces*
- *Configuring the Maximum Number of Queues for Trio MPC/MIC Interfaces*
- *Example: Configuring CoS on SRX5000 Devices with an MPC*
- *Example: Enabling Eight-Queue Class of Service on Redundant Ethernet Interfaces on SRX Series Devices in a Chassis Cluster*

max-transmit-quality-level

Syntax

```
max-transmit-quality-level;
```

Hierarchy Level

```
[edit chassis synchronization]
```

Release Information

Statement introduced in Junos OS Release 12.3 for MX Series routers.

Description

Configure the threshold quality level for the router. If the received quality level is below the threshold quality level, then the router will send out a received quality level of SEC. The available quality levels are listed in Table 27 on page 438.

> **NOTE:** For GPS external output, when you configure the maximum transmit quality level as PRC and the router is rebooted, no valid output is obtained from SCBE. However, when the maximum transmit quality level is configured to any other quality level other than PRC and the router gets rebooted, then the SCBE works normally.

Options

quality-level—The available quality levels are as given in Table 27 on page 438.

Table 27: Quality Levels

Quality Level	Description
prc	Timing quality of a primary reference clock (option-1 only).
prs	Clock traceable to a primary reference source (option-2 only).
sec	Timing quality of an SDH equipment clock (option-1 only).
smc	Clock traceable to a self-timed SONET (option-2 only).
ssu-a	Timing quality of a type I or IV slave clock (option-1 only).
ssu-b	Timing quality of a type VI slave clock (option-1 only).
st2	Clock traceable to Stratum 2 (option-2 only).
st3	Clock traceable to Stratum 3 (option-2 only).
st3e	Clock traceable to Stratum 3E (option-2 only).
st4	Clock traceable to Stratum 4 free-run (option-2 only).
stu	Clock traceable to an unknown quality (option-2 only).
tnc	Clock traceable to a transit node clock (option-2 only).

Required Privilege Level

interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization | 552

member

Syntax

```
member member-id {
    fabric-tree-root;
    location location;
    mastership-priority number;
    no-management-vlan;
    serial-number serial-number;
    role role;
}
```

Hierarchy Level

```
[edit virtual-chassis]
```

Release Information

Statement introduced in Junos OS Release 9.0 for EX Series switches.
Statement introduced in Junos OS Release 13.2X50-D15 for the QFX Series.
Statement introduced in Junos OS Release 13.2X51-D20 for Virtual Chassis Fabric (VCF).

Description

Configure a switch or an XRE200 External Routing Engine as a member of a Virtual Chassis or a Virtual Chassis Fabric (VCF) with characteristics specified by the available options.

Default

When an EX Series switch or a QFX Series devices configured in standalone mode is powered on but not interconnected through its Virtual Chassis ports (VCPs) with other member switches, its default member ID is **0**.

There is no default member ID in an EX8200 or EX9200 Virtual Chassis. An EX8200 or EX9200 Virtual Chassis must be preprovisioned, and that process configures the member IDs.

Options

member-id—Identifies a specific member switch of a Virtual Chassis or VCF configuration.

The exact range for a specific Virtual Chassis or VCF depends on the number of switches allowed in the Virtual Chassis or VCF.

In an EX8200 Virtual Chassis, member IDs 0 through 7 are reserved for EX8200 member switches and member IDs 8 and 9 are reserved for the master and backup external Routing Engines.

The remaining statement options set characteristics of the Virtual Chassis or VCF member, and are explained separately.

Required Privilege Level
system—To view this statement in the configuration.
system-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Autoprovisioning a Virtual Chassis Fabric*
- *Preprovisioning a Virtual Chassis Fabric*
- *Adding a Device to a Virtual Chassis Fabric*
- *Configuring a QFX Series Virtual Chassis*
- *Configuring an EX2300, EX3400, or EX4300 Virtual Chassis*
- *Configuring EX4600 Switches in a Mixed or Non-Mixed Virtual Chassis*
- *Configuring an EX9200 Virtual Chassis*
- *Configuring a QFX Series Virtual Chassis*

memory-enhanced

Syntax

```
memory-enhanced {
    filter;
    route;
    vpn-label;
}
```

Hierarchy Level

```
[edit chassis]
```

Release Information
Statement added in Junos OS Release 10.4.

Description
Allocate more jtree memory for routing tables and Layer 3 VPNs.

> **NOTE:** The **memory-enhanced** statement supports MX Series routers with DPC (I-chip based) line cards only.

The remaining statements are explained separately.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

> *Allocating More Memory for Routing Tables, Firewall Filters, and Layer 3 VPN Labels*

minor

Syntax

```
minor {
    threshold threshold-value;
    action {
        alarm;
        disable-pfe;
        get-state;
        log;
        offline;
        reset;
    }
}
```

Hierarchy Level

[edit chassis **fpc** *slot-number* **error**]

[edit chassis]

Release Information

Statement introduced for PTX Series routers in Junos OS Release 13.3.
Statement introduced for MX240, MX480, MX960, and MX2020 routers in Junos OS Release 14.2.

Description

Severity level of the error. An error that results in the loss of a single packet but is fully recoverable is a minor error. The severity level of an error cannot be configured by a user.

The other statements are explained separately.

Required Privilege Level

interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- Fabric Resiliency and Degradation | **114**
- show chassis fpc errors | **1564**
- Configuring FPC Error Levels and Actions | **185**

minimum-quality

Syntax

```
minimum-quality;
```

Hierarchy Level

```
[edit chassis synchronization output interfaces external]
[edit chassis synchronization output interfaces (external-0/0 | external-1/0)]
```

Release Information

Statement introduced in Junos OS Release 12.3 for MX Series routers.

Description

Configure the minimum quality level threshold to select a clock source (see Table 27 on page 438). If the quality level of the output clock source drops below the configured minimum quality level threshold, the external output clock is suppressed on the external output interface—external—on SCBE and on the external output interfaces—external-0/0 and external-1/0—on SCBE2.

Table 28: Quality Levels

Quality Level	Description
prc	Timing quality of a primary reference clock (option-1 only).
prs	Clock traceable to a primary reference source (option-2 only).
sec	Timing quality of an SDH equipment clock (option-1 only).
smc	Clock traceable to a self-timed SONET (option-2 only).
ssu-a	Timing quality of a type I or IV slave clock (option-1 only).
ssu-b	Timing quality of a type VI slave clock (option-1 only).
st2	Clock traceable to Stratum 2 (option-2 only).
st3	Clock traceable to Stratum 3 (option-2 only).
st3e	Clock traceable to Stratum 3E (option-2 only).
st4	Clock traceable to Stratum 4 free-run (option-2 only).
stu	Clock traceable to an unknown quality (option-2 only).
tnc	Clock traceable to a transit node clock (option-2 only).

Required Privilege Level

interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization | 552

mlfr-uni-nni-bundles

Syntax

```
mlfr-uni-nni-bundles number;
```

Hierarchy Level

```
[edit chassis fpc slot-number pic pic-number]
```

Release Information

Statement introduced before Junos OS Release 7.4.

Description

Configure link services management properties.

Options

number—Number of Multilink Frame Relay user-to-network interface network-to-network interface (UNI-NNI) (FRF.16) bundles to allocate on a Link Services PIC.

Range: 1 through 255

Default: 16

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

> *Configuring the Number of Bundles on Link Services PICs*

mixed-rate-mode

Syntax

mixed-rate-mode;

Hierarchy Level

[edit chassis fpc *slot-number* pic *pic-number* mixed-rate-mode],
[edit chassis *lcc number* fpc *slot-number* pic *pic-number* mixed-rate-mode] (Routing Matrix)

Release Information

Statement introduced in Junos OS Release 13.3.

Description

Configure the mixed-rate mode for the 24-port 10 Gigabit Ethernet PIC (PF-24XGE-SFPP) only.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Modes of Operation

Configuring Mixed-Rate Mode Operation

multiservice

Syntax

```
multiservice {
    source-mac;
    destination-mac;
    payload {
        ip {
            layer-3 (source-ip-only | destination-ip-only);
            layer-4;
        }
    }
    symmetric-hash {
        complement;
    }
}
```

Hierarchy Level

```
[edit chassis fpc slot-number pic pic-number hash-key family]
```

Release Information
Statement introduced in Junos OS Release 9.6.

Description
(MX Series 5G Universal Routing Platforms only) Configure data used in a hash key for the **multiservice** protocol family when configuring PIC-level symmetrical hashing for load balancing on an 802.3ad Link Aggregation Group.

Options
destination-mac—Include destination MAC address in the hash key.

payload—Include payload data in the hash key. This option has the following suboptions:

- **layer-3**—Include Layer 3 IP information in the hash key.
- **layer-4**—Include Layer 4 IP information in the hash key.

source-mac—Include source MAC address in the hash key.

symmetric-hash—Create a symmetric hash or symmetric hash complement key with any attribute.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring PIC-Level Symmetrical Hashing for Load Balancing on 802.3ad LAGs for MX Series Routers

network-option

Syntax

```
network-option (option-1 | option-2);
```

Hierarchy Level

```
[edit chassis synchronization]
```

Release Information

Statement introduced in Junos OS Release 11.2R4 for MX Series routers.

Description

Configure the Ethernet equipment clock (EEC) synchronization networking type.

NOTE: For SCB, this option is set with the **set chassis synchronization network-type (option-1 | option-2)** configuration command at the **[edit]** hierarchy level.

NOTE: For Junos OS releases 11.2R4 through 13.3R3 for MX240, MX480, and MX960 with SCB, SCBE, and SCBE2; and MX2010 and MX2020 with SCB or SCBE; you must execute the following commands after you change the network option at the **[edit chassis synchronization]** hierarchy level. This is because the loop bandwidth does not change automatically when you change the network option.

```
user@host# deactivate chassis synchronization
user@host# activate chassis synchronization
```

Options

Depending on the configuration of the Synchronization Status Messages (SSM) quality level, the network option functions in the following ways:

- **option-1**—Maps to the G.813 option 1 (EEC1).
- **option-2**—Maps to the G.812 type IV clock (EEC1).

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization | 552

network-services

Syntax

```
network-services (ethernet | enhanced-ethernet | ip | enhanced-ip | lan);
```

Hierarchy Level

```
[edit chassis]
```

Release Information
Statement introduced before Junos OS Release 8.5.
enhanced-ethernet and **enhanced-ip** options introduced in Junos OS Release 11.4.
limited-ifl-scaling option introduced in Junos OS Release 15.1R3 for MX Series routers.

Description

Set the router's network services to a specific mode of operation. On MX240, MX480, and MX960 routers, MPC5E and MPC7E power on only if the network services mode configured is **enhanced-ip** or **enhanced-ethernet**.

MX2010 and MX2020 support only **enhanced-ip** and **enhanced-ethernet** network services modes.

Default

- MX80, MX104, MX2010, MX2020—**enhanced-ip**
- MX240, MX480, MX960—**ip**

Options

ethernet—Set the router's network services to Ethernet and use standard, compiled firewall filter format.

enhanced-ethernet—Set the router's network services to enhanced Ethernet and use enhanced mode capabilities. Only MPCs and MS-DPCs are powered on in the chassis.

ip—Set the router's network services to Internet Protocol and use standard, compiled firewall filter format.

enhanced-ip—Set the router's network services to enhanced Internet Protocol and use enhanced mode capabilities. Only MPCs and MS-DPCs are powered on in the chassis. Non-service DPCs do not work with enhanced network services mode options. This feature is enabled by default on MX80, MX104, MX2010, and MX2020 Universal Routing Platforms.

lan—Set the router's network services to LAN and use standard, compiled firewall filter format. Reboot the system after setting the router's network services to LAN.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- Network Services Mode Overview | **275**
- *Firewall Filters and Enhanced Network Services Mode Overview*
- Configuring Junos OS to Run a Specific Network Services Mode in MX Series Routers | **279**
- *Configuring Enhanced IP Network Services for a Virtual Chassis*
- Limiting the Maximum Number of Logical Interfaces on MX Series Routers With MS-DPCs in Enhanced IP Network Services Mode | **281**

no-concatenate

Syntax

```
no-concatenate;
```

Hierarchy Level

```
[edit chassis fpc slot-number pic pic-number],
[edit chassis lcc number fpc slot-number pic pic-number] (Routing Matrix)
```

Release Information
Statement introduced before Junos OS Release 7.4.

Description
Do not concatenate (multiplex) the output of a SONET/SDH PIC (an interface with a name **so-*fpc*/*pic*/*port***).

When configuring and displaying information about interfaces that are operating in channelized mode, you must specify the channel number in the interface name (***physical*:*channel***); for example, **so-2/2/0:0** and **so-2/2/0:1**.

On SONET OC48 interfaces that are configured for channelized (multiplexed) mode, the **bytes e1-quiet** and **bytes f1** options in the **sonet-options** statement have no effect. The **bytes f2**, **bytes z3**, **bytes z4**, and **path-trace** options work correctly on channel 0. They work in the transmit direction only on channels 1, 2, and 3.

Default
Output is concatenated (multiplexed).

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring the Junos OS to Enable a SONET PIC to Operate in Channelized (Multiplexed) Mode

no-multi-rate

Syntax

```
no-multi-rate;
```

Hierarchy Level

[edit chassis fpc *slot-number* pic *pic-number*]

Release Information
Statement introduced in Junos OS Release 11.2.

Description
Disable the rate-selectability configuration.

NOTE:

- The **no-multi-rate** statement is supported only on MIC-3D-8OC3OC12-4OC48.
- The **no-multi-rate** statement enables the first four ports [0 – 3] exclusively at OC48/STM16 speed.
- The **no-multi-rate** statement disables the last four ports [4 – 7].

Default
Rate-selectability is enabled, that is, by default the multirate mode is enabled.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring Port Speed on Multi-Rate MICs

no-route-localize

Syntax

```
no-route-localize;
```

Hierarchy Level

[edit policy-options policy-statement *policy-name* term *term-name* then]

Release Information
Statement introduced in Junos OS Release 11.4.

Description
Enforce installation of routes on all FIB-remote Packet Forwarding Engines.

Required Privilege Level
routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Example: Configuring Packet Forwarding Engine FIB Localization

non-revertive (Chassis)

Syntax

```
non-revertive;
```

Hierarchy Level

```
[edit chassis aggregated-devices ethernet lacp link-protection]
```

Release Information

Statement introduced in Junos OS Release 9.3.
Statement introduced in Junos OS Release 11.4 for EX Series switches.

Description

Disable the ability to switch to a better priority link (if one is available) once a link is established as active and a collection or distribution is enabled.

BEST PRACTICE: (MX Series) By default, Link Aggregation Control Protocol link protection is revertive. This means that after the current link becomes active, the router switches to a higher-priority link if one becomes operational or is added to the aggregated Ethernet bundle. In a highly scaled configuration over aggregated Ethernet, we recommend that you prevent the router from performing such a switch by including the **non-revertive** statement. Failure to do so may result in some traffic loss if a MIC on which a member interface is located reboots. Using the **non-revertive** statement for this purpose is not effective if both the primary and secondary interfaces are on the MIC that reboots.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring Junos OS for Supporting Aggregated Devices

Configuring LACP Link Protection of Aggregated Ethernet Interfaces for Switches

number-of-ports

Syntax

number-of-ports *number-of-active-physical-ports*;

Hierarchy Level

[edit chassis fpc *slot-number*]
[edit chassis fpc *slot-number* pic *pic-number*]

Hierarchy Level

[edit chassis fpc *fpc-slot* pic *pic-number* pic-mode *pic-speed*]

Release Information
Statement introduced in Junos OS Release 10.1 for the 16x10GE MPC.
Support for MPC3, MPC4, MPC5, and MPC6 introduced in Junos OS Release 13.3R2.
Support for MPC7E-MRATE MPC introduced in Junos OS Release 15.1F4.
Support for MPC8E and MPC9E introduced in Junos OS Release 15.1F5.
Support for MX10003 MPC introduced in Junos OS Release 17.3R1
Support for MX204 routers introduced in Junos OS Release 17.4R1
Statement introduced in Junos OS Release 16.1 for EX9200 switches.

Description
Administratively enable physical ports, for example, to prevent oversubscription of the line card fabric interface. By default, all available ports are enabled. When disabled, the LED on the affected line card will appear yellow on capable line cards.

(MX Series with 16x10GE MPC, MPC3, MPC4, MPC5, and MPC6) You can disable a subset of the physical ports available on the Packet Forwarding Engines of the 16x10GE MPC, and for MICs installed in MPC3, MPC4, MPC5, and MPC6. Specify either 8 or 12 ports by using this statement. When eight active ports are configured, two ports per Packet Forwarding Engine are disabled, and the LEDs on the MPC appear **yellow**. When you specify 12 active ports, one port per Packet Forwarding Engine is disabled and the corresponding LED appear **yellow**. When you do not include this statement in the configuration, all 16 default ports on the MPC are active.

(MX Series with MPC7E-MRATE, MPC8E, and MPC9E) To ensure guaranteed bandwidth by preventing fabric oversubscription, you can disable a subset of the physical ports available on MPC7E-MRATE, MPC8E, and MPC9E. For information about the active ports for MPC7E-MRATE, MPC8E, and MPC9E, see *Supported Active Physical Ports for Configuring Rate Selectability to Prevent Oversubscription*.

(MX204 routers) To ensure guaranteed bandwidth by preventing oversubscription, you can disable a subset of the physical ports available on MX204 routers. For information about the active ports for MX204 routers, see *Supported Active Physical Rate-Selectable Ports to Prevent Oversubscription on MX204 Router*

(EX9200 switches)

Options

number-of-active-physical-ports—Specify the number of physical ports to enable on PICs or MICs on an MPC.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- Configuring the Number of Active Ports on 16-Port MPCs of MX Series Routers | **41**
- *Supported Active Physical Ports for Configuring Rate Selectability to Prevent Oversubscription*
- *Configuring Rate Selectability on MPC7E (Multi-Rate) to Enable Different Port Speeds*
- *Configuring Rate Selectability on MIC-MRATE to Enable Different Port Speeds*
- *Configuring Rate Selectability on MX204 to Enable Different Port Speeds*
- *Understanding Rate Selectability*

offline

Syntax

```
offline;
```

Hierarchy Level

```
[edit chassis lcc number]
```

Release Information
Statement introduced before Junos OS Release 7.4.

Description
(Routing matrix based on the TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, configure a T640 router so that it is not part of the routing matrix. On a TX Matrix Plus router, configure a T1600 or T4000 router so that it is not part of the routing matrix.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

online-expected | 464

TX Matrix Router and T640 Router Configuration Overview

TX Matrix Plus Router Configuration Overview

Configuring Junos OS to Enable the TX Matrix Router to Generate an Alarm If a T640 Router Stays Offline

Configuring Junos OS to Enable the TX Matrix Plus Router to Generate an Alarm If a T1600 or T4000 Router Stays Offline

offline-on-fabric-bandwidth-reduction

Syntax

```
offline-on-fabric-bandwidth-reduction;
```

Hierarchy Level

[edit chassis fpc *slot-number*]

Release Information
Statement introduced in Junos OS Release 11.4.

Description
Configure an FPC with degraded fabric bandwidth offline, to avoid causing a traffic black hole in the chassis for an extended time.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Disabling an FPC with Degraded Fabric Bandwidth | 124

Managing Bandwidth Degradation | 123

on-disk-failure (Chassis Routing Engine)

Syntax

```
on-disk-failure {
    disk-failure-action (halt | reboot);
}
```

Hierarchy Level

```
[edit chassis routing-engine]
```

Release Information

Statement introduced before JUNOS Release 7.4.
The **disk-failure-action** statement added in JUNOS Release 9.0.

Description

Instruct the router to halt or reboot if it detects hard disk errors on the Routing Engine.

Options

The remaining statement is explained separately. See CLI Explorer.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Enabling a Routing Engine to Reboot on Hard Disk Errors | 197

on-error

Syntax

```
on-error {
    raise-alarm;
    power (cycle | off);
    write-coredump;
}
```

Hierarchy Level

[edit chassis cfeb *slot-number*]
[edit chassis feb *slot-number*]
[edit chassis fpc *slot-number* sanity-poll]
[edit chassis lcc *number* fpc *number* sanity-poll] (Routing Matrix)

Release Information

Statement introduced in Junos OS Release 11.4.
Statement introduced in Junos OS Release 15.1 on M7i, M10, M120, and M320 routers.

Description

Instruct the FPC or FEB or CFEB to perform actions during an error condition.

Options

raise-alarm—Generate and display a chassis alarm in case of an error.

power cycle—Reboot the FPC or FEB or CFEB after generating a core file. This statement is useful in case of temporary software errors that are eliminated after reboot.

power off—Halt the FPC or FEB or CFEB and keep it offline. This statement is useful in case of permanent hardware failures.

CAUTION: The **power off** statement halts the FPC or FEB or CFEB. Ensure that you have backup paths through different FPC or FEB or CFEB to avoid service outage.

NOTE: The **power cycle** and **power off** statements are mutually exclusive: You can configure either the **power cycle** or the **power off** statement for an error.

write-coredump—Trigger the core file in case of an error.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring Sanity Polling | **192**

sanity-poll | **520**

retry-count | **513**

online-expected

Syntax

```
online-expected;
```

Hierarchy Level

```
[edit chassis lcc number]
```

Release Information
Statement introduced before Junos OS Release 7.4.

Description
(TX Matrix and TX Matrix Plus routing matrix only) On a TX Matrix router, configure a T640 router so that if it does not come online, an alarm is sent to the TX Matrix router. On a TX Matrix Plus router, configure a T1600 or a T4000 router so that if it does not come online, an alarm is sent to the TX Matrix Plus router.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *TX Matrix Router and T640 Router Configuration Overview*
- *TX Matrix Plus Router Configuration Overview*
- *Configuring Junos OS to Enable the TX Matrix Router to Generate an Alarm If a T640 Router Stays Offline*
- *Configuring Junos OS to Enable the TX Matrix Plus Router to Generate an Alarm If a T1600 or T4000 Router Stays Offline*
- offline | 459

oss-map

Syntax

```
oss-map {
   model-name t640|t1600;
}
```

Hierarchy Level

```
[edit chassis]
```

Release Information

Statement introduced in Junos OS Release 12.3R3, 13.1R2, and 13.2R1 for T4000 routers.

Description

Configure the operations support systems (OSS) mapping feature to map a T4000 chassis to a T1600 chassis or a T640 chassis, so that the T4000 chassis is represented as a T1600 chassis or a T640 chassis, respectively. The configuration helps prevent requalifying the T1600 chassis and T640 chassis as a new chassis on the OSS.

Options

model-name t640—Perform OSS mapping on a T4000 chassis to represent it as a T640 chassis, thereby overriding the chassis model name as displayed in the output of the **show chassis hardware**, the **show snmp mib walk system**, and the **show snmp mib walk jnxBoxAnatomy** operational commands.

model-name t1600—Perform OSS mapping on a T4000 chassis to represent it as a T1600 chassis, thereby overriding the chassis model name as displayed in the output of the **show chassis hardware**, the **show snmp mib walk system**, and the **show snmp mib walk jnxBoxAnatomy** operational commands.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring OSS Mapping to Represent a T4000 Chassis as a T1600 or a T640 Chassis | **289**

Example: Configuring a T4000 Chassis to Represent a T640 Chassis | **291**

show chassis oss-map | **1616**

output interfaces external

Syntax

```
output {
    interfaces {
        external {
            holdover-mode-disable;
            minimum-quality (prc | prs | sec | smc | ssu-a | ssu-b | st2 | st3 | st3e | st4 | stu | tnc);
            source-mode (chassis | line); tx-dnu-to-line-source-enable;
            tx-dnu-to-line-source-enable;
            wander-filter-disable;
        }
    }
}
```

Hierarchy Level

[edit chassis **synchronization**]

Release Information

Statement introduced in Junos OS Release 12.3 for MX Series routers.

Description

Configure the options for the external clock output interface—external—on SCBE.

Configure the options for the external clock output interfaces—external-0/0 and external-1/0—on SCBE2.

Options

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization | 552

packet-scheduling

Syntax

```
(packet-scheduling | no-packet-scheduling);
```

Hierarchy Level

```
[edit chassis]
```

Release Information
Statement introduced before Junos OS Release 7.4.

Description
(M 160 routers only) Enable packet-scheduling mode, in which the Packet Director application-specific integrated circuit (ASIC) schedules packet dispatches to compensate for transport delay differences. This preserves the interpacket gaps as the packets are distributed from the Packet Director ASIC to the Packet Forwarding Engine.

Default
no-packet-scheduling

NOTE: The packet-scheduling feature is available on M160 routers only.

Options
no-packet-scheduling—Do not schedule packets.

packet-scheduling—Schedule packets to preserve interpacket gaps.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Enabling an M160 Router to Operate in Packet Scheduling Mode | 285

payload

Syntax

```
payload {
    ip {
        layer-3;
        layer-4;
    }
}
```

Hierarchy Level

[edit chassis fpc *slot-number* pic *pic-number* hash-key family multiservice]

Release Information

Statement introduced in Junos OS Release 9.6.

Description

(MX Series 5G Universal Routing Platforms only) Include payload data in a hash key for the **multiservice** protocol family when configuring PIC-level symmetrical load balancing on an 802.3ad Link Aggregation Group.

Options

ip—Include IPv4 payload data in the hash key. This option has the following suboptions:

- **layer-3**—Include Layer 3 IP information in the hash key.
- **layer-4**—Include Layer 4 IP information in the hash key.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring PIC-Level Symmetrical Hashing for Load Balancing on 802.3ad LAGs for MX Series Routers

pem (M320 Routers)

Syntax

```
pem {
    minimum number;
}
```

Hierarchy Level

```
[edit chassis]
```

Release Information

Statement introduced in Junos OS Release 7.4.

Description

Configure the minimum number of Power Entry Modules (PEMs) on an M320 router. With this configuration, PEM absent alarms are generated only if the PEM count falls below the minimum specified.

Options

minimum *number*—Minimum number of PEMs on the router.

Range: 0 through 3

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

> *Configuring the Junos OS to Support Entry-Level Configuration on an M320 Router with a Minimum Number of SIBs and PIMs*
>
> sib | **527**

pem (T640, T1600, and T4000 Routers with Six-Input DC Power Supply)

Syntax

```
pem {
    feeds number-of-input-feeds;
    input-current amps-in-each-feed;
}
```

Hierarchy Level

```
[edit chassis]
[edit chassis lcc lcc-number] (Routing Matrix)
```

Release Information

Statement introduced in Junos OS Release 12.1.
Option **feeds** introduced in Junos OS Release 12.1.
Option **input-current** introduced for T4000 routers in Junos OS Release 12.3.

Description

Configure the power supply parameters of the six-input DC power supply on T640, T1600, or T4000 routers.

Options

feeds *number-of-input-feeds*—Number of input feeds connected to the six-input DC power supply.

(For T4000 routers only) **input-current *amps-in-each-feed***—Input current (in amperes) in each feed.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring the Six-Input DC Power Supply on T Series Routers | 168

performance-mode

Syntax

```
performance-mode {
    number-of-ucode-workers number-of-ucode-workers;
}
```

Hierarchy Level

```
[edit chassis fpc 0]
```

Release Information

Statement introduced in Junos OS Release 15.1F4 and 16.1R1 for vMX routers.
number-of-ucode-workers option introduced in Junos OS Release 15.1F6 and 16.2R1 for vMX routers.

Description

(vMX routers only) Enables vMX to run in performance mode. Performance mode needs more vCPUs and memory to run at higher bandwidth.

NOTE: When you enable performance mode, make sure you have configured the proper number of vCPUs and memory for your VMs based on your use case. If you have not configured enough vCPUs, vMX runs in lite mode.

Starting with Junos OS Release 15.1F6, performance mode is enabled by default for vMX.

NOTE: The FPC reboots if you change this configuration.

You can tune performance mode for unicast traffic by changing the number of Workers dedicated to processing multicast and control traffic. Starting with Junos OS Release 17.2R1, you do not need to specify dedicated Workers for processing multicast traffic. The default specifies that all available Workers are used to process all traffic.

The number of dedicated Workers specified in relation to the number of available Workers results in the following behavior:

- If the number of dedicated Workers is greater than or equal to the number of available Workers, then all available Workers are used to process all traffic.

- If the number of dedicated Workers is less than the number of available Workers, then the first set of available Workers (equal to the specified number of dedicated Workers) is used to process multicast and control traffic while the remaining available Workers are used to process flow cache traffic.

Options

performance-mode—Enables performance mode.

To disable performance mode, enable lite mode by including the **lite-mode** statement at the [**edit chassis fpc 0**] hierarchy level.

number-of-ucode-workers *number-workers*—Specifies the number of dedicated Workers for processing multicast and control traffic.

Range: 0 through 15

Default: 0 specifies that all available Workers are used to process all traffic.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

lite-mode | 428

phy-timestamping

Syntax

```
phy-timestamping
```

Hierarchy Level

```
[edit protocols ptp]
```

Release Information

Statement introduced in Junos OS Release 17.1R1.

Description

Configure timestamping of the IEEE 1588 event packets at the physical layer. Timestamping the packet at the physical layer, also known as PHY timestamping, eliminates the noise or the packet delay variation (PDV) that is introduced by the Packet Forwarding Engine.

By default PHY timestamping is disabled.

> **NOTE:** MX104 routers and the MPC5E and MPC6E line cards do not support PHY timestamping in WAN PHY mode. If the interface framing is changed from LAN PHY mode to WAN PHY mode or WAN PHY mode to LAN PHY mode on MX104, MPC5E, or MPC6E, you must reboot the MX104 router or the MPC5E and MPC6E line cards. For PHY timestamping to work for MX104 routers and the MPC5E and MPC6E line cards, the packet forwarding engine must come up in LAN PHY mode after a reboot.

Required Privilege Level

routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Precision Time Protocol Overview

pic (M Series and T Series Routers)

Syntax

```
pic pic-number {
    ce1 {
        e1 port-number {
            channel-group group-number timeslots slot-number;
        }
    }
    ct3 {
        port port-number {
            t1 link-number {
                channel-group group-number timeslots slot-number;
            }
        }
    }
    framing (sdh | sonet);
    idle-cell format {
        itu-t;
        payload-pattern payload-pattern-byte;
    }
    inline-services {
        bandwidth (1g | 10g);
    }
    max-queues-per-interface (8 | 4);
    no-concatenate;
}
```

Hierarchy Level

```
[edit chassis fpc slot-number]
```

Release Information

Statement introduced before Junos OS Release 7.4.

Description

Configure properties for an individual PIC.

Options

pic-number—Slot number in which the PIC is installed.

Range: 0 through 3

The remaining statements are explained separately. Search for a statement in CLI Explorer or click a linked statement in the Syntax section for details.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Configuring the Junos OS to Enable SONET/SDH Framing for SONET/SDH PICs*
- *Configuring the Junos OS to Enable a SONET PIC to Operate in Channelized (Multiplexed) Mode*
- *Configuring the Junos OS to Support Channelized DS3-to-DS0 Naming for Channel Groups and Time Slots*
- *Configuring the Junos OS to Support Channel Groups and Time Slots for Channelized E1 PICs*

pic (MX Series Routers)

Syntax

```
pic pic-number {
    account-layer2-overhead;
    adaptive-services {
        (layer-2 | layer-3);
    }
    aggregate-ports;
    ce1 {
        e1 port-number {
            channel-group group-number timeslots slot-number;
        }
    }
    channelization;
    ct3 {
        port port-number {
            t1 link-number {
                channel-group group-number timeslots slot-number;
            }
        }
    }
    egress-policer-overhead bytes;
    framing (sdh | sonet);
    idle-cell format {
        itu-t;
        payload-pattern payload-pattern-byte;
    }
    ingress-policer-overhead bytes;
    inline-services {
        bandwidth (1g | 10g);
    }
    max-queues-per-interface (8 | 4);
    mlfr-uni-nni-bundles number;
    mlfr-uni-nni-bundles-inline number;
    multi-link-layer-2-inline;
    no-concatenate;
    no-multi-rate;
    pic-type OID of PIC type;
    sparse-dlcis;
    tunnel-services (Chassis) {
        bandwidth (1g | 10g | 20g | 40g);
        tunnel-only;
```

```
    }
    vtmapping (klm | itu-t);
}
```

Hierarchy Level

```
[edit chassis fpc slot-number]
```

Release Information

Statement introduced before Junos OS Release 7.4.
multi-link-layer-2-inline and **mlfr-uni-nni-bundles-inline** options introduced in Junos OS Release 14.1.

Description

Configure properties for an individual PIC.

Options

pic-number—Slot number in which the PIC is installed.

Range: 0 through 3

The remaining statements are explained separately.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Configuring the Junos OS to Enable SONET/SDH Framing for SONET/SDH PICs*
- *Configuring the Junos OS to Enable a SONET PIC to Operate in Channelized (Multiplexed) Mode*
- *Configuring the Junos OS to Support Channelized DS3-to-DS0 Naming for Channel Groups and Time Slots*
- *Configuring the Junos OS to Support Channel Groups and Time Slots for Channelized E1 PICs*
- *Enabling Inline Service Interfaces*

pic (TX Matrix and TX Matrix Plus Routers)

Syntax

```
pic pic-number {
    aggregate-ports;
    atm-cell-relay-accumulation;
    atm-l2circuit-mode (cell | aal5 | trunk trunk);
    egress-policer-overhead (count);
    framing (sdh | sonet);
    idle-cell-format {
        itu-t;
        payload-pattern payload-pattern-byte;
    }
    ingress-policer-overhead (count);
    max-queues-per-interface (8 | 4);
    no-concatenate;
    no-mcast-replication;
    q-pic-large-buffer (large-scale | small-scale);
}
```

Hierarchy Level

```
[edit chassis lcc number fpc slot-number]
```

Release Information

Statement introduced before Junos OS Release 7.4.

Description

On a TX Matrix or TX Matrix Plus router, configure properties for an individual PIC.

Options

pic-number—Slot number in which the PIC is installed.

Range: 0 through 3

The remaining statements are explained separately.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

TX Matrix Router and T640 Router Configuration Overview

TX Matrix Plus Router Configuration Overview

Configuring the Junos OS to Enable SONET/SDH Framing for SONET/SDH PICs

pic-mode

Syntax

pic-mode *pic-speed*;

Hierarchy Level

[edit chassis (EX Series) fpc *slot* pic *pic-number*]

Release Information

Statement introduced in Junos OS Release 15.1F4 for MX Series routers with the MPC7E-MRATE MPC.
Statement introduced in Junos OS Release 15.1F5 for MX Series routers with the MIC-MRATE MIC.
Statement introduced in Junos OS Release 17.3R1 for MX10003 routers with the MX10003 MPC.
Statement introduced in Junos OS Release 17.4R1 for MX204 Universal Routing Platforms.

Description

Configure the operating speed of all ports on the MPC7E-MRATE MPC, MIC-MRATE MIC, MX10003 MPC, and MX204 routers.

(MX240, MX480, MX960, MX2010, and MX2020 routers with MPC7E-MRATE) To configure 100 Gbps, 10 Gbps, and 40 Gbps speed on all supported ports, specify **100G**, **10G**, or **40G**, respectively, as the speed for the specified PIC. All the six ports of PIC 0 and PIC 1 of an MPC7E-MRATE MPC support 10-Gbps and 40-Gbps speeds. However, only ports 2 and 5 of PIC 0 and PIC 1 support 100-Gbps speed. Therefore, if you configure **100G** as the operating speed of a PIC, the PIC is rebooted and the ports 0, 1, 3, and 4 are disabled.

(MX2010 and MX2020 routers with MIC-MRATE on MPC8E and MPC9E) To configure the port speed at MIC level or on all supported ports, specify **100G**, **10G**, or **40G**, respectively, as the speed for the MIC-MRATE MIC on MPC8E and MPC9E. All the twelve ports of MIC-MRATE MIC support 10 Gbps and 40 Gbps speeds. When you configure the port speed as 100 Gbps at the PIC level for MPC8E, you can configure only 4 ports of the 12 MIC-MRATE ports on MPC8E to operate at 100 Gbps port speed. The other ports are disabled. Therefore, if you configure **100G** as the operating speed for ports 0, 1, 6, and 7, the other ports are disabled on MPC8E. Similarly, when you configure the port speed as 100 Gbps at the PIC level you can configure only 8 ports of the 12 MIC-MRATE ports on MPC9E with 100 Gbps port speed. Therefore, if you configure **100G** as the operating speed for ports 0, 1, 2, 3, 6,7, 8, and 9, the other ports can support only 40 Gbps or 10 Gbps. However, enabling port speed of 40 Gbps or 10 Gbps at the PIC level, enables all ports and sets the desired port speed on all ports.

(MX10003 routers with MX10003 MPC) To configure 100 Gbps, 10 Gbps, and 40 Gbps speed on all supported ports, specify 100G, 10G, or 40G, respectively, as the speed for the specified PIC. All the six ports of the fixed port PIC support 10-Gbps and 40-Gbps speeds. All the 12 ports of the Multi-rate MIC support 100-Gbps, 10-Gbps and 40-Gbps speeds. To configure all ports to operate at the same speed,

configure rate selectability at the PIC level, in which case you cannot configure the speed of individual ports. To configure rate selectability at the PIC level, use the **pic-mode** statement and specify the port speed. For more information see "MX10003 MPC on MX10003 Router Overview" on page 59 and *Supported Active Physical Ports for Configuring Rate Selectability to Prevent Oversubscription on MX10003 MPC*.

(MX204 routers) To configure all ports to operate at the same speed, configure rate selectability at the PIC level, in which case you cannot configure the speed of individual ports. To configure rate selectability at the PIC level, use the **pic-mode** statement and specify the port speed. The MX204 has four rate-selectable ports (referred to a PIC 0 ports) that can be configured as 100-Gigabit Ethernet ports or 40-Gigabit Ethernet port, or each port can be configured as four 10-Gigabit Ethernet ports (by using a breakout cable). The MX204 also has eight 10-Gigabit Ethernet ports (referred to as PIC 1 ports).

The MX204 router does not support heterogeneous mode. That is, in PIC mode if 40-Gbps or 100-Gbps speed is configured on PIC 0, then the **number-of-ports** on PIC 1 must be configured to 0 only. For more information, see "MX204 Router Overview" on page 65 and *Supported Active Physical Rate-Selectable Ports to Prevent Oversubscription on MX204 Router*.

Options

pic-speed—Operating speed of the interfaces configured on the ports of an MPC7E-MRATE MPC.

100G—Supported ports operate at 100 Gbps speed.

10G—Supported ports operate at 10 Gbps speed.

40G—Supported ports operate at 40 Gbps speed.

Default: 10G

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Configuring Rate Selectability on MPC7E (Multi-Rate) to Enable Different Port Speeds*
- *Configuring Rate Selectability on MIC-MRATE to Enable Different Port Speeds*
- *Configuring Rate Selectability on MX10003 MPC to Enable Different Port Speeds*
- *Configuring Rate Selectability on MX204 to Enable Different Port Speeds*
- *Understanding Rate Selectability*

policer-drop-probability-low

Syntax

```
policer-drop-probability-low;
```

Hierarchy Level

```
[edit chassis]
```

Release Information
Statement introduced in Junos OS Release 11.4R1.

Description
Reduces the possibility that policers configured on the router might drop packets. For some Juniper Networks routers, policers can mark packets as out-of-specification in accordance with TCP. By default, these policers begin to randomly drop packets when the current credit exceeds the credit limit. In the context of TCP, this random drop mechanism helps to smooth the flow of traffic. The **policer-drop-probability-low** statement causes the policers to operate as strict rate limiters and to ignore the standard TCP behavior.

The **policer-drop-probability-low** statement is applicable to the following routing platforms:

- M7i
- M10i
- M120
- M320
- MX Series

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- show pfe cfeb | **1842**
- show pfe feb | **1847**
- show pfe fpc | **1856**

port (Chassis)

Syntax

```
port port-number;
```

Hierarchy Level

```
[edit chassis fpc slot-number pic pic-number ct3]
```

Release Information

Statement introduced before Junos OS Release 7.4.

Description

Configure the channelized T3 port number on the PIC.

Options

port-number—Port number.

Range: 0 through 1

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring the Junos OS to Support Channelized DS3-to-DS0 Naming for Channel Groups and Time Slots

port auxiliary time-of-day-format

Syntax

```
port auxiliary time-of-day-format ascii string;
```

Hierarchy Level

```
[edit chassis synchronization source interfaces (external-a | external-b | interface interface-name)]
[edit chassis synchronization source interfaces (external | interface interface-name)]
[edit chassis synchronization source interfaces (external-0/0 | external-1/0 | interface interface-name)]
```

Release Information

Statement introduced in Junos OS Release 13.3 for MX Series routers.

Description

Configure the time-of-day message format as ASCII on the auxiliary port that receives the external clock signals.

Options

string—Set the message format in ASCII characters.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization (MX Series) | 552

speed

Syntax

```
speed [10G | 40G | 100G];
```

Hierarchy Level

```
[edit chassis fpc slot-number pic pic-number port port-number]
```

Release Information

Statement introduced in Junos OS Release 15.1F3 and 16.1R2 for PTX5000 routers.
Statement introduced in Junos OS Release 15.1F6 and 16.1R2 for PTX3000 routers.
Statement introduced in Junos OS Release 16.1X65 for PTX1000 routers.

Description

Configure the port speed on interface modules that support multiple port speeds. To check the port speed, use the **show interfaces** command. To determine whether a PIC has specific port speed configuration requirements, see the PIC's description in *PTX Series Interface Module Reference*.

Options

10G—10 Gbps

40G—40 Gbps

100G—100 Gbps

NOTE: For PTX 1000 routers, the default port speed is 10 Gbps.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Modes of Operation

Configuring Mixed-Rate Mode Operation

mixed-rate-mode | 446

power

Syntax

```
power (off | on);
```

Hierarchy Level

```
[edit chassis fpc slot-number pfe slot-number]
[edit chassis fpc slot-number]
[edit chassis fpc name pic],
[edit chassis lcc name fpc name pic name],
[edit chassis member name fpc name pic]
```

Release Information

The **edit chassis fpc *slot-number*** statement introduced before Junos OS Release 7.4.
The **edit chassis fpc *slot-number* pic *pic-number* power *off*** introduced in Junos OS Release 13.3R2.
Statement introduced in Junos OS Release 17.3 for MX10003 Universal Routing Platforms.

Description

The **edit chassis fpc *slot-number*** command configures the Flexible PIC Concentrator (FPC) to stay offline or to come online automatically.

> **NOTE:** In Junos Node Slicing, issuing the command **set chassis fpc *slot-number* power off** on the BSYS (base system) powers off even those FPCs that are assigned to the Guest Network Functions (GNFs) in which unified in-service software upgrade (ISSU) is in progress. Learn more about Junos Node Slicing.

The **edit chassis fpc *slot-number* pic *pic-number* power *off*** command turns off the power to the PIC in the specified FPC.

> **NOTE:** **power off** command is applicable only to the fixed-configuration MPC with six 40-Gigabit Ethernet ports and twenty-four 10-Gigabit Ethernet ports (MPC5E-40G10G). For other PICs, it is ignored with a syslog message.

Starting in Junos OS Evolved Release 19.1R1, on the PTX10003-80C, PTX10003-160C routers, deleting the FPC power off configuration during run time might trigger the FPC to go online and that might result in a system crash. This is because these routers do not support taking FPC online (using the command

request chassis fpc <slot> online). We recommend that you delete the **power-off** configuration when you are ready to reboot the router (that is, delete the configuration just before rebooting the router).

Default

on

Options

off—Take the FPC offline, and configure it to stay offline, as, for example, after a system reboot.

on—Bring the FPC online, and configure it to come online automatically, as, for example, after a system reboot.

off—Take the PIC in the specified FPC offline, and configure it to stay offline, as, for example, after a system reboot.

on—Bring the PIC in the specified FPC online, and configure it to come online automatically, as, for example, after a system reboot.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Managing Power | **161**

preserve-fpc-poweron-sequence

Syntax

preserve-fpc-poweron-sequence;

Hierarchy Level

[edit chassis]

Release Information

Statement introduced in Junos OS Release 15.1 for MX Series routers.
Statement introduced in Junos OS Release 17.2R1 for EX9200 switches.
Statement introduced in Junos OS Release 18.2R1 for MX10008 Universal Routing Platforms.

Description

Preserve the sequence in which the line cards—specifically, MPCs on MX series routers—on a router or switch are powered on when the device is restarted. During a system reboot, the line cards are brought online in the sequence specified in the system log file **/var/log/ fpc_poweron_seq.log**. When a line card goes offline, its entry is removed from the log file. You can use the **show chassis power sequence** command to view the configured power-on sequence.

NOTE:

- If both **preserve-fpc-poweron-sequence** and **fru-poweron-sequence** statements are configured, then the power-on sequence specified in the **fru-poweron-sequence** statement takes precedence.
- If **preserve-fpc-poweron-sequence** is configured and **fru-poweron-sequence** not configured, then the line cards are powered on in the sequence preserved in the system log file **/var/log/ fpc_poweron_seq.log**.
- If neither of these statements is configured, then the line cards are powered on in the ascending order of their slot numbers. Line cards whose slot numbers are not specified in the log file are powered on in the ascending order of their slot numbers.

Required Privilege Level

chassis—To view this statement in the configuration.
chassis-control—To add this statement to the configuration.

RELATED DOCUMENTATION

fru-poweron-sequence | 396

show chassis power sequence | 1683

Understanding How Dynamic Power Management Enables Better Utilization of Power | 161

primary

Syntax

```
primary interface name;
```

Hierarchy Level

```
[edit protocols ptp slave interface interface-name],
[edit protocols ptp master interface interface-name]
```

Release Information
Statement introduced in Junos OS Release 17.2R1.

Description
Configure the primary member link in an aggregated Ethernet bundle to enable Precision Time Protocol (PTP) over a link aggregation group. PTP master streams are created on the FPC on which the primary interface is present. Announce and sync packets are transmitted on this primary PTP Aggregated Ethernet link.

Required Privilege Level
routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring Precision Time Protocol

Example: Configuring Precision Time Protocol

Precision Time Protocol Overview

priority1

Syntax

```
priority1 priority1-value;
```

Hierarchy Level

```
[edit protocols ptp]
```

Release Information

Statement introduced in Junos OS Release 12.2.
Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Metro Routers.
Statement introduced in Junos OS Release 17.3 for the QFX Series.

Description

Configure the priority as one of the following:

- In the slave, the priority value is set to select the best master clock. Note that in order to select a particular master clock, the priority value in the master clock's announce message must be equal to or lower than the configured *priority1-value*.
- In the master, the priority value is set to represent itself in the announce message to other slaves.
- In the boundary node, the slave uses this value to determine the best master clock, whereas the master uses this value from the announce message of the selected master clock.

Note that the lower value takes precedence.

Options

priority1-value—The priority value of the clock.

Range: 0 through 255

Default: 128

Required Privilege Level

routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring Precision Time Protocol

Precision Time Protocol Overview

IEEE 1588v2 Precision Timing Protocol (PTP)

priority2

Syntax

```
priority2 priority2-value;
```

Hierarchy Level

```
[edit protocols ptp]
```

Release Information

Statement introduced in Junos OS Release 12.2.
Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Metro Routers.
Statement introduced in Junos OS Release 17.3 for the QFX Series.

Description

Configure the **priority2** value. This value is used to differentiate and prioritize the master clocks to avoid confusion when the ***priority1-value*** is the same for different master clocks in a network.

Note that the lower value takes precedence.

Options

priority2-value—The priority value of the clock.

Range: 0 through 255

Default: 128

Required Privilege Level

routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring Precision Time Protocol

Example: Configuring Precision Time Protocol

Precision Time Protocol Overview

IEEE 1588v2 Precision Timing Protocol (PTP)

priority (Clock Synchronization)

Syntax

```
priority number;
```

Hierarchy Level

```
[edit chassis synchronization source interfaces (external-a | external-b | interface interface-name)]
[edit chassis synchronization source interfaces (external | interface interface-name)]
[edit chassis synchronization source interfaces (external-0/0 | external-1/0 | interface interface-name)]
```

Release Information

Statement introduced in Junos OS Release 11.2R4 for MX Series routers.

Description

Configure the priority of a clock source in relationship to other clock sources to define a network synchronization flow and to help prevent timing loops.

When the priority is not specified, the external-a interface has higher default priority than the external-b interface, and the external-b interface has higher default priority than other Gigabit Ethernet or 10-Gigabit Ethernet clock sources, which have the lowest default priority. Any priority you configure is higher than any default priority.

Options

number—Set the priority level of the clock source.

Range: 1 through 5

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization (MX Series) | 552

profile-type

QFX Series (AES67 Profile)

```
profile-type aes67
```

QFX Series (AES67+SMPTE Profile)

```
profile-type aes67-smpte
```

List of Syntax

QFX Series (AES67 Profile) on page 493
QFX Series (AES67+SMPTE Profile) on page 493
MX Series on page 493
QFX Series (Enterprise Profile) on page 493
QFX Series (G.8275.2 Enhanced Profile) on page 493
QFX Series (SMPTE Profile) on page 493

MX Series

```
profile-type (g.8275.1 | g.8275.1.enh)
```

QFX Series (Enterprise Profile)

```
profile-type enterprise-profile
```

QFX Series (G.8275.2 Enhanced Profile)

```
profile-type g.8275.1.enh
```

QFX Series (SMPTE Profile)

```
profile-type smpte
```

Hierarchy Level

```
[edit protocols ptp]
```

Release Information

Statement introduced in Junos OS Release 17.1R1.

Statement introduced in Junos OS Release 17.3 for the QFX Series.

Description

On the MX Series, configure the G.8275.1 or the enhanced G.8275.1 PTP profile for applications that require accurate phase and time synchronization. This profile supports the architecture defined in ITU-T G.8275 to enable the distribution of phase and time with full timing support and is based on the second version of PTP defined in IEEE 1588.

On QFX Series switches that support the enterprise-profile feature, you can configure the enterprise profile, which supports IEEE 1588 PTPv2 transport over multicast IPv4. If you do not specify a profile, the IEEE 1588 default profile is enabled by default.

On QFX Series switches that support the G.8275.2 enhanced profile feature, you can configure the G.8275.2 enhanced profile, which supports telecom applications that require accurate phase and time synchronization for phase alignment and time of day synchronization over a wide area network. This profile supports PTP over IPv4 unicast, ordinary and boundary clocks, and unicast negotiation.

On QFX Series switches that support the media profile, you can configure the SMPTE, AES67, and the AES67+SMPTE profiles to support video applications for capture (for example, cameras), video edit, and playback to be used in professional broadcast environments. The standard allows multiple video sources to stay in synchronization across various equipment by providing time and frequency synchronization to all devices. This profile supports PTP over IPv4 multicast and ordinary and boundary clocks.

Options

aes67—Enable the AES67 PTP profile.

aes67-smpte—Enable the AES67+SMPTE PTP profile.

enterprise-profile—Enable the enterprise profile. The enterprise profile supports IEEE 1588 PTPv2 transport over multicast IPv4. When the enterprise profile is enabled, no other profiles can be enabled. Also, unicast negotiation is disabled when you enable the enterprise profile.

g.8275.1—Enable the G.8275.1 PTP profile.

g.8275.1.enh—Enable the enhanced G.8275.1 PTP profile. This profile supports PTP over IPv4.

g.8275.2.enh—Enable the enhanced G.8275.2 PTP profile. This profile supports PTP over IPv4 unicast.

smpte—Enable the SMPTE PTP profile.

Required Privilege Level

routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Precision Time Protocol Overview*
- *Configuring the Precision Time Protocol Enterprise Profile*
- *Configuring the Precision Time Protocol G.8275.2 Enhanced Profile (Telecom Profile)*

pulse-per-second-enable

Syntax

```
pulse-per-second-enable;
```

Hierarchy Level

```
[edit chassis synchronization interfaces external]
[edit chassis synchronization interfaces (external-0/0 | external-1/0)]
```

Release Information

Statement introduced in Junos OS Release 12.3 for MX Series routers.

Description

Configure the external interface to receive the pulse per second (PPS) signal on the GPS interface of the router.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization | 552

q-pic-large-buffer

Syntax

```
q-pic-large-buffer (large-scale | small-scale);
```

Hierarchy Level

```
[edit chassis fpc slot-number pic pic-number]
[edit chassis lcc number fpc slot-number pic pic-number (Routing Matrix)
```

Release Information

Statement introduced in Junos OS Release 7.4.
Support for TX Matrix and TX Matrix Plus hierarchy added in Junos OS Release 9.6.

Description

Configure delay buffers.

NOTE: When you commit the configuration after including the **q-pic-large-buffer** statement for a PIC, the Junos OS temporarily takes the PIC offline and brings it back online before the new configuration is activated and becomes the current operational configuration.

Default

small-scale

Options

large-scale—(Optional) Set the average packet size used to calculate the number of notification queue entries in the IQ PIC to 256 bytes. Useful for slower interfaces (T1, E1, and *N*xDS0 interfaces configured on Channelized IQ PICs and Gigabit Ethernet VLANs configured on Gigabit Ethernet IQ PICs).

small-scale—(Optional) Set the average packet size used to calculate the number of notification queue entries in the IQ PIC to 40 bytes.

NOTE: You cannot configure the **large-scale** and the **small-scale** options on MX Series routers. Include only the **q-pic-large-buffer** statement to enable the large delay buffer size on Enhanced Queuing DPCs on MX Series routers.

Required Privilege Level

interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring the Junos OS to Enable Larger Delay Buffers for T1, E1, and DS0 Interfaces Configured on Channelized IQ PICs

Configuring Schedulers

quality-level (Clock Synchronization)

Syntax

```
quality-level (prc | prs | sec | smc | ssu-a | ssu-b | st2 | st3 | st3e | st4 | stu | tnc);
```

Hierarchy Level

```
[edit chassis synchronization source interfaces (external-a | external-b | interface interface-name)]
[edit chassis synchronization source interfaces (external | interface interface-name)]
[edit chassis synchronization source interfaces (external-0/0 | external-1/0 | interface interface-name)]
```

Release Information

Statement introduced in Junos OS Release 11.2R4 for MX Series routers.

Description

Configure the quality level for a timing source so that the router knows the best available source with which to synchronize. The quality level specifies the accuracy level of the clock and is transmitted across the network through Synchronization Status Messages (SSMs) over the Ethernet Synchronization Messaging Channel (ESMC), or through SSMs contained in SONET/SDH frames.

SONET SSM messages are either Generation 1 or Generation 2. Generation 1 is the first and most widely deployed SSM message set. Generation 2 is a newer version. Quality level options are available for both Generation 1 and Generation 2.

Options

prs—Primary reference source—Stratum 1

st2—Stratum 2

tnc—Transit node clock

st3e—Stratum 3E

st3—Stratum 3

smc—SONET minimum clock

st4—Stratum 4

prc—Primary reference clock

ssu-a—Synchronization supply unit A

ssu-b—Synchronization supply unit B

sec—SDH equipment clock

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization (MX Series) | 552

quality-level (hybrid)

Syntax

```
quality-level (prs | st2 | tnc | st3e | st3 | smc | st4) | (prc | ssu-a | ssu-b | sec);
```

Hierarchy Level

[edit protocols ptp **slave clock-class-to-quality-level-mapping**]

Release Information
Statement introduced in Junos OS Release 12.2R2.

Description
Configure the quality level for the timing source so that the router knows the best available source with which to synchronize. The quality level specifies the accuracy level of the clock.

Options
prs —Primary reference source—Stratum 1

st2—Stratum 2

tnc—Transit node clock

st3e—Stratum 3E

st3—Stratum 3

smc—SONET minimum clock

st4—Stratum 4

prc—Primary reference clock

ssu-a—Synchronization supply unit A

ssu-b—Synchronization supply unit B

sec—SDH equipment clock

Required Privilege Level
routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Configuring Hybrid Mode and ESMC Quality Level Mapping*
- *Example: Configuring Hybrid Mode and ESMC Quality Level Mapping*
- *Understanding Hybrid Mode*
- *Precision Time Protocol Overview*
- *Synchronous Ethernet Overview*

quality-mode-enable (MX)

Syntax

```
quality-mode-enable;
```

Hierarchy Level

```
[edit chassis synchronization]
```

Release Information

Statement introduced in Junos OS Release 11.2R4 for MX Series routers.

Description

Enable Synchronous Ethernet ESMC quality mode. The quality level parameter for a Synchronous Ethernet interface is optional when the **quality-mode-enable** and the **selection-mode received-quality** statements are included at the **[edit chassis synchronization]** hierarchy level.

The default quality level for a Synchronous Ethernet interface is based on the value of network option: The **option-1** statement, when set, selects the **sec** quality level; and the **option-2** statement, when set, selects the **st3** quality level.

Table 29 on page 502 shows whether SSM quality level is supported for a given external interface signal type and framing. The default setting is disabled.

- **Table 29: SSM-Quality LevelSupport by Signal Type and Framing**

Signal Type	Framing	SSM Quality Level Supported
E1	G.704	yes
E1	G.704 no CRC4	no
T1	ESF	yes
T1	SF	no
2048 KHz	Not applicable	no

Default

By default, this statement is disabled.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization (MX Series) | 552

show chassis synchronization | 1770

quality-mode-enable (PTX)

Syntax

```
quality-mode-enable;
```

Hierarchy Level

[edit chassis **synchronization (PTX Series)**]

Release Information
Statement introduced in Junos OS Release 14.2R1 for PTX Series routers.

Description

Enable Synchronous Ethernet ESMC quality mode. The quality level parameter for a Synchronous Ethernet interface is optional when the **quality-mode-enable** and the **selection-mode received-quality** statements are included at the **[edit chassis synchronization]** hierarchy level.

The default quality level for a Synchronous Ethernet interface is based on the value of the network option: The **option-1** statement, when included, selects the **sec** quality level; and the **option-2** statement, when included, selects the **st3** quality level.

Default

By default, this statement is not included.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization (PTX Series) | **562**

Synchronizing Internal Stratum 3 Clock to External Clock Sources on PTX Series Routers

show chassis synchronization | **1770**

recovered-clock

Syntax

```
recovered-clock {
    port port-number;
}
```

Hierarchy Level

```
[edit chassis fpc slot-number pic pic-number]
```

Release Information

Statement introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers.

Description

Select the port where the synchronous clock may be recovered.

Options

port-number—Port number where the synchronous clock may be recovered.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Clock Sources for PTX Series Packet Transport Routers*
- *Synchronizing Internal Stratum 3 Clock to External Clock Sources on PTX Series Routers*
- synchronization (PTX Series) | 562

red-buffer-occupancy

Syntax

```
red-buffer-occupancy {
    weighted-averaged [ instant-usage-weight-exponent exponent-value ];
}
```

Hierarchy Level

```
[edit chassis fpc slot-number pic pic-number ],
[edit chassis lcc number fpc slot-number pic pic-number]
```

Release Information

Statement introduced in Junos OS Release 8.3.

Description

Configure the IQ PIC to base random early detection (RED) queue management on a *simple moving average* buffer occupancy calculation. If you do not include this statement, the IQ PIC bases RED on an *instantaneous* buffer occupancy value. As an option, you can specify that the IQ PIC bases RED on a *weighted moving average* of buffer occupancy values.

If you configure this feature on a channelized OC12 intelligent queuing (IQ) PIC, the PIC reboots.

Options

weighted-averaged—Configure the IQ PIC to base RED processing on a simple moving average of instantaneous buffer occupancy values instead of an instantaneous buffer occupancy.

instant-usage-weight-exponent *exponent-value*—(Optional) Specify the integer to be used as the negative exponent of 2 to express a weight value. The PIC performs weighted RED (WRED) by based on a calculation of average buffer occupancy that applies the specified weight value to the instantaneous buffer occupancy and then factors the weighted value into the calculation of average buffer occupancy. Valid exponent range is from 1 through 31 (weight values from 2^{-1} through 2^{-31}). If you do not specify this option, the default exponent value is 0, which results in a weight value of $2^{0} = 1$. With a weight value of 1, the calculation of weighted average buffer occupancy yields the same value as the simple average buffer occupancy.

NOTE: You can specify an exponent value greater than 31, and the value displays in the output of **show** commands. However, the PIC replaces the out-of-range value with the *operational* value of 31, which results in a weight value of $2^{-31} = 1 / 2^{31} = 0.00000000046566128730773925781 25$.

Required Privilege Level

interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Managing Transient Traffic Bursts by Configuring Weighted RED Buffer Occupancy

Example: Managing Transient Traffic Bursts by Configuring Weighted RED Buffer Occupancy

redundancy-mode

Syntax

```
redundancy-mode (increased-bandwidth | redundant)
```

Hierarchy Level

```
[edit chassis fabric]
```

Release Information
Statement introduced in Junos OS Release 12.2.

Description
(MX240, MX480, and MX960 routers only) Configure the active control boards to be in redundancy mode or increased fabric bandwidth mode. In increased fabric bandwidth mode, which is the default behavior for MX Series routers with Switch Control Board (SCB), the maximum number of available fabric planes are used. The MX Series routers that contain the Enhanced SCB—SCBE—and the MPC3E, the control boards operate in redundancy fabric mode (all the FPCs use 4 fabric planes as active planes) by default.

Options

increased-bandwidth—Enable increased fabric bandwidth mode for the control boards, which causes all the available fabric planes to be used.

redundant—Enable redundancy mode for the control boards, which causes all the FPCs to use 4 fabric planes as active planes.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- Detection and Corrective Actions of Line Cards with Degraded Fabric on MX Series Routers | **121**
- Detection and Recovery of Fabric-Related Failures Caused by Loss of Connectivity on MX Series Routers | **118**
- MX Series Routers Fabric Resiliency | **116**
- show chassis fabric redundancy-mode | **1385**
- Configuring Fabric Redundancy Mode for Active Control Boards on MX Series Routers | **102**

request (Clock Synchronization)

Syntax

```
request (force-switch lockout);
```

Hierarchy Level

```
[edit chassis synchronization source interfaces (external-a | external-b | interface interface-name)]
[edit chassis synchronization source interfaces (external | interface interface-name)]
[edit chassis synchronization source interfaces (external-0/0 | external-1/0 | interface interface-name)]
```

Release Information

Statement introduced in Junos OS Release 11.2 R4 for MX Series routers.

Description

Specify the clock selection request criterion.

Options

force-switch—Force switching to a clock source, provided the clock source is enabled and not locked out. Only one configured source may be force-switched.

lockout—Clock source is not considered by the selection process. Lockout may be configured for any source.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization (MX Series) | 552

restart chassis-control

List of Syntax

Syntax on page 510
Syntax (MX Series Routers) on page 510
Syntax (PTX Series) on page 510

Syntax

```
restart chassis-control
<lcc number | sfc number>
<gracefully | immediately | soft>
```

Syntax (MX Series Routers)

```
restart chassis-control
<gracefully | immediately | soft>
```

Syntax (PTX Series)

```
restart chassis-control
<gracefully | immediately | soft>
```

Release Information

Command introduced before JUNOS Release 7.4.
Command introduced in Junos OS Release 12.3 for MX2020 Universal Routing Platforms.
Command introduced in Junos OS Release 12.3 for MX2010 Universal Routing Platforms.
Command introduced in Junos OS Release 17.2 for MX2008 Universal Routing Platforms.
Command introduced in Junos OS Release 17.3 for MX10003 Universal Routing Platforms.

Description

Restart the chassis management process.

NOTE: When GRES is configured and the **restart chassis-control** command is executed on a TX Matrix Plus router with 3D SIBs, we cannot ascertain which Routing Engine becomes a master. This is due to the chassisd restart. The chassis process or chassid is responsible for maintaining and retaining mastership and when it is restarted, the new chassisd is processed based on the router load. This results in one of the Routing Engines being made master.

Options

lcc *number*—(Routing matrix only) (Optional) Restart the software process for a specific T640 routing node that is connected to a TX Matrix platform. Replace ***number*** with a value from **0** through **3**.

sfc *number*—(TX Matrix Plus routers only) (Optional) Restart the software process on the TX Matrix Plus router (or switch-fabric chassis). Replace ***number*** with **0**.

gracefully—(Optional) Restart the software process.

immediately—(Optional) Immediately restart the software process.

> **NOTE:** For PTX Series routers, when the **restart chassis-control** command is executed with the **immediately** option set, the PFE's state will be reset to enabled regardless of whether or not the PFE's state is set to disabled when the action occurs.

soft—(Optional) Reread and reactivate the configuration without completely restarting the software processes. For example, Border Gateway Protocol (BGP) peers stay up and the routing table stays constant. Omitting this option results in a graceful restart of the software process.

Required Privilege Level

reset

RELATED DOCUMENTATION

restart

List of Sample Output

restart chassis-control gracefully on page 511
restart chassis-control soft on page 512

Output Fields

When you enter this command, you are provided feedback on the status of your request.

Sample Output

restart chassis-control gracefully

```
user@host> restart chassis-control gracefully
```

```
Chassis control process started, pid 1631
```

restart chassis-control soft

```
user@host> restart chassis-control soft
```

```
Chassis control process started, pid 1653
```

retry-count

Syntax

```
retry-count number;
```

Hierarchy Level

```
[edit chassis cfeb slot-number]
[edit chassis cluster redundancy-group group-number ip-monitoring ]
[edit chassis feb slot-number]
[edit chassis fpc slot-number sanity-poll]
[edit chassis lcc number fpc number sanity-poll] (Routing Matrix)
```

Release Information

Statement introduced in Junos OS Release 11.4.
Statement introduced in Junos OS Release 15.1 on M7i, M10, M120, and M320 routers.

Description

Number of times sanity polling periodically checks for an error condition in the FPC.

Options

number—Number of times sanity polling is allowed to check for an error condition.

Range: 1 through 30

Default: 10

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring Sanity Polling | 192

sanity-poll | 520

on-error | 462

route (chassis)

Syntax

```
route;
```

Hierarchy Level

```
[edit chassis memory-enhanced]
```

Release Information
Statement added in Junos OS Release 10.4.

Description
Allocate more jtree memory for routing tables over firewall filters.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

> *Allocating More Memory for Routing Tables, Firewall Filters, and Layer 3 VPN Labels*

routing-engine (Chassis)

Syntax

```
routing-engine {
    on-disk-failure {
        disk-failure-action (halt | reboot);
    }
    disk {
        ssd-series ssd-series-name {
            id id-num {
                id-threshold id-threshold-value;
                id-value (norm | raw);
                id-flag (high | low);
            }
        }
        smart-check {
    }
}
```

Hierarchy Level

```
[edit chassis]
```

Release Information

Statement introduced before Junos OS Release 7.4.
The **disk-failure-action** statement added in Junos OS Release 9.0.

Description

Configure a Routing Engine to halt or reboot automatically when a hard disk error occurs. A hard disk error may cause a Routing Engine to enter a state in which it responds to local pings and interfaces remain up, but no other processes are responding. Rebooting or halting prevents this. You can also configure the device to perform certain health checks on the Routing Engine solid-state drive (SSD) and log a health event or raise an alarm in case a predefined health attribute threshold is breached.

Options

disk—Configure health check parameters for the SSD.

ssd-series *ssd-series-name*—Specify the SSD series name.

id *id-num*—Specify the ID of the SSD smart attribute for which you are configuring the health check. You can view the smart attributes and their IDs of an SSD by using the command **show vmhost hard-disk-test status disk /dev/sda**.

Range: 1 - 255

id-threshold—Specify the SSD smart attribute threshold, breaching which will result in the device logging a health event or raising an alarm.

id-value—Choose the attribute value type from the following options:

- norm—Use this option to instruct the device to consider normalized value for the specified smart attribute.
- raw—Use this option to instruct the device to consider raw value for the specified smart attribute.

id-flag—Choose the attribute value flag from the following options:

- high—The software considers the threshold to be breached if the value is greater than smart threshold.
- low—The software considers the threshold to be breached if the value is less than smart threshold.

smart-check—Configure the device to raise alarm when an error occurs. See **smart-check**.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Enabling a Routing Engine to Reboot on Hard Disk Errors | **197**

route-localization

Syntax

```
route-localization {
    inet;
    inet6;
}
```

Hierarchy Level

[edit chassis]

Release Information

Statement introduced in Junos OS Release 11.4.

Description

Configure FIB localization for IPv4 and IPv6 routes.

Options

inet—Configure FIB localization for IPv4 routes.

inet6—Configure FIB localization for IPv6 routes.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Example: Configuring Packet Forwarding Engine FIB Localization

sabit

Syntax

```
sabit bit;
```

Hierarchy Level

```
[edit chassis synchronization interfaces external e1-options]
[edit chassis synchronization interfaces (external-0/0 | external-1/0) e1-options]
[edit chassis synchronization interfaces bits e1-options]
```

Release Information

Statement introduced in Junos OS Release 12.3 for MX Series routers.
Statement introduced in Junos OS Release 16.1 for the MX104 router.

Description

Configure the SA bit for exchanging the SSM quality on the E1 interface.

Options

bit—SA bit value.

Range: 4 through 8.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization | 552

sampling-instance

Syntax

```
sampling-instance instance-name;
```

Hierarchy Level

```
[edit chassis fpc slot-number],
[edit chassis lcc number fpc slot-number] (Routing Matrix),
[edit chassis member member-number fpc slot slot-number]
```

Release Information

Statement introduced in Junos OS Release 9.6.
Support at the **[edit chassis member *member-number* fpc slot *slot-number*]** hierarchy level introduced in Junos OS Release 14.1.
Statement introduced in Junos OS Release 14.1R3 for EX Series switches.

Description

Associate a defined sampling instance with a specific FPC, MPC, or DPC for active sampling instances configured at the **[edit forwarding-options sampling]** hierarchy level.

For M120 routers with FEB, this statement must also be configured under **[edit chassis feb *slot-number*]**, in addition to the **[edit forwarding-options sampling]** hierarchy level.

In a two-member MX Series Virtual Chassis, the master router (member 0) uses FPC slot numbers 0 through 11 with no offset; the backup router (member 1) uses FPC slot numbers 12 through 23, with an offset of 12.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Associating Sampling Instances for Active Flow Monitoring with a Specific FPC, MPC, or DPC

Inline Flow Monitoring for Virtual Chassis Overview

sanity-poll

Syntax

```
sanity-poll {
    retry-count number;
    on-error {
        raise-alarm;
        power (cycle | off);
        write-coredump;
    }
}
```

Hierarchy Level

```
[edit chassis cfeb slot-number]
[edit chassis feb slot-number]
[edit chassis fpc slot-number]
[edit chassis lcc number fpc number] (Routing Matrix)
```

Release Information

Statement introduced in Junos OS Release 11.4.
Statement introduced in Junos OS Release 15.1 on M7i, M10, M120, and M320 routers.

Description

Enable sanity polling and start periodic sanity checking for a particular FPC. The periodic sanity check includes checking for error conditions such as “register sanity issues,” “high temperature,” “hardware failure,” and so on in the FPC.

NOTE: Currently, periodic sanity check is performed only on the routing chip register.

Options

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- Configuring Sanity Polling | 192
- retry-count | 513
- on-error | 462

secondary

Syntax

```
secondary interface name;
```

Hierarchy Level

```
[edit protocols ptp slave interface interface-name],
[edit protocols ptp master interface interface-name]
```

Release Information

Statement introduced in Junos OS Release 17.2R1.

Description

Configure the secondary member link in an aggregated Ethernet bundle to enable Precision Time Protocol (PTP) over a link aggregation group. PTP switches over to the secondary member in the aggregated Ethernet bundle when the primary aggregated Ethernet link is down.

Required Privilege Level

routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Configuring Precision Time Protocol*
- *Example: Configuring Precision Time Protocol*
- *Precision Time Protocol Overview*

selection-mode

Syntax

```
selection-mode (configured-quality | received-quality);
```

Hierarchy Level

```
[edit chassis synchronization]
```

Release Information

Statement introduced in Junos OS Release 11.2R4 for MX Series routers.

Description

Specify whether the clock source selection must use the configured or the received ESMC or SSM quality level for a qualifying interface. In both the selection modes, the interface qualifies for clock source selection only when the received ESMC or SSM quality level on the interface is equal to or greater than the configured ESMC or SSM quality level for the interface.

Options

configured-quality—Set this option to let the clock source selection algorithm to use the ESMC or SSM quality level that is configured for a qualifying interface.

received-quality—Set this option to let the clock source selection algorithm to use the ESMC or SSM quality level that is received on the qualifying interface.

NOTE: For the **selection-mode** statement configuration to take effect, you must set the **quality-mode-enable** statement at the [**edit chassis synchronization**] hierarchy level.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization | 552

service-package

Syntax

```
service-package {
    extension-provider {
        control-cores control-number;
        data-cores data-number;
        data-flow-affinity {
            hash-key (layer-3 | layer-4);
        }
        forwarding-db-size size;
        object-cache-size size;
        package package-name;
        policy-db-size size;
        syslog {
            facility {
                severity;
                destination destination;
            }
        }
        wired-max-processes num-procs;
        wired-process-mem-size mem-size;
    }
    layer-2;
    layer-3;
}
```

Hierarchy Level

[edit chassis fpc *slot-number* pic *pic-number* **adaptive-services**]

Release Information

Statement introduced before Junos OS Release 7.4.
Statement introduced on MX Series 5G Universal Routing Platforms with MS-DPCs in Junos OS Release 9.6.

Description

For adaptive services and multi-services interfaces, enable a service package on the specified Physical Interface Card (PIC).

Options

layer-2—Enable a Layer 2 service package on the specified PIC.

layer-3—Enable a Layer 3 service package on the specified PIC.

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Enabling Service Packages*
- *Configuring MS-MPC-Based, Static HTTP Redirect Services*
- *Configuring MS-MPC-Based, Converged HTTP Redirect Services*

session-offload

Syntax

```
session-offload;
```

Hierarchy Level

```
[edit chassis fpc slot-number pic number adaptive-services service-package extension-provider]
```

Release Information

Statement introduced on MX Series 5G Universal Routing Platforms with MS-DPCs in Junos OS Release 9.6.

Description

Enable session offloading on a per-PIC basis for a Multiservices PIC.

Default

Session offloading is disabled.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Enabling Session Offloading for Multiservices DPCs

sfm (Chassis)

Syntax

```
sfm slot-number power off;
```

Hierarchy Level

```
[edit chassis]
```

Release Information
Statement introduced before Junos OS Release 7.4.

Description
For routers with SFMs, configure an SFM to stay offline.

By default, if you use the **request chassis sfm** CLI command to take an SFM offline, the SFM will attempt to restart when you enter a **commit** CLI command. To prevent a restart, configure an SFM to stay offline. This feature is useful for repair situations. The SFM remains offline until you delete this statement.

Options
slot-number—Slot number in which the SFM is installed.

power off—Take the SFM offline and configure it to remain offline.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring an SFM to Stay Offline | **195**

High Availability Feature Guide

sib

Syntax

```
sib {
    minimum number;
}
```

Hierarchy Level

```
[edit chassis]
```

Release Information

Statement introduced in Junos OS Release 7.4.

Description

Configure the minimum number of SIBs on an M320 router. With this configuration, SIB absent alarms are generated only if the SIB count falls below the minimum specified.

Options

number—Minimum number of SIBs on the router.

Range: 0 through 3

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring the Junos OS to Support Entry-Level Configuration on an M320 Router with a Minimum Number of SIBs and PIMs

pem | 469

signal-type

Syntax

```
signal-type (1hz | 5mhz | 10mhz | 2048mhz | e1 | t1);
```

Hierarchy Level

```
[edit chassis synchronization interfaces external]
[edit chassis synchronization interfaces (external-0/0 | external-1/0)]
```

Release Information
Statement introduced in Junos OS Release 12.3 for MX Series routers.

Description
Configure the frequency for the provided reference clock.

Options
1mhz—Set the signal with a clock frequency of 1 MHz.

5mhz—Set the signal with a clock frequency of 5 MHz.

10mhz—Set the signal with a clock frequency of 10 MHz.

2048khz—Set the signal as an E1 unframed 2048 kHz G.703 signal.

e1—Set the signal as an E1-coded 2048-kHz signal on a 120-ohm balanced line.

t1—Set the signal as a T1-coded 1.544-MHz signal on a 100-ohm balanced line.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization | 552

switchover-mode

Syntax

```
switchover-mode (non-revertive | revertive);
```

Hierarchy Level

```
[edit chassis synchronization]
```

Release Information

Statement introduced in Junos OS Release 11.2R4 for MX Series routers.

Description

Specify whether the router must switch from a lower-quality clock source to a higher-quality clock source or use the current clock source only.

Default

revertive

Options

non-revertive—Set this option so that the router continues to use the current clock source as long as it is valid.

revertive—Set the option so that the router automatically switches from a lower to a higher quality clock source whenever the higher clock source becomes available.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization (MX Series) | 552

synchronization (PTX Series) | 562

slow-pfe-alarm

Syntax

```
slow-pfe-alarm;
```

Hierarchy Level

```
[edit chassis]
```

Release Information
Statement introduced in Junos OS Release 12.1R6, 12.2R5, 12.3R3, 13.1R2, and 13.2R1.

Description
Enable the slow Packet Forwarding Engine alarm on a M Series, MX Series, or a T Series router.

Required Privilege Level
routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring Slow Packet Forwarding Engine Alarm | 259

sonet

Syntax

```
sonet {
    device-count number;
}
```

Hierarchy Level

```
[edit chassis aggregated-devices]
```

Release Information

Statement introduced before Junos OS Release 7.4.

Description

Configure properties for SONET/SDH aggregated devices on the router.

Options

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

> *Configuring Junos OS for Supporting Aggregated Devices*

slave

List of Syntax

MX Series on page 532
QFX Series on page 532

MX Series

```
slave {
    announce-interval announce-interval-value
    announce-timeout announce-timeout-value;
    delay-request delay-request-value;
    frequency-only;
    hybrid
    interface interface-name {
        unicast-mode {
            transport ipv4;
            clock-source ip-address {
                local-ip-address local-ip-address {
            }
        }
        multicast-mode {
            hybrid
            transport 802.3 link-local;
        }
    }
    sync-interval interval;
}
```

QFX Series

```
slave {
    interface interface-name {
        unicast-mode {
            transport ipv4;
            clock-client ip-address {
                local-ip-address local-ip-address;
            }
        }
    }
    multicast-mode {
        transport (ipv4 | ieee-802.3)
        local-ip-address local-ip-address;
```

```
        local-priority local-ip-address;
    }
max-announce-interval max-announce-interval;
max-delay-response-interval max-delay-response-interval;
max-sync-interval max-sync-interval;
min-announce-interval min-announce-interval;
min-delay-response-interval min-delay-response-interval;
min-sync-interval min-sync-interval;
sync-interval sync-interval;
}
```

Hierarchy Level

```
[edit protocols ptp]
```

Release Information

Statement introduced in Junos OS Release 12.2.
Statement introduced in Junos OS Release 17.3 for the QFX Series.

Description

Configure the slave with parameters.

NOTE: Multicast mode is not supported on the QFX Series.

Options

announce-interval—Configure the logarithmic mean interval for the announce messages to be sent by the master.

announce-timeout—Specify the number of announce messages a slave must miss before an announce-timeout is declared.

delay-request—Configure the logarithmic mean interval in seconds between the delay request messages sent by the slave to the master.

frequency-only—Configure frequency synchronization.

hybrid—Configure the timing and synchronization feature to operate in Sync-E assisted PTP mode of operation.

unicast-mode—Configure the slave in unicast mode.

clock-source—Configure the IP address of the master.

multicast-mode—Configure multicast transmission of PTP packets between the master node and the slave node.

transport 802.3—Configure Ethernet as the encapsulation type for transport of PTP packets.

sync-interval—Configure the logarithmic mean interval for sync interval messages to be sent by the master.

unicast-mode—Configure the master in unicast mode.

clock-client—Configure the IP address of the slave

transport—Configure the encapsulation type for PTP packet transport.

local-ip-address—Configure the IP address of the interface acting as the slave or the master.

local-priority—Configure a clock's local priority to be used as a tie-breaker in the dataset comparison algorithm, if all other attributes of the datasets being compared are equal.

max-announce-interval—Configure the maximum log mean interval between announce messages.

max-delay-response-interval—Configure the maximum log mean interval between delay-response messages.

max-sync-interval—Configure the maximum log mean interval between synchronization messages.

min-announce-interval—Configure the minimum log mean interval between announce messages.

min-delay-response-interval—Configure the minimum log mean interval between delay-response messages.

min-sync-interval—Configure the minimum log mean interval between synchronization messages.

Required Privilege Level

routing—To view this statement in the configuration.

routing-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Configuring Precision Time Protocol*
- *Example: Configuring Precision Time Protocol*
- *Precision Time Protocol Overview*
- *Configuring the Precision Time Protocol G.8275.2 Enhanced Profile (Telecom Profile)*

smart-check

Syntax

```
smart-check {
    ssd-series ssd-series-name {
        id id-num {
            id-threshold id-threshold-value;
            id-value (norm | raw);
            id-flag (high | low);
        }
    }
}
```

Hierarchy Level

[edit chassis routing-engine disk]

Release Information

Statement introduced in Junos OS Release 19.2R1.

Description

Configure the device to perform health monitoring on the Routing Engine disk and raise alarm when an error occurs. You can specify threshold value for each smart attribute of the solid-state drive (SSD). The device raises an alarm when the threshold is breached. You can view the alarms by using the command **show chassis alarms**.

Options

disk—Configure health check parameters for the SSD.

ssd-series *ssd-series-name*—Specify the SSD series name.

id *id-num*—Specify the ID of the SSD smart attribute for which you are configuring the health check. You can view the smart attributes and their IDs of an SSD by using the command **show vmhost hard-disk-test status disk /dev/sda**.

Range: 1 - 255

id-threshold—Specify the SSD smart attribute threshold, breaching which will result in the device logging a health event or raising an alarm.

id-value—Choose the attribute value type from the following options:

- norm—Use this option to instruct the device to consider normalized value for the specified smart attribute.

- raw—Use this option to instruct the device to consider raw value for the specified smart attribute.

id-flag—Choose the attribute value flag from the following options:

- high—The software considers the threshold to be breached if the value is greater than smart threshold.
- low—The software considers the threshold to be breached if the value is less than smart threshold.

smart-check—

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Enabling a Routing Engine to Reboot on Hard Disk Errors | 197

source-mode

Syntax

```
source-mode (chassis | line);
```

Hierarchy Level

```
[edit chassis synchronization output interfaces external]
[edit chassis synchronization output interfaces (external-0/0 | external-1/0)]
```

Release Information

Statement introduced in Junos OS Release 12.3 for MX Series routers.

Description

Configure the source mode for selecting a clock source as either a chassis clock or the best line clock source as output for the configured BITS interface.

Options

chassis—Set the chassis clock for output.

line—Set the best line clock source for output.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization | 552

source interfaces

Syntax

```
source interfaces (external | interface-name)
    hold-off-time time;
    priority number;
    quality-level (prc | prs | sec | smc | ssu-a | ssu-b | st2 | st3 | st3e | st4 | stu | tnc);
    request (force-switch | lockout);
    wait-to-restore minutes;
}
```

Hierarchy Level

```
[edit chassis synchronization]
```

Release Information

Statement introduced in Junos OS Release 11.2R4 for MX Series routers.

Description

Configure the clock source that is used by the clock selection process on an interface.

- (SCB only) Specify the primary clock source as the external-a interface and the secondary clock source as the external-b interface. The clock source is chosen using the clock selection process.
- (SCBE only) Specify the external interface to select the external clock source.
- (SCBE2 only) Specify the external-0/0 interface or the external-1/0 interface to select the external clock source.

Options

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization (MX Series) | 552

sparse-dlcis

Syntax

```
sparse-dlcis;
```

Hierarchy Level

```
[edit chassis fpc slot-number pic pic-number];
```

Release Information
Statement introduced before Junos OS Release 7.4.

Description
Support a full data-link connection identifier (DLCI) range (1 through 1022). This enables you to use circuit cross-connect (CCC) and translation cross-connect (TCC) features by means of Frame Relay on T1 and E1 interfaces.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

> *Configuring the Junos OS to Support the Sparse DLCI Mode on Channelized STM1 or Channelized DS3 PICs*

speed

Syntax

```
speed (oc3-stm1 | oc12-stm4 | oc48-stm16 | 100G | 10G | 40G);
```

Hierarchy Level

```
[edit chassis fpc slot-number pic pic-number port port-number]
```

Release Information

Statement introduced in Junos OS Release 11.2.
Support for MPC7E (Multi-Rate) introduced in Junos OS Release 15.1F4.
Support for MX10003 MPC introduced in Junos OS Release 17.3R1.
Support for MX204 routers introduced in Junos OS Release 17.4R1.

Description

Configure the port speed on MX Series routers. This statement is supported only on MPC7E (Multi-Rate) MPC, SONET/SDH (Multi-Rate) MICs with SFP, Channelized SONET/SDH OC3/STM1 (Multi-Rate) MICs with SFP, ATM MICs, and MX204 routers.

Default

oc3-stm1

Options

oc3-stm1—Supported ports operate at OC3 or STM1 speed.

oc12-stm4—Supported ports operate at OC12 or STM4 speed.

oc48-stm16—Supported ports operate at OC48 or STM16 speed.

100G—Supported ports operate at 100-Gbps speed.

10G—Supported ports operate at 10-Gbps speed.

40G—Supported ports operate at 40-Gbps speed.

NOTE: You can configure the **oc12-stm4**, **oc3-stm1**, and **oc48-stm16** port speed options for SONET/SDH OC3/STM1 (Multi-Rate) MICs. However, for Channelized SONET/SDH OC3/STM1 (Multi-Rate) MICs with SFP and ATM MICs, you can configure only the **oc12-stm4** and **oc3-stm1** port speed options.

(MX Series with MPCs and ATM MICs with SFP) To configure up to OC12 CBR bandwidth speed per virtual circuit (VC) on an ATM MIC with SFP (MIC-3D-8OC3-2OC12-ATM), specify **oc12-stm4** as the speed for the specified port. You can configure the **oc12-stm4** port speed option only for ports 0 and 4 on an ATM MIC. If you configure the **oc12-stm4** port speed option for port 0, then ports 1, 2, and 3 are disabled. Similarly, if you configure the **oc12-stm4** port speed for port 4, then ports 5, 6, and 7 are disabled.

(MX Series with MPC7E-MRATE) To configure 100-Gbps, 10-Gbps, or 40-Gbps speed per port on an MPC7E (Multi-Rate) MPC, specify **100G**, **10G**, or **40G**, respectively, as the speed for the specified port. You can configure **10G** and **40G** port speed options on all the six ports of PIC 0 and PIC 1 of an MPC7E-MRATE MPC. However, you can configure the **100G** port speed option only for ports 2 and 5 of PIC 0 and PIC 1 of an MPC7E-MRATE MPC.

(MX10003 routers with MX10003 MPC) To configure 100 Gbps, 10 Gbps, and 40 Gbps speed on all supported ports, specify 100G, 10G, or 40G, respectively, as the speed for the specified PIC. All the six ports of the fixed port PIC support 10-Gbps and 40-Gbps speeds. All the 12 ports of the Multi-rate MIC support 100-Gbps, 10-Gbps and 40-Gbps speeds. For more information see "MX10003 MPC on MX10003 Router Overview" on page 59 and *Supported Active Physical Ports for Configuring Rate Selectability to Prevent Oversubscription on MX10003 MPC*.

(MX204 Routers) The MX204 has four rate-selectable ports (referred to a PIC 0 ports) that can be configured as 100-Gigabit Ethernet ports or 40-Gigabit Ethernet port, or each port can be configured as four 10-Gigabit Ethernet ports (by using a breakout cable). The MX204 also has eight 10-Gigabit Ethernet ports (referred to as PIC 1 ports). For more information, see "MX204 Router Overview" on page 65 and *Supported Active Physical Rate-Selectable Ports to Prevent Oversubscription on MX204 Router*

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring Port Speed on Multi-Rate MICs

Configuring Rate Selectability on MPC7E (Multi-Rate) to Enable Different Port Speeds

Configuring Rate Selectability on MX10003 MPC to Enable Different Port Speeds

Configuring Rate Selectability on MX204 to Enable Different Port Speeds

speed (Gigabit Ethernet interface)

Syntax

```
speed (1G | 10G);
```

Hierarchy Level

```
[edit interfaces intf-name gigether-options]
```

Release Information
Statement introduced in Junos OS Release 18.1R1 for MX10003 and MX204 routers.

Description
Starting in Junos OS Release 18.1R1, on MX10003 and MX204 routers, the 10-Gbps port can operate in 1-Gbps mode also. On MX10003 and MX204 routers, when the port operates in 10-Gbps speed, you can change the operating speed to 1Gpbs using the configuration **speed *1G*** in this configuration statement. Once you commit this configuration, the operating speed of the 10-Gbps port changes to 1-Gbps speed.

On fixed-port PIC and non-MACsec MIC of MX10003 router, you can configure one or all 10-Gbps port operating in 4X10-Gbps speed to operate in 1-Gbps speed.

On MX204 routers, you can configure the 4X10-Gbps port on one of the fixed-port PICs to operate in 1-Gbps mode. And on the other fixed-port PIC, you can configure the 10-Gbps port to 1-Gbps speed.

See *MX10003 MPC Rate-Selectability Overview* and *MX204 Router Rate-Selectability Overview* for more details.

On MX10003 and MX204 routers, 1-Gbps speed is supported with **speed 1g** configuration. The 1-Gbps speed is only supported in non-autonegotation mode. For optics other than SFP-T, in 1-Gbps mode, the peer interfaces must be configured to non-autonegotiation mode.

NOTE:

- On the MX10003 router, the MACsec MIC does not provide 1-Gbps speed. If you attempt to change the operating speed to 1-Gbps, syslog displays that this feature is not supported on the MACsec MIC.
- On MX10003 and MX204 routers, rate selectability at PIC level and port level does not support 1-Gbps speed.
- On MX10003 and MX204 routers, the interface name prefix must be xe.

- On MX10003 and MX204 routers, even after configuring 1-Gbps speed, the protocol continues to advertise the bandwidth as 10-Gigabit Ethernet.
- On MX10003 and MX204 routers, Link Aggregation Group (LAG) is supported on 10-Gbps speed only. It is not supported on 1-Gbps speed.

To view the speed configured for the interface, execute the *show interfaces extensive* command. The **Speed Configuration** output parameter in the command output indicates the current operation speed of the interface. If the interface is configured with 1-Gbps speed, then **Speed Configuration** displays 1G; if the interface is configured with 10-Gbps speed, Speed Configuration displays AUTO.

Default

10G

Options

1G—Supported ports operate at 1-Gbps speed.

10G—Supported ports operate at 10-Gbps speed.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring Port Speed on Multi-Rate MICs

MX10003 MPC Rate-Selectability Overview

Configuring Rate Selectability on MX204 to Enable Different Port Speeds

Configuring Rate Selectability on MX10003 MPC to Enable Different Port Speeds

speed (24-port and 12-port 10 Gigabit Ethernet PIC)

Syntax

speed 1G | 10G

Hierarchy Level

[edit chassis fpc *slot-number* pic *pic-number*]
[edit chassis fpc *slot-number* pic *pic-number* port *port-number*]
[edit chassis *lcc number* fpc *slot-number* pic *pic-number* mixed-rate-mode] (Routing Matrix)

Release Information

Statement introduced in Junos OS Release 13.3.
Statement introduced in Junos OS Release 15.1 for the PTX Series.

Description

Configure the port speed on the following interface modules:

- PF-24XGE-SFPP or the PF-12XGE-SFPP PIC on a T4000 standalone router or on an LCC in a TX Matrix Plus routing matrix with 3D SIBs

  NOTE: To change the port speed from 10 Gbps to 1 Gbps on PF-24XGE-SFPP and PF-12XGE-SFPP PICs, SFP optics is required.

- P1-PTX-24-10GE-SFPP PIC on the PTX3000 router
- P1-PTX-24-10GE-SFPP PIC with the FPC2-PTX-P1A on the PTX5000 router

Dual-rate support for the P1-PTX-24-10GE-SFPP enables you to switch all port speeds to either 1 Gbps or 10 Gbps. The default is 10 Gpbs. All ports are configured to the same speed; there is no mixed-rate-mode capability. Changing the port speed causes the PIC to reboot.

To return all ports to the 10-Gbps port speed, use the **delete chassis fpc *fpc-number* pic *pic-number* speed 1G** statement. To check the port speed, use the **show interfaces** command.

NOTE: For the 1-Gbps port speed on the P1-PTX-24-10GE-SFPP PIC, you can use either the SFP-1GE-SX or the SFP-1GE-LX transceiver.

Options

1 G—1 Gbps

10 G—10 Gbps

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Modes of Operation

Configuring Mixed-Rate Mode Operation

mixed-rate-mode | **446**

stateful (MX Series)

Syntax

```
stateful {
   interface interface-name {
      multicast-mode
            local-priority
            transport 802.3 ( link-local ) ;
            asymmetry number;
         }
   }
   }
}
```

Hierarchy Level

```
[edit protocols ptp]
```

Release Information
Statement introduced in Junos OS Release 17.1R1.

Description

Configure the stateful port or bidirectional port with parameters. A stateful port is useful when you configure PTP over Ethernet for multicast mode of transmission of PTP traffic.

For PTP over Ethernet, you can configure a port to function as both a slave port and a master port. This type of port is called a dynamic port, a stateful port, or a bidirectional port. Such a dynamic port enables the transfer of frequency for synchronization services, in addition to time and phase alignment, when PTP functionality is not hop-by-hop and you have provisioned master and slave roles or interfaces.

Options

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level
routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Precision Time Protocol Overview

Guidelines for Configuring PTP over Ethernet

Configuring PTP Multicast Master and Slave Ports for Ethernet Encapsulation

Configuring PTP Dynamic Ports for Ethernet Encapsulation

symmetric-hash

Syntax

```
symmetric-hash {
   complement;
}
```

Hierarchy Level

```
[edit chassis fpc slot-number pic slot-number hash-key family inet],
[edit chassis fpc slot-number pic slot-number hash-key family multiservice]
```

Release Information
Statement introduced in Junos OS Release 9.6.

Description
(MX Series 5G Universal Routing Platforms only) Configure the symmetric hash or symmetric hash complement at the PIC level for configuring symmetrical load balancing on an 802.3ad Link Aggregation Group.

Options
complement—Include the complement of the symmetric hash in the hash key.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring PIC-Level Symmetrical Hashing for Load Balancing on 802.3ad LAGs for MX Series Routers

synchronization (M Series and T Series)

Syntax

```
synchronization {
    primary (external-a | external-b | fpc-slot-number | gps-0-10mhz | gps-0-5mhz | gps-1-10mhz | gps-1-5mhz | bits-a
        | bits-b);
    secondary (external-a | external-b | fpc-slot-number | gps-0-10mhz | gps-0-5mhz | gps-1-10mhz | gps-1-5mhz |
        bits-a | bits-b );
    signal-type (t1 | e1);
    switching-mode (revertive | non-revertive);
    transmitter-enable;
    validation-interval seconds;
    y-cable-line-termination;
}
```

Hierarchy Level

```
[edit chassis]
```

Release Information

Statement introduced in Junos OS Release 7.6.
Statement introduced in Junos OS Release 9.3 for M120 routers.
Statement introduced in Junos OS Release 10.2 for T320, T640, and T1600 routers.

Description

(M320, M40e, M120, T320, T640, and T1600 routers and PTX Series Packet Transport Routers only) Configure an external synchronization interface to synchronize the internal Stratum 3 clock to an external source, and then synchronize the chassis interface clock to that source.

Options

primary—First external timing source specified in the configuration hierarchy. This statement has the following suboptions:

- **external-a**—Use **external-a** as the primary clock synchronization source.
- **external-b**—Use **external-b** as the primary clock synchronization source.
- **fpc-*slot-number***—Use **fpc-*slot-number*** as the primary clock synchronization source. For the PTX5000 Packet Transport Router, replace *slot-number* with a value from **0** through **7**.
- **gps-0-10mhz**—Use **gps-0-10mhz** as the primary clock synchronization source.

- **gps-0-5mhz**—Use **gps-0-5mhz** as the primary clock synchronization source.
- **gps-1-10mhz**—Use **gps-1-10mhz** as the primary clock synchronization source.
- **gps-1-5mhz**—Use **gps-1-5mhz** as the primary clock synchronization source.
- **bits-a**—Use **bits-a** as the primary clock synchronization source.
- **bits-b**—Use **bits-b** as the primary clock synchronization source.

secondary—Second external timing source specified in the configuration hierarchy.

- **external-a**—Use **external-a** as the secondary clock synchronization source.
- **external-b**—Use **external-b** as the secondary clock synchronization source.
- **fpc-*slot-number***—Use **fpc-*slot-number*** as the secondary clock synchronization source. For the PTX5000 Packet Transport Router, replace *slot-number* with a value from **0** to **7**.
- **gps-0-10mhz**—Use**gps-0-10mhz** as the secondary clock synchronization source.
- **gps-0-5mhz**—Use **gps-0-5mhz** as the secondary clock synchronization source.
- **gps-1-10mhz**—Use **gps-1-10mhz** as the secondary clock synchronization source.
- **gps-1-5mhz**—Use **gps-1-5mhz** as the secondary clock synchronization source.
- **bits-a**—Use **bits-a** as the secondary clock synchronization source.
- **bits-b**—Use **bits-b** as the secondary clock synchronization source.

signal-type—Specify the line encoding mode for interfaces: either **t1** or **e1**. For the M40e router, only the **t1 signal-type** mode is supported.

Default: t1

switching-mode—Specify **revertive** if a lower-priority synchronization can be switched to a valid, higher-priority synchronization.

Default: non-revertive

transmitter-enable—(M320 routers only) Control whether the diagnostic timing signal is transmitted.

validation-interval—Validate the synchronized deviation. If revertive switching is enabled and a higher-priority clock is validated, the clock module is directed to the higher-priority clock, and all configured and active synchronizations are validated. The validation timer resumes after the current validation interval expires. This feature is not supported on PTX Series Packet Transport Routers.

Range: (M320, M40e, T320, T640, T1600 routers) 90 through 86,400 seconds. (M120 routers) 30 through 86,400 seconds.

Default: (M320, M40e, T320, T640, T1600 routers) 90 seconds. (M120 routers) 30 seconds

y-cable-line-termination—(M320 routers only) Specify that a single signal be wired to both Control Boards (CBs) using a Y-cable.

Required Privilege Level

interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

> *Configuring Junos OS to Support an External Clock Synchronization Interface for M Series, MX Series, and T Series Routers*

synchronization (MX Series)

Syntax

```
synchronization {
    clock-mode (auto-select | free-run);
    esmc-transmit {
        interfaces (all | interface-name);
    }
    hold-interval {
        configuration-change seconds;
        restart seconds;
        switchover seconds;
    }
    interfaces {
        external | (external-0/0 | external-1/0) {
            e1-options {
                framing (g704 | g704-no-crc4);
                line-encoding (ami | hdb3);
                sabit number;
            }
            pulse-per-second-enable;
            signal-type (2048khz | e1 | t1);
            t1-options {
                framing (esf | sf);
                line-encoding (ami | b8zs);
            }
        }
        bits {
            e1-options {
                framing (g704 | g704-no-crc4);
                sabit number;
                }
            }
        }
    }
    max-transmit-quality-level quality-level
    network-option (option-1 | option-2);
    output {
        interfaces (external | (external-0/0 | external-1/0)) {
            holdover-mode-disable;
            minimum-quality (prc | prs | sec | smc | ssu-a | ssu-b | st2 | st3 | st3e | st4 | stu | tnc);
            source-mode (chassis | line);
            tx-dnu-to-line-source-enable;
```

```
        wander-filter-disable;
      }
    }
    port auxiliary client {
      time-of-day-format {
      ascii <string>;
      }
    }
    quality-mode-enable;
    selection-mode (configured-quality | received-quality);
    source {
      interfaces (interface-name | (bits |external | (external-0/0 | external-1/0)) {
        priority number;
        quality-level (prc | prs |sec | smc | ssu-a | ssu-b | st2 | st3 | st3e | st4 | stu | tnc);
        request (force-switch | lockout);
      }
    }
    switchover-mode (revertive | non-revertive);
}
```

Hierarchy Level

```
[edit chassis]
```

Release Information

Statement introduced in Junos OS Release 10.4.

Statement introduced in Junos OS Release 17.3R1 for MX10003 router.

Options **interfaces**, **output**, and **source interfaces external** introduced in Junos OS Release 12.3.

Description

(MX5-T, MX10-T, MX40-T, MX80-T, MX240, MX480, MX960 , and MX10003 routers) Configure Synchronous Ethernet parameters. For configuration details, see *Configuring Clock Synchronization Interface on MX Series Routers*.

(MX240, MX480, MX960, and MX2020 routers with SCBE or SCBE2) Configure centralized clocking parameters.

- Starting in Junos 12.2, configure distribution of the selected chassis clock source to downstream network elements through supported line interfaces.
- Starting in Junos 12.3, configure an external building-integrated timing supply (BITS) timing source. You can also configure the selected chassis clock, or an incoming Synchronous Ethernet or PTP line source for transmission out the external interface.
- Starting in Junos 16.1 for the MX104 routers, SSM is supported on the BITS interface and can be configured at the **[edit chassis synchronization interfaces bits e1-options]** hierarchy level.

For configuration details, see *Example: Configuring Centralized Clocking on the Enhanced MX Switch Control Board*.

NOTE:

- Unified ISSU is not supported when clock synchronization is configured for Synchronous Ethernet.
- The commit operation fails if you configure bits as source, without first configuring bits interface.

Options

clock-mode (auto-select | free-run)—Specify the mode of operation to select the clock source either from a free-run local oscillator or from an external qualified clock. On MX240, MX480, and MX960 routers with enhanced MPCs, the free-run clock is provided by a local oscillator. On other MX Series routers, the free-run clock is provided by the SCB. The default setting is auto-select mode.

esmc-transmit interfaces (all | *interface-name*)—Enable Ethernet Synchronization Message Channel (ESMC) packet transmission.

hold-interval (configuration-change | restart | switchover) *seconds*—Specify the chassis synchronization hold interval type and clock selection wait time:

- **configuration-change**—Clock select wait time after change in configuration. The range is 15 through 60 seconds.
- **restart**— Clock select wait time after reboot. The range is 60 through 180 seconds. The default is 120 seconds.
- **switchover**— Switchover wait time after clock recovery. The range is 30 to 60 seconds. The default is 30 seconds.

interfaces (external | (external-0/0 | external-1/0))—Configure the external interface for operating with a connected external device. This interface can be configured as a clock source, which then becomes a candidate for selection as the chassis clock source by the clock source selection algorithm.

- **signal-type (1mhz | 5mhz | 10mhz | 2048khz | e1 | t1)**—Specify the external interface signal type:
  a. **1mhz**—Set the signal with a clock frequency of 1 MHz.
  b. **5mhz**—Set the signal with a clock frequency of 5 MHz.
  c. **10mhz**—Set the signal with a clock frequency of 10 MHz.
  d. **2048khz**—Set the signal with a clock frequency of 2048 kHz.
  e. **e1**—Set the signal as an E1-coded 2048 kHz signal on a 120-ohm balanced line.
  f. **t1**—Set the signal as a T1-coded 1.544 MHz signal on a 100-ohm balanced line.
- **e1-options**—Specify the E1 options:
  a. **framing (g704 | g704-no-crc4)**—Specify the framing format:
     - **g704**—G.704 framing format for E1 interfaces
     - **g704-no-crc4**—G.704 framing with no CRC4 for E1 interfaces
  b. **line-encoding (ami | hdb3)**—Specify the line encoding:
     - **ami**— Alternate mark inversion (AMI)
     - **hdb3**—High-d Density bipolar 3 code (HDB3)

c. **sabit *number***—Specify the San synchronization status bit used for exchanging SSN quality. The value can be 4, 5, 6, 7, or 8. The default is 4.

- **t1-options**—Specify the T1 options:

a. **framing (esf | sf)**—Specify the framing format:

- **esf**—Extended superframe (ESF)
- **sf**—Superframe (SF)

b. **line-encoding (ami | b8zs)**—Specify the line encoding:

- **ami**— Alternate mark inversion (AMI)
- **b8zs**—8-bit zero suppression, bipolar with 8-zero substitution (B8ZS)

max-transmit-quality-level—Specify the threshold quality level for the entire system. If the received quality level is below the threshold quality level then the router will send out a received quality level of SEC. The available quality levels are **PRC**, **PRS**, **SEC**, **SMC**, **SSU-A SSU-B ST2**, **ST3**, **ST3E**, **ST4**, **STU**, and **TNC**.

network-option (option-1 | option-2)—Specify the synchronization networking:

- **option-1**— EEC-1 maps to G.813 option 1 clock
- **option-2**—EEC-2 maps to G.812 type IV clock

output interfaces external—(SCBE only) Specify the properties of the external output interface:

output interfaces (external-0/0 | external-1/0)—(SCBE2 only) Specify the properties of the external output interface:

- **holdover-mode-disable**—Disable holdover.
- **minimum-quality (prc | prs | sec | smc | ssu-a | ssu-b | st2 | st3 | st3e | st4 | stu | tnc)**—Specify the minimum quality level threshold for selection of this clock (see Table 27 on page 438). If the quality level of the output clock source drops below the configured minimum quality level threshold, the external output clock is squelched.

  Table 30: Quality Levels

Quality Level	Description
prc	Timing quality of a primary reference clock (option-1 only).
prs	Clock traceable to a primary reference source (option-2 only).
sec	Timing quality of an SDH equipment clock (option-1 only).
smc	Clock traceable to a self-timed SONET (option-2 only).
ssu-a	Timing quality of a type I or IV slave clock (option-1 only).
ssu-b	Timing quality of a type VI slave clock (option-1 only).
st2	Clock traceable to Stratum 2 (option-2 only).
st3	Clock traceable to Stratum 3 (option-2 only).
st3e	Clock traceable to Stratum 3E (option-2 only).
st4	Clock traceable to Stratum 4 free-run (option-2 only).
stu	Clock traceable to an unknown quality (option-2 only).
tnc	Clock traceable to a transit node clock (option-2 only).

- **source-mode (chassis | line)**—Specify source mode for selecting source to output:
  a. **chassis**—Chassis clock for output
  b. **line**—Best line clock source for output
- **tx-dnu-to-line-source-enable**—Set Tx quality level to DNU/DUS on line source interface that has been selected as the external output source.
- **wander-filter-disable**—Disable wander filtering.

quality-mode-enable—Specify the clock selection, quality level, and priority setting. The quality level parameter for a Synchronous Ethernet interface is optional when quality mode is enabled and the selection mode is set to **received-quality**. The default quality level for a Synchronous Ethernet interface is based on the value of **network-option**: **option-1** selects **SEC** and **option-2** selects **ST3**. Table 29 on page 502 shows whether SSM quality level is supported for a given external interface signal type and framing. The default setting is disabled.

Table 31: SSM-Quality Level Support by Signal Type and Framing

Signal Type	Framing	SSM Quality Level Supported
E1	G.704	yes
E1	G.704 no CRC4	no
T1	ESF	yes
T1	SF	no
2048 KHz	Not applicable	no

selection-mode (configured-quality | received-quality)—Specify whether the clock source selection should use the configured or received ESMC or SSM quality level for a qualifying interface. In both selection modes, the interface qualifies for clock source selection only when the received ESMC or SSM quality level on the interface is equal to or greater than the configured ESMC or SSM quality level for the interface.

NOTE: For the **selection-mode** statement configuration to take effect, you must set the **quality-mode-enable** statement at the **[edit chassis synchronization]** hierarchy level.

a. **configured-quality**—The clock source selection algorithm uses the ESMC or SSM quality level configured for a qualifying interface.

b. **received-quality**—The clock source selection algorithm uses the ESMC or SSM quality level received on the qualifying interface.

source (external-a | external-b | interfaces (*interface-name*) | external | (external-0/0 | external-1/0))—Specify clock sources.

(SCB only) The primary clock source is external-a interface, the secondary clock source is external-b interface. The clock source is chosen using the clock selection process.

(SCBE only) Specify the external interface to select the external clock source.

(SCBE2 only) Specify the external-0/0 interface or external-1/0 interface to select the external clock source.

- **priority *number***—Specify a priority level from 1 to 5. When not specified, **external-a** has higher default priority than external-b interface , and external-b interface has higher default priority than other Gigabit Ethernet or 10-Gigabit Ethernet clock sources, which have the lowest default priority. Any priority you configure is higher than any default priority.
- **quality-level (prc | prs |sec | smc | ssu-a | ssu-b | st2 | st3 | st3e | st4 | stu | tnc)**—Specify the **quality-level** option based on the configured **network-option**. For quality level details, see Table 27 on page 438.

  NOTE: Starting with Junos OS Release 12.2R1, the **quality-level** parameter for a Synchronous Ethernet interface is optional when quality mode is enabled and the selection mode is set to received quality. The default quality level for a Synchronous Ethernet interface is **SEC** for the **option-1** network type and **ST3** for the **option-2** network type.

  Both option I and option II SSM quality levels are supported:

  - For option-1, quality level must be configured for external clocks (**external-a** or **external-b**) whether or not quality level is enabled.
  - For option-2, the default quality level for external clocks is QL_STU whether or not quality level is enabled.
  - Quality level is set to DNU for network-option 1 and set to DUS for network-option 2, if quality-level is not configured and no ESMC messages are received.
  - On the selected active source (primary or secondary, whichever is active), even if ESMC transmit is not enabled, a DNU ESMC will be sent out if **network-option** is 1, and DUS ESMC will be sent out if **network-option** is 2. This is applicable only for sources of Ethernet interface type to avoid source looping.

- **request force-switch**—Force a switch to this source if the source is enabled and not locked out. You can configure only one source to be force-switched.
- **request lockout**—You can configure lockout for any source. When configured, this source is not considered by the clock selection process.

switchover-mode (revertive | non-revertive)—Specify revertive or non-revertive switchover mode:

- In revertive mode (the default), the system switches from a lower to a higher quality clock source whenever the higher quality clock source becomes available.
- In non-revertive mode, the system continues to use the current clock source as long as it is valid.

port auxiliary time-of-day-format ascii *string*—Specify time of day (TOD) format as a string of ASCII characters.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Synchronous Ethernet Overview

show chassis synchronization (MX Series Routers) | **1780**

Configuring Clock Synchronization Interface on MX Series Routers

Example: Configuring Framing Mode for Synchronous Ethernet on MX Series Routers with 10-Gigabit Ethernet MIC

Example: Configuring Centralized Clocking on the Enhanced MX Switch Control Board

Example: Configuring Centralized Clocking on an MX2020

request chassis synchronization mode | **684**

Clock Sources for PTX Series Packet Transport Routers

synchronization (PTX Series)

Syntax

```
synchronization {
    clock-mode (auto-select | free-run);
    esmc-transmit {
        interfaces (all | interface-name);
    }
    global-wait-to-restore minutes;
    hold-interval {
        configuration-change seconds;
        restart seconds;
        switchover seconds;
    }
    interfaces (bits-a | bits-b | gps-0 | gps-1) (pulse-per-second-enable | signal-type (5mhz|10mhz|e1|t1));
    max-transmit-quality-level (prc | prs | sec | ssu-a | ssu-b | st2 | st3e | stu | tnc);
    network-option (option-1 | option-2);
    primary (fpc-slot-number | gps-0 | gps-1 | bits-a | bits-b);
    quality-mode-enable;
    secondary (fpc-slot-number | gps-0 | gps-1 | bits-a | bits-b);
    selection-mode (configured-quality | received-quality);
    source (bits-a | bits-b | gps-0 | gps-1) {
        priority number;
        quality-level (prc | prs |sec | smc | ssu-a | ssu-b | st2 | st3 | st3e | st4 | stu | tnc);
        request (force-switch | lockout);
    }
    switchover-mode (revertive | non-revertive);
}
```

Hierarchy Level

```
[edit chassis]
```

Release Information

Statement introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers.

Description

Configure Synchronous Ethernet parameters.

Options

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level

interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Synchronous Ethernet Overview*
- *Synchronizing Internal Stratum 3 Clock to External Clock Sources on PTX Series Routers*
- request chassis synchronization switch | **686**
- *Clock Sources for PTX Series Packet Transport Routers*
- *Understanding Clock Synchronization*

synchronous-ethernet-mapping

Syntax

```
synchronous-ethernet-mapping {
    clock-source ip-address {
        interface interface1-name;
        interface interface2-name;
    }
}
```

Hierarchy Level

```
[edit protocols ptp slave hybrid]
```

Release Information

Statement introduced in Junos OS Release 12.2R2.

Description

Configure the Synchronous Ethernet mapping for hybrid mode.

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level

routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Configuring Hybrid Mode and ESMC Quality Level Mapping*
- *Example: Configuring Hybrid Mode and ESMC Quality Level Mapping*
- *Understanding Hybrid Mode*
- *Precision Time Protocol Overview*
- *Synchronous Ethernet Overview*

system-priority

Syntax

```
system-priority priority;
```

Hierarchy Level

```
[edit chassis aggregated-devices ethernet lacp]
```

Release Information

Statement introduced in Junos OS Release 9.3.
Statement introduced in Junos OS Release 11.4 for EX Series switches.

Description

Define LACP system priority for aggregated Ethernet interfaces at the global (chassis) level.

The device with the lower system priority value determines which links between LACP partner devices are active and which are in standby for each LACP group. The device on the controlling end of the link uses port priorities to determine which ports are bundled into the aggregated bundle and which ports are put in standby mode. Port priorities on the other device (the noncontrolling end of the link) are ignored. In priority comparisons, numerically lower values have higher priority. Therefore, the system with the numerically lower value (higher priority value) for LACP system priority becomes the controlling system. If both devices have the same LACP system priority (for example, they are both configured with the default setting of 127), the device MAC address determines which switch is in control.

Options

priority—Priority for the aggregated Ethernet system. A smaller value indicates a higher priority.

Range: 0 through 65535

Default: 127

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring Junos OS for Supporting Aggregated Devices

Configuring LACP Link Protection of Aggregated Ethernet Interfaces for Switches

t1

Syntax

```
t1 link-number {
    channel-group channel-number timeslots slot-number;
}
```

Hierarchy Level

```
[edit chassis fpc slot-number pic pic-number ct3 port port-number];
```

Release Information

Statement introduced before Junos OS Release 7.4.

Description

Configure channelized T1 port and channel specifications.

Options

link-number—T1 link.

Range: 0 through 27 for DS0 naming

The remaining statements are explained separately.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

> *Configuring the Junos OS to Support Channelized DS3-to-DS0 Naming for Channel Groups and Time Slots*

t1-options

Syntax

```
t1-options {
    framing (esf | sf);
    line-encoding (ami | b8zs);
}
```

Hierarchy Level

```
[edit chassis synchronization interfaces external]
[edit chassis synchronization interfaces (external-0/0 | external-1/0) e1-options]
```

Release Information

Statement introduced in Junos OS Release 12.3 for MX Series routers.

Description

Configure the T1 interface options.

Options

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization | 552

threshold

Syntax

```
threshold threshold-value;
```

Hierarchy Level

[edit chassis **fpc** *slot-number* **error fatal**]

[edit chassis **fpc** *slot-number* **error major**

[edit chassis **fpc** *slot-number* **error minor**]

[edit chassis **error fatal**]

[edit chassis **error major**]

[edit chassis **error minor**]

Release Information

Statement introduced for PTX Series routers in Junos OS Release 13.3.
Statement introduced for MX240, MX480 MX960, and MX2020 routers in Junos OS Release 14.2.

Description

Configure the threshold value at which to take action. If the severity level of the error is fatal, the action is carried out only once when the total number of errors crosses the threshold value. If the severity level of the error is major, the action is carried out once after the occurrence crosses the threshold. If the severity level is minor, the action is carried out as many times as the value specified by the threshold. For example, when the severity level is minor, and you have configured the threshold value as 10, the action is carried out after the tenth occurrence.

NOTE: You can set the threshold value to 0 for errors with severity level as minor. This implies that no action is taken for that error. You cannot set the threshold value to 0 for errors with severity level as major or fatal.

Default

By default, the error count for fatal and major actions is 1. The default error count for minor actions is 10.

Options

number—Specify the threshold of error counts at which to take action.

Range: 0 through 4,294,967,295

Required Privilege Level

interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- Fabric Resiliency and Degradation | **114**
- show chassis fpc errors | **1564**
- Configuring FPC Error Levels and Actions | **185**

traffic-manager

List of Syntax

Syntax (MX Series, PTX Series) Configure Queue Monitoring on page 570
Syntax (MX Series, T Series) on page 570
Syntax (M Series) on page 571
Syntax (QFX Series) on page 571
Syntax (vSRX) on page 572

Syntax (MX Series, PTX Series) Configure Queue Monitoring

```
traffic-manager {
    egress-shaping-overhead number;
    ingress-shaping-overhead number;
    mode {
        egress-only;
        ingress-and-egress;
        session-shaping;
    }
    enhanced-priority-mode;
    no-enhanced-priority-mode;
    packet-timestamp {
        enable;
    }
    queue-threshold {
        fabric-queue {
            priority high/low {
                threshold threshold-percentage;
            }
        }
        wan-queue {
            priority high/medium-high/medium-low/low {
                threshold threshold-percentage;
            }
        }
    }
}
```

Syntax (MX Series, T Series)

```
traffic-manager {
    egress-shaping-overhead number;
    ingress-shaping-overhead number;
```

```
    mode {
        egress-only;
        ingress-and-egress;
    }
}
```

Syntax (M Series)

```
traffic-manager {
    egress-shaping-overhead number;
    ingress-shaping-overhead number;
    mode {
        egress-only;
        ingress-and-egress;
        session-shaping;
    }
}
```

Syntax (QFX Series)

```
traffic-manager {
    buffer-monitor-enable;
    packet-timestamp {
        enable;
    }
    queue-threshold {
        fabric-queue {
            priority high/low {
                threshold threshold-percentage;
            }
        }
        wan-queue {
            priority high/medium-high/medium-low/low {
                threshold threshold-percentage;
            }
        }
    }
}
```

Syntax (vSRX)

```
traffic-manager {
    egress-shaping-overhead number;
}
```

Hierarchy Level

[edit chassis fpc *slot-number*],
[edit chassis fpc *slot-number* pic *pic-number*],
[edit chassis lcc *number* fpc *slot-number* pic *pic-number*] (Routing Matrix)

Release Information

Statement introduced in Junos OS Release 8.3.

Description

Enable CoS queuing, scheduling, and shaping on an L2TP session.

NOTE: Committing changes to **traffic-manager** automatically restarts any necessary components (PICs, DPCs, or FPCs).

Options

buffer-monitor-enable—QFX5000 Series only. Enable port buffer monitoring. Buffer utilization data is collected in one-second intervals and compared with the data from the previous interval. The larger value is kept to keep track of peak buffer occupancy for each queue or priority group.

queue-threshold—Enable monitoring of Fabric and WAN queues. When the **fabric-queue** statement is configured, an SNMP trap is generated whenever the fabric power utilization exceeds the configured threshold value.

When **wan-queue** is configured, an SNMP trap is generated whenever the WAN queue depth exceeds the configured threshold value.

egress-shaping-overhead *number*—When traffic management (queueing and scheduling) is configured on the egress side, the number of CoS shaping overhead bytes to add to the packets on the egress interface.

Replace ***number*** with a value from **-63** through **192** bytes.

For vSRX, replace ***number*** with a value from **-62** through **192** bytes.

> **NOTE:** The L2 headers (DA/SA + VLAN tags) are automatically a part of the shaping calculation.

ingress-shaping-overhead *number*—When L2TP session shaping is configured, the number of CoS shaping overhead bytes to add to the packets on the ingress side of the L2TP tunnel to determine the shaped session packet length.

When session shaping is not configured and traffic management (queueing and scheduling) is configured on the ingress side, the number of CoS shaping overhead bytes to add to the packets on the ingress interface.

Replace ***number*** with a value from **—63** through **192** bytes.

mode—Configure CoS traffic manager mode of operation. This option has the following suboptions:

- **egress-only**—Enable CoS queuing and scheduling on the egress side for the PIC that houses the interface. This is the default mode for an Enhanced Queueing (EQ) DPC on MX Series routers.

  > **NOTE:** If ingress packet drops are observed at a high rate for an IQ2 or IQ2E PIC, configure the **traffic-manager** statement to work in the **egress-only** mode.

- **ingress-and-egress**—Enable CoS queueing and scheduling on both the egress and ingress sides for the PIC. This is the default mode for IQ2 and IQ2E PICs on M Series and T Series routers.

NOTE:

- For EQ DPCs, you must configure the **traffic-manager** statement with **ingress-and-egress** mode to enable ingress CoS on the EQ DPC.
- EQ DPCs have 250 ms of buffering, with only egress queueing (default mode). When **ingress-and-egress** is configured, the buffer is partitioned as 50 ms for the ingress direction and 200 ms for the egress direction.

- **session-shaping**—(M Series routers only) Configure the IQ2 PIC mode for session-aware traffic shaping to enable L2TP session shaping.

enhanced-priority-mode—Enable the enhanced priority mode. When you enable the enhanced priority mode, the scheduler supports four additional per-priority shaping rates and two additional excess priorities at the interface and interface set level. The four additional per-priority shaping rates are: Guaranteed Strict-high, Guaranteed Medium-low, Excess medium-high, and Excess medium-low. The two additional excess priorities are: Excess-rate Medium- high and Excess-rate Medium-low. This is the default mode for PTX Series routers.

no-enhanced-priority-mode—Disable the enhanced priority mode. This is the default mode for MX Series routers.

NOTE: The line card reboots when you enable or disable the enhanced priority mode feature.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring CoS for L2TP Tunnels on ATM Interfaces

Enabling a Timestamp for Ingress and Egress Queue Packets

show interfaces queue

transport-type

Syntax

```
transport-type type;
```

Hierarchy Level

```
[edit services hosted-services server-profile server-profile-name]
```

Release Information

Statement introduced in Junos OS Release 13.2.

Description

Configure the transport type.

Options

type—Transport type.

Range: GRE, TCP, or UDP

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring Active Flow Monitoring on PTX Series Packet Transport Routers

tunnel-services (Chassis)

Syntax

```
tunnel-services {
    bandwidth bandwidth-value;
    tunnel-only;
}
```

Hierarchy Level

```
[edit chassis fpc slot-number pic number]
```

Release Information

Statement introduced in Junos OS Release 8.2.
Statement introduced in Junos OS Release 12.3X54 for ACX Series routers.

Description

For MX Series 5G Universal Routing Platforms, configure the amount of bandwidth for tunnel services.

For ACX Series routers, configure the amount of bandwidth for tunnel services. Only bandwidths of 1 Gbps and 10 Gbps are supported for ACX routers.

For M7i, M10i, M120, M320, T Series and TX Matrix routers with IQ2 PICs and IQ2E PICs, configure support for per unit scheduling for GRE tunnels. You can specify the IQ2 and IQ2E PICs to work exclusively in tunnel mode or as a regular PIC. The default setting uses IQ2 and IQ2E PICs as a regular PIC. If you do not configure the **tunnel-only** option, the IQ2 and IQ2 PICs operate as regular PICs. For M7i, M10i, M120, M320, T Series and TX Matrix routers with IQ2 PICs and IQ2E PICs, you can use the **tunnel-only** option to specify that an IQ2 or IQ2E PIC work in tunnel mode only.

NOTE: Bandwidth rates of 20 gigabits per second and 40 gigabits per second require use of an MX Series router with the 100-Gigabit Ethernet Modular Port Concentrator (MPC) and the 100-Gigabit CFP MIC.

NOTE: On MX80 routers and MX Series routers with Trio-based FPCs, when ingress queuing is enabled for a PIC, tunnel services and inline services are not supported on the same PIC.

Options

tunnel-only (Optional)—For M7i, M10i, M120, M320, T Series and TX Matrix routers with IQ2 PICs and IQ2E PICs, specify that an IQ2 or IQ2E PIC work in tunnel mode only.

The remaining statements are explained separately. Search for a statement in CLI Explorer or click a linked statement in the Syntax section for details.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Example: Configuring Tunnel Interfaces on a Gigabit Ethernet 40-Port DPC

Example: Configuring Tunnel Interfaces on a 10-Gigabit Ethernet 4-Port DPC

Example: Configuring Tunnel Interfaces on the MPC3E

bandwidth (Tunnel Services) | 322

tx-dnu-to-line-source-enable

Syntax

```
tx-dnu-to-line-source-enable;
```

Hierarchy Level

```
[edit chassis synchronization output interfaces external]
[edit chassis synchronization output interfaces (external-0/0 | external-1/0)]
```

Release Information

Statement introduced in Junos OS Release 12.3 for MX Series routers.

Description

Configure the transmitting quality level to DNU or DUS on the line source interface that has been selected as the external output source.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization | 552

ucode-imem-remap

Syntax

```
ucode-imem-remap;
```

Hierarchy Level

```
[edit chassis feb slot number]
```

Release Information
Statement introduced in Junos OS Release 10.4R2.

Description
M120 routers with a single type-1 FPC mapped to an FEB support a microcode remap feature to resolve microcode overflow resulting in bad PIC combinations.

You can enable the microcode remap by using the **ucode-imem-remap** statement at the [**edit chassis feb slot *number***] hierarchy level. The default microcode map will continue to be available if the **ucode-imem-remap** statement is not configured.

NOTE: On M120 routers, the FEB is automatically restarted once the **ucode-imem-remap** statement is configured and committed.

Required Privilege Level
interfaces—To view this statement in the configuration.
interfaces-control—To add this statement to the configuration.

unicast-mode (slave)

Syntax

```
unicast-mode {
    clock-source ip-address {
        local-ip-address local-ip-address;
            asymmetry number;
        }
    transport ipv4;
    clock-ipv6-source (slave) master-ipv6-address {
        local-ip-address local-ip-address;
        }
    transport ipv6;
}
```

Hierarchy Level

```
[edit protocols ptp slave interface interface-name]
```

Release Information

Statement introduced in Junos OS Release 12.2.

Description

Configure the slave in unicast mode. You can set this option when PTP unicast mode of messaging is needed.

The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level

routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Configuring Precision Time Protocol*
- *Example: Configuring Precision Time Protocol*
- *Precision Time Protocol Overview*
- *IEEE 1588v2 Precision Timing Protocol (PTP)*

unicast-negotiation

Syntax

```
unicast-negotiation;
```

Hierarchy Level

```
[edit protocols ptp]
```

Release Information

Statement introduced in Junos OS Release 12.2.
Statement introduced in Junos OS Release 17.3 for the QFX Series.

Description

Configure unicast negotiation. Unicast negotiation is a method by which the announce, synchronization, and delay response packet rates are negotiated between the master and the slave before a PTP session is established.

NOTE:

When unicast negotiation is enabled, you cannot commit any packet rate–related configuration.

Required Privilege Level

routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Configuring Precision Time Protocol*
- *Example: Configuring Precision Time Protocol*
- *Precision Time Protocol Overview*
- *IEEE 1588v2 Precision Timing Protocol (PTP)*

upgrade-mode

Syntax

```
upgrade-mode (3d-fabric | default | t4000);
```

Hierarchy Level

```
[edit chassis fabric],
[edit chassis member name fabric]
```

Release Information

Statement introduced in Junos OS Release 7.5.
Statement introduced in Junos OS Release 15.1F3 for PTX Series Routers with third-generation FPCs.

Description

Configures upgrade mode for SIBs and forces them to operate in the same mode until the upgrade is complete. Upgrade mode is used so that two different types of SIBs can be installed in an operational router or routing matrix. After you upgrade the SIBs delete the **upgrade-mode** statement from the configuration. See the hardware installation guide for your router for more information about upgrading SIBs in an operational router or routing matrix.

Options

3d-fabric—Enables the TX Matrix Plus router to upgrade to a TX Matrix Plus router with 3D SIBs. On the SFC, enables setting proper support for mixed SIBs (TXP-F13 SIB and TXP-F13-3D SIB). On the T640 or T1600 or T4000 routers in a routing matrix enables support for mixed SIBs (TXP-T1600 SIB and TXP-3D-LCC SIBs on the T1600 router and SIB-I-T4000 and TXP-3D-LCC SIBs on the T4000 router).

default—Enables support for mixed SIBs when upgrading SIBs in the PTX3000 and PTX5000 routers.

t4000—Enables support for mixed SIBs when upgrading to SIB-I-T4000 SIBs in a T640 or T1600.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

TX Matrix Router and T640 Router Configuration Overview

Configuring Junos OS to Upgrade a T4000 Router to LCC 0 of a TX Matrix Plus Router with 3D SIBs

- *Configuring Junos OS to Upgrade the T1600 Router Chassis to LCC 0 of a TX Matrix Plus Router with 3D SIBs*
- *Upgrading an Operational Standalone Router and Integrating It into a TX Matrix Plus Routing Matrix with 3D SIBs*
- *Upgrading to SIB3-SFF-PTX SIBs in an Operational PTX3000*
- *Upgrading the FPCs in an Operational PTX5000*

vpn-label

Syntax

```
vpn-label;
```

Hierarchy Level

```
[edit chassis memory-enhanced]
```

Release Information
Statement added in Junos OS Release 10.4.

Description
Allocate more jtree memory for Layer 3 VPN labels.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

- *Allocating More Memory for Routing Tables, Firewall Filters, and Layer 3 VPN Labels*

vrf-mtu-check

Syntax

```
vrf-mtu-check;
```

Hierarchy Level

```
[edit chassis]
```

Release Information

Statement introduced before Junos OS Release 7.4.
Statement introduced in Junos OS Release 11.1 for EX Series switches.

Description

On M Series routers (except the M120 and M320 router) and on EX Series 8200 switches, configure path maximum transmission unit (MTU) checks on the outgoing interface for unicast traffic routed on a virtual private network (VPN) routing and forwarding (VRF) instance.

Default

Disabled.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring Path MTU Checks for VPN Routing Instances

Configuring the Junos OS to Enable MTU Path Check for a Routing Instance on M Series Routers

vtmapping

Syntax

```
vtmapping (itu-t | klm);
```

Hierarchy Level

```
[edit chassis fpc number pic number],
[edit interfaces interface-name sonet-options]
```

Release Information

Statement introduced before Junos OS Release 7.4.

Description

For the Channelized STM1 IQ PIC or Channelized STM1 PIC, configure virtual tributary mapping.

For the Channelized STM1 PIC, you configure virtual tributary mapping at the **[edit chassis fpc *number* pic *number*]** hierarchy level.

NOTE: The **vtmapping** statement is not supported for **cau4** interfaces on the Channelized OC3/STM1 (Multi-Rate) Circuit Emulation MIC with SFP (H).

Options

itu-t—International Telephony Union standard.

klm—KLM standard.

Default: klm

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

Configuring Virtual Tributary Mapping of Channelized STM1 Interfaces

Configuring the Junos OS to Support Channelized STM1 Interface Virtual Tributary Mapping

wait-to-restore

Syntax

```
wait-to-restore minutes;
```

Hierarchy Level

```
[edit chassis source interfaces (external-a | external-b | interface interface-name)]
[edit chassis source interfaces (external | interface interface-name)]
[edit chassis source interfaces (external-0/0 | external-1/0 | interface interface-name)]
```

Release Information

Statement introduced in Junos OS Release 14.2 for MX Series routers.

Description

Configure the time in minutes for each port to be up before opening the Ethernet Synchronization Message Channel (ESMC) for messages. When a port's signal transitions out of the signal fail state, it must be fault-free for the wait-to-restore time before it is again considered by the clock selection process.

NOTE: When you perform GRES on MX Series routers, you must execute the **clear synchronous-ethernet wait-to-restore** operational mode command on the new master Routing Engine to clear the wait-to-restore timer on it. This is because the **clear synchronous-ethernet wait-to-restore** operational mode command clears the wait-to-restore timer only on the local Routing Engine.

Options

minutes—Set the time for the port signal to be up before the port is opened to receive and transmit ESMC messages.

Range: 0 through 12 minutes

Default: 5 minutes

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization (MX Series) | 552

synchronization (PTX Series) | 562

global-wait-to-restore | 398

wander-filter-disable

Syntax

```
wander-filter-disable;
```

Hierarchy Level

```
[edit chassis synchronization output interfaces external]
[edit chassis synchronization output interfaces (external-0/0 | external-1/0)]
```

Release Information

Statement introduced in Junos OS Release 12.3 for MX Series routers.

Description

Disable the wander filter on the output interface.

Required Privilege Level

interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

synchronization | 552

CHAPTER 11

Administrative Commands

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set chassis display message | **689**

clear chassis alarms fabric degraded

Syntax (TX Matrix Plus Router with 3D SIBs)

```
clear chassis alarms fabric degraded lcc number fpc number
```

Release Information
Command introduced in Junos OS Release 13.2 for a routing matrix with a TX Matrix Plus routers and 3D SIBs.

Description
Clear the fabric degraded alarm for an FPC.

Options
lcc *number*—Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

fpc *number*—Flexible PIC Concentrator (FPC) slot number. On a TX Matrix Plus router in the TXP-T1600-3D, TXP-T4000-3D, or TXP-Mixed-LCC-3D configuration, specify the number of a T1600 or T4000 router by using the **lcc *number*** option and replace **fpc *number*** with a value from 0 through 7.

Required Privilege Level
clear

RELATED DOCUMENTATION

show system alarms

Sample Output

show system alarms (TX Matrix Plus router with 3D SIBs)

```
user@host> show system alarms
```

```
sfc0-re0:
--------------------------------------------------------------------------
2 alarms currently active
Alarm time               Class  Description
2013-05-08 18:13:58 UTC  Major  LCC 0 Major Errors
2013-05-08 17:48:46 UTC  Major  LCC 7 Major Errors

lcc0-re1:
--------------------------------------------------------------------------
3 alarms currently active
Alarm time               Class  Description
2013-05-08 17:35:34 UTC  Minor  SIB 3 Not Online
2013-05-08 17:35:34 UTC  Minor  SIB 2 Not Online
2013-05-08 18:19:24 UTC  Major  FPC 5 degraded fabric condition detected
```

user@host> **clear chassis alarms fabric degraded lcc 0 fpc 5**

```
lcc0-re1:
--------------------------------------------------------------------------
```

user@host> **show system alarms**

```
sfc0-re0:
--------------------------------------------------------------------------
2 alarms currently active
Alarm time               Class  Description
2013-05-08 18:13:58 UTC  Major  LCC 0 Major Errors
2013-05-08 17:48:46 UTC  Major  LCC 7 Major Errors

lcc0-re1:
--------------------------------------------------------------------------
2 alarm currently active
Alarm time               Class  Description
2013-05-08 17:36:34 UTC  Minor  SIB 3 Not Online
2013-05-08 17:36:34 UTC  Minor  SIB 2 Not Online
```

clear chassis display message

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Syntax

```
clear chassis display message
```

Syntax (TX Matrix Router)

```
clear chassis display message
<lcc number | scc>
```

Syntax (TX Matrix Plus Router)

```
clear chassis display message
<lcc number | sfc number>
```

Syntax (QFabric Systems)

```
clear chassis display message
<node-device name | interconnect-device name>
```

Release Information

Command introduced in Junos OS Release 7.5.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option for the TX Matrix Plus routers introduced in Junos OS Release 9.6.
Command introduced in Junos OS Release 11.1 for the QFX Series.
Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

Description

(M40e, M160, M320, T Series routers, EX Series, and QFabric systems only) Clear or stop a text message on the craft interface display, which is on the front of the router or switch or on the LCD panel display on the router or switch. The craft interface alternates the display of text messages with standard craft interface messages, switching between messages every 2 seconds. By default, on both the router and the switch, the text message is displayed for 5 minutes. The craft interface display has four 20-character lines. The LCD panel display has two 16-character lines, and text messages appear only on the second line.

Options

none—Clear or stop a text message on the craft interface display.

interconnect-device *name*—(QFabric systems only) (Optional) On a QFabric system, clear or stop a text message on the LCD panel display on the specified Interconnect device.

lcc *number*—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

node-device *name*—(QFabric systems only) (Optional) On a QFabric system, clear or stop a text message on the LCD panel display on the specified Node device in a Node group.

scc—(TX Matrix routers only) (Optional) Clear or stop a text message on the craft interface on the TX Matrix router (switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) Clear or stop a text message on the craft interface on the TX Matrix Plus router (or switch-fabric chassis). Replace ***number*** with 0.

Required Privilege Level

clear

RELATED DOCUMENTATION

Configuring the LCD Panel on EX Series Switches (CLI Procedure) | 268

set chassis display message | 689

show chassis craft-interface | 734

List of Sample Output

clear chassis display message on page 595

Output Fields

See **show chassis craft-interface** for an explanation of output fields.

Sample Output

clear chassis display message

The following example displays and then clears the text message on the craft interface display:

```
user@host> show chassis craft-interface
```

```
Red alarm:     LED off, relay off
Yellow alarm:  LED off, relay off
Host OK LED:   On
Host fail LED: Off
FPCs     0  1  2  3  4  5  6  7
------------------------------
Green  ..  *..  *  *.
Red    ........
LCD screen:
     +--------------------+
     |NOC contact Dusty   |
     |(888) 526-1234      |
     +--------------------+
```

```
user@host> clear chassis display message
```

```

```

```
user@host> show chassis craft-interface
```

```
Red alarm:     LED off, relay off
Yellow alarm:  LED off, relay off
Host OK LED:   On
Host fail LED: Off
FPCs     0  1  2  3  4  5  6  7
------------------------------
Green  ..  *..  *  *.
Red    ........
LCD screen:
     +--------------------+
     |host                |
     |Up: 0+17:05:47      |
     |                    |
     |Temperature OK      |
     +--------------------+
```

clear chassis fpc errors

Syntax

```
clear chassis fpc errors fpc-slot fpc-slot (all | error-id error-id)
```

Release Information

Command introduced in Junos OS Release 18.2R1.

Description

Clear the chassis FPC errors. You can choose to clear a particular error or all errors on the FPC.

Options

fpc-slot *fpc-slot*—The slot number of the FPC in which you want to run this command.

all—Clear all the errors on the FPC.

error-id *error-id*—Clear a particular error identified by an error-id. An *error-id*, a unique error identifier, is represented as a Uniform Resource Identifier (URI). For example, **"/cpu/0/memory/0/memory-uncorrected-error"** is an error-id that indicates an uncorrectable error under CPU memory module instance **0**.

Required Privilege Level

clear

RELATED DOCUMENTATION

fpc error | 381

List of Sample Output

clear chassis fpc errors on page 596

Output Fields

When you enter this command, you are provided feedback on the status of your request.

Sample Output

clear chassis fpc errors

```
user@host> clear chassis fpc errors fpc-slot 1 all
```

```
Clearing error(s) on fpc 1, option all
```

clear synchronous-ethernet esmc statistics

Syntax

```
clear synchronous-ethernet esmc statistics <interface-name>
```

Release Information

Command introduced before Junos OS Release 10.4.

Description

Clear the ESMC statistics for all the interfaces.

Options

interface-name—(Optional) Clear ESMC statistics for the specified interface.

Required Privilege Level

clear

RELATED DOCUMENTATION

Example: Configuring Synchronous Ethernet on MX Series Routers

Synchronous Ethernet Overview

show synchronous-ethernet esmc statistics | **1913**

List of Sample Output

clear synchronous-ethernet esmc statistics on page 598

Sample Output

clear synchronous-ethernet esmc statistics

The following example displays the message after the **clear synchronous-ethernet esmc statistics** command is entered:

```
user@host> clear synchronous-ethernet esmc statistics
```

```
Cleared ESMC statistics for all interfaces
```

clear synchronous-ethernet wait-to-restore

Syntax

```
clear synchronous-ethernet wait-to-restore
<interface interface-name>
```

Release Information

Command introduced in Junos OS Release 14.2.

Description

Clear the wait-to-restore timer for all the interfaces in an MX Series router.

> **NOTE:** When you perform GRES on MX Series routers, you must execute the **clear synchronous-ethernet wait-to-restore** operational mode command on the new master Routing Engine to clear the wait-to-restore timer on it. This is because the **clear synchronous-ethernet wait-to-restore** operational mode command clears the wait-to-restore timer only on the local Routing Engine.

Options

interface *interface-name*—(Optional) Clear wait to restore timer for the specified interface.

Required Privilege Level

clear

RELATED DOCUMENTATION

> *Example: Configuring Synchronous Ethernet on MX Series Routers*
>
> *Synchronous Ethernet Overview*

List of Sample Output

clear synchronous-ethernet wait-to-restore interface <interface-name> on page 600

Sample Output

clear synchronous-ethernet wait-to-restore interface <interface-name>

The following example displays the message after the **clear synchronous-ethernet wait-to-restore interface ge-2/1/6** command is entered in operational mode command:

```
user@host> clear synchronous-ethernet wait-to-restore interface ge-2/1/6

Cleared wait-to-restore timer for interface ge-2/1/6
```

request chassis afeb

Syntax

```
request chassis afeb (offline | online | restart)
```

Release Information

Command introduced in Junos OS Release 13.2.

Description

Control the operation of the compact Forwarding Engine Board (FEB).

Options

offline—Take the FEB offline.

online—Bring the FEB online.

restart—Restart the FEB.

Required Privilege Level

view

RELATED DOCUMENTATION

show chassis afeb | 701

List of Sample Output

request chassis afeb online (MX104 Router) on page 601

Output Fields

When you enter this command, you are provided feedback on the status of your request.

Sample Output

request chassis afeb online (MX104 Router)

```
user@host> request chassis afeb online
```

```
AFEB is already online
```

request chassis cb

List of Syntax

Syntax on page 602
Syntax (TX Matrix Router) on page 602
Syntax (TX Matrix Plus Router) on page 602
Syntax (QFabric System) on page 602
Syntax (EX9253 Switches) on page 602

Syntax

```
request chassis cb (offline | online) slot slot-number
```

Syntax (TX Matrix Router)

```
request chassis cb (offline | online) <slot slot-number | lcc number slot cb-slot-number | scc number slot cb-slot-number>
```

Syntax (TX Matrix Plus Router)

```
request chassis cb (offline | online) <slot slot-number | lcc number slot cb-slot-number | sfc number slot cb-slot-number>
```

Syntax (QFabric System)

```
request chassis cb (offline | online) interconnect-device name slot slot-number
<interconnect-device name slot slot-number (offline | online)>
```

Syntax (EX9253 Switches)

```
request chassis cb (offline | online) name slot slot-number
```

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS 9.4 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
Command introduced in Junos OS 11.3 for QFX Series.
Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 Universal Routing Platforms.
Command introduced in Junos OS Release 17.2 for MX2008 Universal Routing Platforms.
Command introduced in Junos OS Release 17.3 for MX10003 Universal Routing Platforms.
Command introduced in Junos OS Release 18.2 for EX9253 Series Switches.

Description

(M120, M320, and MX Series routers and T Series routers, QFabric systems, and EX8200 switches only) Control the operation of the Control Board (CB).

Options

offline—Take the Control Board offline.

> **NOTE:** On a QFabric system, to bring the backup Control Board on a QFX3008-I Interconnect device offline, issue the **request chassis cb slot *backup-slot-number* offline** command.

> **NOTE:** Only backup Control Board can be turned offline or online. To turn a Control Board offline or to bring it back online, the Routing Engine should be turned offline first.

online—Bring the Control Board online.

interconnect-device *name*—(QFabric systems only) (Optional) Bring the QFX3008-I Interconnect device Control Board either offline or online:

slot *slot-number*—Control Board slot number:

- (TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, if you specify the number of the T640 router by using the lcc *number* option (the recommended method), replace *cb-slot-number* with a value from 0 through 1.

  Likewise, on a TX Matrix Plus router, if you specify the number of the T1600 or T4000 router by using the lcc *number* option (the recommended method), replace *cb-slot-number* with a value from 0 through 1.
- M320 router—Replace *slot-number* with a value from 0 through 1.
- MX480/MX240 routers—Replace *slot-number* with a value from 0 through 1.
- MX960 router—Replace *slot-number* with a value from 0 through 2.
- MX2020, MX2010, and MX2008 routers—Replace *slot-number* with 0 or 1.
- EX8208 switch—Replace *slot-number* with a value from 0 through 2.
- EX8216 switch—Replace *slot-number* with a value from 0 through 1.
- QFabric System—Replace *slot-number* with a value from 0 through 1.

lcc *number*—(TX Matrix, TX Matrix Plus routers only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

sfc *number*—(TX Matrix Plus routers only) (Optional) Change the CB status for the TX Matrix Plus router (switch-fabric chassis). Replace *number* with 0.

Required Privilege Level
maintenance

RELATED DOCUMENTATION

> show chassis environment cb | **888**
>
> *Understanding Switching Control Board Redundancy*

List of Sample Output
request chassis cb on page 604
request chassis cb interconnect-device (QFabric System) on page 605
request chassis cb (MX2020 Router) on page 605
request chassis cb (MX2010 Router) on page 605
request chassis cb (MX2008 Router) on page 605
request chassis cb (MX10003 Router) on page 605
request chassis cb (EX9253 Switch) on page 605

Output Fields
When you enter this command, you are provided feedback on the status of your request.

Sample Output

request chassis cb

```
user@host> request chassis cb offline slot 1

Backup CB 1 cannot be set offline, backup RE is online
```

request chassis cb interconnect-device (QFabric System)

```
user@switch> request chassis cb interconnect-device interconnect1 offline slot 1
```

```
Backup CB 1 cannot be set offline, backup RE is online
```

request chassis cb (MX2020 Router)

```
user@host> request chassis cb offline slot 1
```

```
Backup CB 1 cannot be set offline, backup RE is online
```

request chassis cb (MX2010 Router)

```
user@host> request chassis cb offline slot 1
```

```
Backup CB 1 cannot be set offline, backup RE is online
```

request chassis cb (MX2008 Router)

```
user@host>request chassis cb offline slot 1
```

```
Backup CB 1 cannot be set offline, backup RE is online
```

request chassis cb (MX10003 Router)

```
user@host>request chassis cb online slot 1
```

```
CB 1 appears to be online already
```

request chassis cb (EX9253 Switch)

```
user@switch>request chassis cb offline slot 1
```

```
Offline initiated, use "show chassis environment cb" to verify
```

request chassis ccg

Syntax

```
request chassis ccg (offline | online) slot slot-number
```

Release Information

Command introduced in Junos OS 12.1x48 for the PTX5000 Packet Transport Routers.

Description

(PTX5000 Packet Transport Routers) Control the operation of the Centralized Clock Generator (CCG).

Options

offline—Take the CCG offline.

online—Bring the CCG online.

slot *slot-number*—CCG slot number. Replace *slot-number* with a value from 0 through 1.

Required Privilege Level

maintenance

RELATED DOCUMENTATION

> *Clock Sources for PTX Series Packet Transport Routers*
>
> show chassis environment ccg | **924**

List of Sample Output

request chassis ccg on page 606

Output Fields

When you enter this command, you are provided feedback on the status of your request.

Sample Output

request chassis ccg

```
user@host> request chassis ccg offline slot 1
```

```
CCG 1 is  offline, Backup CCG 0 is now online.
```

request chassis cfeb

Syntax

```
request chassis cfeb (offline | online | restart)
```

Release Information
Command introduced before Junos OS Release 7.4.

Description
(M7i and M10i routers only) Control the operation of the Compact Forwarding Engine Board (CFEB).

Options
offline—Take the CFEB offline.

online—Bring the CFEB online.

restart—Restart the CFEB.

Required Privilege Level
maintenance

RELATED DOCUMENTATION

- show chassis cfeb | 728
- *Configuring CFEB Redundancy on the M10i Router*
- *CFEB Overview*

List of Sample Output
request chassis cfeb on page 607

Output Fields
When you enter this command, you are provided feedback on the status of your request.

Sample Output

request chassis cfeb

```
user@host> request chassis cfeb offline
```

```
CFEB Offlined
```

request chassis cip

Syntax

```
request chassis cip (offline | online) slot slot-number
```

Release Information

Command introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

(TX Matrix Plus routers only) Control the operation of the Connector Interface Panel (CIP).

Options

offline—Take the CIP offline.

online—Bring the CIP online.

slot *slot-number*—CIP slot number. Replace ***slot-number*** with a value ranging from 0 through 1.

Required Privilege Level

maintenance

RELATED DOCUMENTATION

- show chassis cip | 731
- *Installing a T1600 CIP*
- *Installing a T640 CIP*
- *Installing a TX-CIP*
- *Installing an M320 CIP*
- *Installing the M40e CIP*
- *Installing the T320 CIP*
- *CIP Overview*

List of Sample Output

request chassis cip offline slot (TX Matrix Plus Router) on page 610
request chassis cip offline slot (TX Matrix Plus Router) on page 610

Output Fields

When you enter this command, you are provided feedback on the status of your request.

Sample Output

request chassis cip offline slot (TX Matrix Plus Router)

```
user@host > request chassis cip offline slot 0
```

```
CIP 0 offline done
```

request chassis cip offline slot (TX Matrix Plus Router)

```
user@host > request chassis cip online slot 0
```

```
CIP 0 online done
```

request chassis clock master switch

Syntax

```
request chassis clock master switch
```

Release Information
Command introduced in Junos OS Release 12.1.

Description
(PTX Series Packet Transport Routers only) Control which Centralized Clock Generator (CCG) is the master.

Options
This command has no options.

Additional Information
By default, the CCG in slot 0 (CCG0) is the master and the CCG in slot 1 (CCG1) is the backup. If you use this command to change the master, and then restart the chassis software for any reason, the master reverts to the default setting. To change the default master CCG, include the **ccg** statement at the [**edit chassis redundancy**] hierarchy level in the configuration. For more information, see the *Junos OS Administration Library*.

The configurations on the two CCGs do not have to be the same, and they are not automatically synchronized. If you configure both CCGs as masters, when the chassis software restarts for any reason, the CCG in slot 0 becomes the master and the one in slot 1 becomes the backup.

The switchover from the primary CCG to the backup CCG is immediate.

Required Privilege Level
maintenance

RELATED DOCUMENTATION

show chassis environment | 759

List of Sample Output
request chassis clock master switch on page 612

Output Fields
When you enter this command, you are provided feedback on the status of your request.

Sample Output

request chassis clock master switch

```
user@host> request chassis clock master switch
```

```
CCG master switch initiated, use “show chassis environment ccg” to verify
```

request chassis fabric guided-cabling disable

Syntax

```
request chassis fabric guided-cabling disable (all-lcc | lcc lcc-number)
```

Release Information

Command introduced in Junos OS Release 14.1 for TX Matrix Plus routers with 3D SIBs.

Description

Disable the guided cabling operation.

Options

all-lcc—Disable the guided cabling operation for all the LCCs.

lcc *lcc-number*—Disable the guided cabling operation for the specified LCC.

Required Privilege Level

admin

RELATED DOCUMENTATION

request chassis fabric guided-cabling enable | 615

List of Sample Output

request chassis fabric guided-cabling disable all-lcc on page 613
request chassis fabric guided-cabling disable lcc 7 on page 614

Output Fields

When you enter this command, you are provided feedback on the status of your request.

Sample Output

request chassis fabric guided-cabling disable all-lcc

```
user@host> request chassis fabric guided-cabling disable all-lcc

Guided Cabling disable initiated
```

request chassis fabric guided-cabling disable lcc 7

```
user@host> request chassis fabric guided-cabling disable lcc 7

Guided Cabling disable initiated
```

request chassis fabric guided-cabling enable

Syntax

```
request chassis fabric guided-cabling enable (plane-by-plane | port-by-port) (all-lcc | lcc lcc-number)
```

Release Information

Command introduced in Junos OS Release 14.1 for TX Matrix Plus routers with 3D SIBs.

Description

Enable the guided cabling operation by using blinking LEDs on the ports to be connected on the LCC and the SFC.

Options

plane-by-plane—Enable blinking of **CBL** LEDs for all the unconnected ports on a TXP-F13-3D SIB and a TXP-LCC-3D SIB for a particular fabric plane. After you connect all the cables on a TXP-F13-3D SIB and a TXP-LCC-3D SIB, all **CBL** LEDs blink on the fabric plane that need to be subsequently connected. The operation continues until all the cables are connected for all available fabric planes.

port-by-port—Enable blinking of the **CBL** LED for an unconnected port on a TXP-F13-3D SIB and a TXP-LCC-3D SIB. After you connect the cable to a port on a TXP-F13-3D SIB and a TXP-LCC-3D SIB, the **CBL** LED blinks on the next unconnected port on a TXP-F13-3D SIB and a TXP-LCC-3D SIB.

all-lcc—Enable the guided cabling operation for all the LCCs.

lcc *lcc-number*—Enable the guided cabling operation for the specified LCC.

Required Privilege Level

admin

RELATED DOCUMENTATION

request chassis fabric guided-cabling disable | 613

List of Sample Output

request chassis fabric guided-cabling enable plane-by-plane all-lcc on page 616
request chassis fabric guided-cabling enable port-by-port all-lcc on page 616
request chassis fabric guided-cabling enable plane-by-plane lcc 7 on page 616
request chassis fabric guided-cabling enable port-by-port lcc 7 on page 616

Output Fields

When you enter this command, you are provided feedback on the status of your request.

Sample Output

request chassis fabric guided-cabling enable plane-by-plane all-lcc

```
user@host> request chassis fabric guided-cabling enable plane-by-plane all-lcc
```

```
Guided Cabling enable initiated
```

request chassis fabric guided-cabling enable port-by-port all-lcc

```
user@host> request chassis fabric guided-cabling enable port-by-port all-lcc
```

```
Guided Cabling enable initiated
```

request chassis fabric guided-cabling enable plane-by-plane lcc 7

```
user@host> request chassis fabric guided-cabling enable plane-by-plane lcc 7
```

```
Guided Cabling enable initiated
```

request chassis fabric guided-cabling enable port-by-port lcc 7

```
user@host> request chassis fabric guided-cabling enable port-by-port lcc 7
```

```
Guided Cabling enable initiated
```

request chassis fabric plane

Syntax

```
request chassis fabric plane plane-number  (offline | online)
```

Release Information

Command introduced in Junos OS Release 8.0.
Command introduced in Junos OS Release 9.4 for EX Series switches.
Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 Universal Routing Platforms.
Command introduced in Junos OS Release 17.2 for MX2008 Universal Routing Platforms.
Command introduced in Junos OS Release 17.3 for MX10003 Universal Routing Platforms.
Command introduced in Junos OS Release 18.2 for EX9253 Switches.

Description

(M120 and MX Series routers and EX8200 switches only) Control the operation of the specified fabric plane.

On an MX480 or MX240 series router, you can configure the active control board for redundancy mode or increased bandwidth mode. When running in increased bandwidth mode, MX series routers with Trio chips and the MPC3E will use all eight active fabric planes.

To take both plane 0 and plane 1 offline on a MX480 and MX240 series routers with one or more MPC4E MICs installed, a X86 Media Service Blade, and/or 100G PFE, and where redundancy-mode is configured for "increased-bandwidth", Juniper recommends taking plane 1 offline before plane 0. Likewise, when the router is configured for increased-bandwidth mode, taking fabric planes 0, 2, 4, and 6 offline can cause the chassis to run in a reduced fabric bandwidth mode. Plane 7 may remain in a "spare" state (as seen in the "show chassis fabric summary" command output) until plane 3 is taken offline and then brought back up.

Options

offline—Take the fabric plane offline. Use the **request chassis fabric plane *plane-number* offline** command to clear a FAULT state on a fabric plane. To bring the fabric plane back online, use the **request chassis fabric plane *plane-number* online** command.

online—Bring the fabric plane online.

plane *plane-number*—Fabric plane number.

- For the M120 router, replace *plane-number* with a value from 0 through 3.
- For the MX480 and MX240 routers, replace *plane-number* with a value from 0 through 7.
- For the MX2020, MX2010, and MX2008 routers, replace *plane-number* with a value from 0 through 7.

- For the MX960 router, replace *plane-number* with a value from 0 through 5.
- For the EX8208 switch, replace *plane-number* with a value from 0 through 11.
- For the EX8216 switch, replace *plane-number* with a value from 0 through 7.

Required Privilege Level
maintenance

RELATED DOCUMENTATION

show chassis fabric plane | 1336

show chassis fabric plane-location | 1374

show chassis fabric summary | 1417

List of Sample Output

request chassis fabric plane 0 online on page 618
request chassis fabric plane 0 offline on page 618
request chassis fabric plane 0 online (EX8200 switch) on page 619
request chassis fabric plane (MX2020 Router) on page 619
request chassis fabric plane (MX2010 Router) on page 619
request chassis fabric plane (MX2008 Router) on page 619
request chassis fabric plane (MX10003 Router) on page 619
request chassis fabric plane (EX9253 Switch) on page 619

Output Fields
When you enter this command, you are provided feedback on the status of your request.

Sample Output

request chassis fabric plane 0 online

```
user@host> request chassis fabric plane 0 online

Online initiated, use “show chassis fabric plane” to verify
```

request chassis fabric plane 0 offline

```
user@host> request chassis fabric plane 0 offline
```

```
Offline initiated, use “show chassis fabric plane” to verify
```

request chassis fabric plane 0 online (EX8200 switch)

```
user@host> request chassis fabric plane 0 online
```

```
Plane 0 is already active
```

request chassis fabric plane (MX2020 Router)

```
user@host> request chassis fabric plane 2 online
```

```
Plane 2 is already active
```

request chassis fabric plane (MX2010 Router)

```
user@host> request chassis fabric plane 4 online
```

```
Plane 4 is already active
```

request chassis fabric plane (MX2008 Router)

```
user@host>request chassis fabric plane 4 online
```

```
Plane 4 is already active
```

request chassis fabric plane (MX10003 Router)

```
user@host>request chassis fabric plane 4 online
```

```
Plane 4 is already active
```

request chassis fabric plane (EX9253 Switch)

```
user@switch>request chassis fabric plane 0 online
```

```
Plane 0 is already active
```

request chassis fabric pfe

Syntax

request chassis fabric pfe *pfe-number* fpc *fpc-number* offline

Release Information
Command introduced in Junos OS Release 17.2.

Description
Make a specified fabric of the packet forwarding engine (PFE) offline.

This command makes only the specified PFE of the FPC offline and rest of the PFEs of the FPC are not affected. If a PFE of an FPC is affected because of fabric path wedge errors, the affected PFE is disabled and the associated fabric goes offline as part of fabric hardening actions. The output of the **show chassis fabric fpcs** and **show chassis fabric plane** commands show a new state for the PFE as **Fabric Disabled**.

Fabric stream wedge occurs when the ASIC of the FPC is in the stuck state, and the ingress PFE fails to send traffic to the destination PFE. You can use the request **chassis fabric pfe *pfe-number* fpc *fpc-number* offline** command to make any PFE offline.

NOTE: This statement does not have an option to bring the PFE back online. You must restart the FPC to bring the PFE back online.

Options
pfe-number—[0–3]

pc-number—[0–11] or [0–5] or [0–19] or [0–2], depending on the type of the chassis.

Required Privilege Level
interface—To view this statement in the configuration.
interface-control—To add this statement to the configuration.

RELATED DOCUMENTATION

show chassis fabric plane | 1336

show chassis fabric fpcs | 1271

request chassis feb

List of Syntax

Syntax on page 621
Syntax (ACX Series Routers) on page 621

Syntax

```
request chassis feb (offline | online | restart) slot slot-number
```

Syntax (ACX Series Routers)

```
request chassis feb restart slot slot-number
```

Release Information

Command introduced in Junos OS Release 8.0.
Command introduced in Junos OS Release 12.2 for the ACX Series Universal Metro Routers.

Description

(M120 router only) Control the operation of the specified Forwarding Engine Board (FEB).

(ACX Series routers) Restart the specified FEB.

Options

offline—Take the specified FEB offline.

online—Bring the specified FEB online.

restart—Restart the specified FEB.

slot *slot-number*—FEB slot number. Replace ***slot-number*** with a value from 0 through 5.

Required Privilege Level

maintenance

RELATED DOCUMENTATION

show chassis feb | 1480

show chassis fabric feb | 1262

show chassis fpc-feb-connectivity | 1568

feb

List of Sample Output

request chassis feb offline slot 0 on page 622
request chassis feb online slot 0 on page 622
request chassis feb restart slot 0 on page 622

Output Fields

When you enter this command, you are provided feedback on the status of your request.

request chassis feb (M120 Router)

request chassis feb offline slot 0

```
user@host> request chassis feb offline slot 0
```

```
Offline initiated, use “show chassis feb” to verify
```

request chassis feb online slot 0

```
user@host> request chassis feb online slot 0
```

```
Online initiated, use “show chassis feb” to verify
```

request chassis feb restart slot 0

```
user@host> request chassis feb restart slot 0
```

```
Restart initiated, use “show chassis feb” to verify
```

request chassis feb (ACX Series Routers)

```
user@host> request chassis feb restart slot 0
```

```
FEB will be restarted NOW.
```

request chassis fpc

List of Syntax

Syntax on page 623
Syntax (TX Matrix and TX Matrix Plus Routers) on page 623
Syntax (MX Series Routers) on page 623
Syntax (QFabric System) on page 623

Syntax

```
request chassis fpc (offline | online | restart) slot slot-number
```

Syntax (TX Matrix and TX Matrix Plus Routers)

```
request chassis fpc (offline | online | restart) slot slot-number
<lcc number>
```

Syntax (MX Series Routers)

```
request chassis fpc (offline | online | restart) slot slot-number
<all-members>
<local>
<member member-id>
```

Syntax (QFabric System)

```
request chassis fpc
<interconnect-device name slot slot-number (offline | online)>
<(offline | online) interconnect-device name slot slot-number>
<slot slot-number interconnect-device name (offline | online)>
```

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
Command introduced in Junos OS 11.3 for QFX Series.
Command introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers.
Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 Universal Routing Platforms.
Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.
Command introduced in Junos OS Release 16.1R1 for EX9200 switches.
Command introduced in Junos OS Release 17.2 for MX2008 Universal Routing Platforms.
Command introduced in Junos OS Release 17.3 for MX10003 Universal Routing Platforms.

Command introduced in Junos OS Release 17.4 for MX204 Universal Routing Platforms.
Command introduced in Junos OS Release 18.1R1 for EX9251 Switches.
Command introduced in Junos OS Release 18.2 for EX9253 Switches.

Description

(M20, M40, M40e, M120, M160, M320, MX Series, and T Series routers, QFabric systems, EX Series switches, and PTX Series Packet Transport Routers only) Control the operation of the Flexible PIC Concentrator (FPC).

NOTE: Starting with Junos OS Release 12.3, it is possible that FPCs brought offline by using the **request chassis fpc slot *fpc-slot* offline** operational-mode CLI command can come online during a configuration commit or power-supply replacement procedure. As an alternative, use the **set fpc *fpc-slot* power off** configuration-mode command at the **[edit chassis]** hierarchy level to ensure that the FPCs remain offline.

NOTE: In releases earlier than Junos OS Release 15.1F3 and Junos OS Release 16.1, offline FPCs in the PTX5000 router might be powered on by the router during a reboot, or when triggered by other power management events on the router, such as when you take another FPC offline.

Starting with Junos OS Release 15.1F3 and Junos OS Release 16.1, offline FPCs do not come online during reboots or other power management events. To bring such an FPC online:

1. Delete the **fpc *fpc-slot* power off** statement from the **[edit chassis]** hierarchy level, if that statement is configured, and commit the configuration.

2. Either issue the **request chassis fpc online slot *fpc-slot*** operational-mode CLI command or press and hold the FPC **ONLINE/OFFLINE** button for about 5 seconds until the green **OK** LED next to the button lights steadily.

NOTE: If a CLI-based firmware upgrade is in progress, the specified FPC does not restart. Starting with Junos OS Release 15.1, the following message is displayed when this occurs:

```
user@host> request chassis fpc slot 0 restart

FPC 0 Firmware update in progress. Wait!!!
```

NOTE: The command **request chassis fpc (offline | online) slot *slot-number*** is not supported on PTX1000 router. Whereas, **request chassis fpc restart slot *slot-number*** is supported on PTX1000 router

NOTE: On EX9204, EX9208, EX9214, and EX9253 switches, when a line card is brought online, if the aggregate interface is initialized before the child interface is marked as part of the aggregate interface, there might be a loss of traffic from the aggregate interface for up to 30 seconds and the CPU usage of the line card installed on the switch might go up to 100%.

Options

offline—Take the FPC offline.

online—Bring the FPC online.

interconnect-device *name*—(QFabric systems only) Bring the FPC on the QFX3008-I Interconnect device either offline or online:

- (QFabric System) On a QFabric system, specify the name of the QFX3008-I Interconnect device containing the FPC you want to bring either offline or online.

restart—Restart the FPC.

slot *slot-number*—FPC slot number:

- M20 router—0 through 3.
- M120 router—0 through 5.
- MX240 router—0 through 2. On the MX240 router, slot-number corresponds to the (DPC slot number. If an MPC is installed, slot-number corresponds to the MPC slot number.
- MX480 router—0 through 5. On the MX480 router, slot-number corresponds to the DPC slot number. If an MPC is installed, slot-number corresponds to the MPC slot number.
- MX960 router—0 through 11. On the MX960 router, slot-number corresponds to the DPC slot number. If an MPC is installed, slot-number corresponds to the MPC slot number.
- MX2020 router—0 through 19.
- MX2010 router—0 through 9.
- MX2008 router—0 through 9.

- TX Matrix and TX Matrix Plus routers only—On the TX Matrix router, if you specify the number of the T640 router by using the lcc *number* option (the recommended method), replace *slot-number* with a value from 0 through 7. Otherwise, replace *slot-number* with a value from 0 through 31.

  Likewise, on a TX Matrix Plus router, if you specify the number of the T1600 or T4000 router by using the lcc *number* option (the recommended method), replace *slot-number* with a value from 0 through 7. Otherwise, replace *slot-number* with a value from 0 through 31. In case of TX Matrix Plus router with 3D SIBs, replace *slot-number* with a value from **0** through **63**. For example, the following commands have the same result:

  ```
  user@host> request chassis fpc lcc 1 slot 1 offline
  user@host> request chassis fpc slot 9 offline
  ```

- Other routers—0 through 7.
- QFabric System—Replace *slot-number* with a value from 0 through 2.
- EX Series switches:
  - EX4200 switches in a Virtual Chassis configuration—Replace *slot-number* with a value from 0 through 9.
  - EX6210 switches—Replace *slot-number* with a value from 0 through 9.

    NOTE: These commands are not supported for slots 4 and 5 when a Switch Fabric and Routing Engine (SRE) module is installed in those slots. These commands are supported for slots 4 and 5 only if a line card is installed in them.

  - EX8208 switches—Replace *slot-number* with a value from 0 through 7.
  - EX8216 switches—Replace *slot-number* with a value from 0 through 15.
  - EX9204 switches—Replace *slot-number* with a value from 0 through 2.
  - EX9208 switches—Replace *slot-number* with a value from 0 through 5.
  - EX9214 switches—Replace *slot-number* with a value from 0 through 11.
- PTX5000 Packet Transport Router—Replace *slot-number* with a value from 0 through 7.

all-members—(MX Series routers only) (Optional) Change FPC status of all members of the Virtual Chassis configuration.

local—(MX Series routers only) (Optional) Change FPC status of the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Change FPC status of the specified member of the Virtual Chassis configuration. Replace *member-id* with a value of 0 or 1.

lcc *number*—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

Required Privilege Level
maintenance

RELATED DOCUMENTATION

show chassis fpc | **1507**

show chassis fpc-feb-connectivity | **1568**

show chassis fabric fpcs | **1271**

Resynchronizing FPC Sequence Numbers with Active FPCs when an FPC Comes Online | **196**

MX960 Flexible PIC Concentrator Description

List of Sample Output

request chassis fpc on page 628
request chassis fpc (MX Series Routers with Media Services Blade [MSB]) on page 628
request chassis fpc (MX2020 Router) on page 628
request chassis fpc (MX2010 Router) on page 628
request chassis fpc (MX2008 Router) on page 628
request chassis fpc (MX10003 Router) on page 628
request chassis fpc (MX204 Router) on page 629
request chassis fpc (EX9200 Switch) on page 629
request chassis fpc (EX9251 Switch) on page 629
request chassis fpc (EX9253 Switch) on page 629

Output Fields

When you enter this command, you are provided feedback on the status of your request.

Sample Output

request chassis fpc

```
user@host> request chassis fpc online slot 0
```

```
FPC 0 already online
```

request chassis fpc (MX Series Routers with Media Services Blade [MSB])

```
user@host> request chassis fpc slot 0
```

```
Possible completions:
  offline              Take FPC offline
  online               Bring FPC online
  restart              Restart FPC
```

request chassis fpc (MX2020 Router)

```
user@host >request chassis fpc online slot 2
```

```
FPC 2 already online
```

request chassis fpc (MX2010 Router)

```
user@host >request chassis fpc offline slot 5
```

```
Offline initiated, use "show chassis fpc" to verify
```

request chassis fpc (MX2008 Router)

```
user@host >request chassis fpc online slot 5
```

```
FPC 5 already online
```

request chassis fpc (MX10003 Router)

```
user@host>request chassis fpc online slot 1
```

```
FPC 1 already online
```

request chassis fpc (MX204 Router)

```
user@host>request chassis fpc online slot 0
```

```
FPC 0 already online
```

request chassis fpc (EX9200 Switch)

```
user@host> request chassis fpc slot 0
```

```
Possible completions:
  offline              Take FPC offline
  online               Bring FPC online
  restart              Restart FPC
```

request chassis fpc (EX9251 Switch)

```
user@switch> request chassis fpc online slot 0
```

```
FPC 0 already online
```

request chassis fpc (EX9253 Switch)

```
user@switch> request chassis online fpc slot 0
```

```
FPC 0 already online
```

request chassis fpm resync

List of Syntax

Syntax on page 630
Syntax (TX Matrix Routers) on page 630
Syntax (TX Matrix Plus Routers) on page 630
Syntax (MX Series Routers) on page 630

Syntax

```
request chassis fpm resync
```

Syntax (TX Matrix Routers)

```
request chassis fpm resync (lcc number | scc)
```

Syntax (TX Matrix Plus Routers)

```
request chassis fpm resync (lcc number |  sfc number)
```

Syntax (MX Series Routers)

```
request chassis fpm resync
<all-members>
<local>
<member member-id>
```

Release Information

Command introduced before Junos OS Release 7.4.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 Universal Routing Platforms.

Description

(M40e, M120, M160, M320, MX Series, and T Series routers only) Resynchronize the craft interface status.

Options

all-members—(MX Series routers only) (Optional) Resynchronize the craft interface status on all members of the Virtual Chassis configuration.

lcc *number*—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

local—(MX Series routers only) (Optional) Resynchronize the craft interface status on the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Resynchronize the craft interface status on the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value of 0 or 1.

scc—(TX Matrix routers only) Resynchronize the craft interface status on the TX Matrix router (switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) Resynchronize the craft interface status on the TX Matrix Plus router (or switch-fabric chassis). Replace ***number*** with **0**.

Required Privilege Level
maintenance

RELATED DOCUMENTATION

show chassis environment fpm | **1011**

Resynchronizing FPC Sequence Numbers with Active FPCs when an FPC Comes Online | **196**

List of Sample Output
request chassis fpm resync on page 631
request chassis fpm resync (MX2010 Router) on page 632

Output Fields
When you enter this command, you are provided feedback on the status of your request.

Sample Output

request chassis fpm resync

```
user@host> request chassis fpm resync
```

```
Front Panel resynced
```

request chassis fpm resync (MX2010 Router)

`user@host >` **request chassis fpm resync**

```
Front Panel resynced.
```

request chassis lcc

Syntax (TX Matrix and TX Matrix Plus Routers)

```
request chassis lcc (offline | online) slot slot-number
```

Release Information

Command introduced before Junos OS Release 7.4.

Description

(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, control the operation of a T640 LCC that is connected to the TX Matrixrouter. On a TX Matrix Plus router, control the operation of a LCC that is connected to the TX Matrix Plus router.

Options

offline—On a routing matrix based on the TX Matrix router (switch-card chassis), take the T640 router (line-card chassis) offline. On a routing matrix based on a TX Matrix Plus router (switch-fabric chassis), take the router (line-card chassis) offline.

online—On a routing matrix based on the TX Matrix router (switch-card chassis), bring the T640 router (line-card chassis) online. On a routing matrix based on a TX Matrix Plus router (switch-fabric chassis), bring the router (line-card chassis) online.

slot *slot-number*—On a TX Matrix router (switch-card chassis), the slot number of a T640 router (line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router (switch-fabric chassis), the slot number of a router (line-card chassis) that is connected to the TX Matrix Plus (switch-fabric chassis) router.

slot-number has the following values depending on the LCC configuration

Replace *slot-number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

Required Privilege Level

maintenance

RELATED DOCUMENTATION

- show chassis lccs | 1595
- *Configuring Line-Card Upgrade Groups for Nonstop Software Upgrade*
- *fpc*

List of Sample Output

request chassis lcc on page 634

Output Fields

When you enter this command, you are provided feedback on the status of your request.

Sample Output

request chassis lcc

```
user@host> request chassis lcc offline slot 0
```

request chassis mcs

Syntax

```
request chassis mcs (offline | online | restart) slot slot-number
```

Release Information
Command introduced before Junos OS Release 7.4.

Description
(M40e and M160 routers only) Control the operation of the Miscellaneous Control Subsystem (MCS).

Options
offline—Take the MCS offline.

online—Bring the MCS online.

restart—Restart the MCS.

slot *slot-number*—MCS slot number. Replace ***slot-number*** with 0 or 1.

Required Privilege Level
maintenance

RELATED DOCUMENTATION

show chassis environment mcs | **1050**

List of Sample Output
request chassis mcs on page 635

Output Fields
When you enter this command, you are provided feedback on the status of your request.

Sample Output

request chassis mcs

```
user@host> request chassis mcs online slot 0
```

```
MCS 0 appears to be online already
```

request chassis mic

Syntax

```
request chassis mic (offline | online) fpc-slot slot-number mic-slot slot-number
```

Release Information

Command introduced in Junos OS Release 10.1.
Command introduced in Junos OS Release 12.3 for ACX4000 Series Router.
Command introduced in Junos OS Release 12.3 for MX2020 Universal Routing Platforms.
Command introduced in Junos OS Release 12.3 for MX2010 Universal Routing Platforms.
Command introduced in Junos OS Release 13.2 for MX104 Universal Routing Platforms.
Command introduced in Junos OS Release 17.2 for MX2008 Universal Routing Platforms.

Description

(MX Series routers only) Control the operation of the Modular Interface Cards (MICs) installed on a Modular Port Concentrator (MPC).

NOTE: On MX960 routers, if the MIC is not functioning correctly, you should take the MPC offline, replace it with a new MPC, and reinstall the MIC. On MX104 routers, the **request chassis mic** command is not supported on FPC slot 2 and MIC slot 0.

Options

offline—Take the MIC offline.

online—Bring the MIC online.

fpc-slot *slot-number*—FPC slot number where the MIC is installed:

- ACX4000 router—Replace ***fpc-slot*** with the value **0** or **1**.
- MX80 router—Replace ***fpc-slot*** with the value **1**. This command is not supported on FPC slot 0.
- MX104—Replace ***fpc-slot*** with the value from **0** through **2**.
- MX240 router—Replace ***fpc-slot*** with a value from **0** through **2**.
- MX480 router—Replace ***fpc-slot*** with a value from **0** through **5**.
- MX960 router—Replace ***fpc-slot*** with a value from **0** through **11**.
- MX2020 router—Replace ***fpc-slot*** with a value from **0** through **19**.

- MX2010 router—Replace ***fpc-slot*** with a value from **0** through **9**.
- MX2008 router—Replace ***fpc-slot*** with a value from **0** through **9**.

mic-slot *slot-number*—MIC slot number. Replace ***slot-number*** with **0** or **1**.

Required Privilege Level
maintenance

RELATED DOCUMENTATION

show chassis hardware | **1571**

List of Sample Output
request chassis mic online on page 637
request chassis mic (MX Routers with Media Services Blade [MSB]) on page 637
request chassis mic offline (MX104 Router) on page 637
request chassis mic online (MX2010 Router) on page 638
request chassis mic online (MX2008 Router) on page 638

Output Fields
When you enter this command, you are provided feedback on the status of your request.

Sample Output

request chassis mic online

```
user@host> request chassis mic online fpc-slot 1 mic-slot 1
```

request chassis mic (MX Routers with Media Services Blade [MSB])

```
user@host> request chassis mic fpc-slot 1 mic-slot 0

Possible completions:
  offline              Take MIC offline
  online               Bring MIC online
```

request chassis mic offline (MX104 Router)

```
user@host > request chassis mic mic-slot 0 fpc-slot 1 offline
```

```
fpc 1 mic 0 offline initiated, use "show chassis fpc pic-status 1" to verify
```

request chassis mic online (MX2010 Router)

```
user@host> request chassis mic online fpc-slot 1 mic-slot 0
```

```
FPC 1, MIC 0 is already online
```

request chassis mic online (MX2008 Router)

```
user@host>request chassis mic online fpc-slot 0 mic-slot 0
```

```
FPC 0 is not online
```

request chassis optics

Syntax

```
request chassis optics fpc-slot fpc-slot-number reactivate
```

Release Information

Command introduced in Junos OS Release 12.3 for MX240, MX480, and MX960 Universal Routing Platforms.
Command introduced in Junos OS Release 17.3 for MX10003 Universal Routing Platforms.
Command introduced in Junos OS Release 18.1R1 for EX9251 Swiches.
Command introduced in Junos OS Release 18.2 for EX9253 Switches.

Description

(MX240, MX480, and MX960 routers) Control the status of the optical transceiver.

Options

fpc-slot *fpc-slot-number*—Slot number of the line card that houses the optical transceiver.

- MX240 router—Replace ***fpc-slot-number*** with a value from 0 through 2.
- MX480 router—Replace ***fpc-slot-number*** with a value from 0 through 5.
- MX960 router—Replace ***fpc-slot-number*** with a value from 0 through 11.

reactivate—Reactivate the optical transceiver.

Required Privilege Level

maintenance

RELATED DOCUMENTATION

> *Determining Transceiver Support and Specifications for M Series and T Series Routers*

List of Sample Output

request chassis optics (MX480 router) on page 640
request chassis optics (MX10003 router) on page 640
request chassis optics (EX9251 swich) on page 640
request chassis optics (EX9253 swich) on page 640

Output Fields

When you enter this command, you are provided feedback on the status of your request.

Sample Output

request chassis optics (MX480 router)

```
user@host> request chassis optics fpc-slot 5 reactivate
```

```
Enable FPC 5 non-nebs optics.
```

request chassis optics (MX10003 router)

```
user@host>request chassis optics fpc-slot 1 reactivate
```

```
Enable FPC 1 non-nebs optics.
```

request chassis optics (EX9251 swich)

```
user@switch>request chassis optics fpc-slot 0 reactivate
```

```
Enable FPC 0 non-nebs optics.
```

request chassis optics (EX9253 swich)

```
user@switch>request chassis optics fpc-slot 1 reactivate
```

```
Enable FPC 1 non-nebs optics.
```

request chassis pcg

Syntax

```
request chassis pcg (offline | online) slot slot-number
```

Release Information
Command introduced before Junos OS Release 7.4.

Description
(M40e and M160 routers) Control the operation of the Packet Forwarding Engine (PFE) clock generator (PCG).

Options
offline—Take the PCG offline.

online—Bring the PCG online.

slot *slot-number*—PCG slot number. Replace ***slot-number*** with **0** or **1**.

Required Privilege Level
maintenance

RELATED DOCUMENTATION

show chassis environment pcg | 1053

List of Sample Output
request chassis pcg on page 641

Output Fields
When you enter this command, you are provided feedback on the status of your request.

Sample Output

request chassis pcg

```
user@host> request chassis pcg online slot 0
```

```
PCG 1 appears to be already online
```

request chassis pic

List of Syntax

Syntax on page 642
Syntax (MX Series Routers) on page 642
Syntax (TX Matrix and TX Matrix Plus Routers) on page 642

Syntax

```
request chassis pic (offline | online) fpc-slot slot-number pic-slot slot-number
```

Syntax (MX Series Routers)

```
request chassis pic (offline | online) fpc-slot slot-number pic-slot slot-number
<member member-id>
```

Syntax (TX Matrix and TX Matrix Plus Routers)

```
request chassis pic (offline | online) fpc-slot slot-number pic-slot slot-number
<lcc number>
```

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
Command introduced in Junos OS Release 12.3 for ACX4000 Routers.
Command introduced in Junos OS Release 13.2 for the QFX Series.
Command introduced in Junos OS Release 17.2 for PTX10008 Routers.
Option **member** introduced in Junos OS Release 14.2 for MX Series routers.
Command introduced in Junos OS Release 17.3 for MX10003 3D Universal Edge Routers.

Description

Control the operation of the PIC.

NOTE: Starting with Junos OS Release 12.3, it is possible that PICs brought offline by using the **request chassis fpc slot *fpc-slot* pic *pic-slot* offline** operational mode command can come online during a configuration commit or power-supply replacement procedure. (See the following note about difference in behavior on Junos OS Evolved.) As an alternative, use the **set fpc *fpc-slot* pic *pic-slot* power off** configuration mode command at the **[edit chassis]** hierarchy level to ensure that PICs remain offline.

NOTE: On Junos OS Evolved, a PIC does not restart when you enter a **commit** command that configures an element of that PIC.

NOTE: The **request chassis pic (offline | online) fpc-slot *slot number* pic-slot *slot-number*** command is not supported for built-in PICs on MX Series routers.

To view a list of built-in PICs on the router or switch chassis, use the **show chassis hardware** command.

NOTE: This command is not supported on MX960 and MX2020 routers with MPC5EQ.

NOTE: T1600 routers and TX Matrix Plus routers with 100-Gigabit Ethernet PICs require two adjacent PIC slots, 0 and 1, for each PIC. Therefore, only **online** and **offline** command options to PIC slot 0 are allowed. Use of the **online** and **offline** command options for PIC slot 1 with the described router and PIC combination is not allowed.

NOTE: In T Series routers, when the PIC state is set from **offline** to **online** or vice-versa before the processing is complete for the previous command, you are provided feedback on the status of your request. The following sample messages are displayed if you try to set a PIC **offline** or **online**:

user@switch> request chassis pic fpc-slot 1 pic-slot 0 online

```
fpc 1 pic 0 online initiated, use "show chassis fpc pic-status" to verify
```

user@switch> request chassis pic fpc-slot 1 pic-slot 0 online

```
FPC 1 PIC 0 already transitioning to online
```

When the same PIC is set to a different state while the transition is in progress, you are provided feedback on the status of your request.

user@switch> request chassis pic fpc-slot 1 pic-slot 0 offline

```
FPC 1, PIC 0 already transitioning to online.  Please retry later.
```

NOTE: If a CLI-based firmware upgrade is in progress, it prevents the specified PIC from restarting. Starting in Junos OS Release 15.1, the following message is displayed:

`user@host>` **request chassis pic fpc-slot 0 pic-slot 1 offline**

```
PIC's Firmware update in progress. Wait!!!
```

Options

offline—Take the PIC offline.

online—Bring the PIC online.

fpc-slot *slot-number*—Flexible PIC Concentrator (FPC) slot number. Replace ***slot-number*** with a value appropriate for your router or switch:

- ACX4000 routers—1 or 2.
- EX Series switches:

  - EX3200 switches and EX4200 standalone switches—0.
  - EX4200 switches in a Virtual Chassis configuration—0 through 9 (switch's member ID).
  - EX8208 switches—0 through 7 (line card).
  - EX8216 switches—0 through 15 (line card).
- M5, M7i, M10, and M10i routers—0 or 1.
- M20 routers—0 through 3.
- M40 and M40e routers—0 through 7.
- M120 routers—0 through 5.
- M160 routers—0 through 7.
- M320 routers—0 through 7.
- MX 5, MX10, and MX40 routers—0 or 1.
- MX80 routers—0 or 1.
- MX240 routers—0 through 2
- MX480 routers—0 through 5
- MX2020 routers—0 through 19.
- MX2010 routers—0 through 9.
- MX960 routers—0 through 11.
- MX10003 routers—0 or 1.
- MX204 routers—0.
- PTX5000 routers—0 or 1.
- T Series routers—0 through 7.
- TX Matrix and TX Matrix Plus routers only—On a TX Matrix router, if you specify the number of the T640 router by using the **lcc *number*** option (the recommended method), replace ***slot-number*** with a value from 0 through 7. Otherwise, replace ***slot-number*** with a value from 0 through 31.

  Likewise, on a TX Matrix Plus router, if you specify the ***number*** of the T1600 or T4000 router by using the lcc number option (the recommended method), replace ***slot-number*** with a value from 0 through 7. Otherwise, for the FPC slot number, replace ***slot-number*** with a value from 0 through 31. On a TX Matrix Plus router with 3D SIBs to assign the FPC slot number, replace *slot-number* with a value from **0** through **63**. For example, the following commands have the same result:

  ```
  user@host> request chassis pic fpc-slot 1 lcc 1 pic-slot 0 offline
  ```

```
user@host> request chassis pic fpc-slot 9 pic-slot 0 offline
```

- QFX5100 standalone switches—0.

lcc *number*—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

member *member-id*—(MX Series routers only) (Optional) Change the PIC status on the specified member of the Virtual Chassis configuration. Replace *member-id* with the value that is assigned to the specified member.

offline—Take the PIC offline.

online—Bring the PIC online.

pic-slot *slot-number*—PIC slot number.

- EX3200 and EX4200 switches—0 for built-in network interfaces and 1 for interfaces on uplink modules.
- EX8208 and EX8216 switches—0.
- M Series routers—0, 1, 2, or 3
- MX960 router—***slot-number*** corresponds to the slot number of the Packet Forwarding Engine.
- MX204 router—0 or 1.
- PTX5000 routers—0 or 1.
- T320 router—0 or 1.
- T640 router—0, 1, 2, or 3.
- T1600 router —0, 1, 2, or 3.
- T4000 router—0, 1, 2, or 3.
- QFX5100 standalone switches—0, 1, or 2. PIC 0 is used for all interfaces that are not configured on expansion modules, and PIC 1 and PIC 2 are used for interfaces configured on expansion modules.

Required Privilege Level
maintenance

RELATED DOCUMENTATION

show chassis hardware | 1571

show chassis pic | 1618

List of Sample Output

request chassis pic on page 647
request chassis pic online member (MX Series Routers) on page 647
request chassis pic offline member (MX Series Routers) on page 647
request chassis pic (MX10003 Router) on page 648
request chassis pic online member (PTX10008 Router) on page 648

Output Fields
When you enter this command, you are provided feedback on the status of your request.

Sample Output

request chassis pic

```
user@host> request chassis pic pic-slot 0 online fpc-slot 0
```

```
FPC 0, PIC 0 is already online
```

request chassis pic online member (MX Series Routers)

```
user@host> request chassis pic online member 1 fpc-slot 11 pic-slot 3
```

```
fpc 11 pic 3 online initiated
```

request chassis pic offline member (MX Series Routers)

```
user@host> request chassis pic offline member 1 fpc-slot 11 pic-slot 3
```

```
fpc 11 pic 3 offline initiated
```

request chassis pic (MX10003 Router)

```
user@host> request chassis pic online pic-slot 1 fpc-slot 0
```

```
FPC 0 is not online
```

request chassis pic online member (PTX10008 Router)

```
user@host> request chassis pic online pic-slot 1 fpc-slot 0
```

```
FPC 0, PIC 1 is empty
```

request chassis port-led

Syntax

request chassis port-led (start | stop) fpc-slot *fpc-slot-number* pic-slot *pic-slot-number* port (*port-number*| all-10g | all-40g | all-100g | all-port) duration *duration*

Release Information

Command introduced in Junos OS Release 15.1F4 for MPC7E-MRATE, MPC8E, and MPC9E.
Command introduced in Junos OS Release 17.3 for MX10003 Universal Routing Platforms.
Command introduced in Junos OS Release 17.4 for MX204 Universal Routing Platforms.
Command introduced in Junos OS Release 18.1R1 for EX9251 Switch.
Command introduced in Junos OS Release 18.2R1 for JNP10K-LC2101 on MX10008 Universal Routing Platforms.

Description

Enable remote port identification of the Modular Interface Card (MIC) or PIC by making the LED of the appropriate active port blink for a duration of time. You can also make the LEDs of all active ports, specific active ports, and specific port types blink. For instance, on MX480 routers with MPC7E-MRATE, you can make the LED of all active ports that support port speeds of 100 Gbps blink. Enabling remote port identification provides cabling assistance and reduces cabling mistakes.

NOTE: You can stop a LED from blinking before the end of duration. After the LED stops blinking, it resumes its normal operation of indicating current link status of the port.

Options

start—Start blinking of the LEDs of the specified ports.

stop—Stop the LEDs of the specified ports from blinking.

fpc-slot *fpc-slot-number*—(MX Series routers) Modular Port Concentrator (MPC) slot number. Replace ***fpc-slot-number*** with a value appropriate for your router:

- MX240 routers—0 through 2.
- MX480 routers—0 through 5.
- MX960 routers—0 through 11.
- MX2010 routers—0 through 9.
- MX2020 routers—0 through 19.

- MX10003 routers—0 through 1.
- MX10008 routers—0 through 6.

pic-slot *pic-slot-number*—(MX Series routers) MIC slot number. Replace ***pic-slot-number*** with a value from 0 through 3. For MX10008 routers with JNP10K-LC2101 MPC only, replace ***pic-slot-number*** with a value from 0 through 5.

port *port-number*—Port number. Replace ***port-number*** with a value appropriate for your MPC or line card:

- MIC-MRATE—0 through 11.
- MX10003 MPC—0 through 5 for PIC 0 and 0 through 11 for PIC1
- JNP10K-LC2101 MPC—0 through 3 per PIC. JNP110K-LC2101 supports 6 built-in PICs and each PIC supports 4 ports.

all-10g—Active ports that support port speed of 10 Gbps.

all-40g—Active ports that support port speed of 40 Gbps.

all-100g—Active ports that support port speed of 100 Gbps.

all-ports—All active ports.

duration *duration*—Duration, in seconds, to perform LED blinking. Replace ***duration*** with a value from 0 through 65,535. The default duration is 5 minutes (300 seconds).

Required Privilege Level
view

RELATED DOCUMENTATION

Remote Port Identification using LEDs for Cabling Assistance | **268**

List of Sample Output

request chassis port-led (MX2020 Routers with MPC8E) on page 651
request chassis port-led (MX480 Routers with MPC7E-MRATE) on page 651
request chassis port-led (MX10003 Router) on page 651
request chassis port-led (MX10003 Router for all active 100GE ports) on page 651
request chassis port-led (MX10003 Router for all active 40GE ports) on page 651
request chassis port-led (MX10003 Router for all the active ports in a PIC) on page 651
request chassis port-led (MX204 Router for all the active ports in a PIC) on page 652
request chassis port-led (EX9251 Switch) on page 652
request chassis port-led (MX10008 Router with JNP10K-LC2101) on page 652

Output Fields

When you enter this command, you are asked to verify the LED status based on your request.

Sample Output

request chassis port-led (MX2020 Routers with MPC8E)

```
user@host> request chassis port-led start fpc-slot 3 pic-slot 0 port all-10g duration 5

Command sent to FPC_3. Check physically about LED status on the PIC_0 ports.
```

request chassis port-led (MX480 Routers with MPC7E-MRATE)

```
user@host> request chassis port-led start fpc-slot 3 pic-slot 0 port 2 duration 5

Command sent to FPC_3. Check physically about LED status on the PIC_0 ports.
```

request chassis port-led (MX10003 Router)

```
user@host> request chassis port-led start fpc-slot 1 pic-slot 1 port 0 duration 5

Command sent to FPC_1. Check physically about LED status on the PIC_1 ports.
```

request chassis port-led (MX10003 Router for all active 100GE ports)

```
user@host> request chassis port-led start fpc-slot 1 pic-slot 1 port all-100g duration 5

Command sent to FPC_1. Check physically about LED status on the PIC_1 ports.
```

request chassis port-led (MX10003 Router for all active 40GE ports)

```
user@host> request chassis port-led start fpc-slot 0 pic-slot 1 port all-40g duration 5

Command sent to FPC_0. Check physically about LED status on the PIC_1 ports.
```

request chassis port-led (MX10003 Router for all the active ports in a PIC)

```
user@host> request chassis port-led start fpc-slot 0 pic-slot 0 port all-ports duration 5
```

```
Command sent to FPC_0. Check physically about LED status on the PIC_0 ports.
```

request chassis port-led (MX204 Router for all the active ports in a PIC)

```
user@host> request chassis port-led start fpc-slot 0 pic-slot 0 port all-ports duration 5
```

```
Command sent to FPC_0. Check physically about LED status on the PIC_0 ports.
```

request chassis port-led (EX9251 Switch)

```
user@switch> request chassis port-led start fpc-slot 0 pic-slot 0 port all-ports duration 5
```

```
Command sent to FPC_0. Check physically about LED status on the PIC_0 ports.
```

request chassis port-led (MX10008 Router with JNP10K-LC2101)

```
user@host>request chassis port-led start fpc-slot 0 pic-slot 2 all-ports duration 15
```

```
Command sent to FPC_0. Check physically about LED status on the PIC_2 ports.
```

request chassis redundancy feb slot

Syntax

```
request chassis redundancy feb slot slot-number (switch-to-backup | revert-from-backup)
```

Release Information

Command introduced in Junos OS Release 8.2.

Description

(M120 routers only) Control the operation of the specified Forwarding Engine Board (FEB) in a redundancy group.

Options

slot-number—FEB slot number. Replace ***slot-number*** with a value from **0** through **5**.

switch-to-backup—Initiate a switchover from the specified active FEB to the backup FEB for the redundancy group.

revert-from-backup—Initiate a revert to the specified FEB following a switchover from the backup FEB for a redundancy group.

Required Privilege Level

maintenance

RELATED DOCUMENTATION

show chassis redundancy feb | **1687**

Configuring FEB Redundancy on the M120 Router

Understanding Switching Control Board Redundancy

List of Sample Output

request chassis redundancy feb slot 2 switch-to-backup on page 654
request chassis redundancy feb slot 3 revert-from-backup on page 654

Output Fields

When you enter this command, you are provided feedback on the status of your request.

Sample Output

request chassis redundancy feb slot 2 switch-to-backup

```
user@host> request chassis redundancy feb slot 2 switch-to-backup

Switch initiated, use “show chassis redundancy febs” to verify
```

request chassis redundancy feb slot 3 revert-from-backup

```
user@host> request chassis redundancy feb slot 3 revert-from-backup

Revert initiated, use “show chassis redundancy febs” to verify
```

request chassis routing-engine master

List of Syntax

Syntax on page 655
Syntax (M Series, MX Series, T Series Routers) on page 655
Syntax (TX Matrix Routers) on page 655
Syntax (TX Matrix Plus Routers) on page 655
Syntax (MX Series Virtual Chassis) on page 655
Syntax (QFX Series) on page 656

Syntax

```
request chassis routing-engine master (acquire | release | switch)
<no-confirm>
```

Syntax (M Series, MX Series, T Series Routers)

```
request chassis routing-engine master (acquire | release | switch)
<no-confirm>
<check>
```

Syntax (TX Matrix Routers)

```
request chassis routing-engine master (acquire | release | switch) (lcc number  |
   scc | all-chassis)
<no-confirm>
```

Syntax (TX Matrix Plus Routers)

```
request chassis routing-engine master (acquire | release | switch) (lcc number  |
   sfc | all-chassis | all-lcc)
<no-confirm>
```

Syntax (MX Series Virtual Chassis)

```
request chassis routing-engine master (acquire | release | switch)
<all-members>
<check>
<local>
<member member-id>
<no-confirm>
```

Syntax (QFX Series)

```
request chassis routing-engine master (release | switch)
<check>
<interconnect-device name>
<node-group name>
<no-confirm>
```

Release Information

Command introduced before Junos OS Release 7.4.
all-chassis option added in Junos OS Release 8.0.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
Command introduced in Junos OS Release 11.3 for QFX Series.
Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 3D Universal Edge Routers.
Command introduced in Junos OS Release 13.2 for MX104 3D Universal Edge Routers.
Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.
Command introduced in Junos OS Release 17.2 for MX2008 and PTX10008 Routers.

Description

For routers or switches with multiple Routing Engines, control which Routing Engine is the master.

CAUTION: (Routing matrix based on the TX Matrix or TX Matrix Plus routers only) Within the routing matrix, we recommend that all Routing Engines run the same Junos OS Release. If you run different releases on the Routing Engines and a change in mastership occurs on any backup Routing Engine in the routing matrix, one or all routers (in a routing matrix based on the TX Matrix router or in a routing matrix based on a TX Matrix Plus router) might become logically disconnected from the TX Matrix router and cause data loss. For more information, see the *TX Matrix Router Hardware Guide* or the *High Availability Feature Guide*.

NOTE: Successive graceful Routing Engine switchover events must be a minimum of 240 seconds (4 minutes) apart after both Routing Engines have come up.

If the router or switch displays a warning message similar to "Standby Routing Engine is not ready for graceful switchover. Packet Forwarding Engines that are not ready for graceful switchover might be reset," do not attempt switchover. If you choose to proceed with switchover, only the Packet Forwarding Engines that were not ready for graceful switchover are reset. None of the Flexible PIC concentrators (FPCs) should spontaneously restart. We recommend that you wait until the warning no longer appears and then proceed with the switchover.

You will receive an error message stating "Command aborted. Not ready for mastership switch, try after n seconds" when this command is re-entered before 240 seconds have elapsed on EX Series switches.

NOTE: On a QFabric system, to avoid traffic loss on the network Node group, switch mastership of the routing engine to the backup routing engine, and then reboot.

Options

acquire—(Not available for Junos OS Evolved) Attempt to become the master Routing Engine.

release—(Not available for Junos OS Evolved) Request that the other Routing Engine become the master.

switch—Toggle mastership between Routing Engines.

NOTE: The **acquire** option should be used with caution because acquiring a Routing Engine may result in a corrupted database. If possible, use the **switch** option instead.

The **acquire**, **release**, and **switch** options have the following suboptions:

all-chassis—(TX Matrix and TX Matrix Plus routers only) On a routing matrix composed of a TX Matrix router and the attached T640 routers, switch mastership on all the Routing Engines in the routing matrix. Likewise, on a routing matrix composed of a TX Matrix Plus router and the attached T1600 or T4000 routers, switch mastership on all the Routing Engines in the routing matrix.

all-lcc—(TX Matrix Plus routers only) Request to acquire mastership for all line-card chassis (LCC).

all-members—(MX Series routers only) (Optional) Control Routing Engine mastership on the Routing Engines in all member routers of the Virtual Chassis configuration.

check—(QFabric systems, MX104, MX480, MX960, MX2010, MX2020, and MX2008 routers, and PTX5000 routers only) (Optional) Available with the **switch**, **release**, and **acquire** options. Check graceful switchover status of the standby Routing Engine before toggling mastership between Routing Engines.

interconnect-device *name*—(QFabric systems only) (Optional) Control Routing Engine mastership on the Routing Engines on an Interconnect device.

lcc *number*—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

local—(MX Series routers only) (Optional) Control Routing Engine mastership on the Routing Engines in the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Control Routing Engine mastership on the Routing Engines of the specified member in the Virtual Chassis configuration. Replace ***member-id*** with a value of 0 or 1.

no-confirm—(Optional) Do not request confirmation for the switch.

node-group *name*—(QFabric systems only) (Optional) Control Routing Engine mastership on the Routing Engines on a Node group.

scc—(TX Matrix routers only) TX Matrix (switch-card chassis).

sfc—(TX Matrix Plus routers only) TX Matrix Plus router (or switch-fabric chassis).

Additional Information

Because both Routing Engines are always running, the transition from one to the other as the master Routing Engine is immediate. However, the changeover interrupts communication to the System and Switch Board (SSB). The SSB takes several seconds to reinitialize the Flexible PIC Concentrators (FPCs) and restart the PICs. Interior gateway protocol (IGP) and BGP convergence times depend on the specific network environment.

By default, the Routing Engine in slot 0 (**RE0**) is the master and the Routing Engine in slot 1 (**RE1**) is the backup. To change the default master Routing Engine, include the **routing-engine** statement at the [**edit chassis redundancy**] hierarchy level in the configuration. For more information, see the *Junos OS Administration Library*

To have the backup Routing Engine become the master Routing Engine, use the **request chassis routing-engine master switch** command. If you use this command to change the master and then restart the chassis software for any reason, the master reverts to the default setting.

NOTE: Although the configurations on the two Routing Engines do not have to be the same and are not automatically synchronized, we recommend making both configurations the same.

Required Privilege Level
maintenance

RELATED DOCUMENTATION

- show chassis routing-engine | **1691**
- *Configuring Routing Engine Redundancy*
- *Switching the Global Master and Backup Roles in a Virtual Chassis Configuration*

List of Sample Output

request chassis routing-engine master acquire on page 659
request chassis routing-engine master switch on page 660
request chassis routing-engine master switch (Junos OS Evolved) on page 660
request chassis routing-engine master switch check on page 661

Output Fields
When you enter this command, you are provided feedback on the status of your request.

Sample Output

request chassis routing-engine master acquire

```
user@host> request chassis routing-engine master acquire

warning: Traffic will be interrupted while the PFE is re-initialized

warning: The other routing engine's file system could be corrupted

Reset other routing engine and become master ? [yes,no] (no)
```

request chassis routing-engine master switch

```
user@host> request chassis routing-engine master switch
```

```
warning: Traffic will be interrupted while the PFE is re-initialized
Toggle mastership between Routing Engines ? [yes,no] (no) yes

Resolving mastership...
Complete. The other Routing Engine becomes the master.
```

Switch mastership back to the local Routing Engine:

```
user@host> request chassis routing-engine master switch
```

```
warning: Traffic will be interrupted while the PFE is re-initialized
Toggle mastership between routing engines ? [yes,no] (no) yes

Resolving mastership...
Complete. The local routing engine becomes the master.
```

request chassis routing-engine master switch (Junos OS Evolved)

```
user@host> request chassis routing-engine master switch
```

```
Resolving mastership...
Complete. The other Routing Engine becomes the master.
```

Switching back to primary router:

```
user@host> request chassis routing-engine master switch
```

```
Resolving mastership...
Complete. The local Routing Engine becomes the master.
```

If you did not switch back and tried to enter configuration mode, you would get the following error message:

```
user@host> configure
```

```
error: unknown command: configure
Configuration is allowed only from the master Routing Engine.
```

request chassis routing-engine master switch check

Usage shown for M Series, MX Series, and T Series routers.

```
{master}[edit]
```

```
user@host> request chassis routing-engine master switch check
```

```
warning: Standby Routing Engine is not ready for graceful switchover.

{master}[edit]
```

```
user@host> request chassis routing-engine master switch check
```

```
Switchover Ready
```

You can similarly check the backup Routing Engine.

request chassis scg

List of Syntax

Syntax on page 662
Syntax (TX Matrix and TX Matrix Plus Routers) on page 662

Syntax

```
request chassis scg (offline | online) slot slot-number
```

Syntax (TX Matrix and TX Matrix Plus Routers)

```
request chassis scg lcc number  (offline | online) slot slot-number
```

Release Information

Command introduced before Junos OS Release 7.4.

Description

(T Series routers only) Control the operation of the specified SONET Clock Generator (SCG).

Options

lcc *number*—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

offline—Take the SCG offline. When you change the SCG status to offline, the unit is not powered down.

online—Bring the SCG online.

slot *slot-number*—SCG slot number. Replace ***slot-number*** with 0 or 1.

Required Privilege Level

maintenance

RELATED DOCUMENTATION

- show chassis environment scg | 1108
- *Configuring the Clock Source*
- *T320 SONET Clock Generator (SCG) Description*

List of Sample Output

request chassis scg on page 663

Output Fields

When you enter this command, you are provided feedback on the status of your request.

Sample Output

request chassis scg

```
user@host> request chassis scg online slot 0

Online initiated, use "show chassis environment scg" to verify
```

request chassis sfb

Syntax

```
request chassis sfb (offline | online) slot slot-number
<all-members>
<local>
<member member-id>
```

Release Information

Command introduced in Junos OS Release 12.3 for MX2020 Universal Routing Platforms.
Command introduced in Junos OS Release 12.3 for MX2010 Universal Routing Platforms.
all-members, **local**, and **member *member-id*** options introduced in Junos OS Release 15.1 for MX2020 and MX2010 routers.
Command introduced in Junos OS Release 17.2 for MX2008 Universal Routing Platforms.

Description

Control the operation of the Switch Fabric Board (SFB).

Options

all-members—(Optional) Control the operation of the SFB in all members of the Virtual Chassis configuration.

local—(Optional) Control the operation of the SFB in the local Virtual Chassis member.

member *member-id*—(Optional) Control the operation of the SFB in the specified member of the Virtual Chassis. Replace ***member-id*** with the value 0 or 1.

offline—Take the Switch Fabric Board offline.

online—Bring the Switch Fabric Board online.

slot *slot-number*—Switch Fabric Board slot number. Replace ***slot-number*** with a value of 0 through 7.

Required Privilege Level

maintenance

RELATED DOCUMENTATION

show chassis sfb | 1722

List of Sample Output

request chassis sfb on page 665
request chassis sfb (MX2010 Routers) on page 665

request chassis sfb (MX2008 Routers) on page 665

Output Fields

When you enter this command, you are provided feedback on the status of your request.

Sample Output

request chassis sfb

```
user@host> request chassis sfb offline slot 1
```

```
Backup SFB 1 cannot be set offline, backup RE is online
```

request chassis sfb (MX2010 Routers)

```
user@host> request chassis sfb offline slot 7
```

```
Offline initiated, use "show chassis sfb" to verify
```

request chassis sfb (MX2008 Routers)

```
user@host>request chassis sfb offline slot 1
```

```
Offline initiated, use "show chassis sfb" to verify
```

request chassis sfm master switch

Syntax

```
request chassis sfm master switch
<no-confirm>
```

Release Information

Command introduced before Junos OS Release 7.4.

Description

(M40e and M160 routers only) Control which Switching and Forwarding Module (SFM) is master.

Options

no-confirm—(Optional) Do not display a switch warning or query.

Additional Information

By default, the SFM in slot 0 (SFM0) is the master and the SFM in slot 1 (SFM1) is the backup. If you use this command to change the master, and then restart the chassis software for any reason, the master reverts to the default setting. To change the default master SFM, include the **sfm** statement at the **[edit chassis redundancy]** hierarchy level in the configuration. For more information, see the *Junos OS Administration Library*.

All installed SFMs are always working together to forward packets. If an SFM fails, the other SFMs take over and traffic continues to flow uninterrupted.

Required Privilege Level

maintenance

RELATED DOCUMENTATION

show chassis sfm | 1729

Switching the Global Master and Backup Roles in a Virtual Chassis Configuration

List of Sample Output

request chassis sfm master switch on page 667
request chassis sfm master switch no-confirm on page 667

Output Fields

When you enter this command, you are provided feedback on the status of your request.

Sample Output

request chassis sfm master switch

user@host> **request chassis sfm master switch**

```
warning: Traffic will be interrupted while the PFE is re-initialized
Toggle mastership between system forwarding module? [yes,no] (no) yes

Switch initiated, use “show chassis sfm” to verify
```

request chassis sfm master switch no-confirm

user@host> **request chassis sfm master switch no-confirm**

```
Switch initiated, use “show chassis sfm” to verify
```

request chassis sfm

Syntax

```
request chassis sfm (offline | online | restart) slot slot-number
```

Release Information

Command introduced before Junos OS Release 7.4.

Description

(M40e and M160 routers only) Control the operation of the specified Switching and Forwarding Module (SFM).

Options

offline—Take the SFM offline.

online—Bring the SFM online.

restart—Restart the SFM.

slot *slot-number*—SFM slot number. Replace ***slot-number*** with a value from **0** through **3**.

Required Privilege Level

maintenance

RELATED DOCUMENTATION

show chassis sfm | 1729

Configuring SFM Redundancy on M40e and M160 Routers

M40e Switching and Forwarding Module (SFM) Description

List of Sample Output

request chassis sfm (M40e) on page 669
request chassis sfm (M160) on page 669

Output Fields

When you enter this command, you are provided feedback on the status of your request.

Sample Output

request chassis sfm (M40e)

user@host> **request chassis sfm slot 1 restart**

```
M40e router:
error: SFM 0 is transitioning to online state.
```

request chassis sfm (M160)

user@host> **request chassis sfm slot 1 restart**

```
M160 router:
Restart initiated, use "show chassis sfm" to verify
```

request chassis sib

List of Syntax

Syntax on page 670
Syntax (TX Matrix Router) on page 670
Syntax (TX Matrix Plus Router) on page 670

Syntax

```
request chassis sib (offline | online) slot slot-number
```

Syntax (TX Matrix Router)

```
request chassis sib (all-chassis | lcc number | scc) (offline | online) slot slot-number
(start-receiver number | stop-receiver number)
```

Syntax (TX Matrix Plus Router)

```
request chassis sib (all-lcc | f13 slot-number | f2s sib-slot/sib-f2s-slot-number |lcc number  |
   (offline | online) slot slot-number)
```

Release Information

Command introduced before Junos OS Release 7.4.
f13 and **f2s** options for the TX Matrix Plus router introduced in Junos OS Release 9.6.
Command introduced in Junos OS Release 17.2 for PTX10008 Routers.

Description

(M320 routers and T Series routers only) Control the operation of the specified Switch Interface Board (SIB).

Options

all-chassis—(TX Matrix routers only) Control the status of the specified SIB.

all-lcc—(TX Matrix Plus router only) On TX Matrix Plus router, control the operation of the SIB on all routers connected to the TX Matrix Plus router.

f13 ***slot-number***—Control the operation of F13 SIBs. Replace ***slot-number*** with a value **0**, **1**, **3**, **4**, **6**, **7**, **8**, **9**, **11**, or **12**.

f2s ***sib-slot/sib-f2s-slot-number***—(TX Matrix Plus routers only) (Optional) Control the operation of the SIB F2s. Replace ***sib-slot*** with a value from **0** through **4**, followed by a ***sib-f2s-slot-number*** value **0**, **2**, **4** or **6**.

lcc *number*—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

scc—(TX Matrix router only) TX Matrix router (switch-card chassis) on a routing matrix.

offline—Take the SIB offline.

> **NOTE:** In PTX Series (PTX3000 and PTX5000) and T Series (T640 and T1600) Routers with active PFE interfaces, when the last SIB is taken offline, a message displays that if no SIB is brought online within 10 seconds, the system will take action to address the fabric black hole condition. Taking all SIBs offline in these PTX Series or T Series Routers with active PFE interfaces results in traffic black hole condition, and the software takes action to rectify this condition if it persists for more than 10 seconds. If these routers do not have active PFE interfaces, taking all SIBs offline does not result in black hole condition, and the message is not displayed when the last active SIB is taken offline. For details on black hole condition, see "Fabric Resiliency and Degradation" on page 114.

online—Bring the SIB online.

slot *slot-number*—SIB slot number. For the T320 router, replace ***slot-number*** with a value from 0 through 2. For the T640 router, TX Matrix router, and T1600 router in a routing matrix, replace ***slot-number*** with a value from 0 through 4.

start-receiver *number*—(TX Matrix routers only) Start the SIB optical receiver. Replace ***number*** with a value from **0** through **3**.

stop-receiver *number*—(TX Matrix routers only) Stop the SIB optical receiver. Replace ***number*** with a value from **0** through **3**.

Required Privilege Level
maintenance

RELATED DOCUMENTATION

- show chassis sibs | 1733
- show chassis environment sib | 1136
- *Configuring Junos OS to Upgrade and Downgrade Switch Interface Boards on a TX Matrix Router*
- *M320 SIB Description*

List of Sample Output

request chassis sib on page 672
request chassis sib on page 672

Output Fields

When you enter this command, you are provided feedback on the status of your request.

Sample Output

request chassis sib

```
user@host> request chassis sib slot 0 online
```

```
Online initiated, use "show chassis sibs" to verify
```

request chassis sib

```
user@host> request chassis sib f13 slot 0 offline
```

```
Offline initiated, use "show chassis sibs" to verify
```

request chassis sib f13 train-link-receive slot

Syntax

```
request chassis sib f13 train-link-receive slot  SFC-SIB-F13–slot-num
```

Release Information

Command introduced in Junos OS Release 10.1.

Description

(TX Matrix Plus router only) Control the receiving link of the specified Switch Interface Board (SIB) of the SFC.

Options

slot *SFC-SIB-F13-slot-num*— SFC SIB slot number. Replace it with 0, 3, 6, 8 or 11.

Required Privilege Level

maintenance

RELATED DOCUMENTATION

request chassis sib f13 train-link-transmit slot | 674

Configuring Junos OS to Upgrade the T1600 Router Chassis to LCC0 of a TX Matrix Plus Routing Platform

List of Sample Output

request chassis sib f13 train-link-receive slot on page 673

Output Fields

When you enter this command, the SFC is ready to receive traffic from the T1600 or T4000 router (LCC).

Sample Output

request chassis sib f13 train-link-receive slot

```
user@host> request chassis sib f13 train-link-receive slot 0
```

request chassis sib f13 train-link-transmit slot

Syntax

```
request chassis sib f13 train-link-transmit slot  SFC-SIB-F13-slot-num
```

Release Information

Command introduced in Junos OS Release 10.1.

Description

(TX Matrix Plus router only) Control the transmission link of the specified Switch Interface Board (SIB) of the SFC.

Options

slot *SFC-SIB-F13-slot-num*—SFC SIB slot number. Replace it with 0, 3, 6, 8 or 11.

Required Privilege Level

maintenance

RELATED DOCUMENTATION

request chassis sib f13 train-link-receive slot | 673

Configuring Junos OS to Upgrade the T1600 Router Chassis to LCC0 of a TX Matrix Plus Routing Platform

List of Sample Output

request chassis sib f13 train-link-transmit slot on page 674

Output Fields

When you enter this command, the SFC is ready to transmit traffic to the T1600 or T4000 router (LCC).

Sample Output

request chassis sib f13 train-link-transmit slot

```
user@host> request chassis sib f13 train-link-transmit slot 0
```

request chassis sib optics lcc

Syntax

```
request chassis sib optics lcc number sib-slot number optics-slot number ( enable | disable)
```

Release Information

Command introduced in Junos OS Release 13.1 for TX Matrix Routers with 3D SIBs.

Description

(TX Matrix Plus routers with 3D SIBs only) Control the operation of the high-speed links on the LCCs by enabling or disabling the high-speed links.

Options

lcc *number*—Line-card chassis number. Replace the *number* with the following values depending on the LCC configuration.

- 0 through 7, T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

sib-slot *number*—SIB slot number. Replace the *number* with a value from 0 to 15.

optics-slot *number*—Optics slot number for high-speed link cable. Replace the *number* with a value from 0 to 15.

enable—Start the high-speed linkss on the cables and enable the FPCs.

disable—Disable the FPCs and stop the high-speed links on the cables.

Required Privilege Level

maintenance

RELATED DOCUMENTATION

show chassis fabric optical-links

List of Sample Output

request chassis sib optics lcc on page 676
request chassis sib optics lcc on page 676

Output Fields

When you enter this command, you are provided feedback on the status of your request.

Sample Output

request chassis sib optics lcc

```
user@host> request chassis sib optics lcc 7 optics-slot 6 sib-slot 6 enable
```

```
Optics 6 enable initiated, use "show chassis fabric optical-links detail" to verify
```

request chassis sib optics lcc

```
user@host> request chassis sib optics lcc 7 optics-slot 6 sib-slot 6 disable
```

```
Optics 6 disable initiated, use "show chassis fabric optical-links detail" to
verify
```

request chassis sib optics sfc

Syntax

request chassis sib optics sfc *slot-number* sib-slot *number* optics-slot *number* (enable | disable)

Release Information

Command introduced in Junos OS Release 13.1 for TX Matrix Routers with 3D SIBs.

Description

(TX Matrix Plus routers with 3D SIBs only) Control the operation of the high-speed links on the SIBs by enabling or disabling the high-speed links.

Options

sfc *slot-number*—SFC slot number. Replace the *slot-number* with 0.

sib-slot *number*—SIBslot number. Replace the *number* with a value from 0 to 15.

optics-slot *number*—Optics slot number for high-speed link cable. Replace the *number* with a value from 0 to 15.

enable—Start the high-speed links on the cables and enable the FPCs.

disable—Disable the FPCs and stop the HSLs on the cables.

Required Privilege Level

maintenance

RELATED DOCUMENTATION

show chassis fabric optical-links

List of Sample Output

request chassis sib optics sfc on page 678
request chassis sib optics sfc on page 678

Output Fields

When you enter this command, you are provided feedback on the status of your request.

Sample Output

request chassis sib optics sfc

```
user@host> request chassis sib optics sfc 0 optics-slot 6 sib-slot 6 enable
```

```
Optics 6 enable initiated, use "show chassis fabric optical-links detail" to verify
```

request chassis sib optics sfc

```
user@host> request chassis sib optics sfc 0 optics-slot 6 sib-slot 6 disable
```

```
Optics 6 disable initiated, use "show chassis fabric optical-links detail" to
verify
```

request chassis sib train-link-receive slot

Syntax

```
request chassis sib train-link-receive slot  LCC-SIB-ST-SIB-L-slot-num
```

Release Information

Command introduced in Junos OS Release 10.1.

Description

(T1600 Router (LCC), T4000 Router (LCC), and TX Matrix Plus router only) Control the receiving link of the specified Switch Interface Board (SIB) of the LCC.

Options

slot *LCC-SIB-ST-SIB-L-slot-num*— LCC SIB slot number. Replace it with a value from 0 through 4.

Required Privilege Level

maintenance

RELATED DOCUMENTATION

request chassis sib train-link-transmit slot | 680

Configuring Junos OS to Upgrade the T1600 Router Chassis to LCC0 of a TX Matrix Plus Routing Platform

List of Sample Output

request chassis sib train-link-receive slot on page 679

Output Fields

When you enter this command, the LCC is ready to receive traffic from the SFC.

Sample Output

request chassis sib train-link-receive slot

```
user@host> request chassis sib train-link-receive slot 0
```

request chassis sib train-link-transmit slot

Syntax

```
request chassis sib train-link-transmit slot  LCC-SIB-ST-SIB-L-slot-num
```

Release Information

Command introduced in Junos OS Release 10.1.

Description

(T1600 Router (LCC), T4000 (LCC) and TX Matrix Plus router only) Control the transmission link of the specified Switch Interface Board (SIB) of the LCC.

Options

slot *LCC-SIB-ST-SIB-L-slot-num*— LCC SIB slot number. Replace it with a value from 0 through 4.

Required Privilege Level

maintenance

RELATED DOCUMENTATION

request chassis sib train-link-receive slot | 679

Configuring Junos OS to Upgrade the T1600 Router Chassis to LCC0 of a TX Matrix Plus Routing Platform

List of Sample Output

request chassis sib train-link-transmit slot on page 680

Output Fields

When you enter this command, the LCC is ready to transmit traffic to the SFC.

Sample Output

request chassis sib train-link-transmit slot

```
user@host> request chassis sib train-link-transmit slot 0
```

request chassis spmb restart

List of Syntax

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Syntax (MX2020, MX2010, and 2008 Routers) on page 681
Syntax (TX Matrix Router) on page 681
Syntax (TX Matrix Plus Router) on page 681

Syntax

```
request chassis spmb restart slot slot-number
```

Syntax (MX2020, MX2010, and 2008 Routers)

```
request chassis spmb restart slot slot-number
<all-members>
<local>
<member member-id>
```

Syntax (TX Matrix Router)

```
request chassis spmb restart (lcc number | scc) slot slot-number
```

Syntax (TX Matrix Plus Router)

```
request chassis spmb restart (lcc number | sfc number) slot slot-number
```

Release Information

Command introduced before Junos OS Release 7.4.
sfc option for the TX Matrix Plus router introduced in Junos OS Release 9.6.
Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 Universal Routing Platforms.
all-members, **local**, and **member *member-id*** options introduced in Junos OS Release 15.1 for MX2020 and MX2010 routers.
Command introduced in Junos OS Release 17.2 for MX2008 and PTX10008 Routers.

Description

Restart the specified Switch Processor Mezzanine Board (SPMB) on the Control Board (CB).

Options

all-members—(MX2010, MX2020, and MX2008 routers only) (Optional) Restart the SPMB on the CB in all members of the Virtual Chassis configuration.

lcc *number*—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

local—(MX2010, MX2020, and MX2008 routers only) (Optional) Restart the SPMB on the CB in the local Virtual Chassis member.

member *member-id*—(MX2010, MX2020, and MX2008 routers only) (Optional) Restart the SPMB on the CB in the specified member of the Virtual Chassis. Replace ***member-id*** with the value 0 or 1.

scc—(TX Matrix routers only) TX Matrix router (switch-card chassis) in the routing matrix.

sfc *number*—(TX Matrix Plus routers only) The switch-fabric chassis number of the TX Matrix Plus router. Replace the *number* variable with a value **0**.

slot *slot-number*—The SPMB slot number. Replace ***slot-number*** with **0** or **1**.

Required Privilege Level
maintenance

RELATED DOCUMENTATION

show chassis spmb | **1749**

show chassis spmb sibs | **1763**

List of Sample Output
request chassis spmb restart on page 683
request chassis spmb restart (MX2010 Router) on page 683
request chassis spmb restart (MX2008 Router) on page 683

Output Fields
When you enter this command, you are provided feedback on the status of your request.

Sample Output

request chassis spmb restart

```
user@host> request chassis spmb restart slot 0
```

request chassis spmb restart (MX2010 Router)

```
user@host>  request chassis spmb restart slot 0

Restart initiated, use "show chassis spmb" to verify
```

request chassis spmb restart (MX2008 Router)

```
user@host>request chassis spmb restart slot 0

Restart initiated, use "show chassis spmb" to verify
```

request chassis synchronization mode

Syntax

```
request chassis synchronization mode (free-run | holdover | auto-select)
```

Release Information
Command introduced in Junos OS Release 11.2R4 for MX Series 5G Universal Routing Platforms.

Description
(MX5-T, MX10-T, MX40-T, MX80, MX80-T, MX240, MX480, and MX960 routers only) Change the chassis synchronization source used for Synchronous Ethernet configuration.

Options
freerun—Change chassis synchronization to free-run mode.

holdover—Change chassis synchronization to holdover mode.

auto-select—Change chassis synchronization to auto-select mode.

Required Privilege Level
maintenance

RELATED DOCUMENTATION

> *Synchronous Ethernet Overview*
>
> *Configuring an External Clock Synchronization Interface for MX Series Routers*

List of Sample Output
request chassis synchronization mode freerun on page 685
request chassis synchronization mode holdover on page 685
request chassis synchronization mode auto-select on page 685

Output Fields
When you enter this command, the current status of your request is displayed.

- **Not configured**—Indicates that the source is not configured.
- **Present**—Indicates that the source is configured and present.
- **Qualified**—Indicates that the source is being used for synchronization.

Sample Output

request chassis synchronization mode freerun

```
user@host> request chassis synchronization mode freerun
```

```
mode is freerun, status: qualified
```

Sample Output

request chassis synchronization mode holdover

```
user@host> request chassis synchronization mode holdover
```

```
mode is holdover, status: qualified
```

Sample Output

request chassis synchronization mode auto-select

```
user@host> request chassis synchronization mode auto-select
```

```
mode is auto-select, status: qualified
```

request chassis synchronization switch

List of Syntax

Syntax on page 686
Syntax (M Series, T Series) on page 686
Syntax (PTX Series) on page 686

Syntax

```
request chassis synchronization switch
```

Syntax (M Series, T Series)

```
request chassis synchronization switch (external-a | external-b)
```

Syntax (PTX Series)

```
request chassis synchronization switch (bits-a | bits-b | fpc-slot-number | gps-0 | gps-1 )
```

Release Information

Command introduced in Junos OS Release 7.6.
Command introduced in Junos OS Release 8.3 for M40e routers.
Command introduced in Junos OS Release 9.3 for M120 routers.
Command introduced in Junos OS Release 10.2 for T320, T640, and T1600 routers.
Command introduced in Junos OS Release 12.1 for PTX Series Packet Transport Routers.
Command introduced in Junos OS Release 17.2 for PTX10008 Routers.

Description

(M320, M40e, M120, T320, T640, and T1600 routers and PTX Packet Transport Routers only) Change the external clock source used for chassis synchronization.

Options

external-a—(Routing matrix only) Change the synchronization source to external source A.

external-b—(Routing matrix only) Change the synchronization source to external source B.

bits-a—(PTX Series only) Change the synchronization source to the BITS external source A.

bits-b—(PTX Series only) Change the synchronization source to the BITS external source B.

fpc-*slot-number*—(PTX Series only) Change the synchronization source to an FPC in the slot specified. For the PTX5000 Packet Transport Router, replace *slot-number* with a value from 0 through 7.

gps-0-10mhz—(PTX Series only) Change the synchronization source to the 10 MHz GPS source on CCG port 0.

gps-0-5mhz—(PTX Series only) Change the synchronization source to the 5 MHz GPS source on CCG port 0.

gps-1-10mhz—(PTX Series only) Change the synchronization source to the 10 MHz GPS source on CCG port 1.

gps-1-5mhz—(PTX Series only) Change the synchronization source to the 5 MHz GPS source on CCG port 1.

Required Privilege Level
maintenance

RELATED DOCUMENTATION

show chassis synchronization | 1770

Configuring Clock Synchronization Interface on MX Series Routers

Supported Time Synchronization Standard

List of Sample Output
request chassis synchronization switch (M Series, T Series) on page 687
request chassis synchronization switch (PTX Series) on page 687

Output Fields
When you enter this command, you are provided feedback on the status of your request. **Not configured** indicates that the source is not configured. **Present** indicates that the source is configured and present. **Qualified** indicates that the source is being used for synchronization.

Sample Output

request chassis synchronization switch (M Series, T Series)

```
user@host> request chassis synchronization switch external-a

switching to external-a, status: qualified
```

request chassis synchronization switch (PTX Series)

```
user@host> request chassis synchronization switch fpc-2
```

```
switching to fpc-2, status: qualified
```

set chassis display message

List of Syntax

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Syntax (TX Matrix Router) on page 689
Syntax (TX Matrix Plus Router) on page 689

Syntax

```
set chassis display message "message"
<permanent>
```

Syntax (TX Matrix Router)

```
set chassis display message "message" (lcc number | scc)
<permanent>
```

Syntax (TX Matrix Plus Router)

```
set chassis display message “message ” (fpc-slot slot-number | lcc number |  sfc number)
<permanent>
```

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option for TX Matrix Plus router introduced in Junos OS Release 9.6.

Description

Display or stop a text message on the craft interface display, which is on the front of the router, or on the LCD panel display on the switch. The craft interface alternates the display of text messages with standard craft interface messages three times, switching between messages every 60 seconds.

NOTE: On T Series routers, when this command is executed with the **permanent** option, the display of the text message alternates with that of the standard craft interface message continuously every 60 seconds.

By default, on both the router and the switch, the text message is displayed for 5 minutes. The craft interface display has four 20-character lines. The LCD panel display has two 16-character lines, and text messages appear only on the second line.

Options

"*message*"—Message to display. On the craft interface display, if the message is longer than 20 characters, it wraps onto the next line. If a word does not fit on one line, the entire word moves down to the next line. Any portion of the message that does not fit on the display is truncated. An empty pair of quotation marks (“ ”) deletes the text message from the craft interface display. On the LCD panel display, the message is limited to 16 characters.

fpc-slot *slot-number*—(TX Matrix Plus routers and EX4200 and QFX Series only) On the router or switch, display the text message on the craft interface for a specific Flexible PIC Concentrator (FPC). Replace ***slot-number*** with a value from **0** through **31**. On the switch, display the text message for a specific member of a Virtual Chassis, where **fpc-slot *slot-number*** corresponds to the member ID. Replace ***slot-number*** with a value from **0** through **9**. On the QFX Series, the ***slot-number*** is always **0**. On a TX Matrix Plus router with 3D SIBs replace *slot-number* with a value from **0** through **63**.

lcc *number*—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

permanent—(Optional) Display a text message on the craft interface display or LCD panel display permanently.

scc—(TX Matrix routers only) Display the text message on the craft interface display of the TX Matrix router (switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) Display the text message on the craft interface display of the TX Matrix Plus router (or switch-fabric chassis).

Required Privilege Level

clear

RELATED DOCUMENTATION

Configuring the LCD Panel on EX Series Switches (CLI Procedure) | **268**

clear chassis display message | **593**

show chassis craft-interface | **734**

List of Sample Output

set chassis display message (Creating) on page 691
set chassis display message (Deleting) on page 691

Output Fields

See show chassis craft-interface for an explanation of output fields.

Sample Output

set chassis display message (Creating)

The following example shows how to set the display message and verify the result:

```
user@host> set chassis display message "NOC contact Dusty (888) 555-1234"

message sent

user@host> show chassis craft-interface

Red alarm:     LED off, relay off
Yellow alarm:  LED off, relay off
Host OK LED:   On
Host fail LED: Off
FPCs     0  1  2  3  4  5  6  7
-------------------------------
Green  ..  *..  *  *.
Red    ........
LCD screen:
     +--------------------+
     |NOC contact Dusty   |
     |(888) 555-1234      |
     +--------------------+
```

set chassis display message (Deleting)

The following example shows how to delete the display message and verify that the message is removed:

```
user@host> set chassis display message ""

message sent
```

user@host> **show chassis craft-interface**

```
Red alarm:     LED off, relay off
Yellow alarm:  LED off, relay off
Host OK LED:   On
Host fail LED: Off
FPCs     0  1  2  3  4  5  6  7
------------------------------
Green  ..  *..  *  *.
Red    ........
LCD screen:
     +--------------------+
     |host                |
     |Up: 0+17:05:47      |
     |                    |
     |Temperature OK      |
     +--------------------+
```

12

CHAPTER

Monitoring Commands

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show chassis adc

Syntax

```
show chassis adc
<all-members>
<local>
<member member-id>
```

Release Information

Command introduced in Junos OS Release 12.3 for MX2020 and MX2010 Universal Routing Platforms.
all-members, **local**, and **member *member-id*** options introduced in Junos OS Release 15.1 for MX2020 and MX2010 routers.
Command introduced in Junos OS Release 17.2 for MX2008 Universal Routing Platforms.

Description

Display chassis information about the adapter cards (ADCs).

Options

none—Display information about all adapter cards.

all-members—(Optional) Display information about the adapter cards (ADCs) in all members of the Virtual Chassis configuration.

local—(Optional) Display information about the ADCs in the local member of the Virtual Chassis.

member *member-id*—(Optional) Display information about the ADCs in the specified member of the Virtual Chassis. Replace ***member-id*** with the value 0 or 1.

Required Privilege Level

view

RELATED DOCUMENTATION

show chassis environment adc | 872

List of Sample Output

show chassis adc (MX2020 Router) on page 698
show chassis adc (MX2010 Router) on page 699
show chassis adc (MX2008 Router) on page 699
show chassis adc (Node Slicing) on page 699

Output Fields

Table 32 on page 698 lists the output fields for the **show chassis adc** command. Output fields are listed in the approximate order in which they appear.

Table 32: show chassis adc Output Fields

Field Name	Field Description
Slot	Slot number.
State	Status of the adapter card. • **Online**—The adapter card is online and running. • **Offline**—Adapter card is powered down.
Uptime	How long the Routing Engine has been connected to the adapter card and, therefore, how long the adapter card has been up and running.
GNF (Node slicing)	GNF identifier for each ADC.

Sample Output

show chassis adc (MX2020 Router)

```
user@host> show chassis adc
```

```
Slot  State                          Uptime
 0    Online 1 hour, 21 minutes, 7 seconds
 1    Online 1 hour, 21 minutes, 3 seconds
 2    Online 1 hour, 20 minutes, 59 seconds
 3    Online 1 hour, 20 minutes, 54 seconds
 4    Online 1 hour, 20 minutes, 50 seconds
 5    Online 1 hour, 20 minutes, 46 seconds
 6    Online 1 hour, 20 minutes, 42 seconds
 7    Online 1 hour, 20 minutes, 37 seconds
 8    Online 1 hour, 20 minutes, 33 seconds
 9    Online 1 hour, 20 minutes, 28 seconds
10    Online 1 hour, 20 minutes, 24 seconds
11    Online 1 hour, 20 minutes, 19 seconds
12    Online 1 hour, 20 minutes, 15 seconds
13    Online 1 hour, 20 minutes, 8 seconds
14    Online 1 hour, 20 minutes, 4 seconds
15    Online 1 hour, 19 minutes, 59 seconds
16    Online 1 hour, 19 minutes, 55 seconds
```

```
17    Online 1 hour, 19 minutes, 50 seconds
18    Online 1 hour, 19 minutes, 45 seconds
19    Online 1 hour, 19 minutes, 39 seconds
```

show chassis adc (MX2010 Router)

`user@host >` **show chassis adc**

```
Slot  State                          Uptime
 0    Online 12 hours, 17 minutes, 38 seconds
 1    Online 12 hours, 17 minutes, 30 seconds
 2    Online 12 hours, 17 minutes, 22 seconds
 3    Online 12 hours, 17 minutes, 14 seconds
 4    Online 12 hours, 17 minutes, 6 seconds
 5    Online 12 hours, 16 minutes, 58 seconds
 6    Online 12 hours, 16 minutes, 49 seconds
 7    Online 12 hours, 16 minutes, 41 seconds
 8    Online 12 hours, 16 minutes, 33 seconds
 9    Online 12 hours, 16 minutes, 25 seconds
```

show chassis adc (MX2008 Router)

`user@host >` **show chassis adc**

```
Slot  State                          Uptime
 0    Empty  --- Native line card ---
 1    Empty  --- Native line card ---
 2    Empty
 3    Empty
 4    Empty
 5    Empty
 6    Empty
 7    Online 1 hour, 14 minutes, 32 seconds
 8    Empty
 9    Empty
```

show chassis adc (Node Slicing)

`user@router>` **show chassis adc**

```
Slot  State          Uptime                                        GNF
 0    Online          12 hours, 57 minutes, 46 seconds               3
```

```
1    Empty       --- Native line card ---                          2
2    Online           12 hours, 57 minutes, 18 seconds             3
3    Online           11 minutes, 23 seconds                       6
4    Empty       --- Native line card ---                          6
5    Empty       --- Native line card ---                          4
6    Online           13 hours, 38 minutes, 58 seconds             1
7    Online           13 hours, 3 minutes, 40 seconds              5
8    Empty       --- Native line card ---                          5
9    Empty       --- Native line card ---                          5
```

show chassis afeb

Syntax

```
show chassis afeb
```

Release Information

Command introduced in Junos OS Release 13.2.

Description

Display compact Forwarding Engine Board status.

Options

This command has no options.

Required Privilege Level

view

RELATED DOCUMENTATION

request chassis afeb | 601

List of Sample Output

show chassis afeb (MX104 Router) on page 702

Output Fields

Table 33 on page 701 lists the output fields for the **show chassis afeb** command. Output fields are listed in the approximate order in which they appear.

Table 33: show chassis afeb

Field Name	Field Description

State	State of the compact Forwarding Engine Board:
	• **Offline**—FEB is powered down.
	• **Online**—FEB is operational and running.
	• **Check**—FEB is in alarmed state because of the following reasons:
	  ◦ Hardware error.
	  ◦ PFE is unable to boot.

Table 33: show chassis afeb *(continued)*

Field Name	Field Description
Temperature	Temperature of the air passing by the FEB, in degrees Celsius or in both degrees Celsius and degrees Fahrenheit.
CPU Utilization	Total percentage of CPU being used.
Interrupt Utilization	Of the total CPU being used by the FEB processor, the percentage being used for interrupts.
Heap Utilization	Percentage of heap space (dynamic memory) being used by the FEB processor. If this number exceeds 80 percent, you might experience a software problem (memory leak).
Buffer Utilization	Percentage of buffer space being used by the FEB processor for buffering internal messages.
Total CPU DRAM	Total DRAM, in megabytes, available to the FEB processor.
Start time	Time when the Routing Engine detected that the FEB was running.
Uptime	How long the Routing Engine has been connected to the FEB and, therefore, how long the compact Forwarding Engine Board has been up and running.

Sample Output

show chassis afeb (MX104 Router)

```
user@host> show chassis afeb
```

```
FEB status:
Slot 0 information:
  State                               Online
  Temperature                      31 degrees C / 87 degrees F
  CPU utilization                   3 percent
  Interrupt utilization             0 percent
  Heap utilization                 11 percent
  Buffer utilization               13 percent
  Total CPU DRAM                 2048 MB
  Start time:                         2013-05-27 08:50:03 IST
  Uptime:                             3 hours, 29 minutes, 34 seconds
```

show chassis alarms

List of Syntax

Syntax on page 703
Syntax (MX Series Routers) on page 703
Syntax (TX Matrix Routers) on page 703
Syntax (TX Matrix Plus Routers) on page 703
Syntax (MX104, MX2010, MX2020, and MX2008 Universal Routing Platforms) on page 703
Syntax (MX10003, MX204, MX10008, OCX Series, PTX Series, ACX Series, EX9251, and EX9253) on page 703
Syntax (QFX Series) on page 704

Syntax

```
show chassis alarms
```

Syntax (MX Series Routers)

```
show chassis alarms
<all-members>
<local>
<member member-id>
```

Syntax (TX Matrix Routers)

```
show chassis alarms
<lcc number | scc>
```

Syntax (TX Matrix Plus Routers)

```
show chassis alarms
<lcc number | sfc number>
```

Syntax (MX104, MX2010, MX2020, and MX2008 Universal Routing Platforms)

```
show chassis alarms
<satellite [slot-id slot-id]>
```

Syntax (MX10003, MX204, MX10008, OCX Series, PTX Series, ACX Series, EX9251, and EX9253)

```
show chassis alarms
```

Syntax (QFX Series)

```
show chassis alarms
<interconnect-device name>
<node-device name>
```

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced in Junos OS Release 9.6 for the TX Matrix Plus router.
Command introduced in Junos OS Release 11.1 for the QFX Series.
Command introduced in Junos OS Release 12.1 for the PTX Series Packet Transport Routers.
Command introduced in Junos OS Release 12.2 for the ACX Series Universal Metro Routers.
Command introduced in Junos OS Release 12.3 for MX 2010 and MX2020 Universal Routing Platforms.
Command introduced in Junos OS Release 13.2 for MX104 Universal Routing Platforms.
Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.
satellite option introduced in Junos OS Release 14.2R3 for Junos Fusion.
Command introduced in Junos OS Release 17.2 for MX2008 and PTX10008 Routers.
Command introduced in Junos OS Release 17.3 for MX150 Router Appliance and MX10003 Universal Routing Platforms.
Command introduced in Junos OS Release 17.4 for MX204 Universal Routing Platforms.
Command introduced in Junos OS Release 18.1R1 for EX9251 Switches.
Command introduced in Junos OS Release 18.2R1 for EX9253 Switches and MX10008 Universal Routing Platforms.

Description

Display information about the conditions that have been configured to trigger alarms.

Options

none—Display information about the conditions that have been configured to trigger alarms.

all-members—(MX Series routers only) (Optional) Display information about alarm conditions for all the member routers of the Virtual Chassis configuration.

interconnect-device *name*—(QFabric systems only) (Optional) Display information about alarm conditions for the Interconnect device.

lcc *number*—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

local—(MX Series routers only) (Optional) Display information about alarm conditions for the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display information about alarm conditions for the specified member of the Virtual Chassis configuration. Replace *member-id* variable with a value of 0 or 1.

node-device *name*—(QFabric systems only) (Optional) Display information about alarm conditions for the Node device.

satellite [slot-id *slot-id*]—(Junos Fusion only)(Optional) Display information about alarm conditions for the specified satellite device in a Junos Fusion, or for all satellite devices in the Junos Fusion if no satellite devices are specified.

scc—(TX Matrix router only) (Optional) Show information about the TX Matrix router (switch-card chassis).

sfc *number*—(TX Matrix Plus router only) (Optional) Show information about the respective TX Matrix Plus router, which is the switch-fabric chassis. Replace *number* variable with **0**.

Additional Information

Chassis alarms are preset. You cannot modify them.

You cannot clear the alarms for chassis components. Instead, you must remedy the cause of the alarm. When a chassis alarm LED is lit, it indicates that you are running the router or switch in a manner that we do not recommend.

On routers, you can manually silence external devices connected to the alarm relay contacts by pressing the alarm cutoff button, located on the craft interface. Silencing the device does not remove the alarm messages from the display (if present on the router) or extinguish the alarm LEDs. In addition, new alarms that occur after you silence an external device reactivate the external device.

NOTE: MX10003 routers do not support craft interface.

In Junos OS release 11.1 and later, alarms for fans also show the slot number of the fans in the CLI output.

In Junos OS Release 11.2 and later, the command output on EX8200 switches shows the detailed location (**Plane/FPC/PFE**) for link errors in the chassis.

In Junos OS Release 10.2 and later, an alarm is shown on T Series routers for a standby SONET Clock Generator (SCG) that is offline or absent.

You may often see the following error messages, in which only the error code is shown and no other information is provided:

```
Apr 12 08:04:10 send: red alarm set, device FPC 6, reason FPC 6 Major Errors - Error
 code: 257
Apr 12 08:04:19 send: red alarm set, device FPC 1, reason FPC 1 Major Errors - Error
 code: 559
```

To understand what CM_ALARM error codes mean, you need to first identify the structure of the CM Alarm codes. A CM_ALARM code has the following structure:

Bits:	Error type:
1-31	Major (1)
0	Minor (0)

According to the table above, the LSB (bit 0) identifies the **Error Type** (major alarm, if the bit is set and minor alarm if the bit is unset). The rest of the bits (1 - 31) identify the actual error code.

Take an example of the following error code, which was logged on a T1600:

```
Apr 12 08:04:10 send: red alarm set, device FPC 1, reason FPC 1 Major Errors - Error
 code: 559
```

First, you have to convert 559 to binary; that is **1000101111**. The LSB in this case is **1**, which means that this is a major alarm. After removing the LSB, you are left with **100010111**, which is equal to 279 in decimal. This is the actual error code, its meaning can be found from the following list:

Chip Type: L Chip	**Code**
CMALARM_LCHIP_LOUT_DESRD_PARITY_ERR	1
CMALARM_LCHIP_LOUT_DESRD_UNINIT_ERR	2
CMALARM_LCHIP_LOUT_DESRD_ILLEGALLINK_ERR	3

CMALARM_LCHIP_LOUT_DESRD_ILLEGALSIZE_ERR	4
CMALARM_LCHIP_LOUT_HDRF_TOERR_ERR	5
CMALARM_LCHIP_LOUT_HDRF_PARITY_ERR	6
CMALARM_LCHIP_LOUT_HDRF_UCERR_ERR	7
CMALARM_LCHIP_LOUT_NLIF_CRCDROP_ERR	8
CMALARM_LCHIP_LOUT_NLIF_CRCERR_ERR	9
CMALARM_LCHIP_UCODE_TIMEOUT_ERR	10
CMALARM_LCHIP_LIN_SRCTL_ACCT_DROP_ERR	11
CMALARM_LCHIP_LIN_SRCTL_ACCT_ADDR_SIZE_ERR	12
CMALARM_LCHIP_SRAM_PARITY_ERR	13
CMALARM_LCHIP_UCODE_OVFLW_ERR	14
CMALARM_LCHIP_LOUT_HDRF_MTU_ERR	15

Chip Type: M Chip	**Code**
CMALARM_MCHIP_ECC_UNCORRECT_ERR	128

Chip Type: N Chip	**Code**
CMALARM_NCHIP_RDDMA_JBUS_TIMEOUT_ERR	256
CMALARM_NCHIP_RDDMA_FIFO_OVFLW_ERR	257
CMALARM_NCHIP_RDDMA_FIFO_UNFLW_ERR	258
CMALARM_NCHIP_RDDMA_SIZE_ERR	259
CMALARM_NCHIP_RDDMA_JBUS_CRC_ERR	260
CMALARM_NCHIP_WRDMA_PKTR_ERR	261
CMALARM_NCHIP_WRDMA_PKT_CRC_ERR	262

CMALARM_NCHIP_WRDMA_JBUS_TIMEOUT_ERR	263
CMALARM_NCHIP_WRDMA_FIFO_OVFLW_ERR	264
CMALARM_NCHIP_WRDMA_FIFO_UNFLW_ERR	265
CMALARM_NCHIP_WRDMA_PKT_LEN_ERR	266
CMALARM_NCHIP_WRDMA_JBUS_CRC_ERR	267
CMALARM_NCHIP_PKTR_DMA_AGE_ERR	268
CMALARM_NCHIP_PKTR_ICELLSIG_ERR	269
CMALARM_NCHIP_PKTR_FTTL_ERR	270
CMALARM_NCHIP_RODR_OFFSET_OVFLW_ERR	271
CMALARM_NCHIP_PKTR_TMO_CELL_ERR	272
CMALARM_NCHIP_PKTR_TMO_OUTRANGE_ERR	273
CMALARM_NCHIP_PKTR_MD_REQUEST_Q_OVFLW_ERR	274
CMALARM_NCHIP_PKTR_DMA_BUFFER_OVFLW_ERR	275
CMALARM_NCHIP_PKTR_GRT_OVFLW_ERR	276
CMALARM_NCHIP_FRQ_ERR	277
CMALARM_NCHIP_RODR_IN_Q_OVFLW_ERR	278
CMALARM_NCHIP_DBUF_CRC_ERR	279

Chip Type: R Chip	**Code**
CMALARM_RCHIP_SRAM_PARITY_ERR	512

Chip Type: R Chip	**Code**
CMALARM_ICHIP_WO_DESRD_ID_ERR	601
CMALARM_ICHIP_WO_DESRD_DATA_ERR	602

CMALARM_ICHIP_WO_DESRD_OFLOW_ERR	603
CMALARM_ICHIP_WO_HDRF_UCERR_ERR	604
CMALARM_ICHIP_WO_HDRF_MTUERR_ERR	605
CMALARM_ICHIP_WO_HDRF_PARITY_ERR	606
CMALARM_ICHIP_WO_HDRF_TOERR_ERR	607
CMALARM_ICHIP_WO_IP_CRC_ERR	608
CMALARM_ICHIP_WO_IP_INTER_ERR	609
CMALARM_ICHIP_WI_WAN_TIMEOUT_ERR	625
CMALARM_ICHIP_WI_FAB_TIMEOUT_ERR	626
CMALARM_ICHIP_RLDRAM_BIST_ERR	630
CMALARM_ICHIP_SDRAM_BIST_ERR	631
CMALARM_ICHIP_RLDRAM_PARITY_ERR	632
CMALARM_ICHIP_SDRAM_UNCORRECT_ERR	633
CMALARM_ICHIP_SDRAM_CORRECT_ERR	634
CMALARM_ICHIP_FUSE_DONE_ERR	635

According to the table above, the **279** error code corresponds to **CMALARM_NCHIP_DBUF_CRC_ERR**; this means that new CRC errors were seen on the NCHIP of this particular FPC, which is FPC as per the logs.

If you do not want to convert decimal to binary and vice versa, you may use the following shortcut:

For major alarms, the **Actual Error Code = (Error Code - 1)/2**, where **Error Code** is the code that you get in the log message. For example, if you get the following log:

```
    Apr 12 08:04:10 send: red alarm set, device FPC 6, reason FPC 6 Major Errors -
Error code: 257
```

Actual Error Code = (257-1)/2 = 128. Similarly, for minor alarms, Actual Error Code = (Error Code)/2

NOTE: Starting in Junos OS Release 18.2R1, on MX Series routers, the **show chassis alarms** output does not display error codes for PFE-related errors. You can use the following commands to view more details of the errors that caused the alarms:

- **show chassis errors active**
- **show chassis errors active detail**

Required Privilege Level
view

RELATED DOCUMENTATION

Configuring an RMON Alarm Entry and Its Attributes

Chassis Conditions That Trigger Alarms | **208**

List of Sample Output

show chassis alarms (Alarms Active) on page 711
show chassis alarms (No Alarms Active) on page 712
show chassis alarms (Fan Tray) on page 712
show chassis alarms (MX150) on page 712
show chassis alarms (MX104 Router) on page 712
show chassis alarms (MX2010 Router) on page 712
show chassis alarms (MX2020 Router) on page 713
show chassis alarms (MX10003 Router) on page 713
show chassis alarms (MX204 Router) on page 713
show chassis alarms (MX2008 Router) on page 714
show chassis alarms (MX960, MX480, and MX240 Routers showing Major CB Failure) on page 714
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show chassis alarms node-device (Alarms Active on the QFabric System) on page 720
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show chassis alarms (Alarms Active on an ACX2000 Universal Metro Router) on page 724
show chassis alarms (Active Alarm to Indicate Status of the Bad SCB Clock on MX Series) on page 724
show chassis alarms (Alarms active on a PTX1000 Packet Transport Router) on page 725
show chassis alarms (MX10003 Router) on page 725
show chassis alarms (Alarms active on a MX10008 Router) on page 726

Output Fields

Table 34 on page 711 lists the output fields for the **show chassis alarms** command. Output fields are listed in the approximate order in which they appear.

Table 34: show chassis alarms Output Fields

Field Name	Field Description
Alarm time	Date and time the alarm was first recorded.
Class	Severity class for this alarm: **Minor** or **Major**.
Description	Information about the alarm.

Sample Output

show chassis alarms (Alarms Active)

```
user@host> show chassis alarms
```

```
3 alarms are currently active
Alarm time               Class  Description
2000-02-07 10:12:22 UTC Major fxp0: ethernet link down
```

```
2000-02-07 10:11:54 UTC Minor YELLOW ALARM - PEM 1 Removed
2000-02-07 10:11:03 UTC Minor YELLOW ALARM - Lower Fan Tray Removed
```

show chassis alarms (No Alarms Active)

```
user@host> show chassis alarms
```

```
No alarms are currently active
```

show chassis alarms (Fan Tray)

```
user@host> show chassis alarms
```

```
4 alarms currently active
Alarm time               Class  Description
2010-11-11 20:27:38 UTC  Major  Side Fan Tray 7 Failure
2010-11-11 20:27:13 UTC  Minor  Side Fan Tray 7 Overspeed
2010-11-11 20:27:13 UTC  Major  Side Fan Tray 5 Failure
2010-11-11 20:27:13 UTC  Major  Side Fan Tray 0 Failure
```

show chassis alarms (MX150)

```
user@host > show chassis alarms
```

```
1 alarms currently active
Alarm time               Class  Description
2016-06-04 01:49:43 PDT  Major  Fan Tray 1 Fan 0 failed
```

show chassis alarms (MX104 Router)

```
user@host >show chassis alarms
```

```
1 alarms currently active
Alarm time               Class  Description
2013-06-05 14:43:31 IST  Minor  Backup RE Active
```

show chassis alarms (MX2010 Router)

```
user@host> show chassis alarms
```

```
7 alarms currently active
Alarm time               Class  Description
2012-08-07 00:46:06 PDT  Major  Fan Tray 2 Failure
2012-08-06 18:24:36 PDT  Minor  Redundant feed missing for PSM 6
2012-08-06 07:41:04 PDT  Minor  Redundant feed missing for PSM 8
2012-08-04 02:42:06 PDT  Minor  Redundant feed missing for PSM 5
2012-08-03 21:14:24 PDT  Minor  Loss of communication with Backup RE
2012-08-03 12:26:03 PDT  Minor  Redundant feed missing for PSM 4
2012-08-03 10:40:18 PDT  Minor  Redundant feed missing for PSM 7
```

show chassis alarms (MX2020 Router)

```
user@host> show chassis alarms
```

```
1 alarms currently active
Alarm time Class Description
2012-10-03 12:14:59 PDT Minor Plane 0 not online
```

show chassis alarms (MX10003 Router)

```
user@host> show chassis alarms
```

```
9 alarms currently active
Alarm time               Class  Description
2017-07-13 21:50:31 PDT  Major  FPC 1 Temperature Hot
2017-07-13 21:50:04 PDT  Minor  FPC 1 PIC 1 Invalid port profile configuration
2017-07-13 21:49:13 PDT  Minor  FPC 1 PIC 0 Invalid port profile configuration
2017-07-13 21:48:54 PDT  Major  FPC 0 Temperature Hot
2017-07-13 21:43:54 PDT  Minor  CB 1 Voltage Sensor ADS7830_0x4B Sensor Failed
2017-07-13 21:43:54 PDT  Minor  CB 0 Voltage Sensor ADS7830_0x4B Sensor Failed
2017-07-13 21:43:31 PDT  Minor  Loss of communication with Backup RE
```

Starting in Junos OS Release 19.2R1, the MX10003 routers do not raise an alarm if a Power Entry Module (PEM) slot is empty. However, when the number of operational PEMs goes below 2, the router raises a major alarm. This alarm is cleared when the required number of PEMs are made available.

show chassis alarms (MX204 Router)

```
user@host> show chassis alarms
```

```
1 alarms currently active
Alarm time               Class  Description
2017-11-05 22:13:03 PST  Major  PEM 0 Not Present
```

show chassis alarms (MX2008 Router)

user@host>**show chassis alarms**

```
No alarms currently active
```

show chassis alarms (MX960, MX480, and MX240 Routers showing Major CB Failure)

A major CB 0 failure alarm occurs in the event of a bad CB (unknown or mismatched CBs do not trigger this alarm in Junos Release OS 12.3R9 and later). Following GRES or recovery, if the hardware issue persists, the traffic moves to the good CB and continues. If the alarm was triggered by something transient like a power zone budget on GRES, bringing the CB back online can clear the alarm. Otherwise, replace the bad CB. Note that fabric link speed is not impacted by an offline SCB. The alarm migh be raised on CB0, CB1, and CB2.

user@host> **show chassis alarms**

```
6 alarms currently active
Alarm time               Class  Description
2014-10-31 16:49:41 EDT  Major  PEM 3 Not OK
2014-10-31 16:49:41 EDT  Major  PEM 2 Not OK
2014-10-31 16:49:31 EDT  Major  CB 0 Failure
2014-10-31 16:49:31 EDT  Minor  CB 0 Fabric Chip 0 Not Online
2014-10-31 16:49:31 EDT  Minor  CB 0 Fabric Chip 1 Not Online
2014-10-31 16:49:31 EDT  Minor  Backup RE Active
```

show chassis alarms (PTX10008 Router)

user@host>**show chassis alarms**

```
12 alarms currently active
Alarm time               Class  Description
2017-05-09 01:38:55 PDT  Minor  Loss of communication with Backup RE
2017-05-05 06:49:57 PDT  Major  FPC 5 LCPU Temp Sensor Access Failed
2017-05-05 06:49:57 PDT  Major  FPC 5 PE2 Temp Sensor Hot
2017-05-05 06:49:57 PDT  Major  FPC 5 PE1 Temp Sensor Hot
2017-05-05 06:49:57 PDT  Major  FPC 5 PE0 Temp Sensor Hot
```

```
2017-05-05 06:49:57 PDT  Major  FPC 5 Exhaust-C Temp Sensor Hot
2017-05-05 06:49:57 PDT  Major  FPC 5 Exhaust-B Temp Sensor Hot
2017-05-05 06:49:57 PDT  Major  FPC 5 Exhaust-A Temp Sensor Hot
2017-05-05 06:49:57 PDT  Major  FPC 5 Intake-B Temp Sensor Access Failed
2017-05-05 06:49:57 PDT  Major  FPC 5 Intake-A Temp Sensor Access Failed
2017-05-05 06:49:57 PDT  Major  Fan Tray 0 Fan 5 running at lower speed
2017-05-05 06:49:57 PDT  Major  Fan Tray 0 Fan 4 running at lower speed
```

show chassis alarms (T4000 Router)

`user@host>` **show chassis alarms**

```
9 alarms currently active
Alarm time               Class  Description
2007-06-02 01:41:10 UTC  Minor  RE 0 Not Supported
2007-06-02 01:41:10 UTC  Minor  CB 0 Not Supported
2007-06-02 01:41:10 UTC  Minor  Mixed Master and Backup RE types
2007-05-30 19:37:33 UTC  Major  SPMB 1 not online
2007-05-30 19:37:29 UTC  Minor  Front Bottom Fan Tray Absent
2007-05-30 19:37:13 UTC  Major  PEM 1 Input Failure
2007-05-30 19:37:13 UTC  Major  PEM 0 Not OK
2007-05-30 19:37:03 UTC  Major  PEM 0 Improper for Platform
2007-05-30 19:37:03 UTC  Minor  Backup RE Active
```

show chassis alarms (Unreachable Destinations Present on a T Series Router)

`user@host>` **show chassis alarms**

```
10 alarms currently active
Alarm time               Class  Description
2011-08-30 18:43:53 PDT  Major  FPC 7 has unreachable destinations
2011-08-30 18:43:53 PDT  Major  FPC 5 has unreachable destinations
2011-08-30 18:43:52 PDT  Major  FPC 3 has unreachable destinations
2011-08-30 18:43:52 PDT  Major  FPC 2 has unreachable destinations
2011-08-30 18:43:52 PDT  Minor  SIB 0 Not Online
2011-08-30 18:43:33 PDT  Minor  SIB 4 Not Online
2011-08-30 18:43:28 PDT  Minor  SIB 3 Not Online
2011-08-30 18:43:05 PDT  Minor  SIB 2 Not Online
2011-08-30 18:43:28 PDT  Minor  SIB 1 Not Online
2011-08-30 18:43:05 PDT  Major  PEM 1 Not Ok
```

show chassis alarms (FPC Offline Due to Unreachable Destinations on a T Series Router)

```
user@host> show chassis alarms
```

```
10 alarms currently active
Alarm time               Class  Description
2011-08-30 18:43:53 PDT  Major  FPC 7 offline due to unreachable destinations
2011-08-30 18:43:53 PDT  Major  FPC 5 offline due to unreachable destinations
2011-08-30 18:43:52 PDT  Major  FPC 3 offline due to unreachable destinations
2011-08-30 18:43:52 PDT  Major  FPC 2 offline due to unreachable destinations
2011-08-30 18:43:52 PDT  Minor  SIB 0 Not Online
2011-08-30 18:43:33 PDT  Minor  SIB 4 Not Online
2011-08-30 18:43:28 PDT  Minor  SIB 3 Not Online
2011-08-30 18:43:05 PDT  Minor  SIB 2 Not Online
2011-08-30 18:43:28 PDT  Minor  SIB 1 Not Online
2011-08-30 18:43:05 PDT  Major  PEM 1 Not Ok
```

show chassis alarms (SCG Absent on a T Series Router)

```
user@host> show chassis alarms
```

```
4 alarms currently active
Alarm time               Class  Description
2011-01-23 21:42:46 PST  Major  SCG 0 NO EXT CLK MEAS-BKUP SCG ABS
```

show chassis alarms (Alarms Active on a TX Matrix Router)

```
user@host> show chassis alarms
```

```
scc-re0:
--------------------------------------------------------------------------
8 alarms currently active
Alarm time               Class  Description
2004-08-05 18:43:53 PDT  Minor  LCC 0 Minor Errors
2004-08-05 18:43:53 PDT  Minor  SIB 3 Not Online
2004-08-05 18:43:52 PDT  Major  SIB 2 Absent
2004-08-05 18:43:52 PDT  Major  SIB 1 Absent
2004-08-05 18:43:52 PDT  Major  SIB 0 Absent
2004-08-05 18:43:33 PDT  Major  LCC 2 Major Errors
2004-08-05 18:43:28 PDT  Major  LCC 0 Major Errors
2004-08-05 18:43:05 PDT  Minor  LCC 2 Minor Errors
lcc0-re0:
--------------------------------------------------------------------------
5 alarms currently active
```

```
Alarm time               Class  Description
2004-08-05 18:43:53 PDT  Minor  SIB 3 Not Online
2004-08-05 18:43:49 PDT  Major  SIB 2 Absent
2004-08-05 18:43:49 PDT  Major  SIB 1 Absent
2004-08-05 18:43:49 PDT  Major  SIB 0 Absent
2004-08-05 18:43:28 PDT  Major  PEM 0 Not OK
lcc2-re0:
--------------------------------------------------------------------------
5 alarms currently active
Alarm time               Class  Description
2004-08-05 18:43:35 PDT  Minor  SIB 3 Not Online
2004-08-05 18:43:33 PDT  Major  SIB 2 Absent
2004-08-05 18:43:33 PDT  Major  SIB 1 Absent
2004-08-05 18:43:33 PDT  Major  SIB 0 Absent
2004-08-05 18:43:05 PDT  Minor  PEM 1 Absent
```

show chassis alarms (TX Matrix Plus router with 3D SIBs)

`user@host>` **show chassis alarms**

```
sfc0-re0:
--------------------------------------------------------------------------
Alarm time               Class  Description

2014-04-08 14:35:13 IST  Minor  FPM 0 SFC Config Size Changed
2014-04-08 14:32:58 IST  Major  Fan Tray Failure
2014-04-08 14:31:53 IST  Major  SIB F13 6 Fault
2014-04-08 14:31:43 IST  Major  SIB F13 11 Fault
2014-04-08 14:31:08 IST  Minor  Check SIB F13 12 CXP 14 Fbr Cbl
2014-04-08 14:31:08 IST  Minor  Check SIB F13 12 CXP 8 Fbr Cbl
2014-04-08 14:31:08 IST  Minor  Check SIB F13 12 CXP 3 Fbr Cbl
2014-04-08 14:31:08 IST  Major  SIB F13 12 CXP 15 fault
2014-04-08 14:31:08 IST  Minor  SIB F13 12 CXP 14 LOL
2014-04-08 14:31:08 IST  Minor  Check SIB F13 12 CXP 14
2014-04-08 14:31:08 IST  Major  SIB F13 12 CXP 10 fault
2014-04-08 14:31:08 IST  Minor  SIB F13 12 CXP 8 LOL
2014-04-08 14:31:08 IST  Minor  Check SIB F13 12 CXP 8
2014-04-08 14:31:08 IST  Major  SIB F13 12 CXP 7 fault
2014-04-08 14:31:08 IST  Major  SIB F13 12 CXP 4 fault
2014-04-08 14:31:08 IST  Minor  SIB F13 12 CXP 3 LOL
2014-04-08 14:31:08 IST  Minor  Check SIB F13 12 CXP 3
2014-04-08 14:31:08 IST  Minor  Check SIB F13 6 CXP 14 Fbr Cbl
2014-04-08 14:31:08 IST  Minor  Check SIB F13 6 CXP 12 Fbr Cbl
2014-04-08 14:31:08 IST  Minor  Check SIB F13 6 CXP 8 Fbr Cbl
```

```
2014-04-08 14:31:08 IST  Minor  Check SIB F13 6 CXP 6 Fbr Cbl
2014-04-08 14:31:08 IST  Minor  Check SIB F13 6 CXP 4 Fbr Cbl
2014-04-08 14:31:08 IST  Minor  Check SIB F13 6 CXP 2 Fbr Cbl
2014-04-08 14:31:08 IST  Minor  Check SIB F13 6 CXP 0 Fbr Cbl
2014-04-08 14:31:08 IST  Minor  SIB F13 6 CXP 14 LOL
2014-04-08 14:31:08 IST  Minor  Check SIB F13 6 CXP 14
2014-04-08 14:31:08 IST  Minor  SIB F13 6 CXP 12 LOL
2014-04-08 14:31:08 IST  Minor  Check SIB F13 6 CXP 12
2014-04-08 14:31:08 IST  Major  SIB F13 6 CXP 10 fault
2014-04-08 14:31:08 IST  Minor  SIB F13 6 CXP 8 LOL
2014-04-08 14:31:08 IST  Minor  Check SIB F13 6 CXP 8
2014-04-08 14:31:08 IST  Minor  SIB F13 6 CXP 6 LOL
2014-04-08 14:31:08 IST  Minor  Check SIB F13 6 CXP 6
2014-04-08 14:31:08 IST  Minor  SIB F13 6 CXP 4 LOL
2014-04-08 14:31:08 IST  Minor  Check SIB F13 6 CXP 4
2014-04-08 14:31:08 IST  Minor  SIB F13 6 CXP 2 LOL
2014-04-08 14:31:08 IST  Minor  Check SIB F13 6 CXP 2
2014-04-08 14:31:08 IST  Minor  SIB F13 6 CXP 0 LOL
2014-04-08 14:31:08 IST  Minor  Check SIB F13 6 CXP 0
2014-04-08 14:31:08 IST  Minor  SIB F13 12 CXP 14 XC HSL Link Error
2014-04-08 14:29:27 IST  Minor  LCC 0 Minor Errors
2014-04-08 14:28:37 IST  Major  LCC 0 Major Errors
2014-04-08 14:28:37 IST  Major  LCC 2 Major Errors
2014-04-08 14:28:37 IST  Minor  LCC 2 Minor Errors
2014-04-08 14:28:24 IST  Major  SIB F2S 4/6 Absent
2014-04-08 14:28:24 IST  Major  SIB F2S 4/4 Absent
2014-04-08 14:28:24 IST  Major  SIB F2S 4/2 Absent
2014-04-08 14:28:24 IST  Major  SIB F2S 4/0 Absent
2014-04-08 14:28:24 IST  Major  SIB F2S 3/6 Absent
2014-04-08 14:28:24 IST  Major  SIB F2S 3/4 Absent
2014-04-08 14:28:24 IST  Major  SIB F2S 3/2 Absent
2014-04-08 14:28:24 IST  Major  SIB F2S 3/0 Absent
2014-04-08 14:28:24 IST  Major  SIB F13 9 Absent
2014-04-08 14:28:24 IST  Major  SIB F13 8 Absent
2014-04-08 14:28:24 IST  Major  SIB F13 7 Absent
2014-04-08 14:28:24 IST  Major  SIB F13 4 Absent
2014-04-08 14:28:24 IST  Major  SIB F13 1 Absent
2014-04-08 14:28:22 IST  Major  PEM 0 Input Failure
2014-04-08 14:28:22 IST  Major  PEM 0 Not OK

lcc0-re0:
--------------------------------------------------------------------------
12 alarms currently active
Alarm time               Class  Description
```

```
2014-04-08 14:36:08 IST  Minor  CB 1  M/S Switch Changed
2014-04-08 14:36:08 IST  Minor  CB 1  CHASSIS ID Changed
2014-04-08 14:35:43 IST  Minor  CB 0  M/S Switch Changed
2014-04-08 14:35:43 IST  Minor  CB 0  CHASSIS ID Changed
2014-04-08 14:29:30 IST  Minor  SIB 4 Not Online
2014-04-08 14:29:30 IST  Minor  SIB 3 Not Online
2014-04-08 14:29:30 IST  Minor  SIB 2 Not Online
2014-04-08 14:29:24 IST  Major  Rear Fan Tray Failure
2014-04-08 14:29:24 IST  Major  Front Bottom Fan Tray Improper for Platform
2014-04-08 14:29:24 IST  Major  Front Top Fan Tray Improper for Platform
2014-04-08 14:28:37 IST  Major  SIB 4 Absent
2014-04-08 14:28:37 IST  Major  SIB 3 Absent

lcc2-re0:
--------------------------------------------------------------------------
12 alarms currently active
Alarm time               Class  Description
2014-04-08 14:36:02 IST  Minor  CB 1  M/S Switch Changed
2014-04-08 14:36:02 IST  Minor  CB 1  CHASSIS ID Changed
2014-04-08 14:35:42 IST  Minor  CB 0  M/S Switch Changed
2014-04-08 14:34:42 IST  Minor  CB 0  CHASSIS ID Changed
2014-04-08 14:29:29 IST  Minor  SIB 0 CXP 7 Unsupported Optics
2014-04-08 14:29:27 IST  Major  Front Bottom Fan Tray Improper for Platform
2014-04-08 14:29:27 IST  Major  Front Top Fan Tray Improper for Platform
2014-04-08 14:29:25 IST  Minor  SIB 4 Not Online
2014-04-08 14:29:25 IST  Minor  SIB 3 Not Online
2014-04-08 14:28:47 IST  Major  PEM 0 Not OK
2014-04-08 14:28:36 IST  Major  SIB 2 Absent
2014-04-08 14:28:36 IST  Minor  Host 0 Boot from alternate media

lcc6-re0:
--------------------------------------------------------------------------
2 alarms currently active
Alarm time               Class  Description
2013-11-06 04:03:56 PST  Minor  SIB 1 CXP 0 XC HSL Link Error
2013-11-06 03:49:32 PST  Major  PEM 1 Not OK
```

show chassis alarms (Alarms on a T4000 Router After the enhanced-mode Statement is Enabled)

To enable improved virtual private LAN service (VPLS) MAC address learning on T4000 routers, you must include the **enhanced-mode** statement at the **[edit chassis network-services]** hierarchy level and reboot the router. When router reboots, only the T4000 Type 5 FPCs are required to be present on the router. If there are any other FPCs (apart from T4000 Type 5 FPCs) on the T4000 router, such FPCs become

offline, and FPC misconfiguration alarms are generated. The **show chassis alarm** command output displays FPC misconfiguration (**FPC *fpc-slot* misconfig**) as the reason for the generation of the alarms.

```
user@host> show chassis alarms
```

```
2 alarms currently active
  Alarm time               Class  Description
  2011-10-22 10:10:47 PDT  Major  FPC 1 misconfig
  2011-10-22 10:10:46 PDT  Major  FPC 0 misconfig
```

show chassis alarms (Backup Routing Engine)

```
user@host> show chassis alarms
```

```
2 alarms are currently active
Alarm time               Class  Description
2005-04-07 10:12:22 PDT  Minor  Host 1 Boot from alternate media
2005-04-07 10:11:54 PDT  Major  Host 1 compact-flash missing in Boot List
```

show chassis alarms (EX Series Switch)

```
user@switch> show chassis alarms
```

```
 4 alarms currently active
Alarm time               Class  Description
2014-03-12 15:36:09 UTC  Minor  Require a Fan Tray upgrade
2014-03-12 15:00:02 UTC  Major  PEM 0 Input Failure
2014-03-12 15:00:02 UTC  Major  PEM 0 Not OK
2014-03-12 14:59:51 UTC  Minor  Host 1 Boot from alternate media
```

show chassis alarms (Alarms Active on the QFX Series and OCX Series Switches)

```
user@switch> show chassis alarms
```

```
1 alarms currently active
Alarm time               Class  Description
2012-03-05 2:10:24 UTC  Major  FPC 0 PEM 0 Airflow not matching Chassis Airflow
```

show chassis alarms node-device (Alarms Active on the QFabric System)

```
user@switch> show chassis alarms node-device Test
```

```
node-device ED3694
3 alarms currently active
Alarm time               Class  Description
2011-08-24 16:04:15 UTC  Major  Test:fte-0/1/2: Link down
2011-08-24 16:04:14 UTC  Major  Test:fte-0/1/0: Link down
2011-08-24 14:21:14 UTC  Major  Test PEM 0 is not supported/powered
```

show chassis alarms (Alarms Active on the QFabric System)

`user@switch>` **show chassis alarms**

```
IC-1:
--------------------------------------------------------------------------
1 alarms currently active
Alarm time               Class  Description
2011-08-24 16:04:15 UTC  Minor  Backup RE Active

Test:
--------------------------------------------------------------------------
3 alarms currently active
Alarm time               Class  Description
2011-08-24 16:04:15 UTC  Major  Test:fte-0/1/2: Link down
2011-08-24 16:04:14 UTC  Major  Test:fte-0/1/0: Link down
2011-08-24 14:21:14 UTC  Major  Test PEM 0 is not supported/powered

SNG-0:
--------------------------------------------------------------------------

NW-NG-0:
--------------------------------------------------------------------------
1 alarms currently active
Alarm time               Class  Description
2011-08-24 15:49:27 UTC  Major  Test PEM 0 is not supported/powered
```

show chassis alarms (Alarms Active on an EX8200 Switch)

`user@switch>` **show chassis alarms**

```
6 alarms currently active
Alarm time               Class  Description
2010-12-02 19:15:22 UTC  Major  Fan Tray Failure
```

```
2010-12-02 19:15:22 UTC  Major  Fan Tray Failure
2010-12-02 19:15:14 UTC  Minor  Check CB 0 Fabric Chip 1 on Plane/FPC/PFE: 1/5/0,
 1/5/1, 1/5/2, 1/5/3, 1/7/0, 1/7/1, 1/7/2, 1/7/3, 2/5/0, 2/5/1, ...
2010-12-02 19:15:14 UTC  Minor  Check CB 0 Fabric Chip 0 on Plane/FPC/PFE: 1/5/0,
 1/5/1, 1/5/2, 1/5/3, 1/7/0, 1/7/1, 1/7/2, 1/7/3, 2/5/0, 2/5/1, ...
2010-12-02 19:14:18 UTC  Major  PSU 1 Output Failure
2010-12-02 19:14:18 UTC  Minor  Loss of communication with Backup RE
```

show chassis alarms (EX9251 Switch)

```
user@switch> show chassis alarms
```

```
 2 alarms currently active
Alarm time               Class  Description
2018-03-08 05:13:10 PST  Major  PEM 0 Not Powered
2018-03-08 05:13:10 PST  Major  Fan Tray 2 is not present
```

show chassis alarms (EX9253 Switch)

```
user@switch> show chassis alarms
```

```
6 alarms currently active
Alarm time               Class  Description
2018-03-07 01:09:01 PST  Major  Power Budget:Insufficient Power
2018-03-06 23:56:34 PST  Minor  Loss of communication with Backup RE
2018-02-15 00:48:10 PST  Minor  PEM 3 Not Present
2018-02-15 00:48:10 PST  Minor  PEM 2 Not Present
2018-02-15 00:48:07 PST  Major  PEM 4 Not Powered
2018-02-15 00:48:07 PST  Major  PEM 1 Not Powered
```

show chassis alarms (Alarms Active on a PTX5000 Packet Transport Router)

```
user@host> show chassis alarms
```

```
23 alarms currently active
Alarm time               Class  Description
2011-07-12 16:22:05 PDT  Minor  No Redundant Power for Rear Chassis
2011-07-12 16:22:05 PDT  Major  PDU 0 PSM 1 Not OK
2011-07-12 16:21:57 PDT  Minor  No Redundant Power for Fan 0-2
2011-07-12 16:21:57 PDT  Major  PDU 0 PSM 0 Not OK
2011-07-12 15:56:06 PDT  Major  PDU 1 PSM 2 Not OK
```

```
2011-07-12 15:56:06 PDT  Minor  No Redundant Power for FPC 0-7
2011-07-12 15:56:06 PDT  Major  PDU 0 PSM 3 Not OK
2011-07-12 15:28:20 PDT  Major  PDU 0 PSM 2 Not OK
2011-07-12 15:19:14 PDT  Minor  Backup RE Active
```

show chassis alarms (Mix of PDUs Alarm on a PTX5000 Packet Transport Router with FPC2-PTX-P1A)

All PDUs installed on a PTX5000 router must be of the same type. The **Mix of PDUs** or **Power Manager Non Operational** alarm is raised when different types of PDUs are installed on a PTX5000 router.

`user@host>` **show chassis alarms**

```
15 alarms currently active
Alarm time               Class  Description
2013-03-19 23:03:53 PDT  Minor  No Redundant Power
2013-03-19 23:03:48 PDT  Minor  Mix of PDUs
2013-03-19 23:03:47 PDT  Minor  PDU 1 PSM 3 Absent
2013-03-19 23:03:47 PDT  Minor  PDU 1 PSM 2 Absent
2013-03-19 23:03:47 PDT  Minor  PDU 1 PSM 1 Absent
2013-03-19 23:03:47 PDT  Minor  PDU 1 PSM 0 Absent
2013-03-19 23:03:46 PDT  Major  No CG Online
```

show chassis alarms (PDU Converter Failed Alarm on a PTX5000 Packet Transport Router with FPC2-PTX-P1A)

The **PDU Converter Failed** alarm is raised when one or more 36 V booster converter of a DC PDU fails. If two or more 36 V booster converter fails, fan trays fail and the router might get over heated. Therefore, when this alarm is raised, check the PDU and replace it, if required.

`user@host>` **show chassis alarms**

```
11 alarms currently active
Alarm time               Class  Description
2013-12-11 22:14:13 PST  Minor  No Redundant Power for System
2013-12-11 22:14:10 PST  Major  PDU 0 PSM 7 Not OK
2013-12-11 22:14:10 PST  Major  PDU 0 PSM 6 Not OK
2013-12-11 22:14:10 PST  Major  PDU 0 PSM 5 Not OK
2013-12-11 22:14:10 PST  Major  PDU 0 PSM 4 Not OK
2013-12-11 22:14:10 PST  Major  PDU 0 PSM 3 Not OK
2013-12-11 22:14:10 PST  Major  PDU 0 PSM 2 Not OK
2013-12-11 22:14:10 PST  Major  PDU 0 PSM 1 Not OK
2013-12-11 22:14:10 PST  Major  PDU 0 PSM 0 Not OK
```

```
2013-12-11 22:14:10 PST  Major  PDU 0 Not OK
2013-12-11 22:14:01 PST  Major  PDU 0 Converter Failed
```

show chassis alarms (No Power for System Alarm on a PTX5000 Packet Transport Router with FPC2-PTX-P1A)

user@host> **show chassis alarms**

```
8 alarms currently active
Alarm time               Class  Description
2013-11-19 01:58:41 PST  Major  No Power for System
2013-11-19 01:58:37 PST  Major  PDU 0 PSM 1 Not OK
2013-11-19 01:56:46 PST  Major  PDU 0 PSM 2 Not OK
2013-11-19 01:54:26 PST  Major  PDU 0 PSM 3 Not OK
2013-11-19 01:53:30 PST  Major  PDU 1 PSM 3 Not OK
2013-11-19 01:53:29 PST  Major  PDU 1 PSM 2 Not OK
2013-11-19 01:53:29 PST  Major  PDU 1 PSM 1 Not OK
2013-11-19 01:53:29 PST  Major  PDU 1 PSM 0 Not OK
```

show chassis alarms (Alarms Active on an ACX2000 Universal Metro Router)

user@host> **show chassis alarms**

```
7 alarms currently active
Alarm time               Class  Description
2012-05-22 11:19:09 UTC  Major  xe-0/3/1: Link down
2012-05-22 11:19:09 UTC  Major  xe-0/3/0: Link down
2012-05-22 11:19:09 UTC  Major  ge-0/1/7: Link down
2012-05-22 11:19:09 UTC  Major  ge-0/1/6: Link down
2012-05-22 11:19:09 UTC  Major  ge-0/1/3: Link down
2012-05-22 11:19:09 UTC  Major  ge-0/1/2: Link down
2012-05-22 11:19:09 UTC  Major  ge-0/1/1: Link down
```

show chassis alarms (Active Alarm to Indicate Status of the Bad SCB Clock on MX Series)

user@host> **show chassis alarms**

```
1 alarm currently active
Alarm time               Class  Description
2013-08-06 07:48:35 PDT  Major  CB 0 19.44 MHz clock failure
```

show chassis alarms (Alarms active on a PTX1000 Packet Transport Router)

```
user@host> show chassis alarms
```

```
2 alarms currently active
Alarm time               Class  Description
2004-08-10 00:55:49 UTC  Major  PEM 1 Not Present
2004-08-10 00:55:49 UTC  Major  PEM 0 Not Present
```

show chassis alarms (MX10003 Router)

If LCMD is down on the backup RE, then the following alarm is seen on the Master.

```
user@host> show chassis alarms
```

```
1 alarm currently active
Alarm time               Class  Description
2017-05-09 13:26:27 PDT  Major  VMHost RE 1 host application failed
```

If LCMD is down on the master, then following alarms are displayed.

```
user@host> show chassis alarms
```

```
3 alarms currently active
Alarm time               Class  Description
2017-05-10 14:12:21 PDT  Major  VMHost RE 0 host application failed
2017-05-10 14:12:16 PDT  Minor  LCM Peer Absent
2017-05-09 13:26:27 PDT  Major  VMHost RE 1 host application failed
```

If the LCMD process is crashing on the master, the system will switchover after one minute provided the backup RE LCMD connection is stable. The system will not switchover under the following conditions: if the backup RE LCMD connection is unstable or if the current master just gained mastership. When the master has just gained mastership, the switchover happens only after four minutes.

The LCM peer connection un-stable alarm is raised when the LCMD-CHASD IPC communication flaps three times within a small interval of two to three minutes. Once LCM peer connection un-stable alarm is raised, the connection status is monitored for two minutes.

```
user@host> show chassis alarms
```

```
7 alarms currently active
Alarm time               Class  Description
2017-05-29 10:12:17 PDT  Minor  LCM Peer Connection un-stable
2017-05-29 09:04:17 PDT  Minor  PEM 8 Not Powered
```

```
2017-05-29 09:04:17 PDT  Minor  PEM 9 Not Powered
2017-05-29 09:04:17 PDT  Minor  PEM 7 Not Powered
2017-05-29 09:04:17 PDT  Minor  PEM 3 Not Powered
2017-05-29 09:04:17 PDT  Minor  PEM 0 Not Powered
2017-05-29 09:04:08 PDT  Minor  Loss of communication with Backup RE
```

If there are no more connection flaps within this two minutes time interval, the LCM peer connection un-stable alarm is cleared.

```
6 alarms currently active
Alarm time               Class  Description
2017-05-29 09:04:17 PDT  Minor  PEM 8 Not Powered
2017-05-29 09:04:17 PDT  Minor  PEM 9 Not Powered
2017-05-29 09:04:17 PDT  Minor  PEM 7 Not Powered
2017-05-29 09:04:17 PDT  Minor  PEM 3 Not Powered
2017-05-29 09:04:17 PDT  Minor  PEM 0 Not Powered
2017-05-29 09:04:08 PDT  Minor  Loss of communication with Backup RE
```

A major alarm is raised even if there is on one PLL lock error, and this alarm can be cleared only through an FPC restart.

`user@host>` **show chassis alarms**

```
4 alarms currently active
Alarm time               Class  Description
2017-02-16 09:06:06 PDT  Major  FPC 0 Major Errors
2017-02-16 09:08:40 PDT  Major  FPC 1 Major Errors
2017-02-16 09:11:47 PST  Minor  Fan Tray 3 Pair 1 Outer Fan running at over speed
2017-02-16 09:11:47 PST  Minor  Fan Tray 3 Pair 1 Inner Fan running at over speed
```

show chassis alarms (Alarms active on a MX10008 Router)

`user@host>` **show chassis alarms**

```
13 alarms currently active
Alarm time               Class  Description
2018-07-17 05:48:08 PDT  Major  FPC 2 I2C Failure
2018-07-17 05:47:02 PDT  Minor  Mixed Master and Backup RE types
2018-07-17 05:47:01 PDT  Major  Fan Tray 0 Fan 5 Failed
2018-07-17 05:47:01 PDT  Major  Fan Tray 0 Fan 4 Failed
2018-07-17 05:47:01 PDT  Minor  PEM 5 Not Powered
2018-07-17 05:47:01 PDT  Minor  PEM 5 Feed 2 has no input source
```

```
2018-07-17 05:47:01 PDT  Minor  PEM 5 Feed 1 has no input source
2018-07-17 05:47:01 PDT  Minor  PEM 4 Not Powered
2018-07-17 05:47:01 PDT  Minor  PEM 4 Feed 2 has no input source
2018-07-17 05:47:01 PDT  Minor  PEM 4 Feed 1 has no input source
2018-07-17 05:47:01 PDT  Minor  PEM 3 Not Powered
2018-07-17 05:47:01 PDT  Minor  PEM 3 Feed 2 has no input source
2018-07-17 05:47:01 PDT  Minor  PEM 3 Feed 1 has no input source
```

show chassis cfeb

Syntax

```
show chassis cfeb
```

Release Information

Command introduced before Junos OS Release 7.4.

Description

(M7i and M10i routers only) Display status information about the Compact Forwarding Engine Board (CFEB).

Options

This command has no options.

Required Privilege Level

view

RELATED DOCUMENTATION

- request chassis cfeb | 607
- *Configuring CFEB Redundancy on the M10i Router*
- *CFEB Overview*

List of Sample Output

show chassis cfeb (M7i) on page 729
show chassis cfeb (M10i) on page 730

Output Fields

Table 35 on page 728 lists the output fields for the **show chassis cfeb** command. Output fields are listed in the approximate order in which they appear.

Table 35: show chassis cfeb Output Fields

Field Name	Field Description
State	Status of the CFEB: • **Online**—CFEB is online and running. • **Offline**—CFEB is powered down.

Table 35: show chassis cfeb Output Fields *(continued)*

Field Name	Field Description
Intake Temperature	Temperature of the air before flowing past the CFEB.
Exhaust Temperature	Temperature of the air after flowing past the CFEB.
CPU utilization	Percentage of CPU being used by the CFEB processor.
Interrupt utilization	Of the total CPU being used by the CFEB processor, the percentage being used for interrupts
Heap Utilization	Percentage of heap space (dynamic memory) being used by the CFEB processor. If this number exceeds 80 percent, there may be a software problem (memory leak).
Buffer Utilization	Percentage of buffer space being used by the CFEB processor for buffering internal messages
Total CPU DRAM	Amount of DRAM available to the CFEB CPU.
Internet Processor II	Information about the CFEB processor.
Start time	Time when the Routing Engine detected that the CFEB was running.
Uptime	How long the Routing Engine has been connected to the CFEB and, therefore, how long the Flexible PIC Concentrator (FPC) has been up and running.

Sample Output

show chassis cfeb (M7i)

```
user@host> show chassis cfeb
```

```
CFEB status:
  State                          Online
  Intake Temperature          27 degrees C / 80 degrees F
  Exhaust Temperature         33 degrees C / 91 degrees F
  CPU utilization              3 percent
  Interrupt utilization        0 percent
```

```
  Heap utilization             8 percent
  Buffer utilization          21 percent
  Total CPU DRAM             128 MB
  Internet Processor II          Version 1, Foundry IBM, Part number 164
  Start time:                    2003-06-11 11:41:22 PDT
  Uptime:                        1 hour, 39 minutes, 31 seconds
```

show chassis cfeb (M10i)

user@host> **show chassis cfeb**

```
CFEB status:
Slot 0 information:
  StateMaster
  Intake temperature                35 degrees C / 95 degrees F
  Exhaust temperature               43 degrees C / 109 degrees F
  CPU utilization                    3 percent
  Interrupt utilization              0 percent
  Heap utilization                  10 percent
  Buffer utilization                22 percent
  Total CPU DRAM                   128 MB
  Internet Processor II                Version 1, Foundry IBM, Part number 164
  Start time:                          2004-11-01 03:24:15 PST
  Uptime:                             12 hours, 56 minutes, 18 seconds
Slot 1 information:
  State                                Backup
```

show chassis cip

Syntax (TX Matrix Plus Router)

```
show chassis cip
```

Release Information

Command introduced in Junos OS Release 9.6.

Description

(TX Matrix Plus routers only) Display environmental information about the Connector Interface Panel (CIP) that provides Ethernet Control Plane connectivity to line-card chassis (LCCs), switch fabric chassis, and other devices.

Options

This command has no options.

Required Privilege Level

view

RELATED DOCUMENTATION

- request chassis cip | 609
- *Installing a T1600 CIP*
- *Installing a T640 CIP*
- *Installing a TX-CIP*
- *Installing an M320 CIP*
- *Installing an M320 CIP*
- *Installing the T320 CIP*
- *CIP Overview*

Output Fields

Table 36 on page 732 lists the output fields for the **show chassis cip** command. Output fields are listed in the approximate order in which they appear.

Table 36: show chassis cip Output Fields

Field Name	Field Description
Eswitch	Ethernet switch used to connect to the LCC or to a JCS1200: **0** or **1**.
Port	Physical port number of the Ethernet switch: • Port numbers: **4** to **8** on Ethernet switch **0** can be used to connect up to four (reserved for future use) other SFCs or optional JCS1200s. **NOTE:** The current configuration of the routing matrix based on a TX Matrix Plus router supports only one SFC. • Port numbers **0** to **15** on Ethernet switch **1** can be used to connect up to 16 LCCs. **NOTE:** The current configuration of a routing matrix based on a TX Matrix Plus router supports only up to eight LCCs. You can connect LCCs to the port numbers corresponding to LCC0 to LCC7 (**o** to **15)** on the Ethernet switch **1**.
Type	Type of CIP: • **XE**—Ethernet switch **0** ports used for connections to the SFC control plane or other devices such as JCS1200. • **GE**—Ethernet switch **1** ports used for connections to the LCC control plane.
Connected-to	Show control plane connection to a specific LCC or SFC.
Link	State of the connection to an LCC control plane, SFC control plane, or other devices: **Up** or **Down.**
Speed	Ethernet link speed.
Duplex	Type of Ethernet link: **Full** or **Half Duplex**.
Auto-neg	Status of autonegotiation for the CIP connection to the LCC, SFC, or other devices: **On** or **Off**.

show chassis cip (TX Matrix Plus Router)

`user@host>` **show chassis cip**

```
sfc0-cip0
Eswitch Port Type Connected-to     Link  Speed       Duplex Auto-Neg
```

```
0       4    XE   SFC1             Down  0          Full   Off
0       5    XE   SFC0             Down  0          Full   Off
0       6    XE   SFC3             Down  0          Full   Off
0       7    XE   SFC2             Down  0          Full   Off
0       8    XE   SFC4             Down  0          Full   Off
1       0    GE   LCC0             Up    1000Mbps     Full   On
1       1    GE   LCC8             Down  0          Half   On
1       2    GE   LCC1             Up    1000Mbps     Full   On
1       3    GE   LCC9             Down  0          Half   On
1       4    GE   LCC2             Up    1000Mbps     Full   On
1       5    GE   LCC10            Down  0          Half   On
1       6    GE   LCC3             Up    1000Mbps     Full   On
1       7    GE   LCC11            Down  0          Half   On
1       8    GE   LCC4             Down  0          Half   On
1       9    GE   LCC12            Down  0          Half   On
1       10   GE   LCC5             Down  0          Half   On
1       11   GE   LCC13            Down  0          Half   On
1       12   GE   LCC6             Down  0          Half   On
1       13   GE   LCC14            Down  0          Half   On
1       14   GE   LCC7             Down  0          Half   On
1       15   GE   LCC15            Down  0          Half   On
1       16   GE   GE17             Up    1000Mbps     Full   On
1       17   GE   GE16             Down  0          Half   On
```

show chassis craft-interface

List of Syntax

Syntax (MX Series Routers) on page 734
Syntax (MX104, MX2010, MX2020, MX2008, and ACX Series routers.) on page 734
Syntax (TX Matrix Routers) on page 734
Syntax (TX Matrix Plus Routers) on page 734

Syntax (MX Series Routers)

```
show chassis craft-interface
<all-members>
<local>
<member member-id>
```

Syntax (MX104, MX2010, MX2020, MX2008, and ACX Series routers.)

```
show chassis craft-interface
```

Syntax (TX Matrix Routers)

```
show chassis craft-interface
<lcc number | scc>
```

Syntax (TX Matrix Plus Routers)

```
show chassis craft-interface
<lcc number | sfc number>
```

Release Information

Command introduced before Junos OS Release 7.4.
sfc option for the TX Matrix Plus router introduced in Junos OS Release 9.6.
Command introduced in Junos OS Release 12.2 for ACX Series Universal Metro Routers.
Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 Universal Routing Platforms.
Command introduced in Junos OS Release 13.2 for MX104 Universal Routing Platforms.
Command introduced in Junos OS Release 17.2 for MX2008 Universal Routing Platforms.
Command introduced in Junos OS Release 17.3 for MX150 Router Appliance.

Description

For routers or switches that have a display on the craft interface, show the messages that are currently displayed. On all routers except for the M20 router, you must enter this command on the master Routing Engine.

Options

none—(TX Matrix, TX Matrix Plus routers, MX104, MX2010, MX2020, and MX2008 routers, and ACX Series routers only) On a TX Matrix router, show messages that are currently displayed on the craft interface on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, show messages that are currently displayed on the craft interface on the TX Matrix Plus router and its attached routers.

all-members—(MX Series routers only) (Optional) Display information currently on the craft interface for all members of the Virtual Chassis configuration.

lcc *number*—(TX Matrix, TX Matrix Plus routers only) (Optional) On a TX Matrix router, show messages that are currently displayed on the craft interface for a specified T640 router (line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, show messages that are currently displayed on the craft interface for a specified router (line-card chassis) that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

local—(MX Series routers only) (Optional) Display information currently on the craft interface for the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display information currently on the craft interface for the specified member of the Virtual Chassis configuration. For an MX Series Virtual Chassis, replace *member-id* with a value of 0 or 1.

scc—(TX Matrix router only) (Optional) Show messages that are currently displayed on the craft interface for the TX Matrix router (switch-card chassis).

sfc *number*—(TX Matrix Plus router only) (Optional) Show messages that are currently displayed on the craft interface for the respective TX Matrix Plus router (switch-fabric chassis). Replace *number* variable with **0**.

Required Privilege Level

view

RELATED DOCUMENTATION

clear chassis display message | 593

set chassis display message | 689

List of Sample Output

show chassis craft-interface (M20 Router) on page 738
show chassis craft-interface (M40 Router) on page 738
show chassis craft-interface (M120 Router) on page 739
show chassis craft-interface (M160 Router) on page 740
show chassis craft-interface (MX150) on page 741
show chassis craft-interface (MX104 Router) on page 741
show chassis craft-interface (MX2010 Router) on page 742
show chassis craft-interface (MX2020 Router) on page 743
show chassis craft-interface (MX2008 Router) on page 745
show chassis craft-interface (T4000 Router) on page 746
show chassis craft-interface (TX Matrix Routing Matrix) on page 747
show chassis craft-interface (TX Matrix Plus Routing Matrix) on page 750
show chassis craft-interface (TX Matrix Plus router with 3D SIBs) on page 754
show chassis craft-interface (ACX2000 Universal Metro Router) on page 756
show chassis craft-interface (ACX500 Router) on page 757

Output Fields

Table 37 on page 736 lists the output fields for the **show chassis craft-interface** command. Output fields are listed in the approximate order in which they appear.

Table 37: show chassis craft-interface Output Fields

Field Name	Field Description
LCD screen or **FPM Display Contents**	Contents of the Front Panel Module display: • ***router-name***—Name of the router. • **Up**—How long the router has been operational, in days, hours, minutes, and seconds. • ***message***—Information about the router traffic load, the power supply status, the fan status, and the temperature status. The display of this information changes every 2 seconds. If a text message has been created with the **set chassis display** command, this message appears on all four lines of the craft interface display. The display alternates between the text message and the standard system status messages every 2 seconds.

Table 37: show chassis craft-interface Output Fields *(continued)*

Field Name	Field Description
SFC Front Panel Switch Settings	(TX Matrix Plus Routers)—Display the SFC front panel switch settings: **SFC Chassis Number** and **Config Size** are settings on physical switches located on the left side of the craft interface of the TX Matrix Plus router. • **SFC Chassis Number**—This field always displays the value **00**. • **Config Size**—The value of this field is **0** for the TX Matrix Plus router. The value of this filed is **3** for TX Matrix Plus router with 3D SIBs.
Front Panel System LEDs	(MX104, MX2010, MX2020, and MX2008 Routers) Status of the Front Panel System LEDs. A dot (.) indicates the LED is not lit. An asterisk (*) indicates the LED is lit.
Front Panel Alarm Indicators	(MX104, MX2010, MX2020, and MX2008 Routers) Status of the Front Panel Alarm indicators. A dot (.) indicates the relay is off. An asterisk (*) indicates the relay is active.
Input Relay	Status of the configured input relay ports—0 through 3. The mode is normally open or closed. The status is clear or raised.
Output Relay	Status of the configured output ports—0 or 1. The mode is normally open or closed. The status is clear or raised.
Front Panel FPC LEDs	(MX2010, MX2020, and MX2008 Routers) Status of the Front Panel Flexible PIC Concentrator (FPC) LEDs. A dot (.) indicates the LED is not lit. An asterisk (*) indicates the LED is lit. On MX2010 and MX2008 routers, there are 10 (0-9) FPCs LEDs. On MX2020 routers, there are 20 (0-9 and 10-19) FPCs LEDs.
CB LEDs	Status of the Control Board (CB) LEDs. A dot (.) indicates the LED is not lit. An asterisk (*) indicates the LED is lit.
PS LEDs	(MX2010, MX2020, and MX2008 Routers) Status of the Power Supply (PS) LEDs. A dot (.) indicates the LED is not lit. An asterisk (*) indicates the LED is lit. On MX2010 and MX2008 routers, there are 9 (0-8) PS LEDs. On MX2020 routers, there are 18 (0-8 and 9-17) PS LEDs.
PS Status	(MX104 Routers) Status of the Power Supply (PS). Green indicates that the power supply is functioning. Red indicates that the power supply is not functioning. A dot (.) indicates the LED is not lit. An asterix (*) indicates the LED is lit.
FAN Tray LEDs	(MX2010, MX2020, and MX2008 Routers) Status of the Fan Tray LEDs. A dot (.) indicates the LED is not lit. An asterisk (*) indicates the LED is lit.
Front Panel SFB LEDs	(MX2010, MX2020, and MX2008 Routers) Status of the Front Panel Switch Fabric Boards (SFB) LEDs. A dot (.) indicates the LED is not lit. An asterisk (*) indicates the LED is lit.

Table 37: show chassis craft-interface Output Fields *(continued)*

Field Name	Field Description
Front Panel Chassis Info	(MX2010, MX2020, and MX2008 Routers) Information about the chassis such as the chassis number and role. User can set the chassis number in multi-chassis configurations.
MCS and SFM LEDs	Status of the Miscellaneous Control Subsystem (MCS) and Switching and Forwarding Module (SFM) LEDs. A dot (.) indicates the LED is not lit. An asterisk (*) indicates the LED is lit. When neither a dot nor an asterisk is displayed, there is no board in that slot.
SIB LEDs	Status of the Switch Interface Board (SIB) LEDs. A dot (.) indicates the LED is not lit. An asterisk (*) indicates the LED is lit.
SCG LEDs	Status of the SONET Clock Generator (SCG) LEDs. A dot (.) indicates the LED is not lit. An asterisk (*) indicates the LED is lit.

Sample Output

show chassis craft-interface (M20 Router)

```
user@host> show chassis craft-interface
```

```
Red alarm:     LED off, relay off
Yellow alarm:  LED on, relay on
Host OK LED:   On
Host fail LED: Off
FPCs     0  1  2  3
-------------------
Green  .  *  *.
Red    ....
LCD screen:
     +--------------------+
     |host                |
     |1 Alarm active      |
     |Y: FERF             |
     |                    |
     +--------------------+
```

show chassis craft-interface (M40 Router)

```
user@host> show chassis craft-interface
```

```
Front Panel LCD Display: enabled
Red alarm:     LED off, relay off
Yellow alarm:  LED off, relay off
Host OK LED:   On
Host Fail LED: Off
NICs    0  1  2  3  4  5  6  7
------------------------------
Green   *.  *.  *.  *.
Red   ........
LCD Screen:
     +--------------------+
     |host                |
     |Up: 27+18:52:37     |
     |                    |
     |52.649kpps Load     |
     +--------------------+
```

show chassis craft-interface (M120 Router)

`user@host>` **show chassis craft-interface**

```
Front Panel System LEDs:
Routing Engine    0    1
-------------------------
OK                *    .
Fail              .    .
Master            *    .

Front Panel Alarm Indicators:
-----------------------------
Red LED      *
Yellow LED   .
Major relay  *
Minor relay  .

Front Panel FPC LEDs:
FPC    0   1   2   3   4   5
---------------------------
Red    .   .   .   .   .   .
Green  .   *   .   *   *   *

CB LEDs:
 CB    0   1
--------------
```

```
Amber  .   .
Green  *   *

PS LEDs:
  PS   0   1
------------------------
Red    .   .
Green  *   *

FEB LEDs:
  FEB  0   1   2   3   4   5
------------------------------
Red    .   .   .   .   .   .
Green  .   .   .   *   *   *
Active .   .   .   *   *   *
```

show chassis craft-interface (M160 Router)

`user@host>` **show chassis craft-interface**

```
FPM Display contents:
    +--------------------+
    |hosts               |
    |Up: 1+16:46         |
    |                    |
    |Fans OK             |
    +--------------------+

Front Panel System LEDs:
Host     0    1
------------------------
OK     .    *
Fail   .  .
Master .    *

Front Panel Alarm Indicators:
-----------------------------
Red LED    .
Yellow LED .
Major relay.
Minor relay.

Front Panel FPC LEDs:
FPC    0   1   2   3   4   5   6   7
```

```
-----------------------------------
Red  . . . . . . . .
Green  *   * . . . . . .

MCS and SFM LEDs:
MCS    0   1      SFM    0   1   2   3
--------------------------------------
Amber    .           . .
Green    .           . .
Blue       *             *   *
```

show chassis craft-interface (MX150)

`user@host >` **show chassis craft-interface**

```
               LED status for: FPC 0
               ----------------------------------
LEDs status:
    Alarm LED : Off
    System LED: Green
    Master LED: Green

Interface              STATUS LED      LINK/ACTIVITY LED
-----------------------------------------------------------
ge-0/0/0               N/A             (null)
lc-0/0/0               (null)          (null)
ge-0/0/10              N/A             (null)
gr-0/0/10              N/A             (null)
ip-0/0/10              N/A             (null)
vt-0/0/10              N/A             (null)
ge-0/0/11              N/A             (null)
```

show chassis craft-interface (MX104 Router)

`user@host >` **show chassis craft-interface**

```
Front Panel System LEDs:
Routing Engine    0    1
-------------------------------------
OK                *    .
Fail              .    .
Master            *    .
```

```
Front Panel Alarm Indicators:
-------------------------------------
Red LED      .
Yellow LED   *
Major relay  .
Minor relay  *

Input relay:
-------------------------------------
Port    Mode    Status
 0      Open    Clear
 1      Open    Clear
 2      Open    Clear
 3      Open    Clear

Output relay:
-------------------------------------
Port    Mode    Status
 0      Open    Clear
 1      Open    Clear

PS Status:
  PS   0    1
-------------------------------------
Red    .   .
Green  *   .
```

show chassis craft-interface (MX2010 Router)

`user@host >` **show chassis craft-interface**

```
Front Panel System LEDs:
Routing Engine    0    1
-------------------------
OK                *    .
Fail              .    *
Master            *    .

Front Panel Alarm Indicators:
-----------------------------
Red LED      .
Yellow LED   *
Major relay  .
Minor relay  *
```

```
Front Panel FPC LEDs:
FPC    0    1    2    3    4    5    6    7    8    9
-----------------------------------------------------
Red    .    .    .    .    .    .    .    .    .    .
Green  *    *    .    .    .    .    .    .    *    *

CB LEDs:
 CB    0   1
------------
Amber  .   .
Green  *   *

PS LEDs:
  PS    0    1    2    3    4    5    6    7    8
-------------------------------------------------
Red     .    .    .    .    .    .    .    .    .
Green   .    .    .    .    *    *    *    *    *

Fan Tray LEDs:
  FT   0   1   2   3
--------------------
Red    .   .   .   .
Green  *   *   *   *

Front Panel SFB LEDs:
SFB    0   1   2   3   4   5   6   7
-----------------------------------
Red    .   .   .   .   .   .   .   .
Green  *   *   *   *   *   *   *   *

Front Panel Chassis Info:
Chassis Number    0x0
Chassis Role      S
```

show chassis craft-interface (MX2020 Router)

`user@host >` **show chassis craft-interface**

```
Front Panel System LEDs:
Routing Engine 0 1
--------------------------
OK * *
```

```
Fail . .
Master * .
Front Panel Alarm Indicators:
-----------------------------
Red LED .
Yellow LED .
Major relay .
Minor relay .
Front Panel FPC LEDs:
FPC 0 1 2 3 4 5 6 7 8 9
-----------------------------------------------------
Red . . . . . .
Green * * * * * * * * * *
Front Panel FPC LEDs:
FPC 10 11 12 13 14 15 16 17 18 19
-----------------------------------------------------
Red . . . . . .
Green * * * * * * * * * *
CB LEDs:
CB 0 1
------------
Amber . .
Green * *
PS LEDs:
PS 0 1 2 3 4 5 6 7 8
-------------------------------------------------
Red . . . . . .
Green * * * * * . . * *
PS LEDs:
PS 9 10 11 12 13 14 15 16 17
-------------------------------------------------
Red . . . . . .
Green * * * * * * * * *
Fan Tray LEDs:
FT 0 1 2 3
--------------------
Red . . . .
Green * * * *
Front Panel SFB LEDs:
SFB 0 1 2 3 4 5 6 7
-----------------------------------
Red . . . . . .
Green * * * * * * * *
Front Panel Chassis Info:
```

```
Chassis Number 0x57
Chassis Role M
```

show chassis craft-interface (MX2008 Router)

`user@host>` **show chassis craft-interface**

```
Front Panel System LEDs:
Routing Engine    0    1
-------------------------
OK                *    *
Fail              .    .
Master            *    .

Front Panel Alarm Indicators:
-----------------------------
Red LED      .
Yellow LED   .
Major relay  .
Minor relay  .

Front Panel FPC LEDs:
FPC    0    1    2    3    4    5    6    7    8    9
-------------------------------------------------------
Red    .    .    .    .    .    .    .    .    .    .
Green  *    *    .    .    .    .    .    *    .    .

CB LEDs:
 CB    0   1
------------
Amber  .   .
Green  *   *

PS LEDs:
  PS    0    1    2    3    4    5    6    7    8
-------------------------------------------------
Red     .    .    .    .    .    .    .    .    .
Green   .    *    *    *    *    *    *    *    .

Fan Tray LEDs:
  FT   0   1
------------
Red    .   .
Green  *   *
```

```
Front Panel SFB LEDs:
SFB    0   1   2   3   4   5   6   7
-----------------------------------
Red    .   .   .   .   .   .   .   .
Green  *   *   *   *   *   *   *   *

Front Panel Chassis Info:
Chassis Number    0x36
Chassis Role      M
```

show chassis craft-interface (T4000 Router)

`user@host>` **show chassis craft-interface**

```
FPM Display contents:
    +--------------------+
    |stymphalian         |
    |2 Alarms active     |
    |R: Front Top Fan Tra|
    |Y: PEM 1 Absent     |
    +--------------------|

Front Panel System LEDs:
Routing Engine    0    1
-------------------------
OK                *    *
Fail              .    .
Master            *    .

Front Panel Alarm Indicators:
-----------------------------
Red LED      *
Yellow LED   *
Major relay  *
Minor relay  *

Front Panel FPC LEDs:
FPC    0   1   2   3   4   5   6   7
-----------------------------------
Red    .   .   .   .   .   .   .   .
Green  *   .   .   *   .   *   *   .

CB LEDs:
```

```
  CB   0   1
--------------
Amber  .   .
Green  *   *
Blue   *   .

SCG LEDs:
  SCG  0   1
--------------
Amber  .   .
Green  *   *
Blue   *   .

SIB LEDs:
  SIB  0   1   2   3   4
--------------------------
Red    .   .   .   .   .
Green  *   *   *   *   *
```

show chassis craft-interface (TX Matrix Routing Matrix)

`user@host>` **show chassis craft-interface**

```
scc-re0:
--------------------------------------------------------------------------------
FPM Display contents:
    +--------------------+
    |bradley             |
    |8 Alarms active     |
    |R: SIB 2 Absent     |
    |R: SIB 1 Absent     |
    +--------------------|

Front Panel System LEDs:
Routing Engine    0    1
-------------------------
OK                *  .
Fail            .  .
Master            *  .

Front Panel Alarm Indicators:
-----------------------------
Red LED      *
Yellow LED   *
```

```
Major relay  *
Minor relay  *

CB LEDs:
  CB   0   1
--------------
Amber. .
Green  * .
Blue   * .

SIB LEDs:
  SIB  0   1   2   3   4
--------------------------
Fail . . . . .
OK   . . . .   *
Active . . . .   *

lcc0-re0:
------------------------------------------------------------------------------
FPM Display contents:
    +--------------------+
    |hybrid              |
    |5 Alarms active     |
    |R: SIB 2 Absent     |
    |R: SIB 1 Absent     |
    +--------------------|
Front Panel System LEDs:
Routing Engine    0    1
--------------------------
OK                *  .
Fail            .  .
Master            *  .

Front Panel Alarm Indicators:
-----------------------------
Red LED      *
Yellow LED   *
Major relay  *
Minor relay  *

Front Panel FPC LEDs:
FPC    0   1   2   3   4   5   6   7
-----------------------------------
Red  . . . . . . . .
```

```
Green.   *   * . . . . .

CB LEDs:
  CB   0   1
--------------
Amber. .
Green  * .
Blue   * .

SCG LEDs:
  SCG  0   1
--------------
Amber. .
Green  * .
Blue   * .

SIB LEDs:
  SIB  0   1   2   3   4
--------------------------
Red  . . . . .
Green. . . .   *

lcc2-re0:
--------------------------------------------------------------------------------
FPM Display contents:
    +--------------------+
    |prius               |
    |5 Alarms active     |
    |R: SIB 2 Absent     |
    |R: SIB 1 Absent     |
    +--------------------|

Front Panel System LEDs:
Routing Engine    0    1
-------------------------
OK                *  .
Fail            .  .
Master            *  .

Front Panel Alarm Indicators:
-----------------------------
Red LED      *
Yellow LED   *
Major relay  *
```

```
Minor relay  *

Front Panel FPC LEDs:
FPC    0   1   2   3   4   5   6   7
-----------------------------------
Red  . . . . . . . .
Green  *   *   * . . . . .

CB LEDs:
  CB   0   1
--------------
Amber. .
Green  * .
Blue   * .

SCG LEDs:
  SCG  0   1
--------------
Amber. .
Green  * .
Blue   * .

SIB LEDs:
  SIB  0   1   2   3   4
--------------------------
Red  . . . . .
Green. . . .   *
```

show chassis craft-interface (TX Matrix Plus Routing Matrix)

`user@host>` **show chassis craft-interface**

```
sfc0-re0:
--------------------------------------------------------------------------
FPM Display Contents:
    +--------------------+
    |noname              |
    |12 Alarms active    |
    |R: SIB F13 12 Absent|
    |R: SIB F13 9 Absent |
    +--------------------+

SFC Front Panel Switch Settings:
SFC Chassis Number : 00
```

```
Config Size        : 1

Front Panel System LEDs:
Routing Engine    0    1
-------------------------
OK                *    *
Fail              .    .
Master            *    .

Front Panel Alarm Indicators:
-----------------------------
Red LED      *
Yellow LED   *
Major relay  *
Minor relay  *

Front Panel F13 SIB LEDs:
SIB    0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15
-------------------------------------------------------------------
Fail   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
OK     *   .   .   *   .   .   *   .   *   .   .   *   .   .   .   .
Active .   .   .   *   .   .   *   .   *   .   .   *   .   .   .   .

PS LEDs:
  PS   0   1
------------
Red    .   *
Green  *   .

Fan Tray LEDs:
  FT   0   1   2   3   4   5
----------------------------
Red    .   .   .   .   *   *
Green  *   *   *   *   .   .

CB LEDs:
  CB   0   1
--------------
Amber  .   .
Green  *   *
Blue   *   .

lcc0-re0:
--------------------------------------------------------------------------------
```

```
FPM Display contents:
    +--------------------+
    |noname1              |
    |1 Alarm active      |
    |R: PEM 1 Not OK     |
    |                    |
    +--------------------|

Front Panel System LEDs:
Routing Engine    0    1
-------------------------
OK                *    *
Fail              .    .
Master            *    .

Front Panel Alarm Indicators:
-----------------------------
Red LED      *
Yellow LED   .
Major relay  *
Minor relay  .

Front Panel FPC LEDs:
FPC    0   1   2   3   4   5   6   7
-----------------------------------
Red    .   .   .   .   .   .   .   .
Green  .   *   .   *   *   .   .   *

CB LEDs:
  CB   0   1
--------------
Amber  .   .
Green  *   *
Blue   *   .

SCG LEDs:
  SCG  0   1
--------------
Amber  .   .
Green  *   *
Blue   *   .

SIB LEDs:
  SIB  0   1   2   3   4
```

```
-------------------------
Red    .   .   .   .   .
Green  *   *   *   *   *

lcc1-re0:
--------------------------------------------------------------------------------
FPM Display contents:
    +--------------------+
    |noname2             |
    |2 Alarms active     |
    |R: FPC 0 PIC 0 Failu|
    |R: PEM 1 Not OK     |
    +--------------------|

Front Panel System LEDs:
Routing Engine    0    1
-------------------------
OK                *    *
Fail              .    .
Master            *    .

Front Panel Alarm Indicators:
-----------------------------
Red LED      *
Yellow LED   .
Major relay  *
Minor relay  .

Front Panel FPC LEDs:
FPC    0   1   2   3   4   5   6   7
-----------------------------------
Red    .   .   .   .   .   .   .   .
Green  *   *   *   .   .   *   .   .

CB LEDs:
  CB   0   1
--------------
Amber  .   .
Green  *   *
Blue   *   .

SCG LEDs:
  SCG  0   1
--------------
```

```
Amber  .   .
Green  *   *
Blue   *   .

SIB LEDs:
  SIB  0   1   2   3   4
-------------------------
Red    .   .   .   .   .
Green  *   *   *   *   *
```

show chassis craft-interface (TX Matrix Plus router with 3D SIBs)

```
user@host> show chassis craft-interface
```

```
sfc0-re0:
--------------------------------------------------------------------------------
FPM Display Contents:
    +--------------------+
    |noname              |
    |48 Alarms active    |
    |R: LCC 2 Major Error|
    |R: LCC 0 Major Error|
    +--------------------+

SFC Front Panel Switch Settings:
SFC Chassis Number : 00
Config Size        : 3

Front Panel System LEDs:
Routing Engine    0    1
-------------------------
OK                *    *
Fail              .    .
Master            *    .

Front Panel Alarm Indicators:
----------------------------
Red LED      *
Yellow LED   *
Major relay  *
Minor relay  *

Front Panel F13 SIB LEDs:
SIB    0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15
```

```
------------------------------------------------------------------------
Fail   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
OK     *   .   .   *   .   .   *   .   .   .   .   .   .   .   .   .
Active *   .   .   *   .   .   *   .   .   .   .   .   .   .   .   .

PS LEDs:
  PS   0   1
------------
Red    *   .
Green  .   *

Fan Tray LEDs:
  FT   0   1   2   3   4   5
----------------------------
Red    .   .   .   .   .   *
Green  *   *   *   *   *   .

CB LEDs:
  CB   0   1
--------------
Amber  .   .
Green  *   *
Blue   *   .

lcc0-re0:
--------------------------------------------------------------------------------
FPM Display contents:
    +--------------------+
    |noname1             |
    |14 Alarms active    |
    |R: PEM 1 Not OK     |
    |R: FPC 7 misconfig  |
    +--------------------|

Front Panel System LEDs:
Routing Engine    0    1
--------------------------
OK                *    *
Fail              .    .
Master            *    .

Front Panel Alarm Indicators:
-----------------------------
Red LED      *
```

```
Yellow LED   *
Major relay  *
Minor relay  *

Front Panel FPC LEDs:
FPC    0   1   2   3   4   5   6   7
-----------------------------------
Red    .   .   .   .   .   .   .   .
Green  .   .   .   .   *   .   .   .

CB LEDs:
  CB   0   1
--------------
Amber  .   .
Green  *   *
Blue   *   .

SCG LEDs:
  SCG  0   1
--------------
Amber  .   .
Green  *   *
Blue   *   .

SIB LEDs:
  SIB  0   1   2   3   4
--------------------------
Red    .   .   .   .   .
Green  *   *   *   .   .
```

show chassis craft-interface (ACX2000 Universal Metro Router)

`user@host>` **show chassis craft-interface**

```
Front Panel System LEDs:
Routing Engine
------------------
OK                *
Fail              .

Front Panel Alarm Indicators:
-----------------------------
Red LED      .
Yellow LED   .
```

```
Major relay  .
Minor relay  .

Input relay:
------------
Port    Mode    Status
 0      Open    Clear
 1      Open    Clear
 2      Open    Clear
 3      Open    Clear

Output relay:
-------------
Port    Mode    Status
 0      Open    Clear
 1      Open    Clear

PS Status:
  PS   0    1
---------------
Red    .   .
Green  *   *
```

show chassis craft-interface (ACX500 Router)

`user@host>` **show chassis craft-interface**

```


Front Panel System LEDs:
Routing Engine
------------------
OK                *
Fail              .

Front Panel Alarm Indicators:
-----------------------------
Red LED      .
Yellow LED   .
Major relay  .
Minor relay  .

Input relay:
------------
Port    Mode    Status
```

```
 0      Open    Clear
 1      Open    Clear
 2      Open    Clear
 3      Open    Clear

Output relay:
-------------
Port    Mode    Status
 0      Open    Clear
 1      Open    Clear

PS Status:
  PS   0    1
---------------
Red    .   .
Green  *   *
```

show chassis environment

List of Syntax

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Syntax (TX Matrix Routers) on page 759
Syntax (TX Matrix Plus Routers) on page 759
Syntax (MX Series Routers) on page 760
Syntax (MX104 Universal Routing Platforms) on page 760
Syntax (MX150 Router Appliance) on page 760
Syntax (MX2010, MX2020, and MX2008 Universal Routing Platforms) on page 760
Syntax (MX10003 and MX204 Universal Routing Platforms) on page 761
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Syntax (PTX Series Packet Transport Routers) on page 762
Syntax (ACX Series Universal Metro Routers) on page 762
Syntax (ACX5048 and ACX5096 Routers) on page 762
Syntax (ACX500 Routers) on page 762

Syntax (T320, T640, T1600, and T4000 Routers)

```
show chassis environment
<cb cb-slot-number>
<fpc fpc-slot-number>
<fpm>
<pem pem-slot-number>
<routing-engine re-slot-number>
<scg scg-slot-number>
<sib sib-slot-number>
```

Syntax (TX Matrix Routers)

```
show chassis environment
<lcc number | scc>
```

Syntax (TX Matrix Plus Routers)

```
show chassis environment
<cb cb-slot-number>
<cip cip-slot-number>
<fpc fpc-slot-number>
```

```
<fpm>
<lcc number>
<pem pem-slot-number>
<routing-engine re-slot-number>
<scg scg-slot-number>
< sfc number>
<sib sib-slot-number>
```

Syntax (MX Series Routers)

```
show chassis environment
<all-members>
<local>
<member member-id>
```

Syntax (MX104 Universal Routing Platforms)

```
show chassis environment
<cb>
<pem pem-slot-number>
<routing-engine re-slot-number>
```

Syntax (MX150 Router Appliance)

```
show chassis environment
<pem pem-slot-number>
<routing-engine re-slot-number>
```

Syntax (MX2010, MX2020, and MX2008 Universal Routing Platforms)

```
show chassis environment
<adc adc-slot-number>
<all-members>
<cb cb-slot-number>
<fan fantray-slot-number>
<fpc fpc-slot-number>
<fpm>
<local>
<member member-id>
<monitored>
<psm psm-slot-number>
<routing-engine re-slot-number>
```

```
<sfb sfb-slot-number>
<satellite [fpc-slot slot-id |device-alias alias-name]>
```

Syntax (MX10003 and MX204 Universal Routing Platforms)

```
show chassis environment
<cb cb-slot-number>
<fpc fpc-slot-number>
<pem pem-slot-number>
<routing-engine re-slot-number>
```

Syntax (EX8200 Switches)

```
show chassis environment
<all-members>
<cb cb-slot-number>
<fpc fpc-slot-number>
<local>
<member member-id>
<psu psu-slot-number>
<routing-engine re-slot-number>
```

Syntax (EX Series Switches except EX8200)

```
show chassis environment
<all-members>
<fpc fpc-slot-number>
<local>
<member member-id>
<power-supply-unit>
<routing-engine>
<satellite [fpc-slot slot-id |device-alias alias-name]>
```

Syntax (QFX Series)

```
show chassis environment
<cb slot-number <interconnect-device name>>
<fpc slot-number <interconnect-device name>>
<interconnect-device name <slot-number>
<node-device name>
<pem slot-number (interconnect-device name slot-number) | (node-device name)>
<routing-engine name <interconnect-device name slot-number>>
```

Syntax (OCX Series)

```
show chassis environment
```

Syntax (PTX Series Packet Transport Routers)

```
show chassis environment
<cb cb-slot-number>
<ccg ccg-slot-number >
<fpc fpc-slot-number>
<fpm>
<monitored>
<pdu pdu-slot-number>
<routing-engine re-slot-number>
<sib sib-slot-number>
```

Syntax (ACX Series Universal Metro Routers)

```
show chassis environment
<cb cb-slot-number>
<pem pem-slot-number>
<routing-engine re-slot-number>
```

Syntax (ACX5048 and ACX5096 Routers)

```
show chassis environment
<fpc slot-number>
<pem>
<routing-engine>
```

Syntax (ACX500 Routers)

```
show chassis environment
<cb cb-slot-number>
<routing-engine re-slot-number>
```

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
Command introduced in Junos OS Release 11.1 for QFX Series.
Command introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers.

monitored option added in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers.
Command introduced in Junos OS Release 12.1 for T4000 Core Routers.
Command introduced in Junos OS Release 12.2 for ACX Series Universal Metro Routers.
Command introduced in Junos OS Release 12.3 for MX 2020 and MX2010 Universal Routing Platforms.
pem option introduced in Junos OS Release 12.3 for ACX4000 Universal Metro Routers.
satellite option introduced in Junos OS Release 14.2R3.
all-members, **local**, and **member** *member-id* options introduced in Junos OS Release 15.1 for MX2010 and MX2020 routers.
Command introduced in Junos OS Release 15.1X54-D20 for ACX5048 and ACX5096 Routers.
Command introduced in Junos OS Release 17.2 for MX2008 Universal Routing Platforms and PTX10008 Routers.
Command introduced in Junos OS Release 17.3 for MX150 Router Appliance and MX10003 Universal Routing Platforms.
Command introduced in Junos OS Release 17.4 for MX204 Universal Routing Platforms.
Command introduced in Junos OS Release 18.1R1 for EX9251 Switches.
Command introduced in Junos OS Release 18.2R1 for EX9253 Switches and MX10008 Routers.

Description

Display environmental information about the router or switch chassis, including the temperature and information about the fans, power supplies, and Routing Engine.

In addition, on ACX4000 routers, display temperature information about the different channels of a Modular Interface Card (MIC). The number of channels displayed depends on the type of MIC installed.

Starting with Junos OS Release 14.1, the **show chassis environment cb** ***cb-slot-number*** **| ccg** ***ccg-slot-number*** **| fpc** ***fpc-slot-number*** **| fpm | monitored | pdu** ***pdu-slot-number*** **| routing-engine** ***re-slot-number*** **| sib** ***sib-slot-number*** operational mode command output displays environmental information for the new DC power supply module (PSM) and power distribution unit (PDU) that are added to provide power to the high-density FPC (FPC2-PTX-P1A) and other components in a PTX5000 Packet Transport Router.

Options

none—Display environmental information about the router or switch chassis. On a TX Matrix router, display environmental information about the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about the TX Matrix Plus router and its attached routers.

all-members—(MX Series routers and EX Series switches only) (Optional) Display chassis environmental information for all the members of the Virtual Chassis configuration.

adc ***adc-slot-number***—(MX2010, MX2020, and MX2008 routers only) (Optional) Display chassis environmental information for the adapter cards. For MX2020 routers, replace ***adc-slot-number*** with a value from **0** through **19**. For MX2010 and MX2008 routers, replace ***adc-slot-number*** with a value from **0** through **9**.

cb ***cb-slot-number***—(ACX Series Universal Metro Routers, EX Series switches, M120, M320, and M40e routers, MX Series routers, MX2020 routers, MX2010 routers, MX2008 routers, PTX Series Packet

Transport Routers, QFX Series, and T Series routers, and TX Matrix Plus routers only) (Optional) Display chassis environmental information for the Control Board. On devices other than EX Series switches, replace ***cb-slot*** with **0** or **1**.

cip *cip-slot-number*—(TX Matrix Plus routers only) (Optional) Display chassis environmental information for the Connection Interface Panel (CIP). Replace the ***cip-slot-number*** variable with a value of **0** or **1**.

cb interconnect-device *name*—(QFabric systems only) (Optional) Display chassis environmental information for the Control Board on an Interconnect device.

ccg *ccg-slot-number*—(PTX Series only) (Optional) Display chassis environmental information for the Centralized Clock Generator. Replace ***cb-slot*** with a value of **0** or **1**.

fan *fantray-slot-number*—(MX2010, MX2020, and MX2008 routers only) (Optional) Display chassis environmental information for the fan trays. Replace ***fantray-slot-number*** with a value from **0** through **3**.

fpc *fpc-slot*—(EX Series switches, M120, M320, and M40e routers, MX Series routers, MX2010 routers, MX2020 routers, MX2008 routers, PTX Series Packet Transport Routers, QFX Series, QFX3500 switches, QFabric systems, T Series routers, and TX Matrix Plus routers) (Optional) Display chassis environmental information for a specified Flexible PIC Concentrator. For MX2010 and MX2008 routers, replace ***fpc-slot*** with a value from **0** through **9**. For MX2020 routers, replace ***fpc-slot*** with a value from **0** through **19**. For information about FPC numbering, see **show chassis environment fpc**. On a QFabric system, display chassis environmental information for a specified Flexible PIC Concentrator on an Interconnect device. On an EX Series switch, display chassis environmental information for a specified Flexible PIC Concentrator; see the hardware documentation for your switch for information on FPC numbering. On a TX Matrix Plus router with 3D SIBs replace *fpc-slot* with a value from **0** through **63**.

fpm—(M120, M320, and M40e routers, MX2010 routers, MX2020 routers, MX2008 routers, PTX Series, Packet Transport Routers, T Series routers, and TX Matrix Plus routers only) (Optional) Display chassis environmental information for the craft interface (FPM).

interconnect-device *name*—(QFabric systems only) (Optional) Display chassis environmental information for the Interconnect device.

lcc *number*—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

local—(MX Series routers and EX Series switches only) (Optional) Display chassis environmental information for the local Virtual Chassis member.

member *member-id*—(MX Series routers and EX Series switches only) (Optional) Display chassis environmental information for the specified member of the Virtual Chassis configuration. On MX Series routers, replace *member-id* with a value of **0** or **1**. For EX Series switches, see **member** for member ID values.

monitored—(MX2020 routers and PTX Series Packet Transport Routers only) (Optional) Display chassis environmental information for monitored temperatures only. Temperatures that are not included in temperature alarm computations are not displayed.

node-device *name*—(QFabric systems only) (Optional) Display chassis environmental information for the Node device.

pdu *pdu-slot-number*—(PTX Series only) (Optional) Display chassis environmental information for the specified power distribution unit.

pem—(QFX3500 switches and QFabric systems only) (Optional) Display chassis environmental information for the Power Entry Module on the specified Interconnect device or Node device.

pem *pem-slot-number*—(ACX Series Universal Metro Routers, M120, M320, and M40e routers, MX Series routers, MX104 routers, QFX Series, and T Series routers only) (Optional) Display chassis environmental information for the Power Entry Module on the specified Power Entry Module. For information about the options, see **show chassis environment pem**.

psm *psm-slot-number*—(MX2010, MX2020, and MX2008 routers only) (Optional) Display chassis environmental information for the power supply module. For MX2020 routers, replace ***psm-slot-number*** with a value from **0** through **17**. For MX2010 and MX2008 routers, replace ***psm-slot-number*** with a value from **0** through **8**.

psu *psu-slot-number*—(EX Series switches only) (Optional) Display chassis environmental information for a specified power supply.

routing-engine—(QFX3500 switches and QFabric systems only) (Optional) Display chassis environmental information for the Routing Engine on the specified Interconnect device.

routing-engine *re-slot-number*—(Optional) Display chassis environmental information for the specified Routing Engine. For information about the options, see **show chassis environment routing-engine**.

satellite [fpc-slot *slot-id* | device-alias *alias-name*]—(Junos Fusion only)(Optional) Display chassis environmental information for the specified satellite device in a Junos Fusion, or for all satellite devices in the Junos Fusion if no satellite devices are specified.

scg—(T Series routers only) (Optional) Display chassis environmental information about the SONET Clock Generator.

scc—(TX Matrix routers only) (Optional) Display chassis environmental information about the TX Matrix router (switch-card chassis).

sfb *sfb-slot-number*—(MX2010, MX2020, and MX2008 routers only) (Optional) Display chassis environmental information for the switch fabric board. Replace ***sfb-slot-number*** with a value from **0** through **7**.

sfc *number*—(TX Matrix Plus routers only) (Optional) Display chassis environmental information about the respective TX Matrix Plus router (switch-fabric chassis). Replace ***number*** variable with **0**.

sib *sib-slot-number*—(M320 routers, PTX Series Packet Transport Routers, and T Series routers only) (Optional) Display chassis environmental information about the specified switch interface board. For information about the options, see **show chassis environment sib**.

Required Privilege Level
view

RELATED DOCUMENTATION

- show chassis environment adc | **872**
- show chassis environment cb | **888**
- show chassis environment ccg | **924**
- *show chassis environment cip*
- show chassis environment fpc | **931**
- show chassis environment fpm | **1011**
- *show chassis environment lcc*
- show chassis environment mcs | **1050**
- show chassis environment monitored | **1020**
- show chassis environment pcg | **1053**
- show chassis environment pdu | **1056**
- show chassis environment pem | **1063**
- show chassis environment psm | **1085**
- show chassis environment psu | **1083**
- show chassis environment routing-engine | **1098**
- show chassis environment scg | **1108**

show chassis environment sfb | 1114

show chassis environment sib | 1136

show chassis environment sfc

List of Sample Output

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show chassis environment (M20 Router) on page 773
show chassis environment (M40 Router) on page 773
show chassis environment (M40e Router) on page 774
show chassis environment (M120 Router) on page 774
show chassis environment (M160 Router) on page 776
show chassis environment (M320 Router) on page 777
show chassis environment (MX150) on page 778
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show chassis environment (MX240 Router) on page 778
show chassis environment (MX240 Router with SCBE) on page 780
show chassis environment (MX480 Router) on page 781
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show chassis environment (MX10003 Router) on page 826
show chassis environment (MX10008 Router) on page 828
show chassis environment (MX204 Router) on page 834
show chassis environment (T640 Router) on page 834
show chassis environment (T4000 Router) on page 835
show chassis environment (TX Matrix Router) on page 838
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show chassis environment (TX Matrix Plus Router) on page 841
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show chassis environment (EX8216 Switch) on page 849
show chassis environment (EX9200 Switch) on page 850
show chassis environment (EX9251 Switch) on page 851

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show chassis environment node-device (QFabric System) on page 856
show chassis environment pem node-device (QFabric System) on page 856
show chassis environment (PTX5000 Packet Transport Router) on page 856
show chassis environment (PTX5000 Packet Transport Router with FPC2-PTX-P1A) on page 860
show chassis environment (PTX1000 Packet Transport Router) on page 860
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show chassis environment (PTX10016 Router) on page 864
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show chassis environment (ACX5048 Router) on page 870
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Output Fields

Table 38 on page 769 lists the output fields for the **show chassis environment** command. Output fields are listed in the approximate order in which they appear.

Table 38: show chassis environment Output Fields

Field Name	Field Description

Class	Information about the category or class of chassis component:
	• **Power**: Power information:
	  ◦ (M5, M10, M20, and M40 routers and EX Series switches only) Power supply status: **OK**, **Testing**, (during initial power-on), **Failed**, or **Absent**.
	  ◦ (M7i, M10i, M40e, M120, M160, M320, and T Series routers and EX Series switches only) Power Entry Modules status: **OK**, **Testing**, (during initial power-on), **Check**, **Failed**, or **Absent**.
	  ◦ (PTX Series only) Power information is reported in PDU or PSM combinations. The status is: **OK**, **Testing**, (during initial power-on), **Check**, **Failed**, or **Absent**.
	• **Temp**: Temperature of air flowing through the chassis in degrees Celsius (C) and Fahrenheit (F).
	  ◦ On PTX Series Packet Transport Routers and MX2010, MX2020, and MX2008 Routers, multiple cooling zones are supported. FRU temperatures in each zone are coordinated with the fan speed of fan trays in those zones.
	  ◦ EX2200 switches have a side-to-rear cooling system. The **Local Intake** temperature is measured by the sensor on the right side of the chassis, and the **Remote Intake** temperature is measured by the sensor on the left side of the chassis.
	• **Pic**: On ACX4000 routers, multiple temperature channels on a MIC. The status is: **OK** and the **Measurement** is in degrees Celsius (C) and Fahrenheit (F).
	• **Fan**: Fan status: **OK**, **Testing** (during initial power-on), **Failed**, or **Absent**.
	On PTX Series Packet Transport Routers and MX2010, MX2020, and MX2008 Routers, multiple fan trays are supported. Fan status is reported in Fan Tray or Fan combinations. **Measurement** indicates actual fan RPM (PTX and MX2010, MX2020, and MX2008 Routers only).
	• **Misc**: Information about other components of the chassis.
	  ◦ On some routers, this field indicates the status of one or more additional components.
	  ◦ On the M40e, M160, and M320 router, **Misc** includes **CIP** (Connector Interface Panel). **OK** indicates that the CIP is present. **Absent** indicates that the CIP is not present.
	  ◦ On T Series routers, **Misc** includes **CIP** and **SPMB** (Switch Processor Mezzanine Board). **OK** indicates that the **CIP** or **SPMB** is present. **Absent** indicates that the **CIP** or **SPMB** is not present.
	  ◦ On PTX Series Packet Transport Routers, **Misc** includes the **SPMB** (Switch Processor Mezzanine Board). The SPMB is located on the control boards. **OK** indicates that the control board is present. **Absent** indicates that the control board is not present.

Table 38: show chassis environment Output Fields *(continued)*

Field Name	Field Description
Item	(MX2010, MX2020, and MX2008 Routers) Information about the chassis component: Routing Engines, Controls Boards (CBs), Switch Fabric Boards (SFBs), PICs, Flexible PIC Concentrators (FPCs), and Adapter Cards (ADCs). (MX104 Routers) Information about the chassis components: Routing Engines, Control Board (CB), Power Entry Module (PEM), and Compact Forwarding Engine Board (AFEB). (QFabric Systems) Information about the chassis component: Control Boards, Routing Engines, Flexible PIC Concentrators (FPCs), and Power Entry Modules (PEMs), Node Devices, and Interconnect Devices. (QFX Series) Information about the chassis component: Flexible PIC Concentrators (FPCs), and Power Entry Modules (PEMs).
Status	(MX104, MX2010, MX2020, and MX2008 Routers) Status of the specified chassis component. For example, if the Class is Fan, the fan status can be: • **OK**: The fans are operational. • **Testing**: The fans are being tested during initial power-on. • **Failed**: The fans have failed or the fans are not spinning. • **Absent**: The fan tray is not installed. If the Class is Power, the power supply status can be: • **OK**: The power component is operational. • **Testing**: The power component is being tested during initial power-on. • **Check**: There is insufficient power---that is, fewer than the minimum required feeds are connected. • **Failed**: The inputs leads have failed. • **Absent**: The power component is not installed.
Measurement	(MX104, MX2010, MX2020, and MX2008 Routers) Dependant on the Class. For example, if the Class is Temp, indicates the temperature in degree Celsius and degrees Fahrenheit. If the Class is Fan, indicates actual fan RPM.

Sample Output

show chassis environment (M5 Router)

```
user@host> show chassis environment
```

```
Class Item                  Status     Measurement
Power Power Supply A        OK
      Power Supply B        Absent
Temp  FPC 0                 OK         30 degrees C / 86 degrees F
      FEB                   OK         33 degrees C / 91 degrees F
      PS Intake             OK         27 degrees C / 80 degrees F
      PS Exhaust            OK         27 degrees C / 80 degrees F
      Routing Engine        OK         34 degrees C / 93 degrees F
Fans  Left Fan 1            OK         Spinning at normal speed
      Left Fan 2            OK         Spinning at normal speed
      Left Fan 3            OK         Spinning at normal speed
      Left Fan 4            OK         Spinning at normal speed
Misc  Craft Interface       OK
```

show chassis environment (M7i Router)

`user@host>` **show chassis environment**

```
Class Item                  Status     Measurement
Power Power Supply 0        OK
      Power Supply 1        Absent
Temp  Intake                OK         22 degrees C / 71 degrees F
      FPC 0                 OK         23 degrees C / 73 degrees F
      Power Supplies        OK         23 degrees C / 73 degrees F
      CFEB Intake           OK         24 degrees C / 75 degrees F
      CFEB Exhaust          OK         29 degrees C / 84 degrees F
      Routing Engine        OK         26 degrees C / 78 degrees F
Fans  Fan 1                 OK         Spinning at normal speed
      Fan 2                 OK         Spinning at normal speed
      Fan 3                 OK         Spinning at normal speed
      Fan 4                 OK         Spinning at normal speed
```

show chassis environment (M10 Router)

`user@host>` **show chassis environment**

```
Class Item                  Status     Measurement
Power Power Supply A        OK
      Power Supply B        Failed
Temp  FPC 0                 OK         36 degrees C / 96 degrees F
      FPC 1                 OK         35 degrees C / 95 degrees F
```

```
      FEB                   OK          34 degrees C / 93 degrees F
      PS Intake             OK          31 degrees C / 87 degrees F
      PS Exhaust            OK          34 degrees C / 93 degrees F
      Routing Engine        OK          35 degrees C / 95 degrees F
Fans  Left Fan 1            OK          Spinning at normal speed
      Left Fan 2            OK          Spinning at normal speed
      Left Fan 3            OK          Spinning at normal speed
      Left Fan 4            OK          Spinning at normal speed
Misc  Craft Interface       OK
```

show chassis environment (M10i Router)

`user@host>` **show chassis environment**

```
Class Item                  Status      Measurement
Power Power Supply 0        OK
      Power Supply 1        OK
      Power Supply 2        Absent
      Power Supply 3        Absent
Temp  Intake                OK          26 degrees C / 78 degrees F
      FPC 0                 OK          27 degrees C / 80 degrees F
      FPC 1                 OK          28 degrees C / 82 degrees F
      Lower Power Supplies  OK          29 degrees C / 84 degrees F
      Upper Power Supplies  OK          28 degrees C / 82 degrees F
      CFEB Intake           OK          27 degrees C / 80 degrees F
      CFEB Exhaust          OK          36 degrees C / 96 degrees F
      Routing Engine 0      OK          31 degrees C / 87 degrees F
      Routing Engine 1      OK          27 degrees C / 80 degrees F
Fans  Fan Tray 0 Fan 1      OK          Spinning at normal speed
      Fan Tray 0 Fan 2      OK          Spinning at normal speed
      Fan Tray 0 Fan 3      OK          Spinning at normal speed
      Fan Tray 0 Fan 4      OK          Spinning at normal speed
      Fan Tray 0 Fan 5      OK          Spinning at normal speed
      Fan Tray 0 Fan 6      OK          Spinning at normal speed
      Fan Tray 0 Fan 7      OK          Spinning at normal speed
      Fan Tray 0 Fan 8      OK          Spinning at normal speed
      Fan Tray 1 Fan 1      Absent
      Fan Tray 1 Fan 2      Absent
      Fan Tray 1 Fan 3      Absent
      Fan Tray 1 Fan 4      Absent
      Fan Tray 1 Fan 5      Absent
      Fan Tray 1 Fan 6      Absent
      Fan Tray 1 Fan 7      Absent
```

```
      Fan Tray 1 Fan 8       Absent
```

show chassis environment (M20 Router)

`user@host>` **show chassis environment**

```
Class Item                   Status     Measurement
Power Power Supply A         OK
      Power Supply B         Absent
Temp  FPC 0                  OK         28 degrees C / 82 degrees F
      FPC 1                  OK         27 degrees C / 80 degrees F
      Power Supply A         OK         22 degrees C / 71 degrees F
      Power Supply B         Absent
      SSB 0                  OK         30 degrees C / 86 degrees F
      Backplane              OK         22 degrees C / 71 degrees F
      Routing Engine 0       OK         26 degrees C / 78 degrees F
      Routing Engine 1       Testing
Fans  Rear Fan               OK         Spinning at normal speed
      Front Upper Fan        OK         Spinning at normal speed
      Front Middle Fan       OK         Spinning at normal speed
      Front Bottom Fan       OK         Spinning at normal speed
Misc  Craft Interface        OK
```

show chassis environment (M40 Router)

`user@host>` **show chassis environment**

```
Class Item                   Status     Measurement
Power Power Supply A         OK
      Power Supply B         Absent
Temp  FPC 3                  OK         24 degrees C / 75 degrees F
      FPC 6                  OK         26 degrees C / 78 degrees F
      SCB                    OK         26 degrees C / 78 degrees F
      Backplane @ A1         OK         28 degrees C / 82 degrees F
      Backplane @ A2         OK         23 degrees C / 73 degrees F
      Routing Engine         OK         26 degrees C / 78 degrees F
Fans  Top Impeller           OK         Spinning at normal speed
      Bottom impeller        OK         Spinning at normal speed
      Rear Left Fan          OK         Spinning at normal speed
      Rear Center Fan        OK         Spinning at normal speed
      Rear Right Fan         OK         Spinning at normal speed
```

```
Misc  Craft Interface       OK
```

show chassis environment (M40e Router)

`user@host>` **show chassis environment**

```
Class Item                  Status     Measurement
Power PEM 0                 OK
      PEM 1                 Absent
Temp  PCG 0                 OK         44 degrees C / 111 degrees F
      PCG 1                 OK         47 degrees C / 116 degrees F
      Routing Engine 0      OK         40 degrees C / 104 degrees F
      Routing Engine 1      OK         37 degrees C / 98 degrees F
      MCS 0                 OK         45 degrees C / 113 degrees F
      MCS 1                 OK         42 degrees C / 107 degrees F
      SFM 0 SPP             OK         40 degrees C / 104 degrees F
      SFM 0 SPR             OK         44 degrees C / 111 degrees F
      SFM 1 SPP             OK         43 degrees C / 109 degrees F
      SFM 1 SPR             OK         45 degrees C / 113 degrees F
      FPC 0                 OK         38 degrees C / 100 degrees F
      FPC 1                 OK         40 degrees C / 104 degrees F
      FPC 2                 OK         38 degrees C / 100 degrees F
      FPC 4                 OK         34 degrees C / 93 degrees F
      FPC 5                 OK         43 degrees C / 109 degrees F
      FPC 6                 OK         41 degrees C / 105 degrees F
      FPC 7                 OK         43 degrees C / 109 degrees F
      FPM CMB               OK         28 degrees C / 82 degrees F
      FPM Display           OK         28 degrees C / 82 degrees F
Fans  Rear Bottom Blower    OK         Spinning at normal speed
      Rear Top Blower       OK         Spinning at normal speed
      Front Top Blower      OK         Spinning at normal speed
      Fan Tray Rear Left    OK         Spinning at normal speed
      Fan Tray Rear Right   OK         Spinning at normal speed
      Fan Tray Front Left   OK         Spinning at normal speed
      Fan Tray Front Right  OK         Spinning at normal speed
Misc  CIP                   OK
```

show chassis environment (M120 Router)

`user@host>` **show chassis environment**

```
Class Item                          Status     Measurement
Temp  PEM 0                         OK
      PEM 1                         OK
      Routing Engine 0              OK         43 degrees C / 109 degrees F
      Routing Engine 1              OK         44 degrees C / 111 degrees F
      CB 0 Intake                   OK         33 degrees C / 91 degrees F
      CB 0 Exhaust A                OK         36 degrees C / 96 degrees F
      CB 0 Exhaust B                OK         35 degrees C / 95 degrees F
      CB 1 Intake                   OK         34 degrees C / 93 degrees F
      CB 1 Exhaust A                OK         38 degrees C / 100 degrees F
      CB 1 Exhaust B                OK         35 degrees C / 95 degrees F
      FEB 3 Intake                  OK         35 degrees C / 95 degrees F
      FEB 3 Exhaust A               OK         37 degrees C / 98 degrees F
      FEB 3 Exhaust B               OK         39 degrees C / 102 degrees F
      FEB 4 Intake                  OK         33 degrees C / 91 degrees F
      FEB 4 Exhaust A               OK         39 degrees C / 102 degrees F
      FEB 4 Exhaust B               OK         36 degrees C / 96 degrees F
      FPC 2 Exhaust A               OK         32 degrees C / 89 degrees F
      FPC 2 Exhaust B               OK         31 degrees C / 87 degrees F
      FPC 3 Exhaust A               OK         32 degrees C / 89 degrees F
      FPC 3 Exhaust B               OK         33 degrees C / 91 degrees F
      FPC 4 Exhaust A               OK         32 degrees C / 89 degrees F
      FPC 4 Exhaust B               OK         30 degrees C / 86 degrees F
Fans  Front Top Tray Fan 1          OK         Spinning at normal speed
      Front Top Tray Fan 2          OK         Spinning at normal speed
      Front Top Tray Fan 3          OK         Spinning at normal speed
      Front Top Tray Fan 4          OK         Spinning at normal speed
      Front Top Tray Fan 5          OK         Spinning at normal speed
      Front Top Tray Fan 6          OK         Spinning at normal speed
      Front Top Tray Fan 7          OK         Spinning at normal speed
      Front Top Tray Fan 8          OK         Spinning at normal speed
      Front Bottom Tray Fan 1       OK         Spinning at normal speed
      Front Bottom Tray Fan 2       OK         Spinning at normal speed
      Front Bottom Tray Fan 3       OK         Spinning at normal speed
      Front Bottom Tray Fan 4       OK         Spinning at normal speed
      Front Bottom Tray Fan 5       OK         Spinning at normal speed
      Front Bottom Tray Fan 6       OK         Spinning at normal speed
      Front Bottom Tray Fan 7       OK         Spinning at normal speed
      Front Bottom Tray Fan 8       OK         Spinning at normal speed
      Rear Top Tray Fan 1           OK         Spinning at normal speed
      Rear Top Tray Fan 2           OK         Spinning at normal speed
      Rear Top Tray Fan 3           OK         Spinning at normal speed
      Rear Top Tray Fan 4           OK         Spinning at normal speed
      Rear Top Tray Fan 5           OK         Spinning at normal speed
```

```
      Rear Top Tray Fan 6            OK         Spinning at normal speed
      Rear Top Tray Fan 7            OK         Spinning at normal speed
      Rear Top Tray Fan 8            OK         Spinning at normal speed
      Rear Bottom Tray Fan 1         OK         Spinning at normal speed
      Rear Bottom Tray Fan 2         OK         Spinning at normal speed
      Rear Bottom Tray Fan 3         OK         Spinning at normal speed
      Rear Bottom Tray Fan 4         OK         Spinning at normal speed
      Rear Bottom Tray Fan 5         OK         Spinning at normal speed
      Rear Bottom Tray Fan 6         OK         Spinning at normal speed
      Rear Bottom Tray Fan 7         OK         Spinning at normal speed
      Rear Bottom Tray Fan 8         OK         Spinning at normal speed
```

show chassis environment (M160 Router)

`user@host>` **show chassis environment**

```
Class Item                   Status     Measurement
Power PEM 0                  OK           PEM 1                    Absent
Temp  PCG 0                  OK         45 degrees C / 113 degrees F
      PCG 1                  Absent
      Routing Engine 0       OK         35 degrees C / 95 degrees F
      Routing Engine 1       Absent
      MCS 0                  OK         50 degrees C / 122 degrees F
      SFM 0 SPP              OK         47 degrees C / 116 degrees F
      SFM 0 SPR              OK         49 degrees C / 120 degrees F
      SFM 1 SPP              OK         50 degrees C / 122 degrees F
      SFM 1 SPR              OK         50 degrees C / 122 degrees F
      SFM 2 SPP              OK         51 degrees C / 123 degrees F
      SFM 2 SPR              OK         52 degrees C / 125 degrees F
      SFM 3 SPP              OK         52 degrees C / 125 degrees F
      SFM 3 SPR              OK         48 degrees C / 118 degrees F
      FPC 0                  OK         45 degrees C / 113 degrees F
      FPC 6                  OK         43 degrees C / 109 degrees F
      FPM CMB                OK         31 degrees C / 87 degrees F
      FPM Display            OK         33 degrees C / 91 degrees F
Fans  Rear Bottom Blower     OK         Spinning at normal speed
      Rear Top Blower        OK         Spinning at normal speed
      Front Top Blower       OK         Spinning at normal speed
      Fan Tray Rear Left     OK         Spinning at normal speed
      Fan Tray Rear Right    OK         Spinning at normal speed
      Fan Tray Front Left    OK         Spinning at normal speed
      Fan Tray Front Right   OK         Spinning at normal speed
Misc  CIP                    OK
```

show chassis environment (M320 Router)

```
user@host> show chassis environment
```

```
Class Item                  Status     Measurement
Temp  PEM 0                 Absent
      PEM 1                 Absent
      PEM 2                 OK
      PEM 3                 OK
      Routing Engine 0      OK         33 degrees C / 91 degrees F
      Routing Engine 1      OK         32 degrees C / 89 degrees F
      CB 0                  OK         36 degrees C / 96 degrees F
      CB 1                  OK         36 degrees C / 96 degrees F
      SIB 0                 OK         38 degrees C / 100 degrees F
      SIB 1                 OK         29 degrees C / 84 degrees F
      SIB 2                 OK         38 degrees C / 100 degrees F
      SIB 3                 OK         41 degrees C / 105 degrees F
      FPC 0 Intake          OK         28 degrees C / 82 degrees F
      FPC 0 Exhaust         OK         40 degrees C / 104 degrees F
      FPC 1 Intake          OK         29 degrees C / 84 degrees F
      FPC 1 Exhaust         OK         39 degrees C / 102 degrees F
      FPC 2 Intake          OK         28 degrees C / 82 degrees F
      FPC 2 Exhaust         OK         38 degrees C / 100 degrees F
      FPC 3 Intake          OK         28 degrees C / 82 degrees F
      FPC 3 Exhaust         OK         39 degrees C / 102 degrees F
      FPC 6 Intake          OK         27 degrees C / 80 degrees F
      FPC 6 Exhaust         OK         39 degrees C / 102 degrees F
      FPC 7 Intake          OK         27 degrees C / 80 degrees F
      FPC 7 Exhaust         OK         42 degrees C / 107 degrees F
      FPM GBUS              OK         30 degrees C / 86 degrees F
Fan   Top Left Front fan    OK         Spinning at normal speed
      Top Right Rear fan    OK         Spinning at normal speed
      Top Right Front fan   OK         Spinning at normal speed
      Top Left Rear fan     OK         Spinning at normal speed
      Bottom Left Front fan OK         Spinning at normal speed
      Bottom Right Rear fan OK         Spinning at normal speed
      Bottom Right Front fan OK        Spinning at normal speed
      Bottom Left Rear fan  OK         Spinning at normal speed
      Rear Fan 1 (TOP)      OK         Spinning at normal speed
      Rear Fan 2            OK         Spinning at normal speed
      Rear Fan 3            OK         Spinning at normal speed
      Rear Fan 4            OK         Spinning at normal speed
      Rear Fan 5            OK         Spinning at normal speed
      Rear Fan 6            OK         Spinning at normal speed
      Rear Fan 7 (Bottom)   OK         Spinning at normal speed
```

```
Misc  CIP                    OK
```

show chassis environment (MX150)

`user@host>` **show chassis environment**

```
Class Item                          Status     Measurement
Power FPC 0 Power Supply 0          OK
Temp  FPC 0 Sensor 1                OK         42 degrees C / 107 degrees F
      FPC 0 Sensor 2                OK         39 degrees C / 102 degrees F
      FPC 0 Coretemp                OK         75 degrees C / 167 degrees F
Fans  FPC 0 Fan Tray 0              OK         Spinning at normal speed
      FPC 0 Fan Tray 1              OK         Spinning at normal speed
```

show chassis environment (MX104 Router)

`user@host>` **show chassis environment**

```
Class Item                          Status     Measurement
Temp  PEM 0                         OK         34 degrees C / 93 degrees F
      PEM 1                         Absent
      ABB 0 Intake                  OK         33 degrees C / 91 degrees F
      ABB 0 Exhaust A               OK         42 degrees C / 107 degrees F
      ABB 0 Exhaust B               OK         43 degrees C / 109 degrees F
      ABB 1 Intake                  Absent
      ABB 1 Exhaust A               Absent
      ABB 1 Exhaust B               Absent
      Routing Engine 0              OK         34 degrees C / 93 degrees F
      Routing Engine 0 CPU          OK         46 degrees C / 114 degrees F
      Routing Engine 1              Absent
      Routing Engine 1 CPU          Absent
      AFEB 0 AFEB Processor         OK         33 degrees C / 91 degrees F
Fans  Fan 1                         OK         Spinning at normal speed
      Fan 2                         OK         Spinning at normal speed
      Fan 3                         OK         Spinning at normal speed
      Fan 4                         OK         Spinning at normal speed
      Fan 5                         OK         Spinning at normal speed
```

show chassis environment (MX240 Router)

`user@host>` **show chassis environment**

```
Class Item                          Status     Measurement
Temp  PEM 0                         OK         40 degrees C / 104 degrees F
      PEM 1                         OK         45 degrees C / 113 degrees F
      PEM 2                         Absent
      PEM 3                         Absent
      Routing Engine 0              OK         39 degrees C / 102 degrees F
      Routing Engine 1              OK         37 degrees C / 98 degrees F
      CB 0 Intake                   OK         36 degrees C / 96 degrees F
      CB 0 Exhaust A                OK         34 degrees C / 93 degrees F
      CB 0 Exhaust B                OK         38 degrees C / 100 degrees F
      CB 0 ACBC                     OK         37 degrees C / 98 degrees F
      CB 0 SF A                     OK         49 degrees C / 120 degrees F
      CB 0 SF B                     OK         41 degrees C / 105 degrees F
      CB 1 Intake                   OK         37 degrees C / 98 degrees F
      CB 1 Exhaust A                OK         34 degrees C / 93 degrees F
      CB 1 Exhaust B                OK         39 degrees C / 102 degrees F
      CB 1 ACBC                     OK         38 degrees C / 100 degrees F
      CB 1 SF A                     OK         47 degrees C / 116 degrees F
      CB 1 SF B                     OK         41 degrees C / 105 degrees F
      FPC 1 Intake                  OK         33 degrees C / 91 degrees F
      FPC 1 Exhaust A               OK         38 degrees C / 100 degrees F
      FPC 1 Exhaust B               OK         53 degrees C / 127 degrees F
      FPC 1 I3 0 TSensor            OK         50 degrees C / 122 degrees F
      FPC 1 I3 0 Chip               OK         53 degrees C / 127 degrees F
      FPC 1 I3 1 TSensor            OK         49 degrees C / 120 degrees F
      FPC 1 I3 1 Chip               OK         52 degrees C / 125 degrees F
      FPC 1 I3 2 TSensor            OK         47 degrees C / 116 degrees F
      FPC 1 I3 2 Chip               OK         49 degrees C / 120 degrees F
      FPC 1 I3 3 TSensor            OK         44 degrees C / 111 degrees F
      FPC 1 I3 3 Chip               OK         46 degrees C / 114 degrees F
      FPC 1 IA 0 TSensor            OK         45 degrees C / 113 degrees F
      FPC 1 IA 0 Chip               OK         44 degrees C / 111 degrees F
      FPC 1 IA 1 TSensor            OK         44 degrees C / 111 degrees F
      FPC 1 IA 1 Chip               OK         48 degrees C / 118 degrees F
      FPC 2 Intake                  OK         32 degrees C / 89 degrees F
      FPC 2 Exhaust A               OK         40 degrees C / 104 degrees F
      FPC 2 Exhaust B               OK         52 degrees C / 125 degrees F
      FPC 2 I3 0 TSensor            OK         52 degrees C / 125 degrees F
      FPC 2 I3 0 Chip               OK         56 degrees C / 132 degrees F
      FPC 2 I3 1 TSensor            OK         52 degrees C / 125 degrees F
      FPC 2 I3 1 Chip               OK         55 degrees C / 131 degrees F
      FPC 2 I3 2 TSensor            OK         49 degrees C / 120 degrees F
      FPC 2 I3 2 Chip               OK         52 degrees C / 125 degrees F
      FPC 2 I3 3 TSensor            OK         44 degrees C / 111 degrees F
```

```
      FPC 2 I3 3 Chip                 OK          48 degrees C / 118 degrees F
      FPC 2 IA 0 TSensor              OK          50 degrees C / 122 degrees F
      FPC 2 IA 0 Chip                 OK          48 degrees C / 118 degrees F
      FPC 2 IA 1 TSensor              OK          47 degrees C / 116 degrees F
      FPC 2 IA 1 Chip                 OK          53 degrees C / 127 degrees F
Fans  Front Fan                       OK          Spinning at normal speed
      Middle Fan                      OK          Spinning at normal speed
      Rear Fan                        OK          Spinning at normal speed
```

show chassis environment (MX240 Router with SCBE)

`user@host>` **show chassis environment**

```
Class Item                            Status      Measurement
Temp  PEM 0                           OK          40 degrees C / 104 degrees F
      PEM 1                           OK          45 degrees C / 113 degrees F
      PEM 2                           Absent
      PEM 3                           Absent
      Routing Engine 0                OK          39 degrees C / 102 degrees F
      Routing Engine 1                OK          37 degrees C / 98 degrees F
      CB 0 Intake                     OK          36 degrees C / 96 degrees F
      CB 0 Exhaust A                  OK          34 degrees C / 93 degrees F
      CB 0 Exhaust B                  OK          38 degrees C / 100 degrees F
      CB 0 ACBC                       OK          37 degrees C / 98 degrees F
      CB 0 XF A                       OK          49 degrees C / 120 degrees F
      CB 0 XF B                       OK          41 degrees C / 105 degrees F
      CB 1 Intake                     OK          37 degrees C / 98 degrees F
      CB 1 Exhaust A                  OK          34 degrees C / 93 degrees F
      CB 1 Exhaust B                  OK          39 degrees C / 102 degrees F
      CB 1 ACBC                       OK          38 degrees C / 100 degrees F
      CB 1 XF A                       OK          47 degrees C / 116 degrees F
      CB 1 XF B                       OK          41 degrees C / 105 degrees F
      FPC 1 Intake                    OK          33 degrees C / 91 degrees F
      FPC 1 Exhaust A                 OK          38 degrees C / 100 degrees F
      FPC 1 Exhaust B                 OK          53 degrees C / 127 degrees F
      FPC 1 I3 0 TSensor              OK          50 degrees C / 122 degrees F
      FPC 1 I3 0 Chip                 OK          53 degrees C / 127 degrees F
      FPC 1 I3 1 TSensor              OK          49 degrees C / 120 degrees F
      FPC 1 I3 1 Chip                 OK          52 degrees C / 125 degrees F
      FPC 1 I3 2 TSensor              OK          47 degrees C / 116 degrees F
      FPC 1 I3 2 Chip                 OK          49 degrees C / 120 degrees F
      FPC 1 I3 3 TSensor              OK          44 degrees C / 111 degrees F
      FPC 1 I3 3 Chip                 OK          46 degrees C / 114 degrees F
      FPC 1 IA 0 TSensor              OK          45 degrees C / 113 degrees F
```

```
      FPC 1 IA 0 Chip                 OK          44 degrees C / 111 degrees F
      FPC 1 IA 1 TSensor              OK          44 degrees C / 111 degrees F
      FPC 1 IA 1 Chip                 OK          48 degrees C / 118 degrees F
      FPC 2 Intake                    OK          32 degrees C / 89 degrees F
      FPC 2 Exhaust A                 OK          40 degrees C / 104 degrees F
      FPC 2 Exhaust B                 OK          52 degrees C / 125 degrees F
      FPC 2 I3 0 TSensor              OK          52 degrees C / 125 degrees F
      FPC 2 I3 0 Chip                 OK          56 degrees C / 132 degrees F
      FPC 2 I3 1 TSensor              OK          52 degrees C / 125 degrees F
      FPC 2 I3 1 Chip                 OK          55 degrees C / 131 degrees F
      FPC 2 I3 2 TSensor              OK          49 degrees C / 120 degrees F
      FPC 2 I3 2 Chip                 OK          52 degrees C / 125 degrees F
      FPC 2 I3 3 TSensor              OK          44 degrees C / 111 degrees F
      FPC 2 I3 3 Chip                 OK          48 degrees C / 118 degrees F
      FPC 2 IA 0 TSensor              OK          50 degrees C / 122 degrees F
      FPC 2 IA 0 Chip                 OK          48 degrees C / 118 degrees F
      FPC 2 IA 1 TSensor              OK          47 degrees C / 116 degrees F
      FPC 2 IA 1 Chip                 OK          53 degrees C / 127 degrees F
Fans  Front Fan                       OK          Spinning at normal speed
      Middle Fan                      OK          Spinning at normal speed
      Rear Fan                        OK          Spinning at normal speed
```

show chassis environment (MX480 Router)

`user@host>` **show chassis environment**

```
Class Item                            Status      Measurement
Temp  PEM 0                           OK          35 degrees C / 95 degrees F
      PEM 1                           OK          40 degrees C / 104 degrees F
      PEM 2                           Absent
      PEM 3                           Absent
      Routing Engine 0                OK          44 degrees C / 111 degrees F
      Routing Engine 1                OK          45 degrees C / 113 degrees F
      CB 0 Intake                     OK          36 degrees C / 96 degrees F
      CB 0 Exhaust A                  OK          38 degrees C / 100 degrees F
      CB 0 Exhaust B                  OK          39 degrees C / 102 degrees F
      CB 0 ACBC                       OK          37 degrees C / 98 degrees F
      CB 0 SF A                       OK          51 degrees C / 123 degrees F
      CB 0 SF B                       OK          44 degrees C / 111 degrees F
      CB 1 Intake                     OK          36 degrees C / 96 degrees F
      CB 1 Exhaust A                  OK          39 degrees C / 102 degrees F
      CB 1 Exhaust B                  OK          40 degrees C / 104 degrees F
      CB 1 ACBC                       OK          37 degrees C / 98 degrees F
      CB 1 SF A                       OK          50 degrees C / 122 degrees F
```

```
      CB 1 SF B                      OK          43 degrees C / 109 degrees F
      FPC 0 Intake                   OK          36 degrees C / 96 degrees F
      FPC 0 Exhaust A                OK          39 degrees C / 102 degrees F
      FPC 0 Exhaust B                OK          51 degrees C / 123 degrees F
      FPC 0 I3 0 TSensor             OK          49 degrees C / 120 degrees F
      FPC 0 I3 0 Chip                OK          56 degrees C / 132 degrees F
      FPC 0 I3 1 TSensor             OK          47 degrees C / 116 degrees F
      FPC 0 I3 1 Chip                OK          52 degrees C / 125 degrees F
      FPC 0 I3 2 TSensor             OK          46 degrees C / 114 degrees F
      FPC 0 I3 2 Chip                OK          48 degrees C / 118 degrees F
      FPC 0 I3 3 TSensor             OK          42 degrees C / 107 degrees F
      FPC 0 I3 3 Chip                OK          45 degrees C / 113 degrees F
      FPC 0 IA 0 TSensor             OK          45 degrees C / 113 degrees F
      FPC 0 IA 0 Chip                OK          45 degrees C / 113 degrees F
      FPC 0 IA 1 TSensor             OK          44 degrees C / 111 degrees F
      FPC 0 IA 1 Chip                OK          48 degrees C / 118 degrees F
      FPC 1 Intake                   OK          37 degrees C / 98 degrees F
      FPC 1 Exhaust A                OK          41 degrees C / 105 degrees F
      FPC 1 Exhaust B                OK          52 degrees C / 125 degrees F
      FPC 1 I3 0 TSensor             OK          51 degrees C / 123 degrees F
      FPC 1 I3 0 Chip                OK          57 degrees C / 134 degrees F
      FPC 1 I3 1 TSensor             OK          48 degrees C / 118 degrees F
      FPC 1 I3 1 Chip                OK          52 degrees C / 125 degrees F
      FPC 1 I3 2 TSensor             OK          46 degrees C / 114 degrees F
      FPC 1 I3 2 Chip                OK          50 degrees C / 122 degrees F
      FPC 1 I3 3 TSensor             OK          42 degrees C / 107 degrees F
      FPC 1 I3 3 Chip                OK          46 degrees C / 114 degrees F
      FPC 1 IA 0 TSensor             OK          49 degrees C / 120 degrees F
      FPC 1 IA 0 Chip                OK          48 degrees C / 118 degrees F
      FPC 1 IA 1 TSensor             OK          46 degrees C / 114 degrees F
      FPC 1 IA 1 Chip                OK          50 degrees C / 122 degrees F
Fans  Top Rear Fan                   OK          Spinning at normal speed
      Bottom Rear Fan                OK          Spinning at normal speed
      Top Middle Fan                 OK          Spinning at normal speed
      Bottom Middle Fan              OK          Spinning at normal speed
      Top Front Fan                  OK          Spinning at normal speed
      Bottom Front Fan               OK          Spinning at normal speed
```

show chassis environment (MX480 Router with SCBE)

`user@host>` **show chassis environment**

```
Class Item                           Status     Measurement
Temp  PEM 0                          OK         35 degrees C / 95 degrees F
```

```
PEM 1                       OK          40 degrees C / 104 degrees F
PEM 2                       Absent
PEM 3                       Absent
Routing Engine 0            OK          44 degrees C / 111 degrees F
Routing Engine 1            OK          45 degrees C / 113 degrees F
CB 0 Intake                 OK          36 degrees C / 96 degrees F
CB 0 Exhaust A              OK          38 degrees C / 100 degrees F
CB 0 Exhaust B              OK          39 degrees C / 102 degrees F
CB 0 ACBC                   OK          37 degrees C / 98 degrees F
CB 0 XF A                   OK          51 degrees C / 123 degrees F
CB 0 XF B                   OK          44 degrees C / 111 degrees F
CB 1 Intake                 OK          36 degrees C / 96 degrees F
CB 1 Exhaust A              OK          39 degrees C / 102 degrees F
CB 1 Exhaust B              OK          40 degrees C / 104 degrees F
CB 1 ACBC                   OK          37 degrees C / 98 degrees F
CB 1 XF A                   OK          50 degrees C / 122 degrees F
CB 1 XF B                   OK          43 degrees C / 109 degrees F
FPC 0 Intake                OK          36 degrees C / 96 degrees F
FPC 0 Exhaust A             OK          39 degrees C / 102 degrees F
FPC 0 Exhaust B             OK          51 degrees C / 123 degrees F
FPC 0 I3 0 TSensor          OK          49 degrees C / 120 degrees F
FPC 0 I3 0 Chip             OK          56 degrees C / 132 degrees F
FPC 0 I3 1 TSensor          OK          47 degrees C / 116 degrees F
FPC 0 I3 1 Chip             OK          52 degrees C / 125 degrees F
FPC 0 I3 2 TSensor          OK          46 degrees C / 114 degrees F
FPC 0 I3 2 Chip             OK          48 degrees C / 118 degrees F
FPC 0 I3 3 TSensor          OK          42 degrees C / 107 degrees F
FPC 0 I3 3 Chip             OK          45 degrees C / 113 degrees F
FPC 0 IA 0 TSensor          OK          45 degrees C / 113 degrees F
FPC 0 IA 0 Chip             OK          45 degrees C / 113 degrees F
FPC 0 IA 1 TSensor          OK          44 degrees C / 111 degrees F
FPC 0 IA 1 Chip             OK          48 degrees C / 118 degrees F
FPC 1 Intake                OK          37 degrees C / 98 degrees F
FPC 1 Exhaust A             OK          41 degrees C / 105 degrees F
FPC 1 Exhaust B             OK          52 degrees C / 125 degrees F
FPC 1 I3 0 TSensor          OK          51 degrees C / 123 degrees F
FPC 1 I3 0 Chip             OK          57 degrees C / 134 degrees F
FPC 1 I3 1 TSensor          OK          48 degrees C / 118 degrees F
FPC 1 I3 1 Chip             OK          52 degrees C / 125 degrees F
FPC 1 I3 2 TSensor          OK          46 degrees C / 114 degrees F
FPC 1 I3 2 Chip             OK          50 degrees C / 122 degrees F
FPC 1 I3 3 TSensor          OK          42 degrees C / 107 degrees F
FPC 1 I3 3 Chip             OK          46 degrees C / 114 degrees F
FPC 1 IA 0 TSensor          OK          49 degrees C / 120 degrees F
```

```
      FPC 1 IA 0 Chip                 OK          48 degrees C / 118 degrees F
      FPC 1 IA 1 TSensor              OK          46 degrees C / 114 degrees F
      FPC 1 IA 1 Chip                 OK          50 degrees C / 122 degrees F
Fans  Top Rear Fan                    OK          Spinning at normal speed
      Bottom Rear Fan                 OK          Spinning at normal speed
      Top Middle Fan                  OK          Spinning at normal speed
      Bottom Middle Fan               OK          Spinning at normal speed
      Top Front Fan                   OK          Spinning at normal speed
      Bottom Front Fan                OK          Spinning at normal speed
```

show chassis environment (MX960 Router)

user@host> **show chassis environment**

```
Class Item                            Status      Measurement
Temp  PEM 0                           Absent
      PEM 1                           Absent
      PEM 2                           Check
      PEM 3                           OK          35 degrees C / 95 degrees F
      Routing Engine 0                OK          37 degrees C / 98 degrees F
      Routing Engine 1                Absent
      CB 0 Intake                     OK          24 degrees C / 75 degrees F
      CB 0 Exhaust A                  OK          30 degrees C / 86 degrees F
      CB 0 Exhaust B                  OK          27 degrees C / 80 degrees F
      CB 1 Intake                     Absent
      CB 1 Exhaust A                  Absent
      CB 1 Exhaust B                  Absent
      CB 1 ACBC                       Absent
      CB 1 SF A                       Absent
      CB 1 SF B                       Absent
      CB 2 Intake                     Absent
      CB 2 Exhaust A                  Absent
      CB 2 Exhaust B                  Absent
      CB 2 ACBC                       Absent
      CB 2 SF A                       Absent
      CB 2 SF B                       Absent
      FPC 4 Intake                    OK          24 degrees C / 75 degrees F
      FPC 4 Exhaust A                 OK          36 degrees C / 96 degrees F
      FPC 4 Exhaust B                 OK          38 degrees C / 100 degrees F
      FPC 7 Intake                    OK          24 degrees C / 75 degrees F
      FPC 7 Exhaust A                 OK          36 degrees C / 96 degrees F
      FPC 7 Exhaust B                 OK          42 degrees C / 107 degrees F
Fans  Top Fan Tray Temp               Failed
      Top Tray Fan 1                  OK          Spinning at normal speed
```

```
      Top Tray Fan 2                OK          Spinning at normal speed
      Top Tray Fan 3                OK          Spinning at normal speed
      Top Tray Fan 4                OK          Spinning at normal speed
      Top Tray Fan 5                OK          Spinning at normal speed
      Top Tray Fan 6                OK          Spinning at normal speed
      Bottom Fan Tray Temp          Failed
      Bottom Tray Fan 1             OK          Spinning at normal speed
      Bottom Tray Fan 2             OK          Spinning at normal speed
      Bottom Tray Fan 3             OK          Spinning at normal speed
      Bottom Tray Fan 4             OK          Spinning at normal speed
      Bottom Tray Fan 5             OK          Spinning at normal speed
      Bottom Tray Fan 6             OK          Spinning at normal speed
```

show chassis environment (MX960 Router with SCBE)

`user@host>` **show chassis environment**

```
Class Item                          Status     Measurement
Temp  PEM 0                         Absent
      PEM 1                         OK         50 degrees C / 122 degrees F
      PEM 2                         OK         50 degrees C / 122 degrees F
      PEM 3                         OK         50 degrees C / 122 degrees F
      Routing Engine 0              OK         42 degrees C / 107 degrees F
      Routing Engine 0 CPU          OK         51 degrees C / 123 degrees F
      Routing Engine 1              OK         39 degrees C / 102 degrees F
      Routing Engine 1 CPU          OK         44 degrees C / 111 degrees F
      CB 0 Intake                   OK         35 degrees C / 95 degrees F
      CB 0 Exhaust A                OK         36 degrees C / 96 degrees F
      CB 0 Exhaust B                OK         43 degrees C / 109 degrees F
      CB 0 ACBC                     OK         38 degrees C / 100 degrees F
      CB 0 XF A                     OK         53 degrees C / 127 degrees F
      CB 0 XF B                     OK         47 degrees C / 116 degrees F
      CB 1 Intake                   OK         35 degrees C / 95 degrees F
      CB 1 Exhaust A                OK         35 degrees C / 95 degrees F
      CB 1 Exhaust B                OK         41 degrees C / 105 degrees F
      CB 1 ACBC                     OK         38 degrees C / 100 degrees F
      CB 1 XF A                     OK         52 degrees C / 125 degrees F
      CB 1 XF B                     OK         47 degrees C / 116 degrees F
      CB 2 Intake                   OK         32 degrees C / 89 degrees F
      CB 2 Exhaust A                OK         30 degrees C / 86 degrees F
      CB 2 Exhaust B                OK         35 degrees C / 95 degrees F
      CB 2 ACBC                     OK         33 degrees C / 91 degrees F
      CB 2 XF A                     OK         51 degrees C / 123 degrees F
      CB 2 XF B                     OK         50 degrees C / 122 degrees F
```

```
FPC 0 Intake                    OK          35 degrees C / 95 degrees F
FPC 0 Exhaust A                 OK          39 degrees C / 102 degrees F
FPC 0 Exhaust B                 OK          50 degrees C / 122 degrees F
FPC 0 I3 0 TSensor              OK          50 degrees C / 122 degrees F
FPC 0 I3 0 Chip                 OK          56 degrees C / 132 degrees F
FPC 0 I3 1 TSensor              OK          47 degrees C / 116 degrees F
FPC 0 I3 1 Chip                 OK          50 degrees C / 122 degrees F
FPC 0 I3 2 TSensor              OK          45 degrees C / 113 degrees F
FPC 0 I3 2 Chip                 OK          48 degrees C / 118 degrees F
FPC 0 I3 3 TSensor              OK          41 degrees C / 105 degrees F
FPC 0 I3 3 Chip                 OK          44 degrees C / 111 degrees F
FPC 0 IA 0 TSensor              OK          45 degrees C / 113 degrees F
FPC 0 IA 0 Chip                 OK          45 degrees C / 113 degrees F
FPC 0 IA 1 TSensor              OK          44 degrees C / 111 degrees F
FPC 0 IA 1 Chip                 OK          48 degrees C / 118 degrees F
FPC 1 Intake                    OK          36 degrees C / 96 degrees F
FPC 1 Exhaust A                 OK          47 degrees C / 116 degrees F
FPC 1 Exhaust B                 OK          43 degrees C / 109 degrees F
FPC 1 LU 0 TCAM TSensor         OK          53 degrees C / 127 degrees F
FPC 1 LU 0 TCAM Chip            OK          57 degrees C / 134 degrees F
FPC 1 LU 0 TSensor              OK          53 degrees C / 127 degrees F
FPC 1 LU 0 Chip                 OK          60 degrees C / 140 degrees F
FPC 1 MQ 0 TSensor              OK          53 degrees C / 127 degrees F
FPC 1 MQ 0 Chip                 OK          56 degrees C / 132 degrees F
FPC 1 LU 1 TCAM TSensor         OK          51 degrees C / 123 degrees F
FPC 1 LU 1 TCAM Chip            OK          52 degrees C / 125 degrees F
FPC 1 LU 1 TSensor              OK          51 degrees C / 123 degrees F
FPC 1 LU 1 Chip                 OK          53 degrees C / 127 degrees F
FPC 1 MQ 1 TSensor              OK          51 degrees C / 123 degrees F
FPC 1 MQ 1 Chip                 OK          58 degrees C / 136 degrees F
FPC 2 Intake                    OK          35 degrees C / 95 degrees F
FPC 2 Exhaust A                 OK          39 degrees C / 102 degrees F
FPC 2 Exhaust B                 OK          54 degrees C / 129 degrees F
FPC 2 I3 0 TSensor              OK          52 degrees C / 125 degrees F
FPC 2 I3 0 Chip                 OK          59 degrees C / 138 degrees F
FPC 2 I3 1 TSensor              OK          48 degrees C / 118 degrees F
FPC 2 I3 1 Chip                 OK          52 degrees C / 125 degrees F
FPC 2 I3 2 TSensor              OK          47 degrees C / 116 degrees F
FPC 2 I3 2 Chip                 OK          49 degrees C / 120 degrees F
FPC 2 I3 3 TSensor              OK          41 degrees C / 105 degrees F
FPC 2 I3 3 Chip                 OK          44 degrees C / 111 degrees F
FPC 2 IA 0 TSensor              OK          47 degrees C / 116 degrees F
FPC 2 IA 0 Chip                 OK          46 degrees C / 114 degrees F
FPC 2 IA 1 TSensor              OK          45 degrees C / 113 degrees F
```

```
FPC 2 IA 1 Chip                 OK          49 degrees C / 120 degrees F
FPC 3 Intake                    OK          34 degrees C / 93 degrees F
FPC 3 Exhaust A                 OK          34 degrees C / 93 degrees F
FPC 3 Exhaust B                 OK          47 degrees C / 116 degrees F
FPC 3 I3 0 TSensor              OK          48 degrees C / 118 degrees F
FPC 3 I3 0 Chip                 OK          52 degrees C / 125 degrees F
FPC 3 I3 1 TSensor              OK          46 degrees C / 114 degrees F
FPC 3 I3 1 Chip                 OK          48 degrees C / 118 degrees F
FPC 3 IA 0 TSensor              OK          41 degrees C / 105 degrees F
FPC 3 IA 0 Chip                 OK          40 degrees C / 104 degrees F
FPC 5 Intake                    OK          42 degrees C / 107 degrees F
FPC 5 Exhaust A                 OK          42 degrees C / 107 degrees F
FPC 5 Exhaust B                 OK          53 degrees C / 127 degrees F
FPC 5 LU 0 TSensor              OK          53 degrees C / 127 degrees F
FPC 5 LU 0 Chip                 OK          54 degrees C / 129 degrees F
FPC 5 LU 1 TSensor              OK          53 degrees C / 127 degrees F
FPC 5 LU 1 Chip                 OK          61 degrees C / 141 degrees F
FPC 5 LU 2 TSensor              OK          53 degrees C / 127 degrees F
FPC 5 LU 2 Chip                 OK          51 degrees C / 123 degrees F
FPC 5 LU 3 TSensor              OK          53 degrees C / 127 degrees F
FPC 5 LU 3 Chip                 OK          53 degrees C / 127 degrees F
FPC 5 MQ 0 TSensor              OK          47 degrees C / 116 degrees F
FPC 5 MQ 0 Chip                 OK          52 degrees C / 125 degrees F
FPC 5 MQ 1 TSensor              OK          47 degrees C / 116 degrees F
FPC 5 MQ 1 Chip                 OK          52 degrees C / 125 degrees F
FPC 5 MQ 2 TSensor              OK          47 degrees C / 116 degrees F
FPC 5 MQ 2 Chip                 OK          46 degrees C / 114 degrees F
FPC 5 MQ 3 TSensor              OK          47 degrees C / 116 degrees F
FPC 5 MQ 3 Chip                 OK          45 degrees C / 113 degrees F
FPC 7 Intake                    OK          36 degrees C / 96 degrees F
FPC 7 Exhaust A                 OK          35 degrees C / 95 degrees F
FPC 7 Exhaust B                 OK          33 degrees C / 91 degrees F
FPC 7 QX 0 TSensor              OK          42 degrees C / 107 degrees F
FPC 7 QX 0 Chip                 OK          47 degrees C / 116 degrees F
FPC 7 LU 0 TCAM TSensor         OK          42 degrees C / 107 degrees F
FPC 7 LU 0 TCAM Chip            OK          44 degrees C / 111 degrees F
FPC 7 LU 0 TSensor              OK          42 degrees C / 107 degrees F
FPC 7 LU 0 Chip                 OK          46 degrees C / 114 degrees F
FPC 7 MQ 0 TSensor              OK          42 degrees C / 107 degrees F
FPC 7 MQ 0 Chip                 OK          45 degrees C / 113 degrees F
FPC 8 Intake                    OK          33 degrees C / 91 degrees F
FPC 8 Exhaust A                 OK          33 degrees C / 91 degrees F
FPC 8 Exhaust B                 OK          36 degrees C / 96 degrees F
FPC 8 I3 0 TSensor              OK          38 degrees C / 100 degrees F
```

```
      FPC 8 I3 0 Chip              OK          43 degrees C / 109 degrees F
      FPC 8 BDS 0 TSensor          OK          37 degrees C / 98 degrees F
      FPC 8 BDS 0 Chip             OK          36 degrees C / 96 degrees F
      FPC 8 IA 0 TSensor           OK          37 degrees C / 98 degrees F
      FPC 8 IA 0 Chip              OK          37 degrees C / 98 degrees F
      FPC 10 Intake                OK          38 degrees C / 100 degrees F
      FPC 10 Exhaust A             OK          36 degrees C / 96 degrees F
      FPC 10 Exhaust B             OK          41 degrees C / 105 degrees F
      FPC 10 I3 0 TSensor          OK          40 degrees C / 104 degrees F
      FPC 10 I3 0 Chip             OK          42 degrees C / 107 degrees F
      FPC 10 I3 1 TSensor          OK          40 degrees C / 104 degrees F
      FPC 10 I3 1 Chip             OK          44 degrees C / 111 degrees F
      FPC 10 I3 2 TSensor          OK          42 degrees C / 107 degrees F
      FPC 10 I3 2 Chip             OK          43 degrees C / 109 degrees F
      FPC 10 I3 3 TSensor          OK          39 degrees C / 102 degrees F
      FPC 10 I3 3 Chip             OK          44 degrees C / 111 degrees F
      FPC 10 IA 0 TSensor          OK          36 degrees C / 96 degrees F
      FPC 10 IA 0 Chip             OK          36 degrees C / 96 degrees F
      FPC 10 IA 1 TSensor          OK          43 degrees C / 109 degrees F
      FPC 10 IA 1 Chip             OK          42 degrees C / 107 degrees F
Fans  Top Fan Tray Temp            OK          37 degrees C / 98 degrees F
      Top Tray Fan 1               OK          Spinning at normal speed
      Top Tray Fan 2               OK          Spinning at normal speed
      Top Tray Fan 3               OK          Spinning at normal speed
      Top Tray Fan 4               OK          Spinning at normal speed
      Top Tray Fan 5               OK          Spinning at normal speed
      Top Tray Fan 6               OK          Spinning at normal speed
      Bottom Fan Tray Temp         OK          28 degrees C / 82 degrees F
      Bottom Tray Fan 1            OK          Spinning at normal speed
      Bottom Tray Fan 2            OK          Spinning at normal speed
      Bottom Tray Fan 3            OK          Spinning at normal speed
      Bottom Tray Fan 4            OK          Spinning at normal speed
      Bottom Tray Fan 5            OK          Spinning at normal speed
      Bottom Tray Fan 6            OK          Spinning at normal speed
```

show chassis environment (MX960 Router with MPC5EQ)

`user@host>` **show chassis environment**

```
Class Item                         Status     Measurement
Temp  PEM 0                        OK         50 degrees C / 122 degrees F
      PEM 1                        OK         45 degrees C / 113 degrees F
      PEM 2                        OK         45 degrees C / 113 degrees F
      PEM 3                        Absent
```

```
Routing Engine 0              OK         31 degrees C / 87 degrees F
Routing Engine 0 CPU          OK         30 degrees C / 86 degrees F
Routing Engine 1              Present
Routing Engine 1 CPU          Present
CB 0 Intake                   OK         29 degrees C / 84 degrees F
CB 0 Exhaust A                OK         29 degrees C / 84 degrees F
CB 0 Exhaust B                OK         34 degrees C / 93 degrees F
CB 0 ACBC                     OK         32 degrees C / 89 degrees F
CB 0 XF A                     OK         49 degrees C / 120 degrees F
CB 0 XF B                     OK         45 degrees C / 113 degrees F
CB 1 Intake                   OK         26 degrees C / 78 degrees F
CB 1 Exhaust A                OK         26 degrees C / 78 degrees F
CB 1 Exhaust B                OK         27 degrees C / 80 degrees F
CB 1 ACBC                     OK         26 degrees C / 78 degrees F
CB 1 XF A                     OK         32 degrees C / 89 degrees F
CB 1 XF B                     OK         32 degrees C / 89 degrees F
CB 2 Intake                   OK         28 degrees C / 82 degrees F
CB 2 Exhaust A                OK         27 degrees C / 80 degrees F
CB 2 Exhaust B                OK         33 degrees C / 91 degrees F
CB 2 ACBC                     OK         30 degrees C / 86 degrees F
CB 2 XF A                     OK         48 degrees C / 118 degrees F
CB 2 XF B                     OK         46 degrees C / 114 degrees F
FPC 0 Intake                  OK         38 degrees C / 100 degrees F
FPC 0 Exhaust A               OK         48 degrees C / 118 degrees F
FPC 0 Exhaust B               OK         49 degrees C / 120 degrees F
FPC 0 XL TSen                 OK         48 degrees C / 118 degrees F
FPC 0 XL Chip                 OK         50 degrees C / 122 degrees F
FPC 0 XL_XR0 TSen             OK         48 degrees C / 118 degrees F
FPC 0 XL_XR0 Chip             OK         53 degrees C / 127 degrees F
FPC 0 XL_XR1 TSen             OK         48 degrees C / 118 degrees F
FPC 0 XL_XR1 Chip             OK         54 degrees C / 129 degrees F
FPC 0 XQ TSen                 OK         48 degrees C / 118 degrees F
FPC 0 XQ Chip                 OK         52 degrees C / 125 degrees F
FPC 0 XQ_XR0 TSen             OK         48 degrees C / 118 degrees F
FPC 0 XQ_XR0 Chip             OK         62 degrees C / 143 degrees F
FPC 0 XQ_XR1 TSen             OK         48 degrees C / 118 degrees F
FPC 0 XQ_XR1 Chip             OK         62 degrees C / 143 degrees F
FPC 0 XM 0 TSen               OK         53 degrees C / 127 degrees F
FPC 0 XM 0 Chip               OK         63 degrees C / 145 degrees F
FPC 0 XM 1 TSen               OK         53 degrees C / 127 degrees F
FPC 0 XM 1 Chip               OK         46 degrees C / 114 degrees F
FPC 0 PLX PCIe Switch TSe     OK         53 degrees C / 127 degrees F
FPC 0 PLX PCIe Switch Chi     OK         66 degrees C / 150 degrees F
FPC 1 Intake                  OK         31 degrees C / 87 degrees F
```

```
     FPC 1 Exhaust A               OK         38 degrees C / 100 degrees F
     FPC 1 Exhaust B               OK         49 degrees C / 120 degrees F
     FPC 1 LU 0 TSen               OK         41 degrees C / 105 degrees F
     FPC 1 LU 0 Chip               OK         47 degrees C / 116 degrees F
     FPC 1 LU 1 TSen               OK         41 degrees C / 105 degrees F
FPC 1 LU 1 Chip                OK         42 degrees C / 107 degrees F
     FPC 1 LU 2 TSen               OK         41 degrees C / 105 degrees F
     FPC 1 LU 2 Chip               OK         46 degrees C / 114 degrees F
     FPC 1 LU 3 TSen               OK         41 degrees C / 105 degrees F
     FPC 1 LU 3 Chip               OK         51 degrees C / 123 degrees F
     FPC 1 XM 0 TSen               OK         41 degrees C / 105 degrees F
     FPC 1 XM 0 Chip               OK         49 degrees C / 120 degrees F
     FPC 1 XF 0 TSen               OK         41 degrees C / 105 degrees F
     FPC 1 XF 0 Chip               OK         63 degrees C / 145 degrees F
     FPC 1 PLX Switch TSen         OK         41 degrees C / 105 degrees F
     FPC 1 PLX Switch Chip         OK         43 degrees C / 109 degrees F
     FPC 3 Intake                  OK         31 degrees C / 87 degrees F
     FPC 3 Exhaust A               OK         37 degrees C / 98 degrees F
     FPC 3 Exhaust B               OK         43 degrees C / 109 degrees F
     FPC 3 LU 0 TSen               OK         42 degrees C / 107 degrees F
     FPC 3 LU 0 Chip               OK         43 degrees C / 109 degrees F
     FPC 3 LU 1 TSen               OK         42 degrees C / 107 degrees F
     FPC 3 LU 1 Chip               OK         46 degrees C / 114 degrees F
     FPC 3 LU 2 TSen               OK         42 degrees C / 107 degrees F
     FPC 3 LU 2 Chip               OK         40 degrees C / 104 degrees F
     FPC 3 LU 3 TSen               OK         42 degrees C / 107 degrees F
     FPC 3 LU 3 Chip               OK         41 degrees C / 105 degrees F
     FPC 3 MQ 0 TSen               OK         37 degrees C / 98 degrees F
     FPC 3 MQ 0 Chip               OK         37 degrees C / 98 degrees F
     FPC 3 MQ 1 TSen               OK         37 degrees C / 98 degrees F
     FPC 3 MQ 1 Chip               OK         40 degrees C / 104 degrees F
     FPC 3 MQ 2 TSen               OK         37 degrees C / 98 degrees F
     FPC 3 MQ 2 Chip               OK         36 degrees C / 96 degrees F
     FPC 3 MQ 3 TSen               OK         37 degrees C / 98 degrees F
     FPC 3 MQ 3 Chip               OK         38 degrees C / 100 degrees F
     FPC 4 Intake                  OK         34 degrees C / 93 degrees F
     FPC 4 Exhaust A               OK         45 degrees C / 113 degrees F
     FPC 4 Exhaust B               OK         47 degrees C / 116 degrees F
     FPC 4 XL TSen                 OK         44 degrees C / 111 degrees F
     FPC 4 XL Chip                 OK         47 degrees C / 116 degrees F
     FPC 4 XL_XR0 TSen             OK         44 degrees C / 111 degrees F
     FPC 4 XL_XR0 Chip             OK         48 degrees C / 118 degrees F
     FPC 4 XL_XR1 TSen             OK         44 degrees C / 111 degrees F
     FPC 4 XL_XR1 Chip             OK         47 degrees C / 116 degrees F
```

```
     FPC 4 XQ TSen                 OK         44 degrees C / 111 degrees F
     FPC 4 XQ Chip                 OK         47 degrees C / 116 degrees F
     FPC 4 XQ_XR0 TSen             OK         44 degrees C / 111 degrees F
     FPC 4 XQ_XR0 Chip             OK         57 degrees C / 134 degrees F
     FPC 4 XQ_XR1 TSen             OK         44 degrees C / 111 degrees F
     FPC 4 XQ_XR1 Chip             OK         58 degrees C / 136 degrees F
     FPC 4 XM 0 TSen               OK         51 degrees C / 123 degrees F
     FPC 4 XM 0 Chip               OK         61 degrees C / 141 degrees F
     FPC 4 XM 1 TSen               OK         51 degrees C / 123 degrees F
     FPC 4 XM 1 Chip               OK         47 degrees C / 116 degrees F
     FPC 4 PLX PCIe Switch TSe     OK         51 degrees C / 123 degrees F
     FPC 4 PLX PCIe Switch Chi     OK         60 degrees C / 140 degrees F
     FPC 5 Intake                  OK         34 degrees C / 93 degrees F
     FPC 5 Exhaust A               OK         45 degrees C / 113 degrees F
     FPC 5 Exhaust B               OK         47 degrees C / 116 degrees F
     FPC 5 XL TSen                 OK         45 degrees C / 113 degrees F
     FPC 5 XL Chip                 OK         47 degrees C / 116 degrees F
     FPC 5 XL_XR0 TSen             OK         45 degrees C / 113 degrees F
FPC 5 XL_XR0 Chip             OK         49 degrees C / 120 degrees F
     FPC 5 XL_XR1 TSen             OK         45 degrees C / 113 degrees F
     FPC 5 XL_XR1 Chip             OK         49 degrees C / 120 degrees F
     FPC 5 XQ TSen                 OK         45 degrees C / 113 degrees F
     FPC 5 XQ Chip                 OK         48 degrees C / 118 degrees F
     FPC 5 XQ_XR0 TSen             OK         45 degrees C / 113 degrees F
     FPC 5 XQ_XR0 Chip             OK         60 degrees C / 140 degrees F
     FPC 5 XQ_XR1 TSen             OK         45 degrees C / 113 degrees F
     FPC 5 XQ_XR1 Chip             OK         58 degrees C / 136 degrees F
     FPC 5 XM 0 TSen               OK         50 degrees C / 122 degrees F
     FPC 5 XM 0 Chip               OK         48 degrees C / 118 degrees F
     FPC 5 XM 1 TSen               OK         50 degrees C / 122 degrees F
     FPC 5 XM 1 Chip               OK         47 degrees C / 116 degrees F
     FPC 5 PLX PCIe Switch TSe     OK         50 degrees C / 122 degrees F
     FPC 5 PLX PCIe Switch Chi     OK         59 degrees C / 138 degrees F
     FPC 7 Intake                  OK         32 degrees C / 89 degrees F
     FPC 7 Exhaust A               OK         32 degrees C / 89 degrees F
     FPC 7 Exhaust B               OK         33 degrees C / 91 degrees F
     FPC 7 LU 0 TSen               OK         49 degrees C / 120 degrees F
     FPC 7 LU 0 Chip               OK         44 degrees C / 111 degrees F
     FPC 7 LU 1 TSen               OK         49 degrees C / 120 degrees F
     FPC 7 LU 1 Chip               OK         47 degrees C / 116 degrees F
     FPC 7 LU 2 TSen               OK         49 degrees C / 120 degrees F
     FPC 7 LU 2 Chip               OK         39 degrees C / 102 degrees F
     FPC 7 LU 3 TSen               OK         49 degrees C / 120 degrees F
     FPC 7 LU 3 Chip               OK         43 degrees C / 109 degrees F
```

```
     FPC 7 XM 0 TSen               OK         49 degrees C / 120 degrees F
     FPC 7 XM 0 Chip               OK         57 degrees C / 134 degrees F
     FPC 7 XM 1 TSen               OK         49 degrees C / 120 degrees F
     FPC 7 XM 1 Chip               OK         48 degrees C / 118 degrees F
     FPC 7 PLX Switch TSen         OK         49 degrees C / 120 degrees F
     FPC 7 PLX Switch Chip         OK         45 degrees C / 113 degrees F
     FPC 8 Intake                  OK         36 degrees C / 96 degrees F
     FPC 8 Exhaust A               OK         51 degrees C / 123 degrees F
     FPC 8 Exhaust B               OK         46 degrees C / 114 degrees F
     FPC 8 XL TSen                 OK         46 degrees C / 114 degrees F
     FPC 8 XL Chip                 OK         47 degrees C / 116 degrees F
     FPC 8 XL_XR0 TSen             OK         46 degrees C / 114 degrees F
     FPC 8 XL_XR0 Chip             OK         53 degrees C / 127 degrees F
     FPC 8 XL_XR1 TSen             OK         46 degrees C / 114 degrees F
     FPC 8 XL_XR1 Chip             OK         52 degrees C / 125 degrees F
     FPC 8 XQ TSen                 OK         46 degrees C / 114 degrees F
     FPC 8 XQ Chip                 OK         46 degrees C / 114 degrees F
     FPC 8 XQ_XR0 TSen             OK         46 degrees C / 114 degrees F
     FPC 8 XQ_XR0 Chip             OK         59 degrees C / 138 degrees F
     FPC 8 XQ_XR1 TSen             OK         46 degrees C / 114 degrees F
     FPC 8 XQ_XR1 Chip             OK         57 degrees C / 134 degrees F
     FPC 8 XM 0 TSen               OK         52 degrees C / 125 degrees F
     FPC 8 XM 0 Chip               OK         61 degrees C / 141 degrees F
     FPC 8 XM 1 TSen               OK         52 degrees C / 125 degrees F
     FPC 8 XM 1 Chip               OK         47 degrees C / 116 degrees F
     FPC 8 PLX PCIe Switch TSe     OK         52 degrees C / 125 degrees F
     FPC 8 PLX PCIe Switch Chi     OK         63 degrees C / 145 degrees F
     FPC 9 Intake                  OK         31 degrees C / 87 degrees F
     FPC 9 Exhaust A               OK         34 degrees C / 93 degrees F
     FPC 9 Exhaust B               OK         35 degrees C / 95 degrees F
FPC 9 QX 0 TSen                OK         42 degrees C / 107 degrees F
     FPC 9 QX 0 Chip               OK         45 degrees C / 113 degrees F
     FPC 9 LU 0 TCAM TSen          OK         42 degrees C / 107 degrees F
     FPC 9 LU 0 TCAM Chip          OK         41 degrees C / 105 degrees F
     FPC 9 LU 0 TSen               OK         42 degrees C / 107 degrees F
     FPC 9 LU 0 Chip               OK         43 degrees C / 109 degrees F
     FPC 9 MQ 0 TSen               OK         42 degrees C / 107 degrees F
     FPC 9 MQ 0 Chip               OK         43 degrees C / 109 degrees F
     FPC 9 QX 1 TSen               OK         38 degrees C / 100 degrees F
     FPC 9 QX 1 Chip               OK         40 degrees C / 104 degrees F
     FPC 9 LU 1 TCAM TSen          OK         38 degrees C / 100 degrees F
     FPC 9 LU 1 TCAM Chip          OK         38 degrees C / 100 degrees F
     FPC 9 LU 1 TSen               OK         38 degrees C / 100 degrees F
     FPC 9 LU 1 Chip               OK         41 degrees C / 105 degrees F
```

```
      FPC 9 MQ 1 TSen               OK         38 degrees C / 100 degrees F
      FPC 9 MQ 1 Chip               OK         41 degrees C / 105 degrees F
      FPC 10 Intake                 OK         35 degrees C / 95 degrees F
      FPC 10 Exhaust A              OK         51 degrees C / 123 degrees F
      FPC 10 Exhaust B              OK         46 degrees C / 114 degrees F
      FPC 10 XL TSen                OK         42 degrees C / 107 degrees F
      FPC 10 XL Chip                OK         44 degrees C / 111 degrees F
      FPC 10 XL_XR0 TSen            OK         42 degrees C / 107 degrees F
      FPC 10 XL_XR0 Chip            OK         47 degrees C / 116 degrees F
      FPC 10 XL_XR1 TSen            OK         42 degrees C / 107 degrees F
      FPC 10 XL_XR1 Chip            OK         48 degrees C / 118 degrees F
      FPC 10 XQ TSen                OK         42 degrees C / 107 degrees F
      FPC 10 XQ Chip                OK         46 degrees C / 114 degrees F
      FPC 10 XQ_XR0 TSen            OK         42 degrees C / 107 degrees F
      FPC 10 XQ_XR0 Chip            OK         57 degrees C / 134 degrees F
      FPC 10 XQ_XR1 TSen            OK         42 degrees C / 107 degrees F
      FPC 10 XQ_XR1 Chip            OK         53 degrees C / 127 degrees F
      FPC 10 XM 0 TSen              OK         51 degrees C / 123 degrees F
      FPC 10 XM 0 Chip              OK         61 degrees C / 141 degrees F
      FPC 10 XM 1 TSen              OK         51 degrees C / 123 degrees F
      FPC 10 XM 1 Chip              OK         49 degrees C / 120 degrees F
      FPC 10 PLX PCIe Switch TSe    OK         51 degrees C / 123 degrees F
      FPC 10 PLX PCIe Switch Chi    OK         61 degrees C / 141 degrees F
      FPC 11 Intake                 OK         33 degrees C / 91 degrees F
      FPC 11 Exhaust A              OK         33 degrees C / 91 degrees F
      FPC 11 Exhaust B              OK         34 degrees C / 93 degrees F
      FPC 11 LU 0 TSen              OK         50 degrees C / 122 degrees F
      FPC 11 LU 0 Chip              OK         48 degrees C / 118 degrees F
      FPC 11 LU 1 TSen              OK         50 degrees C / 122 degrees F
      FPC 11 LU 1 Chip              OK         50 degrees C / 122 degrees F
      FPC 11 LU 2 TSen              OK         50 degrees C / 122 degrees F
      FPC 11 LU 2 Chip              OK         41 degrees C / 105 degrees F
      FPC 11 LU 3 TSen              OK         50 degrees C / 122 degrees F
      FPC 11 LU 3 Chip              OK         48 degrees C / 118 degrees F
      FPC 11 XM 0 TSen              OK         50 degrees C / 122 degrees F
      FPC 11 XM 0 Chip              OK         57 degrees C / 134 degrees F
      FPC 11 XM 1 TSen              OK         50 degrees C / 122 degrees F
      FPC 11 XM 1 Chip              OK         52 degrees C / 125 degrees F
      FPC 11 PLX Switch TSen        OK         50 degrees C / 122 degrees F
      FPC 11 PLX Switch Chip        OK         45 degrees C / 113 degrees F
Fans  Top Fan Tray Temp             OK         42 degrees C / 107 degrees F
      Top Tray Fan 1                OK         Spinning at high speed
 Top Tray Fan 2                OK         Spinning at high speed
      Top Tray Fan 3                OK         Spinning at high speed
```

```
      Top Tray Fan 4                OK          Spinning at high speed
      Top Tray Fan 5                OK          Spinning at high speed
      Top Tray Fan 6                OK          Spinning at high speed
      Top Tray Fan 7                OK          Spinning at high speed
      Top Tray Fan 8                OK          Spinning at high speed
      Top Tray Fan 9                OK          Spinning at high speed
      Top Tray Fan 10               OK          Spinning at high speed
      Top Tray Fan 11               OK          Spinning at high speed
      Top Tray Fan 12               OK          Spinning at high speed
      Bottom Fan Tray Temp          OK          33 degrees C / 91 degrees F
      Bottom Tray Fan 1             OK          Spinning at high speed
      Bottom Tray Fan 2             OK          Spinning at high speed
      Bottom Tray Fan 3             OK          Spinning at high speed
      Bottom Tray Fan 4             OK          Spinning at high speed
      Bottom Tray Fan 5             OK          Spinning at high speed
      Bottom Tray Fan 6             OK          Spinning at high speed
      Bottom Tray Fan 7             OK          Spinning at high speed
      Bottom Tray Fan 8             OK          Spinning at high speed
      Bottom Tray Fan 9             OK          Spinning at high speed
      Bottom Tray Fan 10            OK          Spinning at high speed
      Bottom Tray Fan 11            OK          Spinning at high speed
      Bottom Tray Fan 12            OK          Spinning at high speed
```

show chassis environment (MX2020 Router)

`user@host>` **show chassis environment**

```
Class Item                          Status     Measurement
Temp  PSM 0                         Absent
      PSM 1                         Absent
      PSM 2                         OK         41 degrees C / 105 degrees F
      PSM 3                         OK         39 degrees C / 102 degrees F
      PSM 4                         OK         39 degrees C / 102 degrees F
      PSM 5                         OK         38 degrees C / 100 degrees F
      PSM 6                         OK         38 degrees C / 100 degrees F
      PSM 7                         OK         38 degrees C / 100 degrees F
      PSM 8                         OK         37 degrees C / 98 degrees F
      PSM 9                         Absent
      PSM 10                        Absent
      PSM 11                        OK         47 degrees C / 116 degrees F
      PSM 12                        OK         45 degrees C / 113 degrees F
      PSM 13                        OK         44 degrees C / 111 degrees F
      PSM 14                        OK         44 degrees C / 111 degrees F
      PSM 15                        OK         43 degrees C / 109 degrees F
```

```
PSM 16                      OK          42 degrees C / 107 degrees F
PSM 17                      OK          41 degrees C / 105 degrees F
PDM 0                       OK
PDM 1                       Absent
PDM 2                       Absent
PDM 3                       OK
CB 0 IntakeA-Zone0          OK          45 degrees C / 113 degrees F
CB 0 IntakeB-Zone1          OK          34 degrees C / 93 degrees F
CB 0 IntakeC-Zone0          OK          48 degrees C / 118 degrees F
CB 0 ExhaustA-Zone0         OK          45 degrees C / 113 degrees F
CB 0 ExhaustB-Zone1         OK          37 degrees C / 98 degrees F
CB 0 TCBC-Zone0             OK          41 degrees C / 105 degrees F
CB 1 IntakeA-Zone0          OK          46 degrees C / 114 degrees F
CB 1 IntakeB-Zone1          OK          42 degrees C / 107 degrees F
CB 1 IntakeC-Zone0          OK          49 degrees C / 120 degrees F
CB 1 ExhaustA-Zone0         OK          46 degrees C / 114 degrees F
CB 1 ExhaustB-Zone1         OK          41 degrees C / 105 degrees F
CB 1 TCBC-Zone0             OK          46 degrees C / 114 degrees F
SPMB 0 Intake               OK          33 degrees C / 91 degrees F
SPMB 1 Intake               OK          42 degrees C / 107 degrees F
Routing Engine 0            OK          35 degrees C / 95 degrees F
Routing Engine 0 CPU        OK          34 degrees C / 93 degrees F
Routing Engine 1            OK          44 degrees C / 111 degrees F
Routing Engine 1 CPU        OK          42 degrees C / 107 degrees F
SFB 0 Intake-Zone0          OK          55 degrees C / 131 degrees F
SFB 0 Exhaust-Zone1         OK          48 degrees C / 118 degrees F
SFB 0 IntakeA-Zone0         OK          50 degrees C / 122 degrees F
SFB 0 IntakeB-Zone1         OK          40 degrees C / 104 degrees F
SFB 0 Exhaust-Zone0         OK          52 degrees C / 125 degrees F
SFB 0 SFB-XF2-Zone1         OK          61 degrees C / 141 degrees F
SFB 0 SFB-XF1-Zone0         OK          69 degrees C / 156 degrees F
SFB 0 SFB-XF0-Zone0         OK          68 degrees C / 154 degrees F
SFB 1 Intake-Zone0          OK          56 degrees C / 132 degrees F
SFB 1 Exhaust-Zone1         OK          47 degrees C / 116 degrees F
SFB 1 IntakeA-Zone0         OK          51 degrees C / 123 degrees F
SFB 1 IntakeB-Zone1         OK          40 degrees C / 104 degrees F
SFB 1 Exhaust-Zone0         OK          51 degrees C / 123 degrees F
SFB 1 SFB-XF2-Zone1         OK          62 degrees C / 143 degrees F
SFB 1 SFB-XF1-Zone0         OK          67 degrees C / 152 degrees F
SFB 1 SFB-XF0-Zone0         OK          69 degrees C / 156 degrees F
SFB 2 Intake-Zone0          OK          56 degrees C / 132 degrees F
SFB 2 Exhaust-Zone1         OK          47 degrees C / 116 degrees F
SFB 2 IntakeA-Zone0         OK          51 degrees C / 123 degrees F
SFB 2 IntakeB-Zone1         OK          40 degrees C / 104 degrees F
```

```
SFB 2 Exhaust-Zone0          OK        53 degrees C / 127 degrees F
SFB 2 SFB-XF2-Zone1          OK        65 degrees C / 149 degrees F
SFB 2 SFB-XF1-Zone0          OK        69 degrees C / 156 degrees F
SFB 2 SFB-XF0-Zone0          OK        70 degrees C / 158 degrees F
SFB 3 Intake-Zone0           OK        57 degrees C / 134 degrees F
SFB 3 Exhaust-Zone1          OK        48 degrees C / 118 degrees F
SFB 3 IntakeA-Zone0          OK        52 degrees C / 125 degrees F
SFB 3 IntakeB-Zone1          OK        41 degrees C / 105 degrees F
SFB 3 Exhaust-Zone0          OK        53 degrees C / 127 degrees F
SFB 3 SFB-XF2-Zone1          OK        66 degrees C / 150 degrees F
SFB 3 SFB-XF1-Zone0          OK        69 degrees C / 156 degrees F
SFB 3 SFB-XF0-Zone0          OK        71 degrees C / 159 degrees F
SFB 4 Intake-Zone0           OK        58 degrees C / 136 degrees F
SFB 4 Exhaust-Zone1          OK        49 degrees C / 120 degrees F
SFB 4 IntakeA-Zone0          OK        54 degrees C / 129 degrees F
SFB 4 IntakeB-Zone1          OK        42 degrees C / 107 degrees F
SFB 4 Exhaust-Zone0          OK        53 degrees C / 127 degrees F
SFB 4 SFB-XF2-Zone1          OK        64 degrees C / 147 degrees F
SFB 4 SFB-XF1-Zone0          OK        68 degrees C / 154 degrees F
SFB 4 SFB-XF0-Zone0          OK        71 degrees C / 159 degrees F
SFB 5 Intake-Zone0           OK        58 degrees C / 136 degrees F
SFB 5 Exhaust-Zone1          OK        50 degrees C / 122 degrees F
SFB 5 IntakeA-Zone0          OK        53 degrees C / 127 degrees F
SFB 5 IntakeB-Zone1          OK        43 degrees C / 109 degrees F
SFB 5 Exhaust-Zone0          OK        54 degrees C / 129 degrees F
SFB 5 SFB-XF2-Zone1          OK        66 degrees C / 150 degrees F
SFB 5 SFB-XF1-Zone0          OK        69 degrees C / 156 degrees F
SFB 5 SFB-XF0-Zone0          OK        74 degrees C / 165 degrees F
SFB 6 Intake-Zone0           OK        58 degrees C / 136 degrees F
SFB 6 Exhaust-Zone1          OK        49 degrees C / 120 degrees F
SFB 6 IntakeA-Zone0          OK        53 degrees C / 127 degrees F
SFB 6 IntakeB-Zone1          OK        43 degrees C / 109 degrees F
SFB 6 Exhaust-Zone0          OK        53 degrees C / 127 degrees F
SFB 6 SFB-XF2-Zone1          OK        65 degrees C / 149 degrees F
SFB 6 SFB-XF1-Zone0          OK        68 degrees C / 154 degrees F
SFB 6 SFB-XF0-Zone0          OK        72 degrees C / 161 degrees F
SFB 7 Intake-Zone0           OK        57 degrees C / 134 degrees F
SFB 7 Exhaust-Zone1          OK        50 degrees C / 122 degrees F
SFB 7 IntakeA-Zone0          OK        53 degrees C / 127 degrees F
SFB 7 IntakeB-Zone1          OK        43 degrees C / 109 degrees F
SFB 7 Exhaust-Zone0          OK        54 degrees C / 129 degrees F
SFB 7 SFB-XF2-Zone1          OK        68 degrees C / 154 degrees F
SFB 7 SFB-XF1-Zone0          OK        69 degrees C / 156 degrees F
SFB 7 SFB-XF0-Zone0          OK        73 degrees C / 163 degrees F
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```
FPC 0 Intake                    OK          41 degrees C / 105 degrees F
FPC 0 Exhaust A                 OK          48 degrees C / 118 degrees F
FPC 0 Exhaust B                 OK          62 degrees C / 143 degrees F
FPC 0 LU 0 TSen                 OK          59 degrees C / 138 degrees F
FPC 0 LU 0 Chip                 OK          62 degrees C / 143 degrees F
FPC 0 LU 1 TSen                 OK          59 degrees C / 138 degrees F
FPC 0 LU 1 Chip                 OK          64 degrees C / 147 degrees F
FPC 0 LU 2 TSen                 OK          59 degrees C / 138 degrees F
FPC 0 LU 2 Chip                 OK          53 degrees C / 127 degrees F
FPC 0 LU 3 TSen                 OK          59 degrees C / 138 degrees F
FPC 0 LU 3 Chip                 OK          53 degrees C / 127 degrees F
FPC 0 MQ 0 TSen                 OK          47 degrees C / 116 degrees F
FPC 0 MQ 0 Chip                 OK          49 degrees C / 120 degrees F
FPC 0 MQ 1 TSen                 OK          47 degrees C / 116 degrees F
FPC 0 MQ 1 Chip                 OK          51 degrees C / 123 degrees F
FPC 0 MQ 2 TSen                 OK          47 degrees C / 116 degrees F
FPC 0 MQ 2 Chip                 OK          44 degrees C / 111 degrees F
FPC 0 MQ 3 TSen                 OK          47 degrees C / 116 degrees F
FPC 0 MQ 3 Chip                 OK          45 degrees C / 113 degrees F
FPC 1 Intake                    OK          40 degrees C / 104 degrees F
FPC 1 Exhaust A                 OK          49 degrees C / 120 degrees F
FPC 1 Exhaust B                 OK          58 degrees C / 136 degrees F
FPC 1 LU 0 TSen                 OK          55 degrees C / 131 degrees F
FPC 1 LU 0 Chip                 OK          56 degrees C / 132 degrees F
FPC 1 LU 1 TSen                 OK          55 degrees C / 131 degrees F
FPC 1 LU 1 Chip                 OK          58 degrees C / 136 degrees F
FPC 1 LU 2 TSen                 OK          55 degrees C / 131 degrees F
FPC 1 LU 2 Chip                 OK          49 degrees C / 120 degrees F
FPC 1 LU 3 TSen                 OK          55 degrees C / 131 degrees F
FPC 1 LU 3 Chip                 OK          51 degrees C / 123 degrees F
FPC 1 MQ 0 TSen                 OK          47 degrees C / 116 degrees F
FPC 1 MQ 0 Chip                 OK          48 degrees C / 118 degrees F
FPC 1 MQ 1 TSen                 OK          47 degrees C / 116 degrees F
FPC 1 MQ 1 Chip                 OK          50 degrees C / 122 degrees F
FPC 1 MQ 2 TSen                 OK          47 degrees C / 116 degrees F
FPC 1 MQ 2 Chip                 OK          44 degrees C / 111 degrees F
FPC 1 MQ 3 TSen                 OK          47 degrees C / 116 degrees F
FPC 1 MQ 3 Chip                 OK          44 degrees C / 111 degrees F
FPC 2 Intake                    OK          39 degrees C / 102 degrees F
FPC 2 Exhaust A                 OK          49 degrees C / 120 degrees F
FPC 2 Exhaust B                 OK          61 degrees C / 141 degrees F
FPC 2 LU 0 TSen                 OK          58 degrees C / 136 degrees F
FPC 2 LU 0 Chip                 OK          60 degrees C / 140 degrees F
FPC 2 LU 1 TSen                 OK          58 degrees C / 136 degrees F
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```
FPC 2 LU 1 Chip              OK        65 degrees C / 149 degrees F
FPC 2 LU 2 TSen              OK        58 degrees C / 136 degrees F
FPC 2 LU 2 Chip              OK        51 degrees C / 123 degrees F
FPC 2 LU 3 TSen              OK        58 degrees C / 136 degrees F
FPC 2 LU 3 Chip              OK        53 degrees C / 127 degrees F
FPC 2 MQ 0 TSen              OK        47 degrees C / 116 degrees F
FPC 2 MQ 0 Chip              OK        50 degrees C / 122 degrees F
FPC 2 MQ 1 TSen              OK        47 degrees C / 116 degrees F
FPC 2 MQ 1 Chip              OK        52 degrees C / 125 degrees F
FPC 2 MQ 2 TSen              OK        47 degrees C / 116 degrees F
FPC 2 MQ 2 Chip              OK        45 degrees C / 113 degrees F
FPC 2 MQ 3 TSen              OK        47 degrees C / 116 degrees F
FPC 2 MQ 3 Chip              OK        46 degrees C / 114 degrees F
FPC 3 Intake                 OK        40 degrees C / 104 degrees F
FPC 3 Exhaust A              OK        49 degrees C / 120 degrees F
FPC 3 Exhaust B              OK        61 degrees C / 141 degrees F
FPC 3 LU 0 TSen              OK        58 degrees C / 136 degrees F
FPC 3 LU 0 Chip              OK        61 degrees C / 141 degrees F
FPC 3 LU 1 TSen              OK        58 degrees C / 136 degrees F
FPC 3 LU 1 Chip              OK        62 degrees C / 143 degrees F
FPC 3 LU 2 TSen              OK        58 degrees C / 136 degrees F
FPC 3 LU 2 Chip              OK        51 degrees C / 123 degrees F
FPC 3 LU 3 TSen              OK        58 degrees C / 136 degrees F
FPC 3 LU 3 Chip              OK        53 degrees C / 127 degrees F
FPC 3 MQ 0 TSen              OK        48 degrees C / 118 degrees F
FPC 3 MQ 0 Chip              OK        50 degrees C / 122 degrees F
FPC 3 MQ 1 TSen              OK        48 degrees C / 118 degrees F
FPC 3 MQ 1 Chip              OK        54 degrees C / 129 degrees F
FPC 3 MQ 2 TSen              OK        48 degrees C / 118 degrees F
FPC 3 MQ 2 Chip              OK        45 degrees C / 113 degrees F
FPC 3 MQ 3 TSen              OK        48 degrees C / 118 degrees F
FPC 3 MQ 3 Chip              OK        48 degrees C / 118 degrees F
FPC 4 Intake                 OK        40 degrees C / 104 degrees F
FPC 4 Exhaust A              OK        49 degrees C / 120 degrees F
FPC 4 Exhaust B              OK        62 degrees C / 143 degrees F
FPC 4 LU 0 TSen              OK        59 degrees C / 138 degrees F
FPC 4 LU 0 Chip              OK        62 degrees C / 143 degrees F
FPC 4 LU 1 TSen              OK        59 degrees C / 138 degrees F
FPC 4 LU 1 Chip              OK        65 degrees C / 149 degrees F
FPC 4 LU 2 TSen              OK        59 degrees C / 138 degrees F
FPC 4 LU 2 Chip              OK        51 degrees C / 123 degrees F
FPC 4 LU 3 TSen              OK        59 degrees C / 138 degrees F
FPC 4 LU 3 Chip              OK        53 degrees C / 127 degrees F
FPC 4 MQ 0 TSen              OK        48 degrees C / 118 degrees F
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```
FPC 4 MQ 0 Chip              OK        52 degrees C / 125 degrees F
FPC 4 MQ 1 TSen              OK        48 degrees C / 118 degrees F
FPC 4 MQ 1 Chip              OK        53 degrees C / 127 degrees F
FPC 4 MQ 2 TSen              OK        48 degrees C / 118 degrees F
FPC 4 MQ 2 Chip              OK        46 degrees C / 114 degrees F
FPC 4 MQ 3 TSen              OK        48 degrees C / 118 degrees F
FPC 4 MQ 3 Chip              OK        47 degrees C / 116 degrees F
FPC 5 Intake                 OK        41 degrees C / 105 degrees F
FPC 5 Exhaust A              OK        50 degrees C / 122 degrees F
FPC 5 Exhaust B              OK        63 degrees C / 145 degrees F
FPC 5 LU 0 TSen              OK        60 degrees C / 140 degrees F
FPC 5 LU 0 Chip              OK        63 degrees C / 145 degrees F
FPC 5 LU 1 TSen              OK        60 degrees C / 140 degrees F
FPC 5 LU 1 Chip              OK        66 degrees C / 150 degrees F
FPC 5 LU 2 TSen              OK        60 degrees C / 140 degrees F
FPC 5 LU 2 Chip              OK        56 degrees C / 132 degrees F
FPC 5 LU 3 TSen              OK        60 degrees C / 140 degrees F
FPC 5 LU 3 Chip              OK        54 degrees C / 129 degrees F
FPC 5 MQ 0 TSen              OK        49 degrees C / 120 degrees F
FPC 5 MQ 0 Chip              OK        52 degrees C / 125 degrees F
FPC 5 MQ 1 TSen              OK        49 degrees C / 120 degrees F
FPC 5 MQ 1 Chip              OK        53 degrees C / 127 degrees F
FPC 5 MQ 2 TSen              OK        49 degrees C / 120 degrees F
FPC 5 MQ 2 Chip              OK        48 degrees C / 118 degrees F
FPC 5 MQ 3 TSen              OK        49 degrees C / 120 degrees F
FPC 5 MQ 3 Chip              OK        47 degrees C / 116 degrees F
FPC 6 Intake                 OK        42 degrees C / 107 degrees F
FPC 6 Exhaust A              OK        51 degrees C / 123 degrees F
FPC 6 Exhaust B              OK        63 degrees C / 145 degrees F
FPC 6 LU 0 TSen              OK        61 degrees C / 141 degrees F
FPC 6 LU 0 Chip              OK        64 degrees C / 147 degrees F
FPC 6 LU 1 TSen              OK        61 degrees C / 141 degrees F
FPC 6 LU 1 Chip              OK        66 degrees C / 150 degrees F
FPC 6 LU 2 TSen              OK        61 degrees C / 141 degrees F
FPC 6 LU 2 Chip              OK        56 degrees C / 132 degrees F
FPC 6 LU 3 TSen              OK        61 degrees C / 141 degrees F
FPC 6 LU 3 Chip              OK        56 degrees C / 132 degrees F
FPC 6 MQ 0 TSen              OK        50 degrees C / 122 degrees F
FPC 6 MQ 0 Chip              OK        56 degrees C / 132 degrees F
FPC 6 MQ 1 TSen              OK        50 degrees C / 122 degrees F
FPC 6 MQ 1 Chip              OK        59 degrees C / 138 degrees F
FPC 6 MQ 2 TSen              OK        50 degrees C / 122 degrees F
FPC 6 MQ 2 Chip              OK        49 degrees C / 120 degrees F
FPC 6 MQ 3 TSen              OK        50 degrees C / 122 degrees F
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```
FPC 6 MQ 3 Chip                 OK          49 degrees C / 120 degrees F
FPC 7 Intake                    OK          41 degrees C / 105 degrees F
FPC 7 Exhaust A                 OK          51 degrees C / 123 degrees F
FPC 7 Exhaust B                 OK          63 degrees C / 145 degrees F
FPC 7 LU 0 TSen                 OK          60 degrees C / 140 degrees F
FPC 7 LU 0 Chip                 OK          61 degrees C / 141 degrees F
FPC 7 LU 1 TSen                 OK          60 degrees C / 140 degrees F
FPC 7 LU 1 Chip                 OK          65 degrees C / 149 degrees F
FPC 7 LU 2 TSen                 OK          60 degrees C / 140 degrees F
FPC 7 LU 2 Chip                 OK          54 degrees C / 129 degrees F
FPC 7 LU 3 TSen                 OK          60 degrees C / 140 degrees F
FPC 7 LU 3 Chip                 OK          53 degrees C / 127 degrees F
FPC 7 MQ 0 TSen                 OK          50 degrees C / 122 degrees F
FPC 7 MQ 0 Chip                 OK          53 degrees C / 127 degrees F
FPC 7 MQ 1 TSen                 OK          50 degrees C / 122 degrees F
FPC 7 MQ 1 Chip                 OK          54 degrees C / 129 degrees F
FPC 7 MQ 2 TSen                 OK          50 degrees C / 122 degrees F
FPC 7 MQ 2 Chip                 OK          47 degrees C / 116 degrees F
FPC 7 MQ 3 TSen                 OK          50 degrees C / 122 degrees F
FPC 7 MQ 3 Chip                 OK          47 degrees C / 116 degrees F
FPC 8 Intake                    OK          41 degrees C / 105 degrees F
FPC 8 Exhaust A                 OK          50 degrees C / 122 degrees F
FPC 8 Exhaust B                 OK          62 degrees C / 143 degrees F
FPC 8 LU 0 TSen                 OK          59 degrees C / 138 degrees F
FPC 8 LU 0 Chip                 OK          62 degrees C / 143 degrees F
FPC 8 LU 1 TSen                 OK          59 degrees C / 138 degrees F
FPC 8 LU 1 Chip                 OK          64 degrees C / 147 degrees F
FPC 8 LU 2 TSen                 OK          59 degrees C / 138 degrees F
FPC 8 LU 2 Chip                 OK          55 degrees C / 131 degrees F
FPC 8 LU 3 TSen                 OK          59 degrees C / 138 degrees F
FPC 8 LU 3 Chip                 OK          54 degrees C / 129 degrees F
FPC 8 MQ 0 TSen                 OK          49 degrees C / 120 degrees F
FPC 8 MQ 0 Chip                 OK          51 degrees C / 123 degrees F
FPC 8 MQ 1 TSen                 OK          49 degrees C / 120 degrees F
FPC 8 MQ 1 Chip                 OK          52 degrees C / 125 degrees F
FPC 8 MQ 2 TSen                 OK          49 degrees C / 120 degrees F
FPC 8 MQ 2 Chip                 OK          46 degrees C / 114 degrees F
FPC 8 MQ 3 TSen                 OK          49 degrees C / 120 degrees F
FPC 8 MQ 3 Chip                 OK          47 degrees C / 116 degrees F
FPC 9 Intake                    OK          42 degrees C / 107 degrees F
FPC 9 Exhaust A                 OK          51 degrees C / 123 degrees F
FPC 9 Exhaust B                 OK          63 degrees C / 145 degrees F
FPC 9 LU 0 TSen                 OK          60 degrees C / 140 degrees F
FPC 9 LU 0 Chip                 OK          65 degrees C / 149 degrees F
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```
FPC 9 LU 1 TSen              OK          60 degrees C / 140 degrees F
FPC 9 LU 1 Chip              OK          67 degrees C / 152 degrees F
FPC 9 LU 2 TSen              OK          60 degrees C / 140 degrees F
FPC 9 LU 2 Chip              OK          54 degrees C / 129 degrees F
FPC 9 LU 3 TSen              OK          60 degrees C / 140 degrees F
FPC 9 LU 3 Chip              OK          54 degrees C / 129 degrees F
FPC 9 MQ 0 TSen              OK          51 degrees C / 123 degrees F
FPC 9 MQ 0 Chip              OK          55 degrees C / 131 degrees F
FPC 9 MQ 1 TSen              OK          51 degrees C / 123 degrees F
FPC 9 MQ 1 Chip              OK          59 degrees C / 138 degrees F
FPC 9 MQ 2 TSen              OK          51 degrees C / 123 degrees F
FPC 9 MQ 2 Chip              OK          49 degrees C / 120 degrees F
FPC 9 MQ 3 TSen              OK          51 degrees C / 123 degrees F
FPC 9 MQ 3 Chip              OK          49 degrees C / 120 degrees F
FPC 10 Intake                OK          44 degrees C / 111 degrees F
FPC 10 Exhaust A             OK          49 degrees C / 120 degrees F
FPC 10 Exhaust B             OK          55 degrees C / 131 degrees F
FPC 10 LU 0 TSen             OK          54 degrees C / 129 degrees F
FPC 10 LU 0 Chip             OK          55 degrees C / 131 degrees F
FPC 10 LU 1 TSen             OK          54 degrees C / 129 degrees F
FPC 10 LU 1 Chip             OK          59 degrees C / 138 degrees F
FPC 10 LU 2 TSen             OK          54 degrees C / 129 degrees F
FPC 10 LU 2 Chip             OK          52 degrees C / 125 degrees F
FPC 10 LU 3 TSen             OK          54 degrees C / 129 degrees F
FPC 10 LU 3 Chip             OK          51 degrees C / 123 degrees F
FPC 10 MQ 0 TSen             OK          48 degrees C / 118 degrees F
FPC 10 MQ 0 Chip             OK          49 degrees C / 120 degrees F
FPC 10 MQ 1 TSen             OK          48 degrees C / 118 degrees F
FPC 10 MQ 1 Chip             OK          52 degrees C / 125 degrees F
FPC 10 MQ 2 TSen             OK          48 degrees C / 118 degrees F
FPC 10 MQ 2 Chip             OK          47 degrees C / 116 degrees F
FPC 10 MQ 3 TSen             OK          48 degrees C / 118 degrees F
FPC 10 MQ 3 Chip             OK          47 degrees C / 116 degrees F
FPC 11 Intake                OK          30 degrees C / 86 degrees F
FPC 11 Exhaust A             OK          35 degrees C / 95 degrees F
FPC 11 Exhaust B             OK          30 degrees C / 86 degrees F
FPC 11 LU 0 TSen             OK          57 degrees C / 134 degrees F
FPC 11 LU 0 Chip             OK          58 degrees C / 136 degrees F
FPC 11 LU 1 TSen             OK          57 degrees C / 134 degrees F
FPC 11 LU 1 Chip             OK          62 degrees C / 143 degrees F
FPC 11 LU 2 TSen             OK          57 degrees C / 134 degrees F
FPC 11 LU 2 Chip             OK          53 degrees C / 127 degrees F
FPC 11 LU 3 TSen             OK          57 degrees C / 134 degrees F
FPC 11 LU 3 Chip             OK          54 degrees C / 129 degrees F
```

```
FPC 11 MQ 0 TSen              OK          52 degrees C / 125 degrees F
FPC 11 MQ 0 Chip              OK          52 degrees C / 125 degrees F
FPC 11 MQ 1 TSen              OK          52 degrees C / 125 degrees F
FPC 11 MQ 1 Chip              OK          57 degrees C / 134 degrees F
FPC 11 MQ 2 TSen              OK          52 degrees C / 125 degrees F
FPC 11 MQ 2 Chip              OK          48 degrees C / 118 degrees F
FPC 11 MQ 3 TSen              OK          52 degrees C / 125 degrees F
FPC 11 MQ 3 Chip              OK          52 degrees C / 125 degrees F
FPC 12 Intake                 OK          40 degrees C / 104 degrees F
FPC 12 Exhaust A              OK          47 degrees C / 116 degrees F
FPC 12 Exhaust B              OK          52 degrees C / 125 degrees F
FPC 12 LU 0 TSen              OK          51 degrees C / 123 degrees F
FPC 12 LU 0 Chip              OK          52 degrees C / 125 degrees F
FPC 12 LU 1 TSen              OK          51 degrees C / 123 degrees F
FPC 12 LU 1 Chip              OK          55 degrees C / 131 degrees F
FPC 12 LU 2 TSen              OK          51 degrees C / 123 degrees F
FPC 12 LU 2 Chip              OK          47 degrees C / 116 degrees F
FPC 12 LU 3 TSen              OK          51 degrees C / 123 degrees F
FPC 12 LU 3 Chip              OK          50 degrees C / 122 degrees F
FPC 12 MQ 0 TSen              OK          46 degrees C / 114 degrees F
FPC 12 MQ 0 Chip              OK          46 degrees C / 114 degrees F
FPC 12 MQ 1 TSen              OK          46 degrees C / 114 degrees F
FPC 12 MQ 1 Chip              OK          50 degrees C / 122 degrees F
FPC 12 MQ 2 TSen              OK          46 degrees C / 114 degrees F
FPC 12 MQ 2 Chip              OK          44 degrees C / 111 degrees F
FPC 12 MQ 3 TSen              OK          46 degrees C / 114 degrees F
FPC 12 MQ 3 Chip              OK          46 degrees C / 114 degrees F
FPC 13 Intake                 OK          40 degrees C / 104 degrees F
FPC 13 Exhaust A              OK          48 degrees C / 118 degrees F
FPC 13 Exhaust B              OK          52 degrees C / 125 degrees F
FPC 13 LU 0 TSen              OK          51 degrees C / 123 degrees F
FPC 13 LU 0 Chip              OK          52 degrees C / 125 degrees F
FPC 13 LU 1 TSen              OK          51 degrees C / 123 degrees F
FPC 13 LU 1 Chip              OK          55 degrees C / 131 degrees F
FPC 13 LU 2 TSen              OK          51 degrees C / 123 degrees F
FPC 13 LU 2 Chip              OK          48 degrees C / 118 degrees F
FPC 13 LU 3 TSen              OK          51 degrees C / 123 degrees F
FPC 13 LU 3 Chip              OK          48 degrees C / 118 degrees F
FPC 13 MQ 0 TSen              OK          46 degrees C / 114 degrees F
FPC 13 MQ 0 Chip              OK          46 degrees C / 114 degrees F
FPC 13 MQ 1 TSen              OK          46 degrees C / 114 degrees F
FPC 13 MQ 1 Chip              OK          50 degrees C / 122 degrees F
FPC 13 MQ 2 TSen              OK          46 degrees C / 114 degrees F
FPC 13 MQ 2 Chip              OK          44 degrees C / 111 degrees F
```

```
FPC 13 MQ 3 TSen              OK          46 degrees C / 114 degrees F
FPC 13 MQ 3 Chip              OK          46 degrees C / 114 degrees F
FPC 14 Intake                 OK          40 degrees C / 104 degrees F
FPC 14 Exhaust A              OK          50 degrees C / 122 degrees F
FPC 14 Exhaust B              OK          51 degrees C / 123 degrees F
FPC 14 LU 0 TSen              OK          50 degrees C / 122 degrees F
FPC 14 LU 0 Chip              OK          50 degrees C / 122 degrees F
FPC 14 LU 1 TSen              OK          50 degrees C / 122 degrees F
FPC 14 LU 1 Chip              OK          54 degrees C / 129 degrees F
FPC 14 LU 2 TSen              OK          50 degrees C / 122 degrees F
FPC 14 LU 2 Chip              OK          47 degrees C / 116 degrees F
FPC 14 LU 3 TSen              OK          50 degrees C / 122 degrees F
FPC 14 LU 3 Chip              OK          49 degrees C / 120 degrees F
FPC 14 MQ 0 TSen              OK          47 degrees C / 116 degrees F
FPC 14 MQ 0 Chip              OK          46 degrees C / 114 degrees F
FPC 14 MQ 1 TSen              OK          47 degrees C / 116 degrees F
FPC 14 MQ 1 Chip              OK          51 degrees C / 123 degrees F
FPC 14 MQ 2 TSen              OK          47 degrees C / 116 degrees F
FPC 14 MQ 2 Chip              OK          45 degrees C / 113 degrees F
FPC 14 MQ 3 TSen              OK          47 degrees C / 116 degrees F
FPC 14 MQ 3 Chip              OK          48 degrees C / 118 degrees F
FPC 15 Intake                 OK          44 degrees C / 111 degrees F
FPC 15 Exhaust A              OK          49 degrees C / 120 degrees F
FPC 15 Exhaust B              OK          60 degrees C / 140 degrees F
FPC 15 LU 0 TSen              OK          50 degrees C / 122 degrees F
FPC 15 LU 0 Chip              OK          56 degrees C / 132 degrees F
FPC 15 LU 1 TSen              OK          50 degrees C / 122 degrees F
FPC 15 LU 1 Chip              OK          50 degrees C / 122 degrees F
FPC 15 LU 2 TSen              OK          50 degrees C / 122 degrees F
FPC 15 LU 2 Chip              OK          58 degrees C / 136 degrees F
FPC 15 LU 3 TSen              OK          50 degrees C / 122 degrees F
FPC 15 LU 3 Chip              OK          63 degrees C / 145 degrees F
FPC 15 XM 0 TSen              OK          50 degrees C / 122 degrees F
FPC 15 XM 0 Chip              OK          56 degrees C / 132 degrees F
FPC 15 XF 0 TSen              OK          50 degrees C / 122 degrees F
FPC 15 XF 0 Chip              OK          68 degrees C / 154 degrees F
FPC 15 PLX Switch TSen        OK          50 degrees C / 122 degrees F
FPC 15 PLX Switch Chip        OK          56 degrees C / 132 degrees F
FPC 16 Intake                 OK          42 degrees C / 107 degrees F
FPC 16 Exhaust A              OK          51 degrees C / 123 degrees F
FPC 16 Exhaust B              OK          53 degrees C / 127 degrees F
FPC 16 LU 0 TSen              OK          51 degrees C / 123 degrees F
FPC 16 LU 0 Chip              OK          52 degrees C / 125 degrees F
FPC 16 LU 1 TSen              OK          51 degrees C / 123 degrees F
```

```
FPC 16 LU 1 Chip              OK          55 degrees C / 131 degrees F
FPC 16 LU 2 TSen              OK          51 degrees C / 123 degrees F
FPC 16 LU 2 Chip              OK          48 degrees C / 118 degrees F
FPC 16 LU 3 TSen              OK          51 degrees C / 123 degrees F
FPC 16 LU 3 Chip              OK          49 degrees C / 120 degrees F
FPC 16 MQ 0 TSen              OK          49 degrees C / 120 degrees F
FPC 16 MQ 0 Chip              OK          48 degrees C / 118 degrees F
FPC 16 MQ 1 TSen              OK          49 degrees C / 120 degrees F
FPC 16 MQ 1 Chip              OK          53 degrees C / 127 degrees F
FPC 16 MQ 2 TSen              OK          49 degrees C / 120 degrees F
FPC 16 MQ 2 Chip              OK          46 degrees C / 114 degrees F
FPC 16 MQ 3 TSen              OK          49 degrees C / 120 degrees F
FPC 16 MQ 3 Chip              OK          49 degrees C / 120 degrees F
FPC 17 Intake                 OK          43 degrees C / 109 degrees F
FPC 17 Exhaust A              OK          51 degrees C / 123 degrees F
FPC 17 Exhaust B              OK          55 degrees C / 131 degrees F
FPC 17 LU 0 TSen              OK          54 degrees C / 129 degrees F
FPC 17 LU 0 Chip              OK          57 degrees C / 134 degrees F
FPC 17 LU 1 TSen              OK          54 degrees C / 129 degrees F
FPC 17 LU 1 Chip              OK          60 degrees C / 140 degrees F
FPC 17 LU 2 TSen              OK          54 degrees C / 129 degrees F
FPC 17 LU 2 Chip              OK          53 degrees C / 127 degrees F
FPC 17 LU 3 TSen              OK          54 degrees C / 129 degrees F
FPC 17 LU 3 Chip              OK          53 degrees C / 127 degrees F
FPC 17 MQ 0 TSen              OK          49 degrees C / 120 degrees F
FPC 17 MQ 0 Chip              OK          50 degrees C / 122 degrees F
FPC 17 MQ 1 TSen              OK          49 degrees C / 120 degrees F
FPC 17 MQ 1 Chip              OK          54 degrees C / 129 degrees F
FPC 17 MQ 2 TSen              OK          49 degrees C / 120 degrees F
FPC 17 MQ 2 Chip              OK          47 degrees C / 116 degrees F
FPC 17 MQ 3 TSen              OK          49 degrees C / 120 degrees F
FPC 17 MQ 3 Chip              OK          51 degrees C / 123 degrees F
FPC 18 Intake                 OK          44 degrees C / 111 degrees F
FPC 18 Exhaust A              OK          53 degrees C / 127 degrees F
FPC 18 Exhaust B              OK          57 degrees C / 134 degrees F
FPC 18 LU 0 TSen              OK          56 degrees C / 132 degrees F
FPC 18 LU 0 Chip              OK          57 degrees C / 134 degrees F
FPC 18 LU 1 TSen              OK          56 degrees C / 132 degrees F
FPC 18 LU 1 Chip              OK          62 degrees C / 143 degrees F
FPC 18 LU 2 TSen              OK          56 degrees C / 132 degrees F
FPC 18 LU 2 Chip              OK          53 degrees C / 127 degrees F
FPC 18 LU 3 TSen              OK          56 degrees C / 132 degrees F
FPC 18 LU 3 Chip              OK          55 degrees C / 131 degrees F
FPC 18 MQ 0 TSen              OK          51 degrees C / 123 degrees F
```

```
FPC 18 MQ 0 Chip              OK          54 degrees C / 129 degrees F
FPC 18 MQ 1 TSen              OK          51 degrees C / 123 degrees F
FPC 18 MQ 1 Chip              OK          58 degrees C / 136 degrees F
FPC 18 MQ 2 TSen              OK          51 degrees C / 123 degrees F
FPC 18 MQ 2 Chip              OK          50 degrees C / 122 degrees F
FPC 18 MQ 3 TSen              OK          51 degrees C / 123 degrees F
FPC 18 MQ 3 Chip              OK          53 degrees C / 127 degrees F
FPC 19 Intake                 OK          48 degrees C / 118 degrees F
FPC 19 Exhaust A              OK          56 degrees C / 132 degrees F
FPC 19 Exhaust B              OK          64 degrees C / 147 degrees F
FPC 19 LU 0 TSen              OK          63 degrees C / 145 degrees F
FPC 19 LU 0 Chip              OK          64 degrees C / 147 degrees F
FPC 19 LU 1 TSen              OK          63 degrees C / 145 degrees F
FPC 19 LU 1 Chip              OK          70 degrees C / 158 degrees F
FPC 19 LU 2 TSen              OK          63 degrees C / 145 degrees F
FPC 19 LU 2 Chip              OK          61 degrees C / 141 degrees F
FPC 19 LU 3 TSen              OK          63 degrees C / 145 degrees F
FPC 19 LU 3 Chip              OK          62 degrees C / 143 degrees F
FPC 19 MQ 0 TSen              OK          56 degrees C / 132 degrees F
FPC 19 MQ 0 Chip              OK          60 degrees C / 140 degrees F
FPC 19 MQ 1 TSen              OK          56 degrees C / 132 degrees F
FPC 19 MQ 1 Chip              OK          62 degrees C / 143 degrees F
FPC 19 MQ 2 TSen              OK          56 degrees C / 132 degrees F
FPC 19 MQ 2 Chip              OK          56 degrees C / 132 degrees F
FPC 19 MQ 3 TSen              OK          56 degrees C / 132 degrees F
FPC 19 MQ 3 Chip              OK          57 degrees C / 134 degrees F
ADC 0 Intake                  OK          40 degrees C / 104 degrees F
ADC 0 Exhaust                 OK          52 degrees C / 125 degrees F
ADC 0 ADC-XF1                 OK          59 degrees C / 138 degrees F
ADC 0 ADC-XF0                 OK          66 degrees C / 150 degrees F
ADC 1 Intake                  OK          38 degrees C / 100 degrees F
ADC 1 Exhaust                 OK          50 degrees C / 122 degrees F
ADC 1 ADC-XF1                 OK          59 degrees C / 138 degrees F
ADC 1 ADC-XF0                 OK          63 degrees C / 145 degrees F
ADC 2 Intake                  OK          37 degrees C / 98 degrees F
ADC 2 Exhaust                 OK          52 degrees C / 125 degrees F
ADC 2 ADC-XF1                 OK          53 degrees C / 127 degrees F
ADC 2 ADC-XF0                 OK          61 degrees C / 141 degrees F
ADC 3 Intake                  OK          40 degrees C / 104 degrees F
ADC 3 Exhaust                 OK          51 degrees C / 123 degrees F
ADC 3 ADC-XF1                 OK          61 degrees C / 141 degrees F
ADC 3 ADC-XF0                 OK          64 degrees C / 147 degrees F
ADC 4 Intake                  OK          39 degrees C / 102 degrees F
ADC 4 Exhaust                 OK          51 degrees C / 123 degrees F
```

```
ADC 4 ADC-XF1                  OK          60 degrees C / 140 degrees F
ADC 4 ADC-XF0                  OK          63 degrees C / 145 degrees F
ADC 5 Intake                   OK          38 degrees C / 100 degrees F
ADC 5 Exhaust                  OK          54 degrees C / 129 degrees F
ADC 5 ADC-XF1                  OK          56 degrees C / 132 degrees F
ADC 5 ADC-XF0                  OK          67 degrees C / 152 degrees F
ADC 6 Intake                   OK          39 degrees C / 102 degrees F
ADC 6 Exhaust                  OK          52 degrees C / 125 degrees F
ADC 6 ADC-XF1                  OK          59 degrees C / 138 degrees F
ADC 6 ADC-XF0                  OK          66 degrees C / 150 degrees F
ADC 7 Intake                   OK          39 degrees C / 102 degrees F
ADC 7 Exhaust                  OK          54 degrees C / 129 degrees F
ADC 7 ADC-XF1                  OK          62 degrees C / 143 degrees F
ADC 7 ADC-XF0                  OK          70 degrees C / 158 degrees F
ADC 8 Intake                   OK          39 degrees C / 102 degrees F
ADC 8 Exhaust                  OK          52 degrees C / 125 degrees F
ADC 8 ADC-XF1                  OK          61 degrees C / 141 degrees F
ADC 8 ADC-XF0                  OK          65 degrees C / 149 degrees F
ADC 9 Intake                   OK          41 degrees C / 105 degrees F
ADC 9 Exhaust                  OK          51 degrees C / 123 degrees F
ADC 9 ADC-XF1                  OK          63 degrees C / 145 degrees F
ADC 9 ADC-XF0                  OK          63 degrees C / 145 degrees F
ADC 10 Intake                  OK          48 degrees C / 118 degrees F
ADC 10 Exhaust                 OK          53 degrees C / 127 degrees F
ADC 10 ADC-XF1                 OK          67 degrees C / 152 degrees F
ADC 10 ADC-XF0                 OK          66 degrees C / 150 degrees F
ADC 12 Intake                  OK          49 degrees C / 120 degrees F
ADC 12 Exhaust                 OK          54 degrees C / 129 degrees F
ADC 12 ADC-XF1                 OK          67 degrees C / 152 degrees F
ADC 12 ADC-XF0                 OK          67 degrees C / 152 degrees F
ADC 13 Intake                  OK          49 degrees C / 120 degrees F
ADC 13 Exhaust                 OK          57 degrees C / 134 degrees F
ADC 13 ADC-XF1                 OK          66 degrees C / 150 degrees F
ADC 13 ADC-XF0                 OK          69 degrees C / 156 degrees F
ADC 14 Intake                  OK          51 degrees C / 123 degrees F
ADC 14 Exhaust                 OK          59 degrees C / 138 degrees F
ADC 14 ADC-XF1                 OK          69 degrees C / 156 degrees F
ADC 14 ADC-XF0                 OK          74 degrees C / 165 degrees F
ADC 15 Intake                  OK          50 degrees C / 122 degrees F
ADC 15 Exhaust                 OK          59 degrees C / 138 degrees F
ADC 15 ADC-XF1                 OK          68 degrees C / 154 degrees F
ADC 15 ADC-XF0                 OK          69 degrees C / 156 degrees F
ADC 16 Intake                  OK          52 degrees C / 125 degrees F
ADC 16 Exhaust                 OK          58 degrees C / 136 degrees F
```

```
      ADC 16 ADC-XF1                OK          68 degrees C / 154 degrees F
      ADC 16 ADC-XF0                OK          70 degrees C / 158 degrees F
      ADC 17 Intake                 OK          52 degrees C / 125 degrees F
      ADC 17 Exhaust                OK          59 degrees C / 138 degrees F
      ADC 17 ADC-XF1                OK          69 degrees C / 156 degrees F
      ADC 17 ADC-XF0                OK          71 degrees C / 159 degrees F
      ADC 18 Intake                 OK          53 degrees C / 127 degrees F
      ADC 18 Exhaust                OK          59 degrees C / 138 degrees F
      ADC 18 ADC-XF1                OK          68 degrees C / 154 degrees F
      ADC 18 ADC-XF0                OK          73 degrees C / 163 degrees F
      ADC 19 Intake                 OK          50 degrees C / 122 degrees F
      ADC 19 Exhaust                OK          59 degrees C / 138 degrees F
      ADC 19 ADC-XF1                OK          68 degrees C / 154 degrees F
      ADC 19 ADC-XF0                OK          72 degrees C / 161 degrees F
Fans  Fan Tray 0 Fan 1              OK          7440 RPM
      Fan Tray 0 Fan 2              OK          7200 RPM
      Fan Tray 0 Fan 3              OK          6960 RPM
      Fan Tray 0 Fan 4              OK          7200 RPM
      Fan Tray 0 Fan 5              OK          7080 RPM
      Fan Tray 0 Fan 6              OK          6840 RPM
      Fan Tray 1 Fan 1              OK          6840 RPM
      Fan Tray 1 Fan 2              OK          6960 RPM
      Fan Tray 1 Fan 3              OK          6960 RPM
      Fan Tray 1 Fan 4              OK          7080 RPM
      Fan Tray 1 Fan 5              OK          6960 RPM
      Fan Tray 1 Fan 6              OK          6960 RPM
      Fan Tray 2 Fan 1              OK          8640 RPM
      Fan Tray 2 Fan 2              OK          8640 RPM
      Fan Tray 2 Fan 3              OK          8760 RPM
      Fan Tray 2 Fan 4              OK          8760 RPM
      Fan Tray 2 Fan 5              OK          8640 RPM
      Fan Tray 2 Fan 6              OK          8640 RPM
      Fan Tray 3 Fan 1              OK          8520 RPM
      Fan Tray 3 Fan 2              OK          8520 RPM
      Fan Tray 3 Fan 3              OK          8640 RPM
      Fan Tray 3 Fan 4              OK          8640 RPM
      Fan Tray 3 Fan 5              OK          8520 RPM
      Fan Tray 3 Fan 6              OK          8520 RPM
```

show chassis environment (MX2020 Router with MPC5EQ and MPC6E)

```
Class Item                          Status     Measurement
Temp  PSM 0                         OK         32 degrees C / 89 degrees F
```

```
PSM 1                          OK          32 degrees C / 89 degrees F
PSM 2                          OK          32 degrees C / 89 degrees F
PSM 3                          OK          32 degrees C / 89 degrees F
PSM 4                          OK          32 degrees C / 89 degrees F
PSM 5                          OK          33 degrees C / 91 degrees F
PSM 6                          OK          32 degrees C / 89 degrees F
PSM 7                          OK          32 degrees C / 89 degrees F
PSM 8                          OK          32 degrees C / 89 degrees F
PSM 9                          Absent
PSM 10                         Absent
PSM 11                         Absent
PSM 12                         OK          33 degrees C / 91 degrees F
PSM 13                         OK          33 degrees C / 91 degrees F
PSM 14                         OK          34 degrees C / 93 degrees F
PSM 15                         OK          34 degrees C / 93 degrees F
PSM 16                         OK          33 degrees C / 91 degrees F
PSM 17                         OK          33 degrees C / 91 degrees F
PDM 0                          OK
PDM 1                          OK
PDM 2                          OK
PDM 3                          OK
CB 0 IntakeA-Zone0             OK          34 degrees C / 93 degrees F
CB 0 IntakeB-Zone1             OK          26 degrees C / 78 degrees F
CB 0 IntakeC-Zone0             OK          38 degrees C / 100 degrees F
CB 0 ExhaustA-Zone0            OK          34 degrees C / 93 degrees F
CB 0 ExhaustB-Zone1            OK          27 degrees C / 80 degrees F
CB 0 TCBC-Zone0                OK          32 degrees C / 89 degrees F
CB 1 IntakeA-Zone0             OK          24 degrees C / 75 degrees F
CB 1 IntakeB-Zone1             OK          22 degrees C / 71 degrees F
CB 1 IntakeC-Zone0             OK          34 degrees C / 93 degrees F
CB 1 ExhaustA-Zone0            OK          31 degrees C / 87 degrees F
CB 1 ExhaustB-Zone1            OK          24 degrees C / 75 degrees F
CB 1 TCBC-Zone0                OK          27 degrees C / 80 degrees F
SPMB 0 Intake                  OK          25 degrees C / 77 degrees F
SPMB 1 Intake                  OK          23 degrees C / 73 degrees F
Routing Engine 0               OK          28 degrees C / 82 degrees F
Routing Engine 0 CPU           OK          25 degrees C / 77 degrees F
Routing Engine 1               OK          25 degrees C / 77 degrees F
Routing Engine 1 CPU           OK          24 degrees C / 75 degrees F
SFB 0 Intake-Zone0             OK          45 degrees C / 113 degrees F
SFB 0 Exhaust-Zone1            OK          34 degrees C / 93 degrees F
SFB 0 IntakeA-Zone0            OK          32 degrees C / 89 degrees F
SFB 0 IntakeB-Zone1            OK          28 degrees C / 82 degrees F
SFB 0 Exhaust-Zone0            OK          36 degrees C / 96 degrees F
```

```
      SFB 0 SFB-XF2-Zone1            OK         46 degrees C / 114 degrees F
      SFB 0 SFB-XF1-Zone0            OK         48 degrees C / 118 degrees F
      SFB 0 SFB-XF0-Zone0            OK         60 degrees C / 140 degrees F
      SFB 1 Intake-Zone0             OK         44 degrees C / 111 degrees F
      SFB 1 Exhaust-Zone1            OK         34 degrees C / 93 degrees F
      SFB 1 IntakeA-Zone0            OK         35 degrees C / 95 degrees F
      SFB 1 IntakeB-Zone1            OK         27 degrees C / 80 degrees F
      SFB 1 Exhaust-Zone0            OK         37 degrees C / 98 degrees F
      SFB 1 SFB-XF2-Zone1            OK         47 degrees C / 116 degrees F
      SFB 1 SFB-XF1-Zone0            OK         49 degrees C / 120 degrees F
SFB 1 SFB-XF0-Zone0           OK         56 degrees C / 132 degrees F
      SFB 2 Intake-Zone0             OK         41 degrees C / 105 degrees F
      SFB 2 Exhaust-Zone1            OK         34 degrees C / 93 degrees F
      SFB 2 IntakeA-Zone0            OK         35 degrees C / 95 degrees F
      SFB 2 IntakeB-Zone1            OK         28 degrees C / 82 degrees F
      SFB 2 Exhaust-Zone0            OK         37 degrees C / 98 degrees F
      SFB 2 SFB-XF2-Zone1            OK         47 degrees C / 116 degrees F
      SFB 2 SFB-XF1-Zone0            OK         55 degrees C / 131 degrees F
      SFB 2 SFB-XF0-Zone0            OK         55 degrees C / 131 degrees F
      SFB 3 Intake-Zone0             OK         43 degrees C / 109 degrees F
      SFB 3 Exhaust-Zone1            OK         33 degrees C / 91 degrees F
      SFB 3 IntakeA-Zone0            OK         35 degrees C / 95 degrees F
      SFB 3 IntakeB-Zone1            OK         27 degrees C / 80 degrees F
      SFB 3 Exhaust-Zone0            OK         36 degrees C / 96 degrees F
      SFB 3 SFB-XF2-Zone1            OK         46 degrees C / 114 degrees F
      SFB 3 SFB-XF1-Zone0            OK         46 degrees C / 114 degrees F
      SFB 3 SFB-XF0-Zone0            OK         57 degrees C / 134 degrees F
      SFB 4 Intake-Zone0             OK         36 degrees C / 96 degrees F
      SFB 4 Exhaust-Zone1            OK         32 degrees C / 89 degrees F
      SFB 4 IntakeA-Zone0            OK         31 degrees C / 87 degrees F
      SFB 4 IntakeB-Zone1            OK         26 degrees C / 78 degrees F
      SFB 4 Exhaust-Zone0            OK         32 degrees C / 89 degrees F
      SFB 4 SFB-XF2-Zone1            OK         44 degrees C / 111 degrees F
      SFB 4 SFB-XF1-Zone0            OK         45 degrees C / 113 degrees F
      SFB 4 SFB-XF0-Zone0            OK         52 degrees C / 125 degrees F
      SFB 5 Intake-Zone0             OK         31 degrees C / 87 degrees F
      SFB 5 Exhaust-Zone1            OK         30 degrees C / 86 degrees F
      SFB 5 IntakeA-Zone0            OK         26 degrees C / 78 degrees F
      SFB 5 IntakeB-Zone1            OK         24 degrees C / 75 degrees F
      SFB 5 Exhaust-Zone0            OK         29 degrees C / 84 degrees F
      SFB 5 SFB-XF2-Zone1            OK         43 degrees C / 109 degrees F
      SFB 5 SFB-XF1-Zone0            OK         47 degrees C / 116 degrees F
      SFB 5 SFB-XF0-Zone0            OK         49 degrees C / 120 degrees F
      SFB 6 Intake-Zone0             OK         30 degrees C / 86 degrees F
```

```
      SFB 6 Exhaust-Zone1           OK         29 degrees C / 84 degrees F
      SFB 6 IntakeA-Zone0           OK         25 degrees C / 77 degrees F
      SFB 6 IntakeB-Zone1           OK         24 degrees C / 75 degrees F
      SFB 6 Exhaust-Zone0           OK         29 degrees C / 84 degrees F
      SFB 6 SFB-XF2-Zone1           OK         43 degrees C / 109 degrees F
      SFB 6 SFB-XF1-Zone0           OK         44 degrees C / 111 degrees F
      SFB 6 SFB-XF0-Zone0           OK         45 degrees C / 113 degrees F
      SFB 7 Intake-Zone0            OK         31 degrees C / 87 degrees F
      SFB 7 Exhaust-Zone1           OK         30 degrees C / 86 degrees F
      SFB 7 IntakeA-Zone0           OK         26 degrees C / 78 degrees F
      SFB 7 IntakeB-Zone1           OK         24 degrees C / 75 degrees F
      SFB 7 Exhaust-Zone0           OK         28 degrees C / 82 degrees F
      SFB 7 SFB-XF2-Zone1           OK         50 degrees C / 122 degrees F
      SFB 7 SFB-XF1-Zone0           OK         43 degrees C / 109 degrees F
      SFB 7 SFB-XF0-Zone0           OK         47 degrees C / 116 degrees F
      FPC 0 Intake                  OK         31 degrees C / 87 degrees F
      FPC 0 Exhaust A               OK         49 degrees C / 120 degrees F
      FPC 0 Exhaust B               OK         43 degrees C / 109 degrees F
      FPC 0 XL TSen                 OK         42 degrees C / 107 degrees F
      FPC 0 XL Chip                 OK         46 degrees C / 114 degrees F
      FPC 0 XL_XR0 TSen             OK         42 degrees C / 107 degrees F
      FPC 0 XL_XR0 Chip             OK         48 degrees C / 118 degrees F
FPC 0 XL_XR1 TSen             OK         42 degrees C / 107 degrees F
      FPC 0 XL_XR1 Chip             OK         48 degrees C / 118 degrees F
      FPC 0 XQ TSen                 OK         42 degrees C / 107 degrees F
      FPC 0 XQ Chip                 OK         44 degrees C / 111 degrees F
      FPC 0 XQ_XR0 TSen             OK         42 degrees C / 107 degrees F
      FPC 0 XQ_XR0 Chip             OK         57 degrees C / 134 degrees F
      FPC 0 XQ_XR1 TSen             OK         42 degrees C / 107 degrees F
      FPC 0 XQ_XR1 Chip             OK         55 degrees C / 131 degrees F
      FPC 0 XM 0 TSen               OK         48 degrees C / 118 degrees F
      FPC 0 XM 0 Chip               OK         62 degrees C / 143 degrees F
      FPC 0 XM 1 TSen               OK         48 degrees C / 118 degrees F
      FPC 0 XM 1 Chip               OK         44 degrees C / 111 degrees F
      FPC 0 PLX PCIe Switch TSe     OK         48 degrees C / 118 degrees F
      FPC 0 PLX PCIe Switch Chi     OK         57 degrees C / 134 degrees F
      FPC 1 Intake                  OK         29 degrees C / 84 degrees F
      FPC 1 Exhaust A               OK         36 degrees C / 96 degrees F
      FPC 1 Exhaust B               OK         44 degrees C / 111 degrees F
      FPC 1 LU 0 TSen               OK         38 degrees C / 100 degrees F
      FPC 1 LU 0 Chip               OK         45 degrees C / 113 degrees F
      FPC 1 LU 1 TSen               OK         38 degrees C / 100 degrees F
      FPC 1 LU 1 Chip               OK         38 degrees C / 100 degrees F
      FPC 1 LU 2 TSen               OK         38 degrees C / 100 degrees F
```

```
     FPC 1 LU 2 Chip                OK          42 degrees C / 107 degrees F
     FPC 1 LU 3 TSen                OK          38 degrees C / 100 degrees F
     FPC 1 LU 3 Chip                OK          47 degrees C / 116 degrees F
     FPC 1 XM 0 TSen                OK          38 degrees C / 100 degrees F
     FPC 1 XM 0 Chip                OK          44 degrees C / 111 degrees F
     FPC 1 XF 0 TSen                OK          38 degrees C / 100 degrees F
     FPC 1 XF 0 Chip                OK          54 degrees C / 129 degrees F
     FPC 1 PLX Switch TSen          OK          38 degrees C / 100 degrees F
     FPC 1 PLX Switch Chip          OK          41 degrees C / 105 degrees F
     FPC 2 Intake                   OK          28 degrees C / 82 degrees F
     FPC 2 Exhaust A                OK          28 degrees C / 82 degrees F
     FPC 2 Exhaust B                OK          28 degrees C / 82 degrees F
     FPC 2 LU 0 TSen                OK          40 degrees C / 104 degrees F
     FPC 2 LU 0 Chip                OK          40 degrees C / 104 degrees F
     FPC 2 LU 1 TSen                OK          40 degrees C / 104 degrees F
     FPC 2 LU 1 Chip                OK          41 degrees C / 105 degrees F
     FPC 2 LU 2 TSen                OK          40 degrees C / 104 degrees F
     FPC 2 LU 2 Chip                OK          34 degrees C / 93 degrees F
     FPC 2 LU 3 TSen                OK          40 degrees C / 104 degrees F
     FPC 2 LU 3 Chip                OK          38 degrees C / 100 degrees F
     FPC 2 XM 0 TSen                OK          40 degrees C / 104 degrees F
     FPC 2 XM 0 Chip                OK          47 degrees C / 116 degrees F
     FPC 2 XM 1 TSen                OK          40 degrees C / 104 degrees F
     FPC 2 XM 1 Chip                OK          42 degrees C / 107 degrees F
     FPC 2 PLX Switch TSen          OK          40 degrees C / 104 degrees F
     FPC 2 PLX Switch Chip          OK          39 degrees C / 102 degrees F
     FPC 3 Intake                   OK          27 degrees C / 80 degrees F
     FPC 3 Exhaust A                OK          38 degrees C / 100 degrees F
     FPC 3 Exhaust B                OK          31 degrees C / 87 degrees F
     FPC 3 QX 0 TSen                OK          38 degrees C / 100 degrees F
     FPC 3 QX 0 Chip                OK          42 degrees C / 107 degrees F
     FPC 3 LU 0 TCAM TSen           OK          38 degrees C / 100 degrees F
     FPC 3 LU 0 TCAM Chip           OK          43 degrees C / 109 degrees F
     FPC 3 LU 0 TSen                OK          38 degrees C / 100 degrees F
FPC 3 LU 0 Chip                OK          42 degrees C / 107 degrees F
     FPC 3 MQ 0 TSen                OK          38 degrees C / 100 degrees F
     FPC 3 MQ 0 Chip                OK          39 degrees C / 102 degrees F
     FPC 3 QX 1 TSen                OK          32 degrees C / 89 degrees F
     FPC 3 QX 1 Chip                OK          36 degrees C / 96 degrees F
     FPC 3 LU 1 TCAM TSen           OK          32 degrees C / 89 degrees F
     FPC 3 LU 1 TCAM Chip           OK          35 degrees C / 95 degrees F
     FPC 3 LU 1 TSen                OK          32 degrees C / 89 degrees F
     FPC 3 LU 1 Chip                OK          37 degrees C / 98 degrees F
     FPC 3 MQ 1 TSen                OK          32 degrees C / 89 degrees F
```

```
FPC 3 MQ 1 Chip               OK         36 degrees C / 96 degrees F
FPC 4 Intake                  OK         29 degrees C / 84 degrees F
FPC 4 Exhaust A               OK         36 degrees C / 96 degrees F
FPC 4 Exhaust B               OK         40 degrees C / 104 degrees F
FPC 4 XL TSen                 OK         39 degrees C / 102 degrees F
FPC 4 XL Chip                 OK         42 degrees C / 107 degrees F
FPC 4 XL_XR0 TSen             OK         39 degrees C / 102 degrees F
FPC 4 XL_XR0 Chip             OK         45 degrees C / 113 degrees F
FPC 4 XL_XR1 TSen             OK         39 degrees C / 102 degrees F
FPC 4 XL_XR1 Chip             OK         46 degrees C / 114 degrees F
FPC 4 XQ TSen                 OK         39 degrees C / 102 degrees F
FPC 4 XQ Chip                 OK         42 degrees C / 107 degrees F
FPC 4 XQ_XR0 TSen             OK         39 degrees C / 102 degrees F
FPC 4 XQ_XR0 Chip             OK         54 degrees C / 129 degrees F
FPC 4 XQ_XR1 TSen             OK         39 degrees C / 102 degrees F
FPC 4 XQ_XR1 Chip             OK         53 degrees C / 127 degrees F
FPC 4 XM 0 TSen               OK         45 degrees C / 113 degrees F
FPC 4 XM 0 Chip               OK         59 degrees C / 138 degrees F
FPC 4 XM 1 TSen               OK         45 degrees C / 113 degrees F
FPC 4 XM 1 Chip               OK         41 degrees C / 105 degrees F
FPC 4 PLX PCIe Switch TSe     OK         45 degrees C / 113 degrees F
FPC 4 PLX PCIe Switch Chi     OK         58 degrees C / 136 degrees F
FPC 5 Intake                  OK         29 degrees C / 84 degrees F
FPC 5 Exhaust A               OK         33 degrees C / 91 degrees F
FPC 5 Exhaust B               OK         39 degrees C / 102 degrees F
FPC 5 LU 0 TSen               OK         40 degrees C / 104 degrees F
FPC 5 LU 0 Chip               OK         40 degrees C / 104 degrees F
FPC 5 LU 1 TSen               OK         40 degrees C / 104 degrees F
FPC 5 LU 1 Chip               OK         45 degrees C / 113 degrees F
FPC 5 LU 2 TSen               OK         40 degrees C / 104 degrees F
FPC 5 LU 2 Chip               OK         40 degrees C / 104 degrees F
FPC 5 LU 3 TSen               OK         40 degrees C / 104 degrees F
FPC 5 LU 3 Chip               OK         46 degrees C / 114 degrees F
FPC 5 MQ 0 TSen               OK         32 degrees C / 89 degrees F
FPC 5 MQ 0 Chip               OK         33 degrees C / 91 degrees F
FPC 5 MQ 1 TSen               OK         32 degrees C / 89 degrees F
FPC 5 MQ 1 Chip               OK         35 degrees C / 95 degrees F
FPC 5 MQ 2 TSen               OK         32 degrees C / 89 degrees F
FPC 5 MQ 2 Chip               OK         32 degrees C / 89 degrees F
FPC 5 MQ 3 TSen               OK         32 degrees C / 89 degrees F
FPC 5 MQ 3 Chip               OK         32 degrees C / 89 degrees F
FPC 9 Intake                  OK         25 degrees C / 77 degrees F
FPC 9 Exhaust A               OK         37 degrees C / 98 degrees F
FPC 9 Exhaust B               OK         40 degrees C / 104 degrees F
```

```
      FPC 9 XL 0 TSen                 OK          40 degrees C / 104 degrees F
...
```

show chassis environment (MX2010 Router)

`user@host>` **show chassis environment**

```
Class Item                            Status      Measurement
Temp  PSM 0                           OK          7 degrees C / 44 degrees F
      PSM 1                           OK          7 degrees C / 44 degrees F
      PSM 2                           OK          7 degrees C / 44 degrees F
      PSM 3                           OK          6 degrees C / 42 degrees F
      PSM 4                           OK          6 degrees C / 42 degrees F
      PSM 5                           OK          6 degrees C / 42 degrees F
      PSM 6                           OK          6 degrees C / 42 degrees F
      PSM 7                           OK          7 degrees C / 44 degrees F
      PSM 8                           OK          7 degrees C / 44 degrees F
      PDM 0                           OK
      PDM 1                           Absent
      CB 0 IntakeA-Zone0              OK          14 degrees C / 57 degrees F
      CB 0 IntakeB-Zone1              OK          7 degrees C / 44 degrees F
      CB 0 IntakeC-Zone0              OK          22 degrees C / 71 degrees F
      CB 0 ExhaustA-Zone0             OK          14 degrees C / 57 degrees F
      CB 0 ExhaustB-Zone1             OK          9 degrees C / 48 degrees F
      CB 0 TCBC-Zone0                 OK          11 degrees C / 51 degrees F
      CB 1 IntakeA-Zone0              OK          9 degrees C / 48 degrees F
      CB 1 IntakeB-Zone1              OK          5 degrees C / 41 degrees F
      CB 1 IntakeC-Zone0              OK          20 degrees C / 68 degrees F
      CB 1 ExhaustA-Zone0             OK          12 degrees C / 53 degrees F
      CB 1 ExhaustB-Zone1             OK          7 degrees C / 44 degrees F
      CB 1 TCBC-Zone0                 OK          10 degrees C / 50 degrees F
      SPMB 0 Intake                   OK          5 degrees C / 41 degrees F
      SPMB 1 Intake                   OK          4 degrees C / 39 degrees F
      Routing Engine 0                OK          9 degrees C / 48 degrees F
      Routing Engine 0 CPU            OK          9 degrees C / 48 degrees F
      Routing Engine 1                OK          6 degrees C / 42 degrees F
      Routing Engine 1 CPU            OK          6 degrees C / 42 degrees F
      SFB 0 Intake-Zone0              OK          26 degrees C / 78 degrees F
      SFB 0 Exhaust-Zone1             OK          17 degrees C / 62 degrees F
      SFB 0 IntakeA-Zone0             OK          16 degrees C / 60 degrees F
      SFB 0 IntakeB-Zone1             OK          11 degrees C / 51 degrees F
      SFB 0 Exhaust-Zone0             OK          18 degrees C / 64 degrees F
      SFB 0 SFB-XF2-Zone1             OK          25 degrees C / 77 degrees F
      SFB 0 SFB-XF1-Zone0             OK          23 degrees C / 73 degrees F
```

```
      SFB 0 SFB-XF0-Zone0           OK         33 degrees C / 91 degrees F
      SFB 1 Intake-Zone0            OK         27 degrees C / 80 degrees F
      SFB 1 Exhaust-Zone1           OK         15 degrees C / 59 degrees F
      SFB 1 IntakeA-Zone0           OK         20 degrees C / 68 degrees F
      SFB 1 IntakeB-Zone1           OK         10 degrees C / 50 degrees F
      SFB 1 Exhaust-Zone0           OK         19 degrees C / 66 degrees F
      SFB 1 SFB-XF2-Zone1           OK         26 degrees C / 78 degrees F
      SFB 1 SFB-XF1-Zone0           OK         27 degrees C / 80 degrees F
      SFB 1 SFB-XF0-Zone0           OK         32 degrees C / 89 degrees F
      SFB 2 Intake-Zone0            OK         21 degrees C / 69 degrees F
      SFB 2 Exhaust-Zone1           OK         13 degrees C / 55 degrees F
      SFB 2 IntakeA-Zone0           OK         18 degrees C / 64 degrees F
      SFB 2 IntakeB-Zone1           OK         9 degrees C / 48 degrees F
      SFB 2 Exhaust-Zone0           OK         16 degrees C / 60 degrees F
      SFB 2 SFB-XF2-Zone1           OK         24 degrees C / 75 degrees F
      SFB 2 SFB-XF1-Zone0           OK         21 degrees C / 69 degrees F
      SFB 2 SFB-XF0-Zone0           OK         26 degrees C / 78 degrees F
      SFB 4 Intake-Zone0            OK         28 degrees C / 82 degrees F
      SFB 4 Exhaust-Zone1           OK         16 degrees C / 60 degrees F
SFB 4 IntakeA-Zone0           OK         18 degrees C / 64 degrees F
      SFB 4 IntakeB-Zone1           OK         11 degrees C / 51 degrees F
      SFB 4 Exhaust-Zone0           OK         19 degrees C / 66 degrees F
      SFB 4 SFB-XF2-Zone1           OK         27 degrees C / 80 degrees F
      SFB 4 SFB-XF1-Zone0           OK         27 degrees C / 80 degrees F
      SFB 4 SFB-XF0-Zone0           OK         32 degrees C / 89 degrees F
      SFB 5 Intake-Zone0            OK         22 degrees C / 71 degrees F
      SFB 5 Exhaust-Zone1           OK         14 degrees C / 57 degrees F
      SFB 5 IntakeA-Zone0           OK         18 degrees C / 64 degrees F
      SFB 5 IntakeB-Zone1           OK         10 degrees C / 50 degrees F
      SFB 5 Exhaust-Zone0           OK         17 degrees C / 62 degrees F
      SFB 5 SFB-XF2-Zone1           OK         22 degrees C / 71 degrees F
      SFB 5 SFB-XF1-Zone0           OK         29 degrees C / 84 degrees F
      SFB 5 SFB-XF0-Zone0           OK         27 degrees C / 80 degrees F
      SFB 6 Intake-Zone0            OK         27 degrees C / 80 degrees F
      SFB 6 Exhaust-Zone1           OK         13 degrees C / 55 degrees F
      SFB 6 IntakeA-Zone0           OK         19 degrees C / 66 degrees F
      SFB 6 IntakeB-Zone1           OK         10 degrees C / 50 degrees F
      SFB 6 Exhaust-Zone0           OK         20 degrees C / 68 degrees F
      SFB 6 SFB-XF2-Zone1           OK         24 degrees C / 75 degrees F
      SFB 6 SFB-XF1-Zone0           OK         32 degrees C / 89 degrees F
      SFB 6 SFB-XF0-Zone0           OK         33 degrees C / 91 degrees F
      SFB 7 Intake-Zone0            OK         25 degrees C / 77 degrees F
      SFB 7 Exhaust-Zone1           OK         13 degrees C / 55 degrees F
      SFB 7 IntakeA-Zone0           OK         14 degrees C / 57 degrees F
```

```
      SFB 7 IntakeB-Zone1           OK         8 degrees C / 46 degrees F
      SFB 7 Exhaust-Zone0           OK         17 degrees C / 62 degrees F
      SFB 7 SFB-XF2-Zone1           OK         21 degrees C / 69 degrees F
      SFB 7 SFB-XF1-Zone0           OK         21 degrees C / 69 degrees F
      SFB 7 SFB-XF0-Zone0           OK         33 degrees C / 91 degrees F
      FPC 0 Intake                  OK         13 degrees C / 55 degrees F
      FPC 0 Exhaust A               OK         13 degrees C / 55 degrees F
      FPC 0 Exhaust B               OK         14 degrees C / 57 degrees F
      FPC 0 LU 0 TSen               OK         28 degrees C / 82 degrees F
      FPC 0 LU 0 Chip               OK         25 degrees C / 77 degrees F
      FPC 0 LU 1 TSen               OK         28 degrees C / 82 degrees F
      FPC 0 LU 1 Chip               OK         27 degrees C / 80 degrees F
      FPC 0 LU 2 TSen               OK         28 degrees C / 82 degrees F
      FPC 0 LU 2 Chip               OK         19 degrees C / 66 degrees F
      FPC 0 LU 3 TSen               OK         28 degrees C / 82 degrees F
      FPC 0 LU 3 Chip               OK         23 degrees C / 73 degrees F
      FPC 0 XM 0 TSen               OK         28 degrees C / 82 degrees F
      FPC 0 XM 0 Chip               OK         33 degrees C / 91 degrees F
      FPC 0 XM 1 TSen               OK         28 degrees C / 82 degrees F
      FPC 0 XM 1 Chip               OK         26 degrees C / 78 degrees F
      FPC 0 PLX Switch TSen         OK         28 degrees C / 82 degrees F
      FPC 0 PLX Switch Chip         OK         26 degrees C / 78 degrees F
      FPC 1 Intake                  OK         10 degrees C / 50 degrees F
      FPC 1 Exhaust A               OK         24 degrees C / 75 degrees F
      FPC 1 Exhaust B               OK         28 degrees C / 82 degrees F
      FPC 1 LU 0 TSen               OK         22 degrees C / 71 degrees F
      FPC 1 LU 0 Chip               OK         31 degrees C / 87 degrees F
      FPC 1 LU 1 TSen               OK         22 degrees C / 71 degrees F
      FPC 1 LU 1 Chip               OK         21 degrees C / 69 degrees F
      FPC 1 LU 2 TSen               OK         22 degrees C / 71 degrees F
      FPC 1 LU 2 Chip               OK         25 degrees C / 77 degrees F
      FPC 1 LU 3 TSen               OK         22 degrees C / 71 degrees F
      FPC 1 LU 3 Chip               OK         33 degrees C / 91 degrees F
      FPC 1 XM 0 TSen               OK         22 degrees C / 71 degrees F
      FPC 1 XM 0 Chip               OK         30 degrees C / 86 degrees F
      FPC 1 XF 0 TSen               OK         22 degrees C / 71 degrees F
      FPC 1 XF 0 Chip               OK         37 degrees C / 98 degrees F
      FPC 1 PLX Switch TSen         OK         22 degrees C / 71 degrees F
FPC 1 PLX Switch Chip          OK         22 degrees C / 71 degrees F
      FPC 2 Intake                  OK         9 degrees C / 48 degrees F
      FPC 2 Exhaust A               OK         10 degrees C / 50 degrees F
      FPC 2 Exhaust B               OK         10 degrees C / 50 degrees F
      FPC 2 LU 0 TSen               OK         26 degrees C / 78 degrees F
      FPC 2 LU 0 Chip               OK         25 degrees C / 77 degrees F
```

```
FPC 2 LU 1 TSen              OK         26 degrees C / 78 degrees F
FPC 2 LU 1 Chip              OK         26 degrees C / 78 degrees F
FPC 2 LU 2 TSen              OK         26 degrees C / 78 degrees F
FPC 2 LU 2 Chip              OK         17 degrees C / 62 degrees F
FPC 2 LU 3 TSen              OK         26 degrees C / 78 degrees F
FPC 2 LU 3 Chip              OK         22 degrees C / 71 degrees F
FPC 2 XM 0 TSen              OK         26 degrees C / 78 degrees F
FPC 2 XM 0 Chip              OK         34 degrees C / 93 degrees F
FPC 2 XM 1 TSen              OK         26 degrees C / 78 degrees F
FPC 2 XM 1 Chip              OK         26 degrees C / 78 degrees F
FPC 2 PLX Switch TSen        OK         26 degrees C / 78 degrees F
FPC 2 PLX Switch Chip        OK         20 degrees C / 68 degrees F
FPC 3 Intake                 OK         12 degrees C / 53 degrees F
FPC 3 Exhaust A              OK         16 degrees C / 60 degrees F
FPC 3 Exhaust B              OK         26 degrees C / 78 degrees F
FPC 3 LU 0 TSen              OK         23 degrees C / 73 degrees F
FPC 3 LU 0 Chip              OK         26 degrees C / 78 degrees F
FPC 3 LU 1 TSen              OK         23 degrees C / 73 degrees F
FPC 3 LU 1 Chip              OK         27 degrees C / 80 degrees F
FPC 3 LU 2 TSen              OK         23 degrees C / 73 degrees F
FPC 3 LU 2 Chip              OK         22 degrees C / 71 degrees F
FPC 3 LU 3 TSen              OK         23 degrees C / 73 degrees F
FPC 3 LU 3 Chip              OK         21 degrees C / 69 degrees F
FPC 3 MQ 0 TSen              OK         15 degrees C / 59 degrees F
FPC 3 MQ 0 Chip              OK         18 degrees C / 64 degrees F
FPC 3 MQ 1 TSen              OK         15 degrees C / 59 degrees F
FPC 3 MQ 1 Chip              OK         20 degrees C / 68 degrees F
FPC 3 MQ 2 TSen              OK         15 degrees C / 59 degrees F
FPC 3 MQ 2 Chip              OK         17 degrees C / 62 degrees F
FPC 3 MQ 3 TSen              OK         15 degrees C / 59 degrees F
FPC 3 MQ 3 Chip              OK         16 degrees C / 60 degrees F
FPC 4 Intake                 OK         11 degrees C / 51 degrees F
FPC 4 Exhaust A              OK         22 degrees C / 71 degrees F
FPC 4 Exhaust B              OK         28 degrees C / 82 degrees F
FPC 4 LU 0 TSen              OK         22 degrees C / 71 degrees F
FPC 4 LU 0 Chip              OK         33 degrees C / 91 degrees F
FPC 4 LU 1 TSen              OK         22 degrees C / 71 degrees F
FPC 4 LU 1 Chip              OK         21 degrees C / 69 degrees F
FPC 4 LU 2 TSen              OK         22 degrees C / 71 degrees F
FPC 4 LU 2 Chip              OK         26 degrees C / 78 degrees F
FPC 4 LU 3 TSen              OK         22 degrees C / 71 degrees F
FPC 4 LU 3 Chip              OK         33 degrees C / 91 degrees F
FPC 4 XM 0 TSen              OK         22 degrees C / 71 degrees F
FPC 4 XM 0 Chip              OK         30 degrees C / 86 degrees F
```

```
      FPC 4 XF 0 TSen                OK          22 degrees C / 71 degrees F
      FPC 4 XF 0 Chip                OK          37 degrees C / 98 degrees F
      FPC 4 PLX Switch TSen          OK          22 degrees C / 71 degrees F
      FPC 4 PLX Switch Chip          OK          23 degrees C / 73 degrees F
      FPC 5 Intake                   OK          12 degrees C / 53 degrees F
      FPC 5 Exhaust A                OK          12 degrees C / 53 degrees F
FPC 5 Exhaust B                OK          12 degrees C / 53 degrees F
      FPC 5 LU 0 TSen                OK          27 degrees C / 80 degrees F
      FPC 5 LU 0 Chip                OK          28 degrees C / 82 degrees F
      FPC 5 LU 1 TSen                OK          27 degrees C / 80 degrees F
      FPC 5 LU 1 Chip                OK          27 degrees C / 80 degrees F
      FPC 5 LU 2 TSen                OK          27 degrees C / 80 degrees F
      FPC 5 LU 2 Chip                OK          19 degrees C / 66 degrees F
      FPC 5 LU 3 TSen                OK          27 degrees C / 80 degrees F
      FPC 5 LU 3 Chip                OK          22 degrees C / 71 degrees F
      FPC 5 XM 0 TSen                OK          27 degrees C / 80 degrees F
      FPC 5 XM 0 Chip                OK          36 degrees C / 96 degrees F
      FPC 5 XM 1 TSen                OK          27 degrees C / 80 degrees F
      FPC 5 XM 1 Chip                OK          26 degrees C / 78 degrees F
      FPC 5 PLX Switch TSen          OK          27 degrees C / 80 degrees F
      FPC 5 PLX Switch Chip          OK          24 degrees C / 75 degrees F
      FPC 6 Intake                   OK          12 degrees C / 53 degrees F
      FPC 6 Exhaust A                OK          17 degrees C / 62 degrees F
      FPC 6 Exhaust B                OK          28 degrees C / 82 degrees F
      FPC 6 LU 0 TSen                OK          24 degrees C / 75 degrees F
      FPC 6 LU 0 Chip                OK          29 degrees C / 84 degrees F
      FPC 6 LU 1 TSen                OK          24 degrees C / 75 degrees F
      FPC 6 LU 1 Chip                OK          30 degrees C / 86 degrees F
      FPC 6 LU 2 TSen                OK          24 degrees C / 75 degrees F
      FPC 6 LU 2 Chip                OK          24 degrees C / 75 degrees F
      FPC 6 LU 3 TSen                OK          24 degrees C / 75 degrees F
      FPC 6 LU 3 Chip                OK          22 degrees C / 71 degrees F
      FPC 6 MQ 0 TSen                OK          16 degrees C / 60 degrees F
      FPC 6 MQ 0 Chip                OK          19 degrees C / 66 degrees F
      FPC 6 MQ 1 TSen                OK          16 degrees C / 60 degrees F
      FPC 6 MQ 1 Chip                OK          20 degrees C / 68 degrees F
      FPC 6 MQ 2 TSen                OK          16 degrees C / 60 degrees F
      FPC 6 MQ 2 Chip                OK          17 degrees C / 62 degrees F
      FPC 6 MQ 3 TSen                OK          16 degrees C / 60 degrees F
      FPC 6 MQ 3 Chip                OK          16 degrees C / 60 degrees F
      FPC 7 Intake                   OK          10 degrees C / 50 degrees F
      FPC 7 Exhaust A                OK          10 degrees C / 50 degrees F
      FPC 7 Exhaust B                OK          11 degrees C / 51 degrees F
      FPC 7 LU 0 TSen                OK          26 degrees C / 78 degrees F
```

```
     FPC 7 LU 0 Chip               OK         26 degrees C / 78 degrees F
     FPC 7 LU 1 TSen               OK         26 degrees C / 78 degrees F
     FPC 7 LU 1 Chip               OK         29 degrees C / 84 degrees F
     FPC 7 LU 2 TSen               OK         26 degrees C / 78 degrees F
     FPC 7 LU 2 Chip               OK         19 degrees C / 66 degrees F
     FPC 7 LU 3 TSen               OK         26 degrees C / 78 degrees F
     FPC 7 LU 3 Chip               OK         24 degrees C / 75 degrees F
     FPC 7 XM 0 TSen               OK         26 degrees C / 78 degrees F
     FPC 7 XM 0 Chip               OK         34 degrees C / 93 degrees F
     FPC 7 XM 1 TSen               OK         26 degrees C / 78 degrees F
     FPC 7 XM 1 Chip               OK         32 degrees C / 89 degrees F
     FPC 7 PLX Switch TSen         OK         26 degrees C / 78 degrees F
     FPC 7 PLX Switch Chip         OK         22 degrees C / 71 degrees F
     FPC 8 Intake                  OK         10 degrees C / 50 degrees F
     FPC 8 Exhaust A               OK         22 degrees C / 71 degrees F
     FPC 8 Exhaust B               OK         28 degrees C / 82 degrees F
     FPC 8 LU 0 TSen               OK         20 degrees C / 68 degrees F
     FPC 8 LU 0 Chip               OK         33 degrees C / 91 degrees F
FPC 8 LU 1 TSen                OK         20 degrees C / 68 degrees F
     FPC 8 LU 1 Chip               OK         23 degrees C / 73 degrees F
     FPC 8 LU 2 TSen               OK         20 degrees C / 68 degrees F
     FPC 8 LU 2 Chip               OK         26 degrees C / 78 degrees F
     FPC 8 LU 3 TSen               OK         20 degrees C / 68 degrees F
     FPC 8 LU 3 Chip               OK         33 degrees C / 91 degrees F
     FPC 8 XM 0 TSen               OK         20 degrees C / 68 degrees F
     FPC 8 XM 0 Chip               OK         29 degrees C / 84 degrees F
     FPC 8 XF 0 TSen               OK         20 degrees C / 68 degrees F
     FPC 8 XF 0 Chip               OK         38 degrees C / 100 degrees F
     FPC 8 PLX Switch TSen         OK         20 degrees C / 68 degrees F
     FPC 8 PLX Switch Chip         OK         24 degrees C / 75 degrees F
     FPC 9 Intake                  OK         11 degrees C / 51 degrees F
     FPC 9 Exhaust A               OK         11 degrees C / 51 degrees F
     FPC 9 Exhaust B               OK         11 degrees C / 51 degrees F
     FPC 9 LU 0 TSen               OK         25 degrees C / 77 degrees F
     FPC 9 LU 0 Chip               OK         24 degrees C / 75 degrees F
     FPC 9 LU 1 TSen               OK         25 degrees C / 77 degrees F
     FPC 9 LU 1 Chip               OK         26 degrees C / 78 degrees F
     FPC 9 LU 2 TSen               OK         25 degrees C / 77 degrees F
     FPC 9 LU 2 Chip               OK         16 degrees C / 60 degrees F
     FPC 9 LU 3 TSen               OK         25 degrees C / 77 degrees F
     FPC 9 LU 3 Chip               OK         21 degrees C / 69 degrees F
     FPC 9 XM 0 TSen               OK         25 degrees C / 77 degrees F
     FPC 9 XM 0 Chip               OK         32 degrees C / 89 degrees F
     FPC 9 XM 1 TSen               OK         25 degrees C / 77 degrees F
```

```
      FPC 9 XM 1 Chip               OK         25 degrees C / 77 degrees F
      FPC 9 PLX Switch TSen         OK         25 degrees C / 77 degrees F
      FPC 9 PLX Switch Chip         OK         21 degrees C / 69 degrees F
      ADC 0 Intake                  OK         12 degrees C / 53 degrees F
      ADC 0 Exhaust                 OK         20 degrees C / 68 degrees F
      ADC 0 ADC-XF1                 OK         26 degrees C / 78 degrees F
      ADC 0 ADC-XF0                 OK         32 degrees C / 89 degrees F
      ADC 1 Intake                  OK         11 degrees C / 51 degrees F
      ADC 1 Exhaust                 OK         21 degrees C / 69 degrees F
      ADC 1 ADC-XF1                 OK         24 degrees C / 75 degrees F
      ADC 1 ADC-XF0                 OK         31 degrees C / 87 degrees F
      ADC 2 Intake                  OK         14 degrees C / 57 degrees F
      ADC 2 Exhaust                 OK         21 degrees C / 69 degrees F
      ADC 2 ADC-XF1                 OK         28 degrees C / 82 degrees F
      ADC 2 ADC-XF0                 OK         34 degrees C / 93 degrees F
      ADC 3 Intake                  OK         13 degrees C / 55 degrees F
      ADC 3 Exhaust                 OK         19 degrees C / 66 degrees F
      ADC 3 ADC-XF1                 OK         24 degrees C / 75 degrees F
      ADC 3 ADC-XF0                 OK         31 degrees C / 87 degrees F
      ADC 4 Intake                  OK         9 degrees C / 48 degrees F
      ADC 4 Exhaust                 OK         22 degrees C / 71 degrees F
      ADC 4 ADC-XF1                 OK         28 degrees C / 82 degrees F
      ADC 4 ADC-XF0                 OK         35 degrees C / 95 degrees F
      ADC 5 Intake                  OK         12 degrees C / 53 degrees F
      ADC 5 Exhaust                 OK         22 degrees C / 71 degrees F
      ADC 5 ADC-XF1                 OK         28 degrees C / 82 degrees F
      ADC 5 ADC-XF0                 OK         34 degrees C / 93 degrees F
      ADC 6 Intake                  OK         11 degrees C / 51 degrees F
      ADC 6 Exhaust                 OK         21 degrees C / 69 degrees F
      ADC 6 ADC-XF1                 OK         26 degrees C / 78 degrees F
 ADC 6 ADC-XF0                  OK         35 degrees C / 95 degrees F
      ADC 7 Intake                  OK         14 degrees C / 57 degrees F
      ADC 7 Exhaust                 OK         22 degrees C / 71 degrees F
      ADC 7 ADC-XF1                 OK         26 degrees C / 78 degrees F
      ADC 7 ADC-XF0                 OK         34 degrees C / 93 degrees F
      ADC 8 Intake                  OK         14 degrees C / 57 degrees F
      ADC 8 Exhaust                 OK         21 degrees C / 69 degrees F
      ADC 8 ADC-XF1                 OK         24 degrees C / 75 degrees F
      ADC 8 ADC-XF0                 OK         31 degrees C / 87 degrees F
      ADC 9 Intake                  OK         10 degrees C / 50 degrees F
      ADC 9 Exhaust                 OK         22 degrees C / 71 degrees F
      ADC 9 ADC-XF1                 OK         28 degrees C / 82 degrees F
      ADC 9 ADC-XF0                 OK         36 degrees C / 96 degrees F
Fans  Fan Tray 0 Fan 1              OK         3480 RPM
```

```
      Fan Tray 0 Fan 2              OK          3480 RPM
      Fan Tray 0 Fan 3              OK          3480 RPM
      Fan Tray 0 Fan 4              OK          3360 RPM
      Fan Tray 0 Fan 5              OK          3360 RPM
      Fan Tray 0 Fan 6              OK          3480 RPM
      Fan Tray 1 Fan 1              OK          3360 RPM
      Fan Tray 1 Fan 2              OK          3360 RPM
      Fan Tray 1 Fan 3              OK          3360 RPM
      Fan Tray 1 Fan 4              OK          3480 RPM
      Fan Tray 1 Fan 5              OK          3480 RPM
      Fan Tray 1 Fan 6              OK          3480 RPM
      Fan Tray 2 Fan 1              OK          3360 RPM
      Fan Tray 2 Fan 2              OK          3360 RPM
      Fan Tray 2 Fan 3              OK          3480 RPM
      Fan Tray 2 Fan 4              OK          3480 RPM
      Fan Tray 2 Fan 5              OK          3360 RPM
      Fan Tray 2 Fan 6              OK          3480 RPM
      Fan Tray 3 Fan 1              OK          3360 RPM
      Fan Tray 3 Fan 2              OK          3360 RPM
      Fan Tray 3 Fan 3              OK          3480 RPM
      Fan Tray 3 Fan 4              OK          3480 RPM
      Fan Tray 3 Fan 5              OK          3480 RPM
      Fan Tray 3 Fan 6              OK          3360 RPM
```

show chassis environment (MX2008 Router)

user@host>**show chassis environment**

```
Class Item                          Status     Measurement
Temp  PSM 0                         Absent
      PSM 1                         OK         29 degrees C / 84 degrees F
      PSM 2                         OK         30 degrees C / 86 degrees F
      PSM 3                         OK         29 degrees C / 84 degrees F
      PSM 4                         OK         29 degrees C / 84 degrees F
      PSM 5                         OK         30 degrees C / 86 degrees F
      PSM 6                         OK         29 degrees C / 84 degrees F
      PSM 7                         OK         31 degrees C / 87 degrees F
      PSM 8                         Absent
      PDM 0                         OK
      PDM 1                         OK
      CB 0 Inlet1                   OK         37 degrees C / 98 degrees F
      CB 0 Inlet2                   OK         45 degrees C / 113 degrees F
      CB 0 Inlet3                   OK         44 degrees C / 111 degrees F
      CB 0 Inlet4                   OK         41 degrees C / 105 degrees F
```

```
CB 0 Exhaust1                 OK          30 degrees C / 86 degrees F
CB 0 Exhaust2                 OK          40 degrees C / 104 degrees F
CB 0 Exhaust3                 OK          48 degrees C / 118 degrees F
CB 0 Exhaust4                 OK          46 degrees C / 114 degrees F
CB 1 Inlet1                   OK          30 degrees C / 86 degrees F
CB 1 Inlet2                   OK          31 degrees C / 87 degrees F
CB 1 Inlet3                   OK          29 degrees C / 84 degrees F
CB 1 Inlet4                   OK          32 degrees C / 89 degrees F
CB 1 Exhaust1                 OK          30 degrees C / 86 degrees F
CB 1 Exhaust2                 OK          33 degrees C / 91 degrees F
CB 1 Exhaust3                 OK          34 degrees C / 93 degrees F
CB 1 Exhaust4                 OK          34 degrees C / 93 degrees F
Routing Engine 0              OK
Routing Engine 0 CPU          OK          75 degrees C / 167 degrees F
Routing Engine 1              OK
Routing Engine 1 CPU          OK          46 degrees C / 114 degrees F
SFB 0 Inlet2                  OK          44 degrees C / 111 degrees F
SFB 0 Exhaust1                OK          39 degrees C / 102 degrees F
SFB 0 Inlet1                  OK          41 degrees C / 105 degrees F
SFB 0 Exhaust2                OK          45 degrees C / 113 degrees F
SFB 0 SFB2-PF-local           OK          45 degrees C / 113 degrees F
SFB 0 SFB2-PF-die             OK          51 degrees C / 123 degrees F
SFB 1 Inlet2                  OK          30 degrees C / 86 degrees F
SFB 1 Exhaust1                OK          27 degrees C / 80 degrees F
SFB 1 Inlet1                  OK          28 degrees C / 82 degrees F
SFB 1 Exhaust2                OK          31 degrees C / 87 degrees F
SFB 1 SFB2-PF-local           OK          30 degrees C / 86 degrees F
SFB 1 SFB2-PF-die             OK          37 degrees C / 98 degrees F
SFB 2 Inlet2                  OK          28 degrees C / 82 degrees F
SFB 2 Exhaust1                OK          26 degrees C / 78 degrees F
SFB 2 Inlet1                  OK          27 degrees C / 80 degrees F
SFB 2 Exhaust2                OK          28 degrees C / 82 degrees F
SFB 2 SFB2-PF-local           OK          27 degrees C / 80 degrees F
SFB 2 SFB2-PF-die             OK          33 degrees C / 91 degrees F
SFB 3 Inlet2                  OK          28 degrees C / 82 degrees F
SFB 3 Exhaust1                OK          26 degrees C / 78 degrees F
SFB 3 Inlet1                  OK          26 degrees C / 78 degrees F
SFB 3 Exhaust2                OK          28 degrees C / 82 degrees F
SFB 3 SFB2-PF-local           OK          27 degrees C / 80 degrees F
SFB 3 SFB2-PF-die             OK          33 degrees C / 91 degrees F
SFB 4 Inlet2                  OK          28 degrees C / 82 degrees F
SFB 4 Exhaust1                OK          26 degrees C / 78 degrees F
SFB 4 Inlet1                  OK          26 degrees C / 78 degrees F
SFB 4 Exhaust2                OK          28 degrees C / 82 degrees F
```

```
SFB 4 SFB2-PF-local          OK          27 degrees C / 80 degrees F
SFB 4 SFB2-PF-die            OK          32 degrees C / 89 degrees F
SFB 5 Inlet2                 OK          29 degrees C / 84 degrees F
SFB 5 Exhaust1               OK          27 degrees C / 80 degrees F
SFB 5 Inlet1                 OK          28 degrees C / 82 degrees F
SFB 5 Exhaust2               OK          29 degrees C / 84 degrees F
SFB 5 SFB2-PF-local          OK          28 degrees C / 82 degrees F
SFB 5 SFB2-PF-die            OK          34 degrees C / 93 degrees F
SFB 6 Inlet2                 OK          33 degrees C / 91 degrees F
SFB 6 Exhaust1               OK          32 degrees C / 89 degrees F
SFB 6 Inlet1                 OK          32 degrees C / 89 degrees F
SFB 6 Exhaust2               OK          34 degrees C / 93 degrees F
SFB 6 SFB2-PF-local          OK          33 degrees C / 91 degrees F
SFB 6 SFB2-PF-die            OK          40 degrees C / 104 degrees F
SFB 7 Inlet2                 OK          29 degrees C / 84 degrees F
SFB 7 Exhaust1               OK          28 degrees C / 82 degrees F
SFB 7 Inlet1                 OK          29 degrees C / 84 degrees F
SFB 7 Exhaust2               OK          29 degrees C / 84 degrees F
SFB 7 SFB2-PF-local          OK          28 degrees C / 82 degrees F
SFB 7 SFB2-PF-die            OK          33 degrees C / 91 degrees F
FPC 0 Intake                 OK          29 degrees C / 84 degrees F
FPC 0 Exhaust A              OK          42 degrees C / 107 degrees F
FPC 0 Exhaust B              OK          42 degrees C / 107 degrees F
FPC 0 XL 0 TSen              OK          38 degrees C / 100 degrees F
FPC 0 XL 0 Chip              OK          53 degrees C / 127 degrees F
FPC 0 XL 0 XR2 0 TSen        OK          38 degrees C / 100 degrees F
FPC 0 XL 0 XR2 0 Chip        OK          59 degrees C / 138 degrees F
FPC 0 XL 0 XR2 1 TSen        OK          38 degrees C / 100 degrees F
FPC 0 XL 0 XR2 1 Chip        OK          59 degrees C / 138 degrees F
FPC 0 XL 1 TSen              OK          30 degrees C / 86 degrees F
FPC 0 XL 1 Chip              OK          42 degrees C / 107 degrees F
FPC 0 XL 1 XR2 0 TSen        OK          30 degrees C / 86 degrees F
FPC 0 XL 1 XR2 0 Chip        OK          49 degrees C / 120 degrees F
FPC 0 XL 1 XR2 1 TSen        OK          30 degrees C / 86 degrees F
FPC 0 XL 1 XR2 1 Chip        OK          50 degrees C / 122 degrees F
FPC 0 XM 0 TSen              OK          42 degrees C / 107 degrees F
FPC 0 XM 0 Chip              OK          49 degrees C / 120 degrees F
FPC 0 XM 1 TSen              OK          42 degrees C / 107 degrees F
FPC 0 XM 1 Chip              OK          42 degrees C / 107 degrees F
FPC 0 XM 2 TSen              OK          42 degrees C / 107 degrees F
FPC 0 XM 2 Chip              OK          42 degrees C / 107 degrees F
FPC 0 XM 3 TSen              OK          42 degrees C / 107 degrees F
FPC 0 XM 3 Chip              OK          40 degrees C / 104 degrees F
FPC 0 PCIe Switch TSen       OK          42 degrees C / 107 degrees F
```

```
FPC 0 PCIe Switch Chip        OK         22 degrees C / 71 degrees F
FPC 1 Intake                  OK         29 degrees C / 84 degrees F
FPC 1 Exhaust A               OK         52 degrees C / 125 degrees F
FPC 1 Exhaust B               OK         44 degrees C / 111 degrees F
FPC 1 EA0 TSen                OK         54 degrees C / 129 degrees F
FPC 1 EA0 Chip                OK         47 degrees C / 116 degrees F
FPC 1 EA0_XR0 TSen            OK         54 degrees C / 129 degrees F
FPC 1 EA0_XR0 Chip            OK         56 degrees C / 132 degrees F
FPC 1 EA0_XR1 TSen            OK         54 degrees C / 129 degrees F
FPC 1 EA0_XR1 Chip            OK         53 degrees C / 127 degrees F
FPC 1 EA1 TSen                OK         54 degrees C / 129 degrees F
FPC 1 EA1 Chip                OK         49 degrees C / 120 degrees F
FPC 1 EA1_XR0 TSen            OK         54 degrees C / 129 degrees F
FPC 1 EA1_XR0 Chip            OK         57 degrees C / 134 degrees F
FPC 1 EA1_XR1 TSen            OK         54 degrees C / 129 degrees F
FPC 1 EA1_XR1 Chip            OK         58 degrees C / 136 degrees F
FPC 1 PEX TSen                OK         54 degrees C / 129 degrees F
FPC 1 PEX Chip                OK         39 degrees C / 102 degrees F
FPC 1 EA2 TSen                OK         43 degrees C / 109 degrees F
FPC 1 EA2 Chip                OK         39 degrees C / 102 degrees F
FPC 1 EA2_XR0 TSen            OK         43 degrees C / 109 degrees F
FPC 1 EA2_XR0 Chip            OK         45 degrees C / 113 degrees F
FPC 1 EA2_XR1 TSen            OK         43 degrees C / 109 degrees F
FPC 1 EA2_XR1 Chip            OK         42 degrees C / 107 degrees F
FPC 1 EA3 TSen                OK         43 degrees C / 109 degrees F
FPC 1 EA3 Chip                OK         40 degrees C / 104 degrees F
FPC 1 EA3_XR0 TSen            OK         43 degrees C / 109 degrees F
FPC 1 EA3_XR0 Chip            OK         50 degrees C / 122 degrees F
FPC 1 EA3_XR1 TSen            OK         43 degrees C / 109 degrees F
FPC 1 EA3_XR1 Chip            OK         46 degrees C / 114 degrees F
FPC 1 EA0_HMC0 Logic die      OK         60 degrees C / 140 degrees F
FPC 1 EA0_HMC0 DRAM botm      OK         57 degrees C / 134 degrees F
FPC 1 EA0_HMC1 Logic die      OK         61 degrees C / 141 degrees F
FPC 1 EA0_HMC1 DRAM botm      OK         58 degrees C / 136 degrees F
FPC 1 EA0_HMC2 Logic die      OK         57 degrees C / 134 degrees F
FPC 1 EA0_HMC2 DRAM botm      OK         54 degrees C / 129 degrees F
FPC 1 EA1_HMC0 Logic die      OK         65 degrees C / 149 degrees F
FPC 1 EA1_HMC0 DRAM botm      OK         62 degrees C / 143 degrees F
FPC 1 EA1_HMC1 Logic die      OK         64 degrees C / 147 degrees F
FPC 1 EA1_HMC1 DRAM botm      OK         61 degrees C / 141 degrees F
FPC 1 EA1_HMC2 Logic die      OK         61 degrees C / 141 degrees F
FPC 1 EA1_HMC2 DRAM botm      OK         58 degrees C / 136 degrees F
FPC 1 EA2_HMC0 Logic die      OK         50 degrees C / 122 degrees F
FPC 1 EA2_HMC0 DRAM botm      OK         47 degrees C / 116 degrees F
```

```
      FPC 1 EA2_HMC1 Logic die      OK         54 degrees C / 129 degrees F
      FPC 1 EA2_HMC1 DRAM botm      OK         51 degrees C / 123 degrees F
      FPC 1 EA2_HMC2 Logic die      OK         51 degrees C / 123 degrees F
      FPC 1 EA2_HMC2 DRAM botm      OK         48 degrees C / 118 degrees F
      FPC 1 EA3_HMC0 Logic die      OK         51 degrees C / 123 degrees F
      FPC 1 EA3_HMC0 DRAM botm      OK         48 degrees C / 118 degrees F
      FPC 1 EA3_HMC1 Logic die      OK         51 degrees C / 123 degrees F
      FPC 1 EA3_HMC1 DRAM botm      OK         48 degrees C / 118 degrees F
      FPC 1 EA3_HMC2 Logic die      OK         51 degrees C / 123 degrees F
      FPC 1 EA3_HMC2 DRAM botm      OK         48 degrees C / 118 degrees F
      FPC 7 Intake                  OK         30 degrees C / 86 degrees F
      FPC 7 Exhaust A               OK         45 degrees C / 113 degrees F
      FPC 7 Exhaust B               OK         38 degrees C / 100 degrees F
      FPC 7 QX 0 TSen               OK         48 degrees C / 118 degrees F
      FPC 7 QX 0 Chip               OK         51 degrees C / 123 degrees F
      FPC 7 LU 0 TCAM TSen          OK         48 degrees C / 118 degrees F
      FPC 7 LU 0 TCAM Chip          OK         51 degrees C / 123 degrees F
      FPC 7 LU 0 TSen               OK         48 degrees C / 118 degrees F
      FPC 7 LU 0 Chip               OK         50 degrees C / 122 degrees F
      FPC 7 MQ 0 TSen               OK         48 degrees C / 118 degrees F
      FPC 7 MQ 0 Chip               OK         54 degrees C / 129 degrees F
      FPC 7 QX 1 TSen               OK         41 degrees C / 105 degrees F
      FPC 7 QX 1 Chip               OK         42 degrees C / 107 degrees F
      FPC 7 LU 1 TCAM TSen          OK         41 degrees C / 105 degrees F
      FPC 7 LU 1 TCAM Chip          OK         43 degrees C / 109 degrees F
      FPC 7 LU 1 TSen               OK         41 degrees C / 105 degrees F
      FPC 7 LU 1 Chip               OK         46 degrees C / 114 degrees F
      FPC 7 MQ 1 TSen               OK         41 degrees C / 105 degrees F
      FPC 7 MQ 1 Chip               OK         47 degrees C / 116 degrees F
      ADC 7 Intake                  OK         32 degrees C / 89 degrees F
      ADC 7 Exhaust                 OK         39 degrees C / 102 degrees F
      ADC 7 ADC-XF1                 OK         46 degrees C / 114 degrees F
      ADC 7 ADC-XF0                 OK         54 degrees C / 129 degrees F
Fans  Fan Tray 0 Fan 1              OK         6240 RPM
      Fan Tray 0 Fan 2              OK         6120 RPM
      Fan Tray 0 Fan 3              OK         6120 RPM
      Fan Tray 0 Fan 4              OK         5760 RPM
      Fan Tray 0 Fan 5              OK         5880 RPM
      Fan Tray 0 Fan 6              OK         6000 RPM
      Fan Tray 1 Fan 1              OK         5880 RPM
      Fan Tray 1 Fan 2              OK         5880 RPM
      Fan Tray 1 Fan 3              OK         6000 RPM
      Fan Tray 1 Fan 4              OK         6000 RPM
```

```
      Fan Tray 1 Fan 5              OK         6000 RPM
      Fan Tray 1 Fan 6              OK         6000 RPM
```

show chassis environment (T320 Router)

`user@host>` **show chassis environment**

```
Class Item                  Status     Measurement
Power PEM 0                 OK
      PEM 1                 Absent
Temp  SCG 0                 OK         28 degrees C / 82 degrees F
      SCG 1                 OK         28 degrees C / 82 degrees F
      Routing Engine 0      OK         31 degrees C / 87 degrees F
      Routing Engine 1      OK         30 degrees C / 86 degrees F
      CB 0                  OK         32 degrees C / 89 degrees F
      CB 1                  OK         32 degrees C / 89 degrees F
      SIB 0                 OK         33 degrees C / 91 degrees F
      SIB 1                 OK         33 degrees C / 91 degrees F
      SIB 2                 OK         34 degrees C / 93 degrees F
      FPC 0 Top             OK         38 degrees C / 100 degrees F
      FPC 0 Bottom          OK         32 degrees C / 89 degrees F
      FPC 1 Top             OK         38 degrees C / 100 degrees F
      FPC 1 Bottom          OK         33 degrees C / 91 degrees F
      FPC 2 Top             OK         36 degrees C / 96 degrees F
      FPC 2 Bottom          OK         31 degrees C / 87 degrees F
      FPM GBUS              OK         26 degrees C / 78 degrees F
      FPM Display           OK         29 degrees C / 84 degrees F
Fans  Top Left Front fan    OK         Spinning at normal speed
      Top Left Middle fan   OK         Spinning at normal speed
      Top Left Rear fan     OK         Spinning at normal speed
      Top Right Front fan   OK         Spinning at normal speed
      Top Right Middle fan  OK         Spinning at normal speed
      Top Right Rear fan    OK         Spinning at normal speed
      Bottom Left Front fan  OK        Spinning at normal speed
      Bottom Left Middle fan OK        Spinning at normal speed
      Bottom Left Rear fan   OK        Spinning at normal speed
      Bottom Right Front fan OK        Spinning at normal speed
      Bottom Right Middle fan OK       Spinning at normal speed
      Bottom Right Rear fan  OK        Spinning at normal speed
      Rear Tray Top fan     OK         Spinning at normal speed
      Rear Tray Second fan  OK         Spinning at normal speed
      Rear Tray Middle fan  OK         Spinning at normal speed
      Rear Tray Fourth fan  OK         Spinning at normal speed
      Rear Tray Bottom fan  OK         Spinning at normal speed
```

```
Misc  CIP                    OK
      SPMB 0                 OK
      SPMB 1                 OK
```

show chassis environment (MX10003 Router)

`user@host>` **show chassis environment**

```
Class Item                           Status     Measurement
Temp  CB 0 Exhaust Temp Sensor 0x49  OK         36 degrees C / 96 degrees F
      CB 0 Inlet Temp Sensor 0x49    OK         29 degrees C / 84 degrees F
      CB 1 Exhaust Temp Sensor 0x49  OK         36 degrees C / 96 degrees F
      CB 1 Inlet Temp Sensor 0x49    OK         31 degrees C / 87 degrees F
      FPC 0 Intake Temp Sensor       OK         29 degrees C / 84 degrees F
      FPC 0 Exhaust-A Temp Sensor    OK         55 degrees C / 131 degrees F
      FPC 0 Exhaust-B Temp Sensor    OK         44 degrees C / 111 degrees F
      FPC 0 EA0 Chip                 OK         58 degrees C / 136 degrees F
      FPC 0 EA0-XR0 Chip             OK         61 degrees C / 141 degrees F
      FPC 0 EA0-XR1 Chip             OK         62 degrees C / 143 degrees F
      FPC 0 EA1 Chip                 OK         67 degrees C / 152 degrees F
      FPC 0 EA1-XR0 Chip             OK         71 degrees C / 159 degrees F
      FPC 0 EA1-XR1 Chip             OK         72 degrees C / 161 degrees F
      FPC 0 PEX Chip                 OK         75 degrees C / 167 degrees F
      FPC 0 EA2 Chip                 OK         49 degrees C / 120 degrees F
      FPC 0 EA2-XR0 Chip             OK         55 degrees C / 131 degrees F
      FPC 0 EA2-XR1 Chip             OK         56 degrees C / 132 degrees F
      FPC 0 PF Chip                  OK         68 degrees C / 154 degrees F
      FPC 0 EA0_HMC0 Logic die       OK         72 degrees C / 161 degrees F
      FPC 0 EA0_HMC0 DRAM botm       OK         69 degrees C / 156 degrees F
      FPC 0 EA0_HMC1 Logic die       OK         72 degrees C / 161 degrees F
      FPC 0 EA0_HMC1 DRAM botm       OK         69 degrees C / 156 degrees F
      FPC 0 EA0_HMC2 Logic die       OK         75 degrees C / 167 degrees F
      FPC 0 EA0_HMC2 DRAM botm       OK         72 degrees C / 161 degrees F
      FPC 0 EA1_HMC0 Logic die       OK         81 degrees C / 177 degrees F
      FPC 0 EA1_HMC0 DRAM botm       OK         78 degrees C / 172 degrees F
      FPC 0 EA1_HMC1 Logic die       OK         79 degrees C / 174 degrees F
      FPC 0 EA1_HMC1 DRAM botm       OK         76 degrees C / 168 degrees F
      FPC 0 EA1_HMC2 Logic die       OK         82 degrees C / 179 degrees F
      FPC 0 EA1_HMC2 DRAM botm       OK         79 degrees C / 174 degrees F
      FPC 0 EA2_HMC0 Logic die       OK         61 degrees C / 141 degrees F
      FPC 0 EA2_HMC0 DRAM botm       OK         58 degrees C / 136 degrees F
      FPC 0 EA2_HMC1 Logic die       OK         62 degrees C / 143 degrees F
```

```
      FPC 0 EA2_HMC1 DRAM botm       OK         59 degrees C / 138 degrees F
      FPC 0 EA2_HMC2 Logic die       OK         64 degrees C / 147 degrees F
      FPC 0 EA2_HMC2 DRAM botm       OK         61 degrees C / 141 degrees F
      FPC 1 Intake Temp Sensor       OK         28 degrees C / 82 degrees F
      FPC 1 Exhaust-A Temp Sensor    OK         58 degrees C / 136 degrees F
      FPC 1 Exhaust-B Temp Sensor    OK         46 degrees C / 114 degrees F
      FPC 1 EA0 Chip                 OK         64 degrees C / 147 degrees F
      FPC 1 EA0-XR0 Chip             OK         67 degrees C / 152 degrees F
      FPC 1 EA0-XR1 Chip             OK         68 degrees C / 154 degrees F
      FPC 1 EA1 Chip                 OK         70 degrees C / 158 degrees F
      FPC 1 EA1-XR0 Chip             OK         74 degrees C / 165 degrees F
      FPC 1 EA1-XR1 Chip             OK         74 degrees C / 165 degrees F
      FPC 1 PEX Chip                 OK         88 degrees C / 190 degrees F
      FPC 1 EA2 Chip                 OK         50 degrees C / 122 degrees F
      FPC 1 EA2-XR0 Chip             OK         54 degrees C / 129 degrees F
      FPC 1 EA2-XR1 Chip             OK         56 degrees C / 132 degrees F
      FPC 1 PF Chip                  OK         71 degrees C / 159 degrees F
      FPC 1 EA0_HMC0 Logic die       OK         74 degrees C / 165 degrees F
      FPC 1 EA0_HMC0 DRAM botm       OK         71 degrees C / 159 degrees F
      FPC 1 EA0_HMC1 Logic die       OK         78 degrees C / 172 degrees F
      FPC 1 EA0_HMC1 DRAM botm       OK         75 degrees C / 167 degrees F
      FPC 1 EA0_HMC2 Logic die       OK         78 degrees C / 172 degrees F
      FPC 1 EA0_HMC2 DRAM botm       OK         75 degrees C / 167 degrees F
      FPC 1 EA1_HMC0 Logic die       OK         84 degrees C / 183 degrees F
      FPC 1 EA1_HMC0 DRAM botm       OK         81 degrees C / 177 degrees F
      FPC 1 EA1_HMC1 Logic die       OK         81 degrees C / 177 degrees F
      FPC 1 EA1_HMC1 DRAM botm       OK         78 degrees C / 172 degrees F
      FPC 1 EA1_HMC2 Logic die       OK         85 degrees C / 185 degrees F
      FPC 1 EA1_HMC2 DRAM botm       OK         82 degrees C / 179 degrees F
      FPC 1 EA2_HMC0 Logic die       OK         63 degrees C / 145 degrees F
      FPC 1 EA2_HMC0 DRAM botm       OK         60 degrees C / 140 degrees F
      FPC 1 EA2_HMC1 Logic die       OK         60 degrees C / 140 degrees F
      FPC 1 EA2_HMC1 DRAM botm       OK         57 degrees C / 134 degrees F
      FPC 1 EA2_HMC2 Logic die       OK         66 degrees C / 150 degrees F
      FPC 1 EA2_HMC2 DRAM botm       OK         63 degrees C / 145 degrees F
Power PEM 0                          OK
      PEM 1                          OK
      PEM 2                          OK
      PEM 3                          OK
      PEM 4                          Absent
      PEM 5                          Absent
Fans  Fan Tray 0 Fan 0               OK         Spinning at normal speed
      Fan Tray 0 Fan 1               OK         Spinning at normal speed
      Fan Tray 0 Fan 2               OK         Spinning at normal speed
```

```
      Fan Tray 0 Fan 3              OK          Spinning at normal speed
      Fan Tray 1 Fan 0              OK          Spinning at normal speed
      Fan Tray 1 Fan 1              OK          Spinning at normal speed
      Fan Tray 1 Fan 2              OK          Spinning at normal speed
      Fan Tray 1 Fan 3              OK          Spinning at normal speed
      Fan Tray 2 Fan 0              OK          Spinning at normal speed
      Fan Tray 2 Fan 1              OK          Spinning at normal speed
      Fan Tray 2 Fan 2              OK          Spinning at normal speed
      Fan Tray 2 Fan 3              OK          Spinning at normal speed
      Fan Tray 3 Fan 0              OK          Spinning at normal speed
      Fan Tray 3 Fan 1              OK          Spinning at normal speed
      Fan Tray 3 Fan 2              OK          Spinning at normal speed
      Fan Tray 3 Fan 3              OK          Spinning at normal speed
```

show chassis environment (MX10008 Router)

`user@host>` **show chassis environment**

```
Class Item                          Status     Measurement
      Routing Engine 0 CPU          OK         41 degrees C / 105 degrees F
      Routing Engine 1 CPU          OK         40 degrees C / 104 degrees F
Temp  CB 0 Intake A Temp Sensor     OK         24 degrees C / 75 degrees F
      CB 0 Intake B Temp Sensor     OK         24 degrees C / 75 degrees F
      CB 0 Exhaust A Temp Sensor    OK         28 degrees C / 82 degrees F
      CB 0 Exhaust B Temp Sensor    OK         30 degrees C / 86 degrees F
      CB 0 Middle Temp Sensor       OK         28 degrees C / 82 degrees F
      CB 1 Intake A Temp Sensor     OK         24 degrees C / 75 degrees F
      CB 1 Intake B Temp Sensor     OK         23 degrees C / 73 degrees F
      CB 1 Exhaust A Temp Sensor    OK         27 degrees C / 80 degrees F
      CB 1 Exhaust B Temp Sensor    OK         29 degrees C / 84 degrees F
      CB 1 Middle Temp Sensor       OK         28 degrees C / 82 degrees F
      FPC 0 Intake-A Temp Sensor    OK         32 degrees C / 89 degrees F
      FPC 0 Exhaust-A Temp Sensor   OK         44 degrees C / 111 degrees F
      FPC 0 Exhaust-B Temp Sensor   OK         49 degrees C / 120 degrees F
      FPC 0 EA0 Temp Sensor         OK         66 degrees C / 150 degrees F
      FPC 0 EA0_XR0 Temp Sensor     OK         69 degrees C / 156 degrees F
      FPC 0 EA0_XR1 Temp Sensor     OK         73 degrees C / 163 degrees F
      FPC 0 EA1 Temp Sensor         OK         60 degrees C / 140 degrees F
      FPC 0 EA1_XR0 Temp Sensor     OK         64 degrees C / 147 degrees F
      FPC 0 EA1_XR1 Temp Sensor     OK         63 degrees C / 145 degrees F
      FPC 0 EA2 Temp Sensor         OK         68 degrees C / 154 degrees F
      FPC 0 EA2_XR0 Temp Sensor     OK         73 degrees C / 163 degrees F
      FPC 0 EA2_XR1 Temp Sensor     OK         72 degrees C / 161 degrees F
      FPC 0 EA3 Temp Sensor         OK         63 degrees C / 145 degrees F
```

```
FPC 0 EA3_XR0 Temp Sensor      OK          66 degrees C / 150 degrees F
FPC 0 EA3_XR1 Temp Sensor      OK          65 degrees C / 149 degrees F
FPC 0 EA4 Temp Sensor          OK          68 degrees C / 154 degrees F
FPC 0 EA4_XR0 Temp Sensor      OK          71 degrees C / 159 degrees F
FPC 0 EA4_XR1 Temp Sensor      OK          70 degrees C / 158 degrees F
FPC 0 EA5 Temp Sensor          OK          56 degrees C / 132 degrees F
FPC 0 EA5_XR0 Temp Sensor      OK          61 degrees C / 141 degrees F
FPC 0 EA5_XR1 Temp Sensor      OK          63 degrees C / 145 degrees F
FPC 0 EA0_HMC0 Logic die       OK          75 degrees C / 167 degrees F
FPC 0 EA0_HMC0 DRAM botm       OK          72 degrees C / 161 degrees F
FPC 0 EA0_HMC1 Logic die       OK          75 degrees C / 167 degrees F
FPC 0 EA0_HMC1 DRAM botm       OK          72 degrees C / 161 degrees F
FPC 0 EA0_HMC2 Logic die       OK          77 degrees C / 170 degrees F
FPC 0 EA0_HMC2 DRAM botm       OK          74 degrees C / 165 degrees F
FPC 0 EA1_HMC0 Logic die       OK          72 degrees C / 161 degrees F
FPC 0 EA1_HMC0 DRAM botm       OK          69 degrees C / 156 degrees F
FPC 0 EA1_HMC1 Logic die       OK          73 degrees C / 163 degrees F
FPC 0 EA1_HMC1 DRAM botm       OK          70 degrees C / 158 degrees F
FPC 0 EA1_HMC2 Logic die       OK          72 degrees C / 161 degrees F
FPC 0 EA1_HMC2 DRAM botm       OK          69 degrees C / 156 degrees F
FPC 0 EA2_HMC0 Logic die       OK          80 degrees C / 176 degrees F
FPC 0 EA2_HMC0 DRAM botm       OK          77 degrees C / 170 degrees F
FPC 0 EA2_HMC1 Logic die       OK          80 degrees C / 176 degrees F
FPC 0 EA2_HMC1 DRAM botm       OK          77 degrees C / 170 degrees F
FPC 0 EA2_HMC2 Logic die       OK          79 degrees C / 174 degrees F
FPC 0 EA2_HMC2 DRAM botm       OK          76 degrees C / 168 degrees F
FPC 0 EA3_HMC0 Logic die       OK          77 degrees C / 170 degrees F
FPC 0 EA3_HMC0 DRAM botm       OK          74 degrees C / 165 degrees F
FPC 0 EA3_HMC1 Logic die       OK          78 degrees C / 172 degrees F
FPC 0 EA3_HMC1 DRAM botm       OK          75 degrees C / 167 degrees F
FPC 0 EA3_HMC2 Logic die       OK          77 degrees C / 170 degrees F
FPC 0 EA3_HMC2 DRAM botm       OK          74 degrees C / 165 degrees F
FPC 0 EA4_HMC0 Logic die       OK          80 degrees C / 176 degrees F
FPC 0 EA4_HMC0 DRAM botm       OK          77 degrees C / 170 degrees F
FPC 0 EA4_HMC1 Logic die       OK          81 degrees C / 177 degrees F
FPC 0 EA4_HMC1 DRAM botm       OK          78 degrees C / 172 degrees F
FPC 0 EA4_HMC2 Logic die       OK          80 degrees C / 176 degrees F
FPC 0 EA4_HMC2 DRAM botm       OK          77 degrees C / 170 degrees F
FPC 0 EA5_HMC0 Logic die       OK          68 degrees C / 154 degrees F
FPC 0 EA5_HMC0 DRAM botm       OK          65 degrees C / 149 degrees F
FPC 0 EA5_HMC1 Logic die       OK          68 degrees C / 154 degrees F
FPC 0 EA5_HMC1 DRAM botm       OK          65 degrees C / 149 degrees F
FPC 0 EA5_HMC2 Logic die       OK          67 degrees C / 152 degrees F
FPC 0 EA5_HMC2 DRAM botm       OK          64 degrees C / 147 degrees F
```

```
FPC 2 Intake-A Temp Sensor     OK          32 degrees C / 89 degrees F
FPC 2 Exhaust-A Temp Sensor    OK          52 degrees C / 125 degrees F
FPC 2 Exhaust-B Temp Sensor    OK          50 degrees C / 122 degrees F
FPC 2 EA0 Temp Sensor          OK          71 degrees C / 159 degrees F
FPC 2 EA0_XR0 Temp Sensor      OK          75 degrees C / 167 degrees F
FPC 2 EA0_XR1 Temp Sensor      OK          78 degrees C / 172 degrees F
FPC 2 EA1 Temp Sensor          OK          64 degrees C / 147 degrees F
FPC 2 EA1_XR0 Temp Sensor      OK          67 degrees C / 152 degrees F
FPC 2 EA1_XR1 Temp Sensor      OK          65 degrees C / 149 degrees F
FPC 2 EA2 Temp Sensor          OK          75 degrees C / 167 degrees F
FPC 2 EA2_XR0 Temp Sensor      OK          80 degrees C / 176 degrees F
FPC 2 EA2_XR1 Temp Sensor      OK          80 degrees C / 176 degrees F
FPC 2 EA3 Temp Sensor          OK          66 degrees C / 150 degrees F
FPC 2 EA3_XR0 Temp Sensor      OK          69 degrees C / 156 degrees F
FPC 2 EA3_XR1 Temp Sensor      OK          69 degrees C / 156 degrees F
FPC 2 EA4 Temp Sensor          OK          75 degrees C / 167 degrees F
FPC 2 EA4_XR0 Temp Sensor      OK          76 degrees C / 168 degrees F
FPC 2 EA4_XR1 Temp Sensor      OK          75 degrees C / 167 degrees F
FPC 2 EA5 Temp Sensor          OK          60 degrees C / 140 degrees F
FPC 2 EA5_XR0 Temp Sensor      OK          64 degrees C / 147 degrees F
FPC 2 EA5_XR1 Temp Sensor      OK          64 degrees C / 147 degrees F
FPC 2 EA0_HMC0 Logic die       OK          84 degrees C / 183 degrees F
FPC 2 EA0_HMC0 DRAM botm       OK          81 degrees C / 177 degrees F
FPC 2 EA0_HMC1 Logic die       OK          85 degrees C / 185 degrees F
FPC 2 EA0_HMC1 DRAM botm       OK          82 degrees C / 179 degrees F
FPC 2 EA0_HMC2 Logic die       OK          83 degrees C / 181 degrees F
FPC 2 EA0_HMC2 DRAM botm       OK          80 degrees C / 176 degrees F
FPC 2 EA1_HMC0 Logic die       OK          76 degrees C / 168 degrees F
FPC 2 EA1_HMC0 DRAM botm       OK          73 degrees C / 163 degrees F
FPC 2 EA1_HMC1 Logic die       OK          76 degrees C / 168 degrees F
FPC 2 EA1_HMC1 DRAM botm       OK          73 degrees C / 163 degrees F
FPC 2 EA1_HMC2 Logic die       OK          76 degrees C / 168 degrees F
FPC 2 EA1_HMC2 DRAM botm       OK          73 degrees C / 163 degrees F
FPC 2 EA2_HMC0 Logic die       OK          86 degrees C / 186 degrees F
FPC 2 EA2_HMC0 DRAM botm       OK          83 degrees C / 181 degrees F
FPC 2 EA2_HMC1 Logic die       OK          87 degrees C / 188 degrees F
FPC 2 EA2_HMC1 DRAM botm       OK          84 degrees C / 183 degrees F
FPC 2 EA2_HMC2 Logic die       OK          87 degrees C / 188 degrees F
FPC 2 EA2_HMC2 DRAM botm       OK          84 degrees C / 183 degrees F
FPC 2 EA3_HMC0 Logic die       OK          80 degrees C / 176 degrees F
FPC 2 EA3_HMC0 DRAM botm       OK          77 degrees C / 170 degrees F
FPC 2 EA3_HMC1 Logic die       OK          80 degrees C / 176 degrees F
FPC 2 EA3_HMC1 DRAM botm       OK          77 degrees C / 170 degrees F
FPC 2 EA3_HMC2 Logic die       OK          80 degrees C / 176 degrees F
```

```
FPC 2 EA3_HMC2 DRAM botm       OK          77 degrees C / 170 degrees F
FPC 2 EA4_HMC0 Logic die       OK          88 degrees C / 190 degrees F
FPC 2 EA4_HMC0 DRAM botm       OK          85 degrees C / 185 degrees F
FPC 2 EA4_HMC1 Logic die       OK          89 degrees C / 192 degrees F
FPC 2 EA4_HMC1 DRAM botm       OK          86 degrees C / 186 degrees F
FPC 2 EA4_HMC2 Logic die       OK          80 degrees C / 176 degrees F
FPC 2 EA4_HMC2 DRAM botm       OK          77 degrees C / 170 degrees F
FPC 2 EA5_HMC0 Logic die       OK          72 degrees C / 161 degrees F
FPC 2 EA5_HMC0 DRAM botm       OK          69 degrees C / 156 degrees F
FPC 2 EA5_HMC1 Logic die       OK          69 degrees C / 156 degrees F
FPC 2 EA5_HMC1 DRAM botm       OK          66 degrees C / 150 degrees F
FPC 2 EA5_HMC2 Logic die       OK          72 degrees C / 161 degrees F
FPC 2 EA5_HMC2 DRAM botm       OK          69 degrees C / 156 degrees F
FPC 3 Intake-A Temp Sensor     OK          30 degrees C / 86 degrees F
FPC 3 Exhaust-A Temp Sensor    OK          48 degrees C / 118 degrees F
FPC 3 Exhaust-B Temp Sensor    OK          44 degrees C / 111 degrees F
FPC 3 EA0 Temp Sensor          OK          60 degrees C / 140 degrees F
FPC 3 EA0_XR0 Temp Sensor      OK          65 degrees C / 149 degrees F
FPC 3 EA0_XR1 Temp Sensor      OK          67 degrees C / 152 degrees F
FPC 3 EA1 Temp Sensor          OK          54 degrees C / 129 degrees F
FPC 3 EA1_XR0 Temp Sensor      OK          59 degrees C / 138 degrees F
FPC 3 EA1_XR1 Temp Sensor      OK          58 degrees C / 136 degrees F
FPC 3 EA2 Temp Sensor          OK          62 degrees C / 143 degrees F
FPC 3 EA2_XR0 Temp Sensor      OK          66 degrees C / 150 degrees F
FPC 3 EA2_XR1 Temp Sensor      OK          66 degrees C / 150 degrees F
FPC 3 EA3 Temp Sensor          OK          54 degrees C / 129 degrees F
FPC 3 EA3_XR0 Temp Sensor      OK          57 degrees C / 134 degrees F
FPC 3 EA3_XR1 Temp Sensor      OK          56 degrees C / 132 degrees F
FPC 3 EA4 Temp Sensor          OK          68 degrees C / 154 degrees F
FPC 3 EA4_XR0 Temp Sensor      OK          71 degrees C / 159 degrees F
FPC 3 EA4_XR1 Temp Sensor      OK          70 degrees C / 158 degrees F
FPC 3 EA5 Temp Sensor          OK          55 degrees C / 131 degrees F
FPC 3 EA5_XR0 Temp Sensor      OK          58 degrees C / 136 degrees F
FPC 3 EA5_XR1 Temp Sensor      OK          58 degrees C / 136 degrees F
FPC 3 EA0_HMC0 Logic die       OK          69 degrees C / 156 degrees F
FPC 3 EA0_HMC0 DRAM botm       OK          66 degrees C / 150 degrees F
FPC 3 EA0_HMC1 Logic die       OK          70 degrees C / 158 degrees F
FPC 3 EA0_HMC1 DRAM botm       OK          67 degrees C / 152 degrees F
FPC 3 EA0_HMC2 Logic die       OK          69 degrees C / 156 degrees F
FPC 3 EA0_HMC2 DRAM botm       OK          66 degrees C / 150 degrees F
FPC 3 EA1_HMC0 Logic die       OK          67 degrees C / 152 degrees F
FPC 3 EA1_HMC0 DRAM botm       OK          64 degrees C / 147 degrees F
FPC 3 EA1_HMC1 Logic die       OK          64 degrees C / 147 degrees F
FPC 3 EA1_HMC1 DRAM botm       OK          61 degrees C / 141 degrees F
```

```
      FPC 3 EA1_HMC2 Logic die       OK         64 degrees C / 147 degrees F
      FPC 3 EA1_HMC2 DRAM botm       OK         61 degrees C / 141 degrees F
      FPC 3 EA2_HMC0 Logic die       OK         74 degrees C / 165 degrees F
      FPC 3 EA2_HMC0 DRAM botm       OK         71 degrees C / 159 degrees F
      FPC 3 EA2_HMC1 Logic die       OK         76 degrees C / 168 degrees F
      FPC 3 EA2_HMC1 DRAM botm       OK         73 degrees C / 163 degrees F
      FPC 3 EA2_HMC2 Logic die       OK         74 degrees C / 165 degrees F
      FPC 3 EA2_HMC2 DRAM botm       OK         71 degrees C / 159 degrees F
      FPC 3 EA3_HMC0 Logic die       OK         69 degrees C / 156 degrees F
      FPC 3 EA3_HMC0 DRAM botm       OK         66 degrees C / 150 degrees F
      FPC 3 EA3_HMC1 Logic die       OK         68 degrees C / 154 degrees F
      FPC 3 EA3_HMC1 DRAM botm       OK         65 degrees C / 149 degrees F
      FPC 3 EA3_HMC2 Logic die       OK         68 degrees C / 154 degrees F
      FPC 3 EA3_HMC2 DRAM botm       OK         65 degrees C / 149 degrees F
      FPC 3 EA4_HMC0 Logic die       OK         81 degrees C / 177 degrees F
      FPC 3 EA4_HMC0 DRAM botm       OK         78 degrees C / 172 degrees F
      FPC 3 EA4_HMC1 Logic die       OK         80 degrees C / 176 degrees F
      FPC 3 EA4_HMC1 DRAM botm       OK         77 degrees C / 170 degrees F
      FPC 3 EA4_HMC2 Logic die       OK         81 degrees C / 177 degrees F
      FPC 3 EA4_HMC2 DRAM botm       OK         78 degrees C / 172 degrees F
      FPC 3 EA5_HMC0 Logic die       OK         68 degrees C / 154 degrees F
      FPC 3 EA5_HMC0 DRAM botm       OK         65 degrees C / 149 degrees F
      FPC 3 EA5_HMC1 Logic die       OK         70 degrees C / 158 degrees F
      FPC 3 EA5_HMC1 DRAM botm       OK         67 degrees C / 152 degrees F
      FPC 3 EA5_HMC2 Logic die       OK         69 degrees C / 156 degrees F
      FPC 3 EA5_HMC2 DRAM botm       OK         66 degrees C / 150 degrees F
Power PEM 0                          OK         29 degrees C / 84 degrees F
      PEM 1                          OK         27 degrees C / 80 degrees F
      PEM 2                          OK         30 degrees C / 86 degrees F
      PEM 3                          Check
      PEM 4                          Check
      PEM 5                          Check
Fans  Fan Tray 0 Fan 0               OK         Spinning at normal speed
      Fan Tray 0 Fan 1               OK         Spinning at normal speed
      Fan Tray 0 Fan 2               OK         Spinning at normal speed
      Fan Tray 0 Fan 3               OK         Spinning at normal speed
      Fan Tray 0 Fan 4               Failed
      Fan Tray 0 Fan 5               Failed
      Fan Tray 0 Fan 6               OK         Spinning at normal speed
      Fan Tray 0 Fan 7               OK         Spinning at normal speed
      Fan Tray 0 Fan 8               OK         Spinning at normal speed
      Fan Tray 0 Fan 9               OK         Spinning at normal speed
      Fan Tray 0 Fan 10              OK         Spinning at normal speed
      Fan Tray 1 Fan 0               OK         Spinning at normal speed
```

```
Fan Tray 1 Fan 1              OK          Spinning at normal speed
Fan Tray 1 Fan 2              OK          Spinning at normal speed
Fan Tray 1 Fan 3              OK          Spinning at normal speed
Fan Tray 1 Fan 4              OK          Spinning at normal speed
Fan Tray 1 Fan 5              OK          Spinning at normal speed
Fan Tray 1 Fan 6              OK          Spinning at normal speed
Fan Tray 1 Fan 7              OK          Spinning at normal speed
Fan Tray 1 Fan 8              OK          Spinning at normal speed
Fan Tray 1 Fan 9              OK          Spinning at normal speed
Fan Tray 1 Fan 10             OK          Spinning at normal speed
SFB 0 Intake-A                OK          32 degrees C / 89 degrees F
SFB 0 Intake-B                OK          21 degrees C / 69 degrees F
SFB 0 Exhaust-A               OK          27 degrees C / 80 degrees F
SFB 0 Exhaust-B               OK          32 degrees C / 89 degrees F
SFB 0 PF0                     OK          39 degrees C / 102 degrees F
SFB 0 PF1                     OK          29 degrees C / 84 degrees F
SFB 1 Intake-A                OK          43 degrees C / 109 degrees F
SFB 1 Intake-B                OK          20 degrees C / 68 degrees F
SFB 1 Exhaust-A               OK          25 degrees C / 77 degrees F
SFB 1 Exhaust-B               OK          44 degrees C / 111 degrees F
SFB 1 PF0                     OK          50 degrees C / 122 degrees F
SFB 1 PF1                     OK          29 degrees C / 84 degrees F
SFB 2 Intake-A                OK          39 degrees C / 102 degrees F
SFB 2 Intake-B                OK          20 degrees C / 68 degrees F
SFB 2 Exhaust-A               OK          25 degrees C / 77 degrees F
SFB 2 Exhaust-B               OK          38 degrees C / 100 degrees F
SFB 2 PF0                     OK          45 degrees C / 113 degrees F
SFB 2 PF1                     OK          30 degrees C / 86 degrees F
SFB 3 Intake-A                OK          36 degrees C / 96 degrees F
SFB 3 Intake-B                OK          20 degrees C / 68 degrees F
SFB 3 Exhaust-A               OK          25 degrees C / 77 degrees F
SFB 3 Exhaust-B               OK          35 degrees C / 95 degrees F
SFB 3 PF0                     OK          42 degrees C / 107 degrees F
SFB 3 PF1                     OK          29 degrees C / 84 degrees F
SFB 4 Intake-A                OK          30 degrees C / 86 degrees F
SFB 4 Intake-B                OK          20 degrees C / 68 degrees F
SFB 4 Exhaust-A               OK          25 degrees C / 77 degrees F
SFB 4 Exhaust-B               OK          31 degrees C / 87 degrees F
SFB 4 PF0                     OK          41 degrees C / 105 degrees F
SFB 4 PF1                     OK          29 degrees C / 84 degrees F
SFB 5 Intake-A                OK          30 degrees C / 86 degrees F
SFB 5 Intake-B                OK          21 degrees C / 69 degrees F
SFB 5 Exhaust-A               OK          25 degrees C / 77 degrees F
SFB 5 Exhaust-B               OK          30 degrees C / 86 degrees F
```

```
      SFB 5 PF0                     OK          35 degrees C / 95 degrees F
      SFB 5 PF1                     OK          34 degrees C / 93 degrees F
```

show chassis environment (MX204 Router)

`user@host>` **show chassis environment**

```
Class Item                          Status     Measurement
Temp  CB 0 Top Right Inlet Sensor   OK         35 degrees C / 95 degrees F
      CB 0 Top Left Inlet Sensor    OK         37 degrees C / 98 degrees F
      CB 0 Top Right Exhaust Sensor OK         43 degrees C / 109 degrees F
      CB 0 Top Left Exhaust Sensor  OK         50 degrees C / 122 degrees F
      CB 0 CPU Core-0 Temp          OK         47 degrees C / 116 degrees F
      CB 0 CPU Core-1 Temp          OK         48 degrees C / 118 degrees F
      CB 0 CPU Core-2 Temp          OK         47 degrees C / 116 degrees F
      CB 0 CPU Core-3 Temp          OK         47 degrees C / 116 degrees F
      CB 0 CPU Core-4 Temp          OK         47 degrees C / 116 degrees F
      CB 0 CPU Core-5 Temp          OK         47 degrees C / 116 degrees F
      CB 0 CPU Core-6 Temp          OK         47 degrees C / 116 degrees F
      CB 0 CPU Core-7 Temp          OK         47 degrees C / 116 degrees F
      FPC 0 EA0_HMC0 Logic die      OK         77 degrees C / 170 degrees F
      FPC 0 EA0_HMC0 DRAM botm      OK         74 degrees C / 165 degrees F
      FPC 0 EA0_HMC1 Logic die      OK         81 degrees C / 177 degrees F
      FPC 0 EA0_HMC1 DRAM botm      OK         78 degrees C / 172 degrees F
      FPC 0 EA0 Chip                OK         94 degrees C / 201 degrees F
      FPC 0 EA0-XR0 Chip            OK         64 degrees C / 147 degrees F
      FPC 0 EA0-XR1 Chip            OK         65 degrees C / 149 degrees F
Power PEM 0                         Absent
      PEM 1                         OK         48 degrees C / 118 degrees F
Fans  Fan Tray 0 Fan 0              OK         Spinning at normal speed
      Fan Tray 0 Fan 1              OK         Spinning at normal speed
      Fan Tray 1 Fan 0              OK         Spinning at normal speed
      Fan Tray 1 Fan 1              OK         Spinning at normal speed
      Fan Tray 2 Fan 0              OK         Spinning at normal speed
      Fan Tray 2 Fan 1              OK         Spinning at normal speed
```

show chassis environment (T640 Router)

`user@host>` **show chassis environment**

```
Class Item                  Status     Measurement
Temp  PEM 0                 Absent
```

```
      PEM 1                 OK         22 degrees C / 71 degrees F
      SCG 0                 OK         30 degrees C / 86 degrees F
      SCG 1                 OK         30 degrees C / 86 degrees F
      Routing Engine 0      Present
      Routing Engine 1      OK         27 degrees C / 80 degrees F
      CB 0                  Present
      CB 1                  OK         33 degrees C / 91 degrees F
      SIB 0                 Absent
      SIB 1                 Absent
      SIB 2                 Absent
      SIB 3                 Absent
      SIB 4                 Absent
      FPC 4 Top             Testing
      FPC 4 Bottom          Testing
      FPC 5 Top             Testing
      FPC 5 Bottom          Testing
      FPC 6 Top             Testing
      FPC 6 Bottom          Testing
      FPM GBUS              OK         23 degrees C / 73 degrees F
      FPM Display           Absent
Fans  Top Left Front fan    OK         Spinning at normal speed
      Top Left Middle fan   OK         Spinning at normal speed
      Top Left Rear fan     OK         Spinning at normal speed
      Top Right Front fan   OK         Spinning at normal speed
      Top Right Middle fan  OK         Spinning at normal speed
      Top Right Rear fan    OK         Spinning at normal speed
      Bottom Left Front fan OK         Spinning at normal speed
      Bottom Left Middle fan OK        Spinning at normal speed
      Bottom Left Rear fan  OK         Spinning at normal speed
      Bottom Right Front fan OK        Spinning at normal speed
      Bottom Right Middle fan OK       Spinning at normal speed
      Bottom Right Rear fan OK         Spinning at normal speed
      Fourth Blower from top OK        Spinning at normal speed
      Bottom Blower         OK         Spinning at normal speed
      Middle Blower         OK         Spinning at normal speed
      Top Blower            OK         Spinning at normal speed
      Second Blower from top OK        Spinning at normal speed
Misc  CIP                   OK
      SPMB 0                OK
      SPMB 1                OK
```

show chassis environment (T4000 Router)

`user@host>` **show chassis environment**

```
Class Item                           Status     Measurement
Temp  PEM 0                          OK         33 degrees C / 91 degrees F
      PEM 1                          Absent
      SCG 0                          OK         33 degrees C / 91 degrees F
      SCG 1                          OK         33 degrees C / 91 degrees F
      Routing Engine 0               OK         33 degrees C / 91 degrees F
      Routing Engine 0 CPU           OK         50 degrees C / 122 degrees F
      Routing Engine 1               OK         32 degrees C / 89 degrees F
      Routing Engine 1 CPU           OK         46 degrees C / 114 degrees F
      CB 0                           OK         32 degrees C / 89 degrees F
      CB 1                           OK         33 degrees C / 91 degrees F
      SIB 0                          OK         42 degrees C / 107 degrees F
      SIB 1                          OK         42 degrees C / 107 degrees F
      SIB 2                          OK         42 degrees C / 107 degrees F
      SIB 3                          OK         43 degrees C / 109 degrees F
      SIB 4                          OK         45 degrees C / 113 degrees F
      FPC 0 Fan Intake               OK         34 degrees C / 93 degrees F
      FPC 0 Fan Exhaust              OK         48 degrees C / 118 degrees F
      FPC 0 PMB                      OK         47 degrees C / 116 degrees F
      FPC 0 LMB0                     OK         50 degrees C / 122 degrees F
      FPC 0 LMB1                     OK         41 degrees C / 105 degrees F
      FPC 0 LMB2                     OK         35 degrees C / 95 degrees F
      FPC 0 PFE1 LU2                 OK         46 degrees C / 114 degrees F
      FPC 0 PFE1 LU0                 OK         41 degrees C / 105 degrees F
      FPC 0 PFE0 LU0                 OK         57 degrees C / 134 degrees F
      FPC 0 XF1                      OK         46 degrees C / 114 degrees F
      FPC 0 XF0                      OK         52 degrees C / 125 degrees F
      FPC 0 XM1                      OK         41 degrees C / 105 degrees F
      FPC 0 XM0                      OK         50 degrees C / 122 degrees F
      FPC 0 PFE0 LU1                 OK         56 degrees C / 132 degrees F
      FPC 0 PFE0 LU2                 OK         45 degrees C / 113 degrees F
      FPC 0 PFE1 LU1                 OK         37 degrees C / 98 degrees F
      FPC 3 Fan Intake               OK         36 degrees C / 96 degrees F
      FPC 3 Fan Exhaust              OK         51 degrees C / 123 degrees F
      FPC 3 PMB                      OK         43 degrees C / 109 degrees F
      FPC 3 LMB0                     OK         57 degrees C / 134 degrees F
      FPC 3 LMB1                     OK         54 degrees C / 129 degrees F
      FPC 3 LMB2                     OK         38 degrees C / 100 degrees F
      FPC 3 PFE1 LU2                 OK         63 degrees C / 145 degrees F
      FPC 3 PFE1 LU0                 OK         45 degrees C / 113 degrees F
      FPC 3 PFE0 LU0                 OK         69 degrees C / 156 degrees F
      FPC 3 XF1                      OK         62 degrees C / 143 degrees F
      FPC 3 XF0                      OK         63 degrees C / 145 degrees F
      FPC 3 XM1                      OK         43 degrees C / 109 degrees F
```

```
      FPC 3 XM0                    OK        67 degrees C / 152 degrees F
      FPC 3 PFE0 LU1               OK        63 degrees C / 145 degrees F
      FPC 3 PFE0 LU2               OK        66 degrees C / 150 degrees F
      FPC 3 PFE1 LU1               OK        41 degrees C / 105 degrees F
      FPC 5 Top                    OK        39 degrees C / 102 degrees F
      FPC 5 Bottom                 OK        38 degrees C / 100 degrees F
      FPC 6 Fan Intake             OK        33 degrees C / 91 degrees F
      FPC 6 Fan Exhaust            OK        49 degrees C / 120 degrees F
      FPC 6 PMB                    OK        40 degrees C / 104 degrees F
      FPC 6 LMB0                   OK        60 degrees C / 140 degrees F
      FPC 6 LMB1                   OK        58 degrees C / 136 degrees F
      FPC 6 LMB2                   OK        40 degrees C / 104 degrees F
      FPC 6 PFE1 LU2               OK        69 degrees C / 156 degrees F
      FPC 6 PFE1 LU0               OK        45 degrees C / 113 degrees F
      FPC 6 PFE0 LU0               OK        71 degrees C / 159 degrees F
      FPC 6 XF1                    OK        58 degrees C / 136 degrees F
      FPC 6 XF0                    OK        65 degrees C / 149 degrees F
      FPC 6 XM1                    OK        39 degrees C / 102 degrees F
      FPC 6 XM0                    OK        66 degrees C / 150 degrees F
      FPC 6 PFE0 LU1               OK        69 degrees C / 156 degrees F
      FPC 6 PFE0 LU2               OK        69 degrees C / 156 degrees F
      FPC 6 PFE1 LU1               OK        42 degrees C / 107 degrees F
      FPM GBUS                     OK        24 degrees C / 75 degrees F
      FPM Display                  OK        27 degrees C / 80 degrees F
Fans  Top Left Front fan           OK        Spinning at high speed
      Top Left Middle fan          OK        Spinning at high speed
      Top Left Rear fan            OK        Spinning at high speed
      Top Right Front fan          OK        Spinning at high speed
      Top Right Middle fan         OK        Spinning at high speed
      Top Right Rear fan           OK        Spinning at high speed
      Bottom Left Front fan        OK        Spinning at high speed
      Bottom Left Middle fan       OK        Spinning at high speed
      Bottom Left Rear fan         OK        Spinning at high speed
      Bottom Right Front fan       OK        Spinning at high speed
      Bottom Right Middle fan      OK        Spinning at high speed
      Bottom Right Rear fan        OK        Spinning at high speed
      Rear Tray Top fan            OK        Spinning at high speed
      Rear Tray Second fan         OK        Spinning at high speed
      Rear Tray Third fan          OK        Spinning at high speed
      Rear Tray Fourth fan         OK        Spinning at high speed
      Rear Tray Fifth fan          OK        Spinning at high speed
      Rear Tray Sixth fan          OK        Spinning at high speed
      Rear Tray Seventh fan        OK        Spinning at high speed
      Rear Tray Bottom fan         OK        Spinning at high speed
```

```
Misc  CIP                          OK
      SPMB 0                       OK
      SPMB 1                       OK
```

show chassis environment (TX Matrix Router)

`user@host>` **show chassis environment**

```
---------------------------------------------------------------------------
Class Item                   Status     Measurement
Temp  PEM 0                  Absent
      PEM 1                  OK         29 degrees C / 84 degrees F
      Routing Engine 0       OK         34 degrees C / 93 degrees F
      Routing Engine 1       OK         34 degrees C / 93 degrees F
      CB 0                   OK         32 degrees C / 89 degrees F
      CB 1                   OK         32 degrees C / 89 degrees F
      SIB 0                  OK         44 degrees C / 111 degrees F
      SIB 0 (B)              OK         44 degrees C / 111 degrees F
      FPM GBUS               OK         27 degrees C / 80 degrees F
      FPM Display            OK         32 degrees C / 89 degrees F
Fans  Top Left Front fan     OK         Spinning at normal speed
      Top Left Middle fan    OK         Spinning at normal speed
      Top Left Rear fan      OK         Spinning at normal speed
      Top Right Front fan    OK         Spinning at normal speed
      Top Right Middle fan   OK         Spinning at normal speed
      Top Right Rear fan     OK         Spinning at normal speed
      Bottom Left Front fan  OK         Spinning at normal speed
      Bottom Left Middle fan OK         Spinning at normal speed
      Bottom Left Rear fan   OK         Spinning at normal speed
      Bottom Right Front fan OK         Spinning at normal speed
      Bottom Right Middle fan OK        Spinning at normal speed
      Bottom Right Rear fan  OK         Spinning at normal speed
      Rear Tray Top fan      OK         Spinning at normal speed
      Rear Tray Second fan   OK         Spinning at normal speed
      Rear Tray Third fan    OK         Spinning at normal speed
      Rear Tray Fourth fan   OK         Spinning at normal speed
      Rear Tray Fifth fan    OK         Spinning at normal speed
      Rear Tray Sixth fan    OK         Spinning at normal speed
      Rear Tray Seventh fan  OK         Spinning at normal speed
      Rear Tray Bottom fan   OK         Spinning at normal speed
Misc  CIP 0                  OK
      CIP 1                  OK
      SPMB 0                 OK
```

```
      SPMB 1                OK

lcc0-re0:
--------------------------------------------------------------------------
Class Item                  Status     Measurement
Temp  PEM 0                 OK         29 degrees C / 84 degrees F
      PEM 1                 Absent
      SCG 0                 OK         35 degrees C / 95 degrees F
      SCG 1                 Absent
      Routing Engine 0      OK         39 degrees C / 102 degrees F
      Routing Engine 1      OK         36 degrees C / 96 degrees F
      CB 0                  OK         32 degrees C / 89 degrees F
      CB 1                  OK         32 degrees C / 89 degrees F
      SIB 0                 OK         40 degrees C / 104 degrees F
      SIB 0 (B)             OK         51 degrees C / 123 degrees F
      FPC 0 Top             OK         45 degrees C / 113 degrees F
      FPC 0 Bottom          OK         31 degrees C / 87 degrees F
      FPC 1 Top             OK         34 degrees C / 93 degrees F
      FPC 1 Bottom          OK         31 degrees C / 87 degrees F
      FPM GBUS              OK         30 degrees C / 86 degrees F
      FPM Display           OK         34 degrees C / 93 degrees F
Fans  Top Left Front fan    OK         Spinning at normal speed
      Top Left Middle fan   OK         Spinning at normal speed
      Top Left Rear fan     OK         Spinning at normal speed
      Top Right Front fan   OK         Spinning at normal speed
      Top Right Middle fan  OK         Spinning at normal speed
      Top Right Rear fan    OK         Spinning at normal speed
      Bottom Left Front fan  OK        Spinning at normal speed
      Bottom Left Middle fan OK        Spinning at normal speed
      Bottom Left Rear fan  OK         Spinning at normal speed
      Bottom Right Front fan OK        Spinning at normal speed
      Bottom Right Middle fan OK       Spinning at normal speed
      Bottom Right Rear fan  OK        Spinning at normal speed
      Rear Tray Top fan     OK         Spinning at normal speed
      Rear Tray Second fan  OK         Spinning at normal speed
      Rear Tray Third fan   OK         Spinning at normal speed
      Rear Tray Fourth fan  OK         Spinning at normal speed
      Rear Tray Fifth fan   OK         Spinning at normal speed
      Rear Tray Sixth fan   OK         Spinning at normal speed
      Rear Tray Seventh fan  OK        Spinning at normal speed
      Rear Tray Bottom fan  OK         Spinning at normal speed
Misc  CIP                   OK
      SPMB 0                OK
      SPMB 1                OK
```

```
lcc2-re0:
--------------------------------------------------------------------------
Class Item                   Status     Measurement
Temp  PEM 0                  OK         29 degrees C / 84 degrees F
      PEM 1                  Absent
      SCG 0                  OK         32 degrees C / 89 degrees F
      SCG 1                  Absent
      Routing Engine 0       OK         31 degrees C / 87 degrees F
      Routing Engine 1       OK         32 degrees C / 89 degrees F
      CB 0                   OK         30 degrees C / 86 degrees F
      SIB 0                  OK         38 degrees C / 100 degrees F
      SIB 0 (B)              OK         49 degrees C / 120 degrees F
      FPC 0 Top              OK         45 degrees C / 113 degrees F
      FPC 0 Bottom           OK         33 degrees C / 91 degrees F
      FPC 1 Top              OK         37 degrees C / 98 degrees F
      FPC 1 Bottom           OK         33 degrees C / 91 degrees F
      FPM GBUS               OK         30 degrees C / 86 degrees F
      FPM Display            OK         34 degrees C / 93 degrees F
Fans  Top Left Front fan     OK         Spinning at normal speed
      Top Left Middle fan    OK         Spinning at normal speed
...
```

show chassis environment (T1600 Router)

`user@host>` **show chassis environment**

```
Class Item                          Status     Measurement
Temp  PEM 0                         OK         27 degrees C / 80 degrees F
      PEM 1                         Absent
      SCG 0                         OK         31 degrees C / 87 degrees F
      SCG 1                         OK         35 degrees C / 95 degrees F
      Routing Engine 0              OK         30 degrees C / 86 degrees F
      Routing Engine 1              OK         30 degrees C / 86 degrees F
      CB 0                          OK         31 degrees C / 87 degrees F
      CB 1                          OK         31 degrees C / 87 degrees F
      SIB 0                         OK         41 degrees C / 105 degrees F
      SIB 0 (B)                     OK         34 degrees C / 93 degrees F
      SIB 1                         OK         0 degrees C / 32 degrees F
      SIB 1 (B)                     OK         0 degrees C / 32 degrees F
      SIB 2                         OK         0 degrees C / 32 degrees F
      SIB 2 (B)                     OK         0 degrees C / 32 degrees F
      SIB 3                         OK         0 degrees C / 32 degrees F
      SIB 3 (B)                     OK         0 degrees C / 32 degrees F
```

```
      SIB 4                          OK         0 degrees C / 32 degrees F
      SIB 4 (B)                      OK         0 degrees C / 32 degrees F
      FPC 0 Top                      OK         49 degrees C / 120 degrees F
      FPC 0 Bottom                   OK         50 degrees C / 122 degrees F
      FPC 1 Top                      OK         48 degrees C / 118 degrees F
      FPC 1 Bottom                   OK         49 degrees C / 120 degrees F
      FPM GBUS                       OK         27 degrees C / 80 degrees F
      FPM Display                    OK         30 degrees C / 86 degrees F
Fans  Top Left Front fan             OK         Spinning at normal speed
      Top Left Middle fan            OK         Spinning at normal speed
      Top Left Rear fan              OK         Spinning at normal speed
      Top Right Front fan            OK         Spinning at normal speed
      Top Right Middle fan           OK         Spinning at normal speed
      Top Right Rear fan             OK         Spinning at normal speed
      Bottom Left Front fan          OK         Spinning at normal speed
      Bottom Left Middle fan         OK         Spinning at normal speed
      Bottom Left Rear fan           OK         Spinning at normal speed
      Bottom Right Front fan         OK         Spinning at normal speed
      Bottom Right Middle fan        OK         Spinning at normal speed
      Bottom Right Rear fan          OK         Spinning at normal speed
      Rear Tray Top fan              OK         Spinning at normal speed
      Rear Tray Second fan           OK         Spinning at normal speed
      Rear Tray Third fan            OK         Spinning at normal speed
      Rear Tray Fourth fan           OK         Spinning at normal speed
      Rear Tray Fifth fan            OK         Spinning at normal speed
      Rear Tray Sixth fan            OK         Spinning at normal speed
      Rear Tray Seventh fan          OK         Spinning at normal speed
      Rear Tray Bottom fan           OK         Spinning at normal speed
Misc  CIP                            OK
      SPMB 0                         OK
      SPMB 1                         OK
```

show chassis environment (TX Matrix Plus Router)

`user@host>` **show chassis environment**

```
---------------------------------------------------------------------------
Class Item                           Status     Measurement
Temp  PEM 0                          OK         28 degrees C / 82 degrees F
      PEM 1                          Absent
      Routing Engine 0               OK         27 degrees C / 80 degrees F
      Routing Engine 1               OK         29 degrees C / 84 degrees F
      CB 0 Intake                    OK         26 degrees C / 78 degrees F
```

```
      CB 0 Exhaust A              OK          25 degrees C / 77 degrees F
      CB 0 Exhaust B              OK          25 degrees C / 77 degrees F
      CB 1 Intake                 OK          26 degrees C / 78 degrees F
      CB 1 Exhaust A              OK          26 degrees C / 78 degrees F
      CB 1 Exhaust B              OK          26 degrees C / 78 degrees F
      SIB F13 0                   OK          47 degrees C / 116 degrees F
      SIB F13 0 (B)               OK          48 degrees C / 118 degrees F
      SIB F13 1                   OK          38 degrees C / 100 degrees F
      SIB F13 1 (B)               OK          37 degrees C / 98 degrees F
      SIB F2S 0/0                 OK          27 degrees C / 80 degrees F
      SIB F2S 0/2                 OK          28 degrees C / 82 degrees F
      SIB F2S 0/4                 OK          27 degrees C / 80 degrees F
      SIB F2S 0/6                 OK          28 degrees C / 82 degrees F
      SIB F2S 1/0                 OK          26 degrees C / 78 degrees F
      SIB F2S 1/2                 OK          26 degrees C / 78 degrees F
      SIB F2S 1/4                 OK          26 degrees C / 78 degrees F
      SIB F2S 1/6                 OK          26 degrees C / 78 degrees F
      SIB F2S 2/0                 OK          25 degrees C / 77 degrees F
      SIB F2S 2/2                 OK          25 degrees C / 77 degrees F
      SIB F2S 2/4                 OK          23 degrees C / 73 degrees F
      CIP 0 Intake                OK          23 degrees C / 73 degrees F
      CIP 0 Exhaust A             OK          24 degrees C / 75 degrees F
      CIP 0 Exhaust B             OK          24 degrees C / 75 degrees F
      CIP 1 Intake                OK          24 degrees C / 75 degrees F
      CIP 1 Exhaust A             OK          25 degrees C / 77 degrees F
      CIP 1 Exhaust B             OK          25 degrees C / 77 degrees F
Fans  Fan Tray 0 Fan 1            OK          Spinning at normal speed
      Fan Tray 0 Fan 2            OK          Spinning at normal speed
      Fan Tray 0 Fan 3            OK          Spinning at normal speed
      Fan Tray 0 Fan 4            OK          Spinning at normal speed
      Fan Tray 0 Fan 5            OK          Spinning at normal speed
      Fan Tray 0 Fan 6            OK          Spinning at normal speed
      Fan Tray 1 Fan 1            OK          Spinning at normal speed
      Fan Tray 1 Fan 2            OK          Spinning at normal speed
      Fan Tray 1 Fan 3            OK          Spinning at normal speed
      Fan Tray 1 Fan 4            OK          Spinning at normal speed
      Fan Tray 1 Fan 5            OK          Spinning at normal speed
      Fan Tray 1 Fan 6            OK          Spinning at normal speed
      Fan Tray 2 Fan 1            OK          Spinning at normal speed
      Fan Tray 2 Fan 2            OK          Spinning at normal speed
      Fan Tray 2 Fan 3            OK          Spinning at normal speed
      Fan Tray 2 Fan 4            OK          Spinning at normal speed
      Fan Tray 2 Fan 5            OK          Spinning at normal speed
      Fan Tray 2 Fan 6            OK          Spinning at normal speed
```

```
      Fan Tray 2 Fan 7               OK         Spinning at normal speed
      Fan Tray 2 Fan 8               OK         Spinning at normal speed
      Fan Tray 2 Fan 9               OK         Spinning at normal speed
      Fan Tray 3 Fan 1               OK         Spinning at normal speed
      Fan Tray 3 Fan 2               OK         Spinning at normal speed
      Fan Tray 3 Fan 3               OK         Spinning at normal speed
      Fan Tray 3 Fan 4               OK         Spinning at normal speed
      Fan Tray 3 Fan 5               OK         Spinning at normal speed
      Fan Tray 3 Fan 6               OK         Spinning at normal speed
      Fan Tray 3 Fan 7               OK         Spinning at normal speed
      Fan Tray 3 Fan 8               OK         Spinning at normal speed
      Fan Tray 3 Fan 9               OK         Spinning at normal speed
      Fan Tray 4 Fan 1               OK         Spinning at normal speed
      Fan Tray 4 Fan 2               OK         Spinning at normal speed
      Fan Tray 4 Fan 3               OK         Spinning at normal speed
      Fan Tray 4 Fan 4               OK         Spinning at normal speed
      Fan Tray 4 Fan 5               OK         Spinning at normal speed
      Fan Tray 4 Fan 6               OK         Spinning at normal speed
      Fan Tray 4 Fan 7               OK         Spinning at normal speed
      Fan Tray 4 Fan 8               OK         Spinning at normal speed
      Fan Tray 4 Fan 9               OK         Spinning at normal speed
      Fan Tray 5 Fan 1               OK         Spinning at normal speed
      Fan Tray 5 Fan 2               OK         Spinning at normal speed
      Fan Tray 5 Fan 3               OK         Spinning at normal speed
      Fan Tray 5 Fan 4               OK         Spinning at normal speed
      Fan Tray 5 Fan 5               OK         Spinning at normal speed
      Fan Tray 5 Fan 6               OK         Spinning at normal speed
      Fan Tray 5 Fan 7               OK         Spinning at normal speed
      Fan Tray 5 Fan 8               OK         Spinning at normal speed
      Fan Tray 5 Fan 9               OK         Spinning at normal speed
Misc  SPMB 0                         OK
      SPMB 1                         OK

lcc0-re0:
--------------------------------------------------------------------------
Class Item                           Status     Measurement
Temp  PEM 0                          OK         27 degrees C / 80 degrees F
      PEM 1                          Absent
      SCG 0                          OK         31 degrees C / 87 degrees F
      SCG 1                          OK         35 degrees C / 95 degrees F
      Routing Engine 0               OK         30 degrees C / 86 degrees F
      Routing Engine 1               OK         30 degrees C / 86 degrees F
      CB 0                           OK         31 degrees C / 87 degrees F
      CB 1                           OK         31 degrees C / 87 degrees F
```

```
      SIB 0                          OK          41 degrees C / 105 degrees F
      SIB 0 (B)                      OK          34 degrees C / 93 degrees F
      SIB 1                          OK          0 degrees C / 32 degrees F
      SIB 1 (B)                      OK          0 degrees C / 32 degrees F
      SIB 2                          OK          0 degrees C / 32 degrees F
      SIB 2 (B)                      OK          0 degrees C / 32 degrees F
      SIB 3                          OK          0 degrees C / 32 degrees F
      SIB 3 (B)                      OK          0 degrees C / 32 degrees F
      SIB 4                          OK          0 degrees C / 32 degrees F
      SIB 4 (B)                      OK          0 degrees C / 32 degrees F
      FPC 0 Top                      OK          49 degrees C / 120 degrees F
      FPC 0 Bottom                   OK          50 degrees C / 122 degrees F
      FPC 1 Top                      OK          48 degrees C / 118 degrees F
      FPC 1 Bottom                   OK          49 degrees C / 120 degrees F
      FPM GBUS                       OK          27 degrees C / 80 degrees F
      FPM Display                    OK          30 degrees C / 86 degrees F
Fans  Top Left Front fan             OK          Spinning at normal speed
      Top Left Middle fan            OK          Spinning at normal speed
      Top Left Rear fan              OK          Spinning at normal speed
      Top Right Front fan            OK          Spinning at normal speed
      Top Right Middle fan           OK          Spinning at normal speed
      Top Right Rear fan             OK          Spinning at normal speed
      Bottom Left Front fan          OK          Spinning at normal speed
      Bottom Left Middle fan         OK          Spinning at normal speed
      Bottom Left Rear fan           OK          Spinning at normal speed
      Bottom Right Front fan         OK          Spinning at normal speed
      Bottom Right Middle fan        OK          Spinning at normal speed
      Bottom Right Rear fan          OK          Spinning at normal speed
      Rear Tray Top fan              OK          Spinning at normal speed
      Rear Tray Second fan           OK          Spinning at normal speed
      Rear Tray Third fan            OK          Spinning at normal speed
      Rear Tray Fourth fan           OK          Spinning at normal speed
      Rear Tray Fifth fan            OK          Spinning at normal speed
      Rear Tray Sixth fan            OK          Spinning at normal speed
      Rear Tray Seventh fan          OK          Spinning at normal speed
      Rear Tray Bottom fan           OK          Spinning at normal speed
Misc  CIP                            OK
      SPMB 0                         OK
      SPMB 1                         OK
```

show chassis environment (TX Matrix Plus router with 3D SIBs)

`user@host>` **show chassis environment**

```
--------------------------------------------------------------------------
Class Item                             Status     Measurement
Temp  PEM 0                            Check      30 degrees C / 86 degrees F
      PEM 1                            OK         33 degrees C / 91 degrees F
      Routing Engine 0                 OK         28 degrees C / 82 degrees F
      Routing Engine 0 CPU             OK         42 degrees C / 107 degrees F
      Routing Engine 1                 OK         29 degrees C / 84 degrees F
      Routing Engine 1 CPU             OK         44 degrees C / 111 degrees F
      CB 0 Intake                      OK         30 degrees C / 86 degrees F
      CB 0 Exhaust A                   OK         28 degrees C / 82 degrees F
      CB 0 Exhaust B                   OK         30 degrees C / 86 degrees F
      CB 1 Intake                      OK         31 degrees C / 87 degrees F
      CB 1 Exhaust A                   OK         27 degrees C / 80 degrees F
      CB 1 Exhaust B                   OK         31 degrees C / 87 degrees F
      SIB F13 0 Board                  OK         44 degrees C / 111 degrees F
      SIB F13 0 XF Junction            OK         62 degrees C / 143 degrees F
      SIB F13 3 Board                  OK         45 degrees C / 113 degrees F
      SIB F13 3 XF Junction            OK         60 degrees C / 140 degrees F
      SIB F13 6 Board                  OK         47 degrees C / 116 degrees F
      SIB F13 6 XF Junction            OK         62 degrees C / 143 degrees F
      SIB F2S 0/0 Board                OK         32 degrees C / 89 degrees F
      SIB F2S 0/0 XF Junction          OK         42 degrees C / 107 degrees F
      SIB F2S 0/2 Board                OK         31 degrees C / 87 degrees F
      SIB F2S 0/2 XF Junction          OK         41 degrees C / 105 degrees F
      SIB F2S 0/4 Board                OK         31 degrees C / 87 degrees F
      SIB F2S 0/4 XF Junction          OK         42 degrees C / 107 degrees F
      SIB F2S 0/6 Board                OK         31 degrees C / 87 degrees F
      SIB F2S 0/6 XF Junction          OK         41 degrees C / 105 degrees F
      SIB F2S 1/0 Board                OK         31 degrees C / 87 degrees F
      SIB F2S 1/0 XF Junction          OK         41 degrees C / 105 degrees F
      SIB F2S 1/2 Board                OK         29 degrees C / 84 degrees F
      SIB F2S 1/2 XF Junction          OK         39 degrees C / 102 degrees F
      SIB F2S 1/4 Board                OK         29 degrees C / 84 degrees F
      SIB F2S 1/4 XF Junction          OK         35 degrees C / 95 degrees F
      SIB F2S 1/6 Board                OK         30 degrees C / 86 degrees F
      SIB F2S 1/6 XF Junction          OK         41 degrees C / 105 degrees F
      SIB F2S 2/0 Board                OK         30 degrees C / 86 degrees F
      SIB F2S 2/0 XF Junction          OK         42 degrees C / 107 degrees F
      SIB F2S 2/2 Board                OK         28 degrees C / 82 degrees F
      SIB F2S 2/2 XF Junction          OK         39 degrees C / 102 degrees F
      SIB F2S 2/4 Board                OK         29 degrees C / 84 degrees F
      SIB F2S 2/4 XF Junction          OK         42 degrees C / 107 degrees F
      SIB F2S 2/6 Board                OK         29 degrees C / 84 degrees F
```

```
      SIB F2S 2/6 XF Junction       OK         41 degrees C / 105 degrees F
      CIP 0 Intake                  OK         25 degrees C / 77 degrees F
      CIP 0 Exhaust A               OK         26 degrees C / 78 degrees F
      CIP 0 Exhaust B               OK         26 degrees C / 78 degrees F
      CIP 1 Intake                  OK         26 degrees C / 78 degrees F
      CIP 1 Exhaust A               OK         27 degrees C / 80 degrees F
      CIP 1 Exhaust B               OK         27 degrees C / 80 degrees F
Fans  Fan Tray 0 Fan 1              OK         Spinning at normal speed
      Fan Tray 0 Fan 2              OK         Spinning at normal speed
      Fan Tray 0 Fan 3              OK         Spinning at normal speed
      Fan Tray 0 Fan 4              OK         Spinning at normal speed
      Fan Tray 0 Fan 5              OK         Spinning at normal speed
      Fan Tray 0 Fan 6              OK         Spinning at normal speed
      Fan Tray 1 Fan 1              OK         Spinning at normal speed
      Fan Tray 1 Fan 2              OK         Spinning at normal speed
      Fan Tray 1 Fan 3              OK         Spinning at normal speed
      Fan Tray 1 Fan 4              OK         Spinning at normal speed
      Fan Tray 1 Fan 5              OK         Spinning at normal speed
      Fan Tray 1 Fan 6              OK         Spinning at normal speed
      Fan Tray 2 Fan 1              OK         Spinning at normal speed
      Fan Tray 2 Fan 2              OK         Spinning at normal speed
      Fan Tray 2 Fan 3              OK         Spinning at normal speed
      Fan Tray 2 Fan 4              OK         Spinning at normal speed
      Fan Tray 2 Fan 5              OK         Spinning at normal speed
      Fan Tray 2 Fan 6              OK         Spinning at normal speed
      Fan Tray 2 Fan 7              OK         Spinning at normal speed
      Fan Tray 2 Fan 8              OK         Spinning at normal speed
      Fan Tray 2 Fan 9              OK         Spinning at normal speed
      Fan Tray 3 Fan 1              OK         Spinning at normal speed
      Fan Tray 3 Fan 2              OK         Spinning at normal speed
      Fan Tray 3 Fan 3              OK         Spinning at normal speed
      Fan Tray 3 Fan 4              OK         Spinning at normal speed
      Fan Tray 3 Fan 5              OK         Spinning at normal speed
      Fan Tray 3 Fan 6              OK         Spinning at normal speed
      Fan Tray 3 Fan 7              OK         Spinning at normal speed
      Fan Tray 3 Fan 8              OK         Spinning at normal speed
      Fan Tray 3 Fan 9              OK         Spinning at normal speed
      Fan Tray 4 Fan 1              OK         Spinning at normal speed
      Fan Tray 4 Fan 2              OK         Spinning at normal speed
      Fan Tray 4 Fan 3              OK         Spinning at normal speed
      Fan Tray 4 Fan 4              OK         Spinning at normal speed
      Fan Tray 4 Fan 5              OK         Spinning at normal speed
      Fan Tray 4 Fan 6              OK         Spinning at normal speed
      Fan Tray 4 Fan 7              OK         Spinning at normal speed
```

```
      Fan Tray 4 Fan 8              OK         Spinning at normal speed
      Fan Tray 4 Fan 9              OK         Spinning at normal speed
      Fan Tray 5 Fan 1              OK         Spinning at normal speed
      Fan Tray 5 Fan 2              OK         Spinning at normal speed
      Fan Tray 5 Fan 3              OK         Spinning at normal speed
      Fan Tray 5 Fan 4              OK         Spinning at normal speed
      Fan Tray 5 Fan 5              OK         Spinning at normal speed
      Fan Tray 5 Fan 6              OK         Spinning at normal speed
      Fan Tray 5 Fan 7              OK         Spinning at normal speed
      Fan Tray 5 Fan 8              OK         Spinning at normal speed
      Fan Tray 5 Fan 9              Check
Misc  SPMB 0                        OK
      SPMB 1                        OK

lcc0-re0:
--------------------------------------------------------------------------
Class Item                          Status     Measurement
Temp  PEM 0                         OK         29 degrees C / 84 degrees F
      PEM 1                         Check      29 degrees C / 84 degrees F
      SCG 0                         OK         32 degrees C / 89 degrees F
      SCG 1                         OK         33 degrees C / 91 degrees F
      Routing Engine 0              OK         32 degrees C / 89 degrees F
      Routing Engine 0 CPU          OK         51 degrees C / 123 degrees F
      Routing Engine 1              OK         32 degrees C / 89 degrees F
      Routing Engine 1 CPU          OK         49 degrees C / 120 degrees F
      CB 0                          OK         34 degrees C / 93 degrees F
      CB 1                          OK         34 degrees C / 93 degrees F
      SIB 0                         OK         39 degrees C / 102 degrees F
      SIB 0 (B)                     Absent
      SIB 1                         OK         39 degrees C / 102 degrees F
      SIB 1 (B)                     Absent
      SIB 2                         OK         39 degrees C / 102 degrees F
      SIB 2 (B)                     Absent
      FPC 4 Top                     OK         43 degrees C / 109 degrees F
      FPC 4 Bottom                  OK         43 degrees C / 109 degrees F
      FPC 7 Fan Intake              OK         35 degrees C / 95 degrees F
      FPC 7 Fan Exhaust             OK         50 degrees C / 122 degrees F
      FPC 7 PMB                     OK         50 degrees C / 122 degrees F
      FPC 7 LMB0                    OK         55 degrees C / 131 degrees F
      FPC 7 LMB1                    OK         49 degrees C / 120 degrees F
      FPC 7 LMB2                    OK         39 degrees C / 102 degrees F
      FPC 7 PFE1 LU2                OK         55 degrees C / 131 degrees F
      FPC 7 PFE1 LU0                OK         45 degrees C / 113 degrees F
      FPC 7 PFE0 LU0                OK         62 degrees C / 143 degrees F
```

```
      FPC 7 XF1                       OK         52 degrees C / 125 degrees F
      FPC 7 XF0                       OK         61 degrees C / 141 degrees F
      FPC 7 XM1                       OK         39 degrees C / 102 degrees F
      FPC 7 XM0                       OK         56 degrees C / 132 degrees F
      FPC 7 PFE0 LU1                  OK         60 degrees C / 140 degrees F
      FPC 7 PFE0 LU2                  OK         55 degrees C / 131 degrees F
      FPC 7 PFE1 LU1                  OK         41 degrees C / 105 degrees F
      FPM GBUS                        OK         24 degrees C / 75 degrees F
      FPM Display                     OK         28 degrees C / 82 degrees F
Fans  Top Left Front fan              OK         Spinning at normal speed
      Top Left Middle fan             OK         Spinning at normal speed
      Top Left Rear fan               OK         Spinning at normal speed
      Top Right Front fan             OK         Spinning at normal speed
      Top Right Middle fan            OK         Spinning at normal speed
      Top Right Rear fan              OK         Spinning at normal speed
      Bottom Left Front fan           OK         Spinning at normal speed
      Bottom Left Middle fan          OK         Spinning at normal speed
      Bottom Left Rear fan            OK         Spinning at normal speed
      Bottom Right Front fan          OK         Spinning at normal speed
      Bottom Right Middle fan         OK         Spinning at normal speed
      Bottom Right Rear fan           OK         Spinning at normal speed
      Rear Tray fan 1 (Top)           OK         Spinning at normal speed
      Rear Tray fan 2                 OK         Spinning at normal speed
      Rear Tray fan 3                 OK         Spinning at normal speed
      Rear Tray fan 4                 OK         Spinning at normal speed
      Rear Tray fan 5                 OK         Spinning at normal speed
      Rear Tray fan 6                 OK         Spinning at normal speed
      Rear Tray fan 7                 OK         Spinning at normal speed
      Rear Tray fan 8                 OK         Spinning at normal speed
      Rear Tray fan 9                 OK         Spinning at normal speed
      Rear Tray fan 10                OK         Spinning at normal speed
      Rear Tray fan 11                OK         Spinning at normal speed
      Rear Tray fan 12                OK         Spinning at normal speed
      Rear Tray fan 13                OK         Spinning at normal speed
      Rear Tray fan 14                OK         Spinning at normal speed
      Rear Tray fan 15                OK         Spinning at normal speed
      Rear Tray fan 16 (Bottom)       OK         Spinning at normal speed
Misc  CIP                             OK
      SPMB 0                          OK
      SPMB 1                          OK
```

show chassis environment (EX4200 Standalone Switch)

`user@switch>` **show chassis environment**

```
Class Item                          Status     Measurement
Power FPC 0 Power Supply 0          OK
      FPC 0 Power Supply 1          Absent
Temp  FPC 0 CPU                     OK         41 degrees C / 105 degrees F
      FPC 0 EX-PFE1                 OK         42 degrees C / 107 degrees F
      FPC 0 EX-PFE2                 OK         46 degrees C / 114 degrees F
      FPC 0 GEPHY Front Left        OK         25 degrees C / 77 degrees F
      FPC 0 GEPHY Front Right       OK         27 degrees C / 80 degrees F
      FPC 0 Uplink Conn             OK         29 degrees C / 84 degrees F
Fans  FPC 0 Fan 1                   OK         Spinning at normal speed
      FPC 0 Fan 2                   OK         Spinning at normal speed
      FPC 0 Fan 3                   OK         Spinning at normal speed
```

show chassis environment (EX8216 Switch)

`user@switch>` **show chassis environment**

```
Class Item                          Status     Measurement
Power PSU 0                         OK
      PSU 1                         OK
      PSU 2                         OK
      PSU 3                         Check
      PSU 4                         Absent
      PSU 5                         Absent
Temp  CB 0 Intake                   OK         23 degrees C / 73 degrees F
      CB 0 Exhaust                  OK         26 degrees C / 78 degrees F
      CB 1 Intake                   OK         22 degrees C / 71 degrees F
      CB 1 Exhaust                  OK         25 degrees C / 77 degrees F
      FPC 4 Intake                  OK         49 degrees C / 120 degrees F
      FPC 4 Exhaust                 OK         59 degrees C / 138 degrees F
      SIB 5 Intake                  OK         25 degrees C / 77 degrees F
      SIB 5 Exhaust                 OK         35 degrees C / 95 degrees F
      SIB 6 Intake                  OK         25 degrees C / 77 degrees F
      SIB 6 Exhaust                 OK         38 degrees C / 100 degrees F
Fans  Top Fan 1                     OK         Spinning at normal speed
      Top Fan 2                     OK         Spinning at normal speed
      Top Fan 3                     OK         Spinning at normal speed
      Top Fan 4                     OK         Spinning at normal speed
      Top Fan 5                     OK         Spinning at normal speed
      Top Fan 6                     OK         Spinning at normal speed
      Top Fan 7                     OK         Spinning at normal speed
      Top Fan 8                     OK         Spinning at normal speed
      Top Fan 9                     OK         Spinning at normal speed
      Bottom Fan 1                  OK         Spinning at normal speed
```

```
      Bottom Fan 2                  OK          Spinning at normal speed
      Bottom Fan 3                  OK          Spinning at normal speed
      Bottom Fan 4                  OK          Spinning at normal speed
      Bottom Fan 5                  OK          Spinning at normal speed
      Bottom Fan 6                  OK          Spinning at normal speed
      Bottom Fan 7                  OK          Spinning at normal speed
      Bottom Fan 8                  OK          Spinning at normal speed
      Bottom Fan 9                  OK          Spinning at normal speed
```

show chassis environment (EX9200 Switch)

user@switch> **show chassis environment**

```
Class Item                          Status     Measurement
Temp  PEM 0                         Check
      PEM 1                         OK         40 degrees C / 104 degrees F
      PEM 2                         OK         40 degrees C / 104 degrees F
      PEM 3                         Absent
      Routing Engine 0              OK         35 degrees C / 95 degrees F
      Routing Engine 0 CPU          OK         33 degrees C / 91 degrees F
      Routing Engine 1              OK         38 degrees C / 100 degrees F
      Routing Engine 1 CPU          OK         33 degrees C / 91 degrees F
      CB 0 Intake                   OK         35 degrees C / 95 degrees F
      CB 0 Exhaust A                OK         33 degrees C / 91 degrees F
      CB 0 Exhaust B                OK         40 degrees C / 104 degrees F
      CB 0 ACBC                     OK         39 degrees C / 102 degrees F
      CB 0 XF A                     OK         49 degrees C / 120 degrees F
      CB 0 XF B                     OK         46 degrees C / 114 degrees F
      CB 1 Intake                   OK         37 degrees C / 98 degrees F
      CB 1 Exhaust A                OK         32 degrees C / 89 degrees F
      CB 1 Exhaust B                OK         39 degrees C / 102 degrees F
      CB 1 ACBC                     OK         41 degrees C / 105 degrees F
      CB 1 XF A                     OK         49 degrees C / 120 degrees F
      CB 1 XF B                     OK         49 degrees C / 120 degrees F
      FPC 2 Intake                  OK         37 degrees C / 98 degrees F
      FPC 2 Exhaust A               OK         40 degrees C / 104 degrees F
      FPC 2 Exhaust B               OK         34 degrees C / 93 degrees F
      FPC 2 LU 0 TCAM TSen          OK         44 degrees C / 111 degrees F
      FPC 2 LU 0 TCAM Chip          OK         48 degrees C / 118 degrees F
      FPC 2 LU 0 TSen               OK         44 degrees C / 111 degrees F
      FPC 2 LU 0 Chip               OK         60 degrees C / 140 degrees F
      FPC 2 MQ 0 TSen               OK         44 degrees C / 111 degrees F
      FPC 2 MQ 0 Chip               OK         51 degrees C / 123 degrees F
      FPC 3 Intake                  OK         39 degrees C / 102 degrees F
```

```
      FPC 3 Exhaust A               OK          51 degrees C / 123 degrees F

[...Output truncated...]

     Fans  Top Rear Fan             OK          Spinning at intermediate-speed
     Bottom Rear Fan                OK          Spinning at intermediate-speed
     Top Middle Fan                 OK          Spinning at intermediate-speed
     Bottom Middle Fan              OK          Spinning at intermediate-speed
     Top Front Fan                  OK          Spinning at intermediate-speed
     Bottom Front Fan               OK          Spinning at intermediate-speed
```

show chassis environment (EX9251 Switch)

`user@switch>` **show chassis environment**

```
Class Item                           Status     Measurement
Temp  CB 0 Top Right Inlet Sensor    OK         29 degrees C / 84 degrees F
      CB 0 Top Left Inlet Sensor     OK         29 degrees C / 84 degrees F
      CB 0 Top Right Exhaust Sensor  OK         40 degrees C / 104 degrees F
      CB 0 Top Left Exhaust Sensor   OK         59 degrees C / 138 degrees F
      CB 0 CPU Core-0 Temp           OK         45 degrees C / 113 degrees F
      CB 0 CPU Core-1 Temp           OK         44 degrees C / 111 degrees F
      CB 0 CPU Core-2 Temp           OK         44 degrees C / 111 degrees F
      CB 0 CPU Core-3 Temp           OK         44 degrees C / 111 degrees F
      CB 0 CPU Core-4 Temp           OK         45 degrees C / 113 degrees F
      CB 0 CPU Core-5 Temp           OK         44 degrees C / 111 degrees F
      CB 0 CPU Core-6 Temp           OK         44 degrees C / 111 degrees F
      CB 0 CPU Core-7 Temp           OK         43 degrees C / 109 degrees F
Power PEM 0                          Check
      PEM 1                          OK         36 degrees C / 96 degrees F
Fans  Fan Tray 0 Fan 0               OK         Spinning at normal speed
      Fan Tray 0 Fan 1               OK         Spinning at normal speed
      Fan Tray 1 Fan 0               OK         Spinning at normal speed
      Fan Tray 1 Fan 1               OK         Spinning at normal speed
      Fan Tray 2 Fan 0               Absent
      Fan Tray 2 Fan 1               Absent
```

show chassis environment (EX9253 Switch)

`user@switch>` **show chassis environment**

```
Class Item                           Status     Measurement
Temp  CB 0 Exhaust Temp Sensor       OK         37 degrees C / 98 degrees F
```

```
      CB 0 Inlet Temp Sensor         OK         31 degrees C / 87 degrees F
      CB 0 CPU DIE Temp Sensor       OK         42 degrees C / 107 degrees F
      CB 1 Exhaust Temp Sensor       OK         31 degrees C / 87 degrees F
      CB 1 Inlet Temp Sensor         OK         28 degrees C / 82 degrees F
      CB 1 CPU DIE Temp Sensor       OK         42 degrees C / 107 degrees F
      FPC 0 Intake Temp Sensor       OK         31 degrees C / 87 degrees F
      FPC 0 Exhaust-A Temp Sensor    OK         58 degrees C / 136 degrees F
      FPC 0 Exhaust-B Temp Sensor    OK         47 degrees C / 116 degrees F
      FPC 1 Intake Temp Sensor       OK         29 degrees C / 84 degrees F
      FPC 1 Exhaust-A Temp Sensor    OK         59 degrees C / 138 degrees F
      FPC 1 Exhaust-B Temp Sensor    OK         48 degrees C / 118 degrees F
Power PEM 0                          OK         54 degrees C / 129 degrees F
      PEM 1                          Check
      PEM 2                          Absent
      PEM 3                          Absent
      PEM 4                          Check
      PEM 5                          OK         61 degrees C / 141 degrees F
Fans  Fan Tray 0 Fan 0               OK         Spinning at normal speed
      Fan Tray 0 Fan 1               OK         Spinning at normal speed
      Fan Tray 0 Fan 2               OK         Spinning at normal speed
      Fan Tray 0 Fan 3               OK         Spinning at normal speed
      Fan Tray 1 Fan 0               OK         Spinning at normal speed
      Fan Tray 1 Fan 1               OK         Spinning at normal speed
      Fan Tray 1 Fan 2               OK         Spinning at normal speed
      Fan Tray 1 Fan 3               OK         Spinning at normal speed
      Fan Tray 2 Fan 0               OK         Spinning at normal speed
      Fan Tray 2 Fan 1               OK         Spinning at normal speed
      Fan Tray 2 Fan 2               OK         Spinning at normal speed
      Fan Tray 2 Fan 3               OK         Spinning at normal speed
      Fan Tray 3 Fan 0               OK         Spinning at normal speed
      Fan Tray 3 Fan 1               OK         Spinning at normal speed
      Fan Tray 3 Fan 2               OK         Spinning at normal speed
      Fan Tray 3 Fan 3               OK         Spinning at normal speed
```

show chassis environment (QFX Series and OCX Series)

`user@switch>` **show chassis environment**

```
Class Item                           Status     Measurement
Temp  CB 0 Top Right Inlet Sensor    OK         29 degrees C / 84 degrees F
      CB 0 Top Left Inlet Sensor     OK         29 degrees C / 84 degrees F
      CB 0 Top Right Exhaust Sensor  OK         40 degrees C / 104 degrees F
      CB 0 Top Left Exhaust Sensor   OK         59 degrees C / 138 degrees F
      CB 0 CPU Core-0 Temp           OK         45 degrees C / 113 degrees F
```

```
      CB 0 CPU Core-1 Temp          OK         44 degrees C / 111 degrees F
      CB 0 CPU Core-2 Temp          OK         44 degrees C / 111 degrees F
      CB 0 CPU Core-3 Temp          OK         44 degrees C / 111 degrees F
      CB 0 CPU Core-4 Temp          OK         45 degrees C / 113 degrees F
      CB 0 CPU Core-5 Temp          OK         44 degrees C / 111 degrees F
      CB 0 CPU Core-6 Temp          OK         44 degrees C / 111 degrees F
      CB 0 CPU Core-7 Temp          OK         43 degrees C / 109 degrees F
Power PEM 0                         Check
      PEM 1                         OK         36 degrees C / 96 degrees F
Fans  Fan Tray 0 Fan 0              OK         Spinning at normal speed
      Fan Tray 0 Fan 1              OK         Spinning at normal speed
      Fan Tray 1 Fan 0              OK         Spinning at normal speed
      Fan Tray 1 Fan 1              OK         Spinning at normal speed
      Fan Tray 2 Fan 0              Absent
      Fan Tray 2 Fan 1              Absent
```

show chassis environment interconnect-device (QFabric System)

`user@switch>` **show chassis environment interconnect-device IC-A0004**

```
Class Item                          Status     Measurement
      CB 0
      CB 0 L Intake                 OK         30 degrees C / 86 degrees F
      CB 0 R Intake                 OK         31 degrees C / 87 degrees F
      CB 0 L Exhaust                OK         32 degrees C / 89 degrees F
      CB 0 R Exhaust                OK         33 degrees C / 91 degrees F
      Routing Engine 0 CPU temp     OK         51 degrees C / 123 degrees F
      CB 1
      CB 1 L Intake                 OK         27 degrees C / 80 degrees F
      CB 1 R Intake                 OK         29 degrees C / 84 degrees F
      CB 1 L Exhaust                OK         31 degrees C / 87 degrees F
      CB 1 R Exhaust                OK         32 degrees C / 89 degrees F
      Routing Engine 1 CPU temp     OK         40 degrees C / 104 degrees F
      FC 0 FPC 0
      FPC 0 L Intake                OK         25 degrees C / 77 degrees F
      FPC 0 R Intake                OK         28 degrees C / 82 degrees F
      FPC 0 L Exhaust               OK         28 degrees C / 82 degrees F
      FPC 0 R Exhaust               OK         29 degrees C / 84 degrees F
      FC 7 FPC 7
      FPC 7 L Intake                OK         25 degrees C / 77 degrees F
      FPC 7 R Intake                OK         26 degrees C / 78 degrees F
      FPC 7 L Exhaust               OK         28 degrees C / 82 degrees F
      FPC 7 R Exhaust               OK         29 degrees C / 84 degrees F
      RC 0 FPC 8
```

```
      FPC 8 L Intake                 OK          25 degrees C / 77 degrees F
      FPC 8 R Intake                 OK          26 degrees C / 78 degrees F
      FPC 8 L Exhaust                OK          32 degrees C / 89 degrees F
      FPC 8 R Exhaust                OK          30 degrees C / 86 degrees F
      RC 7 FPC 15
      FPC 15 L Intake                OK          24 degrees C / 75 degrees F
      FPC 15 R Intake                OK          25 degrees C / 77 degrees F
      FPC 15 L Exhaust               OK          33 degrees C / 91 degrees F
      FPC 15 R Exhaust               OK          31 degrees C / 87 degrees F
Fans  TFT 0 Fan 0                    OK          Spinning at normal speed
Fans  TFT 0 Fan 1                    OK          Spinning at normal speed
Fans  TFT 0 Fan 2                    OK          Spinning at normal speed
Fans  TFT 0 Fan 3                    OK          Spinning at normal speed
Fans  TFT 0 Fan 4                    OK          Spinning at normal speed
Fans  TFT 0 Fan 5                    OK          Spinning at normal speed
Fans  BFT 1 Fan 0                    OK          Spinning at normal speed
Fans  BFT 1 Fan 1                    OK          Spinning at normal speed
Fans  BFT 1 Fan 2                    OK          Spinning at normal speed
Fans  BFT 1 Fan 3                    Check
Fans  BFT 1 Fan 4                    OK          Spinning at normal speed
Fans  BFT 1 Fan 5                    OK          Spinning at normal speed
Fans  SFT 0 Fan 0 Rotor 0            OK          Spinning at normal speed
Fans  SFT 0 Fan 0 Rotor 1            OK          Spinning at normal speed
Fans  SFT 0 Fan 1 Rotor 0            OK          Spinning at normal speed
Fans  SFT 0 Fan 1 Rotor 1            OK          Spinning at normal speed
Fans  SFT 0 Fan 2 Rotor 0            OK          Spinning at normal speed
Fans  SFT 0 Fan 2 Rotor 1            OK          Spinning at normal speed
Fans  SFT 0 Fan 3 Rotor 0            OK          Spinning at normal speed
Fans  SFT 0 Fan 3 Rotor 1            OK          Spinning at normal speed
Fans  SFT 1 Fan 0 Rotor 0            OK          Spinning at normal speed
Fans  SFT 1 Fan 0 Rotor 1            OK          Spinning at normal speed
Fans  SFT 1 Fan 1 Rotor 0            OK          Spinning at normal speed
Fans  SFT 1 Fan 1 Rotor 1            OK          Spinning at normal speed
Fans  SFT 1 Fan 2 Rotor 0            OK          Spinning at normal speed
Fans  SFT 1 Fan 2 Rotor 1            OK          Spinning at normal speed
Fans  SFT 1 Fan 3 Rotor 0            OK          Spinning at normal speed
Fans  SFT 1 Fan 3 Rotor 1            OK          Spinning at normal speed
Fans  SFT 2 Fan 0 Rotor 0            OK          Spinning at normal speed
Fans  SFT 2 Fan 0 Rotor 1            OK          Spinning at normal speed
Fans  SFT 2 Fan 1 Rotor 0            OK          Spinning at normal speed
Fans  SFT 2 Fan 1 Rotor 1            OK          Spinning at normal speed
Fans  SFT 2 Fan 2 Rotor 0            OK          Spinning at normal speed
Fans  SFT 2 Fan 2 Rotor 1            OK          Spinning at normal speed
Fans  SFT 2 Fan 3 Rotor 0            OK          Spinning at normal speed
```

```
Fans  SFT 2 Fan 3 Rotor 1           OK         Spinning at normal speed
Fans  SFT 3 Fan 0 Rotor 0           OK         Spinning at normal speed
Fans  SFT 3 Fan 0 Rotor 1           OK         Spinning at normal speed
Fans  SFT 3 Fan 1 Rotor 0           OK         Spinning at normal speed
Fans  SFT 3 Fan 1 Rotor 1           OK         Spinning at normal speed
Fans  SFT 3 Fan 2 Rotor 0           OK         Spinning at normal speed
Fans  SFT 3 Fan 2 Rotor 1           OK         Spinning at normal speed
Fans  SFT 3 Fan 3 Rotor 0           OK         Spinning at normal speed
Fans  SFT 3 Fan 3 Rotor 1           OK         Spinning at normal speed
Fans  SFT 4 Fan 0 Rotor 0           OK         Spinning at normal speed
Fans  SFT 4 Fan 0 Rotor 1           OK         Spinning at normal speed
Fans  SFT 4 Fan 1 Rotor 0           OK         Spinning at normal speed
Fans  SFT 4 Fan 1 Rotor 1           OK         Spinning at normal speed
Fans  SFT 4 Fan 2 Rotor 0           OK         Spinning at normal speed
Fans  SFT 4 Fan 2 Rotor 1           OK         Spinning at normal speed
Fans  SFT 4 Fan 3 Rotor 0           OK         Spinning at normal speed
Fans  SFT 4 Fan 3 Rotor 1           OK         Spinning at normal speed
Fans  SFT 5 Fan 0 Rotor 0           OK         Spinning at normal speed
Fans  SFT 5 Fan 0 Rotor 1           OK         Spinning at normal speed
Fans  SFT 5 Fan 1 Rotor 0           OK         Spinning at normal speed
Fans  SFT 5 Fan 1 Rotor 1           OK         Spinning at normal speed
Fans  SFT 5 Fan 2 Rotor 0           OK         Spinning at normal speed
Fans  SFT 5 Fan 2 Rotor 1           OK         Spinning at normal speed
Fans  SFT 5 Fan 3 Rotor 0           OK         Spinning at normal speed
Fans  SFT 5 Fan 3 Rotor 1           OK         Spinning at normal speed
Fans  SFT 6 Fan 0 Rotor 0           OK         Spinning at normal speed
Fans  SFT 6 Fan 0 Rotor 1           OK         Spinning at normal speed
Fans  SFT 6 Fan 1 Rotor 0           OK         Spinning at normal speed
Fans  SFT 6 Fan 1 Rotor 1           OK         Spinning at normal speed
Fans  SFT 6 Fan 2 Rotor 0           OK         Spinning at normal speed
Fans  SFT 6 Fan 2 Rotor 1           OK         Spinning at normal speed
Fans  SFT 6 Fan 3 Rotor 0           OK         Spinning at normal speed
Fans  SFT 6 Fan 3 Rotor 1           OK         Spinning at normal speed
Fans  SFT 7 Fan 0 Rotor 0           OK         Spinning at normal speed
Fans  SFT 7 Fan 0 Rotor 1           OK         Spinning at normal speed
Fans  SFT 7 Fan 1 Rotor 0           OK         Spinning at normal speed
Fans  SFT 7 Fan 1 Rotor 1           OK         Spinning at normal speed
Fans  SFT 7 Fan 2 Rotor 0           OK         Spinning at normal speed
Fans  SFT 7 Fan 2 Rotor 1           OK         Spinning at normal speed
Fans  SFT 7 Fan 3 Rotor 0           OK         Spinning at normal speed
Fans  SFT 7 Fan 3 Rotor 1           OK         Spinning at normal speed
Power PEM 0                         OK         30 degrees C / 86 degrees F
Power PEM 1                         OK         30 degrees C / 86 degrees F
Power PEM 2                         OK         30 degrees C / 86 degrees F
```

```
Power PEM 3                          Absent
Power PEM 4                          Absent
Power PEM 5                          Absent
```

show chassis environment node-device (QFabric System)

`user@switch>` **show chassis environment node-device node1**

```
Class Item                           Status     Measurement
Power node1 Power Supply 0            Absent
      node1 Power Supply 1            Absent
Fans  node1 Fan Tray 0                Testing
      node1 Fan Tray 1                Testing
      node1 Fan Tray 2                Testing
```

show chassis environment pem node-device (QFabric System)

`user@switch>` **show chassis environment pem node-device node1**

```
FPC 0 PEM 0 status:
  State                       Check
  Airflow                     Front to Back
  Temperature                 OK
  AC Input:                   OK
  DC Output           Voltage(V) Current(A)  Power(W)  Load(%)
                          12        10            120      18
FPC 0 PEM 1 status:
  State                       Online
  Airflow                     Back to Front
  Temperature                 OK
  AC Input:                   OK
  DC Output           Voltage(V) Current(A)  Power(W)  Load(%)
                          11        10           110      17
```

show chassis environment (PTX5000 Packet Transport Router)

`user@host>` **show chassis environment**

```
Class Item                           Status     Measurement
Temp  PDU 0                          OK
      PDU 0 PSM 0                    OK         36 degrees C / 96 degrees F
      PDU 0 PSM 1                    OK         38 degrees C / 100 degrees F
```

```
PDU 0 PSM 2                    OK          38 degrees C / 100 degrees F
PDU 0 PSM 3                    OK          37 degrees C / 98 degrees F
PDU 1                          Absent
CCG 0                          OK          44 degrees C / 111 degrees F
CCG 1                          OK          44 degrees C / 111 degrees F
Routing Engine 0               OK          62 degrees C / 143 degrees F
Routing Engine 0 CPU           OK          75 degrees C / 167 degrees F
Routing Engine 1               OK          51 degrees C / 123 degrees F
Routing Engine 1 CPU           OK          64 degrees C / 147 degrees F
CB 0 Intake                    OK          38 degrees C / 100 degrees F
CB 0 Exhaust A                 OK          46 degrees C / 114 degrees F
CB 0 Exhaust B                 OK          42 degrees C / 107 degrees F
CB 1 Intake                    OK          35 degrees C / 95 degrees F
CB 1 Exhaust A                 OK          39 degrees C / 102 degrees F
CB 1 Exhaust B                 OK          36 degrees C / 96 degrees F
SIB 0 Exhaust                  OK          47 degrees C / 116 degrees F
SIB 0 Junction                 OK          45 degrees C / 113 degrees F
SIB 1 Exhaust                  OK          44 degrees C / 111 degrees F
SIB 1 Junction                 OK          43 degrees C / 109 degrees F
SIB 2 Exhaust                  OK          47 degrees C / 116 degrees F
SIB 2 Junction                 OK          42 degrees C / 107 degrees F
SIB 3 Exhaust                  OK          43 degrees C / 109 degrees F
SIB 3 Junction                 OK          43 degrees C / 109 degrees F
SIB 4 Exhaust                  OK          47 degrees C / 116 degrees F
SIB 4 Junction                 OK          42 degrees C / 107 degrees F
SIB 5 Exhaust                  OK          42 degrees C / 107 degrees F
SIB 5 Junction                 OK          40 degrees C / 104 degrees F
SIB 6 Exhaust                  OK          46 degrees C / 114 degrees F
SIB 6 Junction                 OK          42 degrees C / 107 degrees F
SIB 7 Exhaust                  OK          43 degrees C / 109 degrees F
SIB 7 Junction                 OK          39 degrees C / 102 degrees F
SIB 8 Exhaust                  OK          44 degrees C / 111 degrees F
SIB 8 Junction                 OK          41 degrees C / 105 degrees F
FPC 0 PMB                      OK          35 degrees C / 95 degrees F
FPC 0 Intake                   OK          33 degrees C / 91 degrees F
FPC 0 Exhaust A                OK          51 degrees C / 123 degrees F
FPC 0 Exhaust B                OK          43 degrees C / 109 degrees F
FPC 0 TL0                      OK          48 degrees C / 118 degrees F
FPC 0 TQ0                      OK          53 degrees C / 127 degrees F
FPC 0 TL1                      OK          56 degrees C / 132 degrees F
FPC 0 TQ1                      OK          58 degrees C / 136 degrees F
FPC 0 TL2                      OK          55 degrees C / 131 degrees F
FPC 0 TQ2                      OK          56 degrees C / 132 degrees F
FPC 0 TL3                      OK          59 degrees C / 138 degrees F
```

```
FPC 0 TQ3                       OK          59 degrees C / 138 degrees F
FPC 2 PMB                       OK          35 degrees C / 95 degrees F
FPC 2 Intake                    OK          34 degrees C / 93 degrees F
FPC 2 Exhaust A                 OK          51 degrees C / 123 degrees F
FPC 2 Exhaust B                 OK          52 degrees C / 125 degrees F
FPC 2 TL0                       OK          53 degrees C / 127 degrees F
FPC 2 TQ0                       OK          53 degrees C / 127 degrees F
FPC 2 TL1                       OK          57 degrees C / 134 degrees F
FPC 2 TQ1                       OK          58 degrees C / 136 degrees F
FPC 2 TL2                       OK          54 degrees C / 129 degrees F
FPC 2 TQ2                       OK          59 degrees C / 138 degrees F
FPC 2 TL3                       OK          60 degrees C / 140 degrees F
FPC 2 TQ3                       OK          64 degrees C / 147 degrees F
PIC 2/0 Ambient                 OK          49 degrees C / 120 degrees F
FPC 3 PMB                       OK          34 degrees C / 93 degrees F
FPC 3 Intake                    OK          35 degrees C / 95 degrees F
FPC 3 Exhaust A                 OK          54 degrees C / 129 degrees F
FPC 3 Exhaust B                 OK          49 degrees C / 120 degrees F
FPC 3 TL0                       OK          49 degrees C / 120 degrees F
FPC 3 TQ0                       OK          55 degrees C / 131 degrees F
FPC 3 TL1                       OK          56 degrees C / 132 degrees F
FPC 3 TQ1                       OK          58 degrees C / 136 degrees F
FPC 3 TL2                       OK          56 degrees C / 132 degrees F
FPC 3 TQ2                       OK          59 degrees C / 138 degrees F
FPC 3 TL3                       OK          62 degrees C / 143 degrees F
FPC 3 TQ3                       OK          63 degrees C / 145 degrees F
PIC 3/1                         Absent
FPC 5 PMB                       OK          35 degrees C / 95 degrees F
FPC 5 Intake                    OK          34 degrees C / 93 degrees F
FPC 5 Exhaust A                 OK          51 degrees C / 123 degrees F
FPC 5 Exhaust B                 OK          53 degrees C / 127 degrees F
FPC 5 TL0                       OK          54 degrees C / 129 degrees F
FPC 5 TQ0                       OK          52 degrees C / 125 degrees F
FPC 5 TL1                       OK          61 degrees C / 141 degrees F
FPC 5 TQ1                       OK          60 degrees C / 140 degrees F
FPC 5 TL2                       OK          55 degrees C / 131 degrees F
FPC 5 TQ2                       OK          55 degrees C / 131 degrees F
FPC 5 TL3                       OK          59 degrees C / 138 degrees F
FPC 5 TQ3                       OK          58 degrees C / 136 degrees F
PIC 5/0 Ambient                 OK          51 degrees C / 123 degrees F
PIC 5/1 Ambient                 OK          34 degrees C / 93 degrees F
PIC 5/1 cfp-5/1/0               OK          34 degrees C / 93 degrees F
PIC 5/1 cfp-5/1/1               OK          36 degrees C / 96 degrees F
FPC 6 PMB                       OK          36 degrees C / 96 degrees F
```

```
      FPC 6 Intake                 OK          33 degrees C / 91 degrees F
      FPC 6 Exhaust A              OK          51 degrees C / 123 degrees F
      FPC 6 Exhaust B              OK          39 degrees C / 102 degrees F
      FPC 6 TL0                    OK          44 degrees C / 111 degrees F
      FPC 6 TQ0                    OK          54 degrees C / 129 degrees F
      FPC 6 TL1                    OK          59 degrees C / 138 degrees F
      FPC 6 TQ1                    OK          58 degrees C / 136 degrees F
      FPC 6 TL2                    OK          60 degrees C / 140 degrees F
      FPC 6 TQ2                    OK          57 degrees C / 134 degrees F
      FPC 6 TL3                    OK          65 degrees C / 149 degrees F
      FPC 6 TQ3                    OK          60 degrees C / 140 degrees F
      FPC 7 PMB                    OK          35 degrees C / 95 degrees F
      FPC 7 Intake                 OK          33 degrees C / 91 degrees F
      FPC 7 Exhaust A              OK          53 degrees C / 127 degrees F
      FPC 7 Exhaust B              OK          40 degrees C / 104 degrees F
      FPC 7 TL0                    OK          46 degrees C / 114 degrees F
      FPC 7 TQ0                    OK          58 degrees C / 136 degrees F
      FPC 7 TL1                    OK          53 degrees C / 127 degrees F
      FPC 7 TQ1                    OK          59 degrees C / 138 degrees F
      FPC 7 TL2                    OK          56 degrees C / 132 degrees F
      FPC 7 TQ2                    OK          61 degrees C / 141 degrees F
      FPC 7 TL3                    OK          63 degrees C / 145 degrees F
      FPC 7 TQ3                    OK          63 degrees C / 145 degrees F
      FPM I2CS                     OK          37 degrees C / 98 degrees F
Fans  Fan Tray 0 Fan 1             OK          3042 RPM
      Fan Tray 0 Fan 2             OK          3042 RPM
      Fan Tray 0 Fan 3             OK          3000 RPM
      Fan Tray 0 Fan 4             OK          3042 RPM
      Fan Tray 0 Fan 5             OK          3000 RPM
      Fan Tray 0 Fan 6             OK          3042 RPM
      Fan Tray 0 Fan 7             OK          3085 RPM
      Fan Tray 0 Fan 8             OK          3042 RPM
      Fan Tray 0 Fan 9             OK          3042 RPM
      Fan Tray 0 Fan 10            OK          3085 RPM
      Fan Tray 0 Fan 11            OK          3085 RPM
      Fan Tray 0 Fan 12            OK          3128 RPM
      Fan Tray 0 Fan 13            OK          3128 RPM
      Fan Tray 0 Fan 14            OK          3042 RPM
      Fan Tray 1 Fan 1             OK          2299 RPM
      Fan Tray 1 Fan 2             OK          2399 RPM
      Fan Tray 1 Fan 3             OK          2299 RPM
      Fan Tray 1 Fan 4             OK          2266 RPM
      Fan Tray 1 Fan 5             OK          2266 RPM
      Fan Tray 1 Fan 6             OK          2366 RPM
```

```
      Fan Tray 2 Fan 1              OK          2199 RPM
      Fan Tray 2 Fan 2              OK          2133 RPM
      Fan Tray 2 Fan 3              OK          2366 RPM
      Fan Tray 2 Fan 4              OK          2233 RPM
      Fan Tray 2 Fan 5              OK          2399 RPM
      Fan Tray 2 Fan 6              OK          2233 RPM
Misc  SPMB 0 Intake                 OK          50 degrees C / 122 degrees F
      SPMB 1 Intake                 OK          40 degrees C / 104 degrees F
```

show chassis environment (PTX5000 Packet Transport Router with FPC2-PTX-P1A)

`user@host>` **show chassis environment**

```
Class Item                          Status     Measurement
Temp  PDU 0                         OK
      PDU 0 PSM 0                   OK         41 degrees C / 105 degrees F
      PDU 0 PSM 1                   Absent
      PDU 0 PSM 2                   OK         43 degrees C / 109 degrees F
      PDU 0 PSM 3                   Absent
      PDU 0 PSM 4                   OK         44 degrees C / 111 degrees F
      PDU 0 PSM 5                   Absent
      PDU 0 PSM 6                   OK         45 degrees C / 113 degrees F
      PDU 0 PSM 7                   Absent
      PDU 1                         OK
      PDU 1 PSM 0                   Absent
      PDU 1 PSM 1                   OK         45 degrees C / 113 degrees F
      PDU 1 PSM 2                   Absent
      PDU 1 PSM 3                   OK         43 degrees C / 109 degrees F
      PDU 1 PSM 4                   Absent
      PDU 1 PSM 5                   OK         46 degrees C / 114 degrees F
      PDU 1 PSM 6                   Absent
      PDU 1 PSM 7                   OK         46 degrees C / 114 degrees F
      CCG 0                         OK         27 degrees C / 80 degrees F
      CCG 1                         OK         29 degrees C / 84 degrees F
...
```

show chassis environment (PTX1000 Packet Transport Router)

`user@host>` **show chassis environment**

```
Class Item                          Status     Measurement
Power FPC 0 Power Supply 0          Absent
      FPC 0 Power Supply 1          Absent
```

```
      FPC 0 Power Supply 2          OK
      FPC 0 Power Supply 3          OK
Temp  FPC 0 Intake Temp Sensor      OK          25 degrees C / 77 degrees F
      FPC 0 Exhaust Temp Sensor     OK          35 degrees C / 95 degrees F
      FPC 0 Mezz Temp Sensor 0      OK          25 degrees C / 77 degrees F
      FPC 0 Mezz Temp Sensor 1      OK          34 degrees C / 93 degrees F
      FPC 0 PE2 Temp Sensor         OK          34 degrees C / 93 degrees F
      FPC 0 PE1 Temp Sensor         OK          32 degrees C / 89 degrees F
      FPC 0 PF0 Temp Sensor         OK          40 degrees C / 104 degrees F
      FPC 0 PE0 Temp Sensor         OK          33 degrees C / 91 degrees F
      FPC 0 PE5 Temp Sensor         OK          34 degrees C / 93 degrees F
      FPC 0 PE4 Temp Sensor         OK          34 degrees C / 93 degrees F
      FPC 0 PF1 Temp Sensor         OK          41 degrees C / 105 degrees F
      FPC 0 PE3 Temp Sensor         OK          36 degrees C / 96 degrees F
      FPC 0 CPU Die Temp Sensor     OK          40 degrees C / 104 degrees F
      FPC 0 OCXO Temp Sensor        OK          37 degrees C / 98 degrees F
Fans  FPC 0 Fan Tray 0              OK          Spinning at normal speed
      FPC 0 Fan Tray 1              OK          Spinning at normal speed
      FPC 0 Fan Tray 2              OK          Spinning at normal speed
```

show chassis environment (PTX10008 Router)

`user@host>` **show chassis environment**

```
Class Item                          Status     Measurement
      Routing Engine 0 CPU          OK         40 degrees C / 104 degrees F
      Routing Engine 1 CPU          OK         40 degrees C / 104 degrees F
Temp  CB 0 Intake Temp Sensor       OK         29 degrees C / 84 degrees F
      CB 0 Exhaust Temp Sensor      OK         33 degrees C / 91 degrees F
      CB 1 Intake Temp Sensor       OK         28 degrees C / 82 degrees F
      CB 1 Exhaust Temp Sensor      OK         32 degrees C / 89 degrees F
      FPC 0 Intake-A Temp Sensor    OK         38 degrees C / 100 degrees F
      FPC 0 Intake-B Temp Sensor    OK         34 degrees C / 93 degrees F
      FPC 0 Exhaust-A Temp Sensor   OK         36 degrees C / 96 degrees F
      FPC 0 Exhaust-B Temp Sensor   OK         37 degrees C / 98 degrees F
      FPC 0 Exhaust-C Temp Sensor   OK         40 degrees C / 104 degrees F
      FPC 0 PE0 Temp Sensor         OK         40 degrees C / 104 degrees F
      FPC 0 PE1 Temp Sensor         OK         42 degrees C / 107 degrees F
      FPC 0 PE2 Temp Sensor         OK         44 degrees C / 111 degrees F
      FPC 0 LCPU Temp Sensor        OK         41 degrees C / 105 degrees F
      FPC 1 Intake-A Temp Sensor    OK         37 degrees C / 98 degrees F
      FPC 1 Intake-B Temp Sensor    OK         33 degrees C / 91 degrees F
      FPC 1 Exhaust-A Temp Sensor   OK         37 degrees C / 98 degrees F
      FPC 1 Exhaust-B Temp Sensor   OK         38 degrees C / 100 degrees F
```

```
FPC 1 Exhaust-C Temp Sensor    OK          40 degrees C / 104 degrees F
FPC 1 PE0 Temp Sensor          OK          41 degrees C / 105 degrees F
FPC 1 PE1 Temp Sensor          OK          41 degrees C / 105 degrees F
FPC 1 PE2 Temp Sensor          OK          45 degrees C / 113 degrees F
FPC 1 LCPU Temp Sensor         OK          40 degrees C / 104 degrees F
FPC 2 Intake-A Temp Sensor     OK          44 degrees C / 111 degrees F
FPC 2 Intake-B Temp Sensor     OK          30 degrees C / 86 degrees F
FPC 2 Exhaust-A Temp Sensor    OK          52 degrees C / 125 degrees F
FPC 2 Exhaust-B Temp Sensor    OK          54 degrees C / 129 degrees F
FPC 2 Exhaust-C Temp Sensor    OK          52 degrees C / 125 degrees F
FPC 2 PE0 Temp Sensor          OK          49 degrees C / 120 degrees F
FPC 2 PE1 Temp Sensor          OK          59 degrees C / 138 degrees F
FPC 2 PE2 Temp Sensor          OK          49 degrees C / 120 degrees F
FPC 2 PE3 Temp Sensor          OK          60 degrees C / 140 degrees F
FPC 2 PE4 Temp Sensor          OK          49 degrees C / 120 degrees F
FPC 2 PE5 Temp Sensor          OK          63 degrees C / 145 degrees F
FPC 2 LCPU Temp Sensor         OK          47 degrees C / 116 degrees F
FPC 3 Intake-A Temp Sensor     OK          42 degrees C / 107 degrees F
FPC 3 Intake-B Temp Sensor     OK          30 degrees C / 86 degrees F
FPC 3 Exhaust-A Temp Sensor    OK          46 degrees C / 114 degrees F
FPC 3 Exhaust-B Temp Sensor    OK          48 degrees C / 118 degrees F
FPC 3 Exhaust-C Temp Sensor    OK          47 degrees C / 116 degrees F
FPC 3 PE0 Temp Sensor          OK          47 degrees C / 116 degrees F
FPC 3 PE1 Temp Sensor          OK          53 degrees C / 127 degrees F
FPC 3 PE2 Temp Sensor          OK          46 degrees C / 114 degrees F
FPC 3 PE3 Temp Sensor          OK          53 degrees C / 127 degrees F
FPC 3 PE4 Temp Sensor          OK          48 degrees C / 118 degrees F
FPC 3 PE5 Temp Sensor          OK          57 degrees C / 134 degrees F
FPC 3 LCPU Temp Sensor         OK          47 degrees C / 116 degrees F
FPC 5 Intake-A Temp Sensor     Failed
FPC 5 Intake-B Temp Sensor     Failed
FPC 5 Exhaust-A Temp Sensor    OK          40 degrees C / 104 degrees F
FPC 5 Exhaust-B Temp Sensor    OK          40 degrees C / 104 degrees F
FPC 5 Exhaust-C Temp Sensor    OK          41 degrees C / 105 degrees F
FPC 5 PE0 Temp Sensor          OK          46 degrees C / 114 degrees F
FPC 5 PE1 Temp Sensor          OK          48 degrees C / 118 degrees F
FPC 5 PE2 Temp Sensor          OK          51 degrees C / 123 degrees F
FPC 5 LCPU Temp Sensor         Failed
FPC 6 Intake-A Temp Sensor     OK          40 degrees C / 104 degrees F
FPC 6 Intake-B Temp Sensor     OK          36 degrees C / 96 degrees F
FPC 6 Exhaust-A Temp Sensor    OK          39 degrees C / 102 degrees F
FPC 6 Exhaust-B Temp Sensor    OK          39 degrees C / 102 degrees F
FPC 6 Exhaust-C Temp Sensor    OK          39 degrees C / 102 degrees F
FPC 6 PE0 Temp Sensor          OK          44 degrees C / 111 degrees F
```

```
      FPC 6 PE1 Temp Sensor          OK         45 degrees C / 113 degrees F
      FPC 6 PE2 Temp Sensor          OK         50 degrees C / 122 degrees F
      FPC 6 LCPU Temp Sensor         OK         40 degrees C / 104 degrees F
      SIB 0 Intake-A Temp Sensor     OK         37 degrees C / 98 degrees F
      SIB 0 Intake-B Temp Sensor     OK         30 degrees C / 86 degrees F
      SIB 0 Exhaust-A Temp Sensor    OK         33 degrees C / 91 degrees F
      SIB 0 Exhaust-B Temp Sensor    OK         38 degrees C / 100 degrees F
      SIB 0 PF0 Temp Sensor          OK         46 degrees C / 114 degrees F
      SIB 0 PF1 Temp Sensor          OK         39 degrees C / 102 degrees F
      SIB 1 Intake-A Temp Sensor     OK         43 degrees C / 109 degrees F
      SIB 1 Intake-B Temp Sensor     OK         34 degrees C / 93 degrees F
      SIB 1 Exhaust-A Temp Sensor    OK         36 degrees C / 96 degrees F
      SIB 1 Exhaust-B Temp Sensor    OK         44 degrees C / 111 degrees F
      SIB 1 PF0 Temp Sensor          OK         54 degrees C / 129 degrees F
      SIB 1 PF1 Temp Sensor          OK         41 degrees C / 105 degrees F
      SIB 2 Intake-A Temp Sensor     OK         46 degrees C / 114 degrees F
      SIB 2 Intake-B Temp Sensor     OK         35 degrees C / 95 degrees F
      SIB 2 Exhaust-A Temp Sensor    OK         37 degrees C / 98 degrees F
      SIB 2 Exhaust-B Temp Sensor    OK         47 degrees C / 116 degrees F
      SIB 2 PF0 Temp Sensor          OK         55 degrees C / 131 degrees F
      SIB 2 PF1 Temp Sensor          OK         42 degrees C / 107 degrees F
      SIB 3 Intake-A Temp Sensor     OK         45 degrees C / 113 degrees F
      SIB 3 Intake-B Temp Sensor     OK         35 degrees C / 95 degrees F
      SIB 3 Exhaust-A Temp Sensor    OK         36 degrees C / 96 degrees F
      SIB 3 Exhaust-B Temp Sensor    OK         45 degrees C / 113 degrees F
      SIB 3 PF0 Temp Sensor          OK         54 degrees C / 129 degrees F
      SIB 3 PF1 Temp Sensor          OK         42 degrees C / 107 degrees F
      SIB 4 Intake-A Temp Sensor     OK         46 degrees C / 114 degrees F
      SIB 4 Intake-B Temp Sensor     OK         34 degrees C / 93 degrees F
      SIB 4 Exhaust-A Temp Sensor    OK         36 degrees C / 96 degrees F
      SIB 4 Exhaust-B Temp Sensor    OK         46 degrees C / 114 degrees F
      SIB 4 PF0 Temp Sensor          OK         54 degrees C / 129 degrees F
      SIB 4 PF1 Temp Sensor          OK         41 degrees C / 105 degrees F
      SIB 5 Intake-A Temp Sensor     OK         38 degrees C / 100 degrees F
      SIB 5 Intake-B Temp Sensor     OK         31 degrees C / 87 degrees F
      SIB 5 Exhaust-A Temp Sensor    OK         34 degrees C / 93 degrees F
      SIB 5 Exhaust-B Temp Sensor    OK         39 degrees C / 102 degrees F
      SIB 5 PF0 Temp Sensor          OK         44 degrees C / 111 degrees F
      SIB 5 PF1 Temp Sensor          OK         42 degrees C / 107 degrees F
Power Power Supply 0                 OK
      Power Supply 1                 OK
      Power Supply 2                 OK
      Power Supply 3                 OK
      Power Supply 4                 Check
```

```
      Power Supply 5                OK
Fans  Fan Tray 0 Fan 0              OK          Spinning at normal speed
      Fan Tray 0 Fan 1              OK          Spinning at normal speed
      Fan Tray 0 Fan 2              OK          Spinning at normal speed
      Fan Tray 0 Fan 3              OK          Spinning at normal speed
      Fan Tray 0 Fan 4              Failed
      Fan Tray 0 Fan 5              Failed
      Fan Tray 0 Fan 6              OK          Spinning at normal speed
      Fan Tray 0 Fan 7              OK          Spinning at normal speed
      Fan Tray 0 Fan 8              OK          Spinning at normal speed
      Fan Tray 0 Fan 9              OK          Spinning at normal speed
      Fan Tray 0 Fan 10             OK          Spinning at normal speed
      Fan Tray 1 Fan 0              OK          Spinning at normal speed
      Fan Tray 1 Fan 1              OK          Spinning at normal speed
      Fan Tray 1 Fan 2              OK          Spinning at normal speed
      Fan Tray 1 Fan 3              OK          Spinning at normal speed
      Fan Tray 1 Fan 4              OK          Spinning at normal speed
      Fan Tray 1 Fan 5              OK          Spinning at normal speed
      Fan Tray 1 Fan 6              OK          Spinning at normal speed
      Fan Tray 1 Fan 7              OK          Spinning at normal speed
      Fan Tray 1 Fan 8              OK          Spinning at normal speed
      Fan Tray 1 Fan 9              OK          Spinning at normal speed
      Fan Tray 1 Fan 10             OK          Spinning at normal speed
```

show chassis environment (PTX10016 Router)

`user@host>` **show chassis environment**

```
Class Item                          Status     Measurement
      Routing Engine 0 CPU          OK         34 degrees C / 93 degrees F
      Routing Engine 1 CPU          OK         34 degrees C / 93 degrees F
Temp  CB 0 Intake Temp Sensor       OK         20 degrees C / 68 degrees F
      CB 0 Exhaust Temp Sensor      OK         24 degrees C / 75 degrees F
      CB 1 Intake Temp Sensor       OK         20 degrees C / 68 degrees F
      CB 1 Exhaust Temp Sensor      OK         23 degrees C / 73 degrees F
      FPC 1 Intake-A Temp Sensor    OK         37 degrees C / 98 degrees F
      FPC 1 Intake-B Temp Sensor    OK         32 degrees C / 89 degrees F
      FPC 1 Exhaust-A Temp Sensor   OK         37 degrees C / 98 degrees F
      FPC 1 Exhaust-B Temp Sensor   OK         36 degrees C / 96 degrees F
      FPC 1 Exhaust-C Temp Sensor   OK         36 degrees C / 96 degrees F
      FPC 1 PE0 Temp Sensor         OK         45 degrees C / 113 degrees F
      FPC 1 PE1 Temp Sensor         OK         46 degrees C / 114 degrees F
      FPC 1 PE2 Temp Sensor         OK         54 degrees C / 129 degrees F
      FPC 1 LCPU Temp Sensor        OK         35 degrees C / 95 degrees F
```

```
      FPC 3 Intake-A Temp Sensor     OK          35 degrees C / 95 degrees F
      FPC 3 Intake-B Temp Sensor     OK          31 degrees C / 87 degrees F
      FPC 3 Exhaust-A Temp Sensor    OK          36 degrees C / 96 degrees F
      FPC 3 Exhaust-B Temp Sensor    OK          35 degrees C / 95 degrees F
      FPC 3 Exhaust-C Temp Sensor    OK          33 degrees C / 91 degrees F
      FPC 3 PE0 Temp Sensor          OK          43 degrees C / 109 degrees F
      FPC 3 PE1 Temp Sensor          OK          45 degrees C / 113 degrees F
      FPC 3 PE2 Temp Sensor          OK          49 degrees C / 120 degrees F
      FPC 3 LCPU Temp Sensor         OK          35 degrees C / 95 degrees F
      FPC 6 Intake-A Temp Sensor     OK          34 degrees C / 93 degrees F
      FPC 6 Intake-B Temp Sensor     OK          31 degrees C / 87 degrees F
      FPC 6 Exhaust-A Temp Sensor    OK          35 degrees C / 95 degrees F
      FPC 6 Exhaust-B Temp Sensor    OK          35 degrees C / 95 degrees F
      FPC 6 Exhaust-C Temp Sensor    OK          35 degrees C / 95 degrees F
      FPC 6 PE0 Temp Sensor          OK          43 degrees C / 109 degrees F
      FPC 6 PE1 Temp Sensor          OK          43 degrees C / 109 degrees F
      FPC 6 PE2 Temp Sensor          OK          47 degrees C / 116 degrees F
      FPC 6 LCPU Temp Sensor         OK          35 degrees C / 95 degrees F
      FPC 8 Intake-A Temp Sensor     OK          34 degrees C / 93 degrees F
      FPC 8 Intake-B Temp Sensor     OK          31 degrees C / 87 degrees F
      FPC 8 Exhaust-A Temp Sensor    OK          37 degrees C / 98 degrees F
      FPC 8 Exhaust-B Temp Sensor    OK          37 degrees C / 98 degrees F
      FPC 8 Exhaust-C Temp Sensor    OK          38 degrees C / 100 degrees F
      FPC 8 PE0 Temp Sensor          OK          42 degrees C / 107 degrees F
      FPC 8 PE1 Temp Sensor          OK          44 degrees C / 111 degrees F
      FPC 8 PE2 Temp Sensor          OK          47 degrees C / 116 degrees F
      FPC 8 LCPU Temp Sensor         OK          33 degrees C / 91 degrees F
      FPC 9 Intake-A Temp Sensor     OK          44 degrees C / 111 degrees F
      FPC 9 Intake-B Temp Sensor     OK          28 degrees C / 82 degrees F
      FPC 9 Exhaust-A Temp Sensor    OK          51 degrees C / 123 degrees F
      FPC 9 Exhaust-B Temp Sensor    OK          52 degrees C / 125 degrees F
      FPC 9 Exhaust-C Temp Sensor    OK          48 degrees C / 118 degrees F
      FPC 9 PE0 Temp Sensor          OK          52 degrees C / 125 degrees F
      FPC 9 PE1 Temp Sensor          OK          66 degrees C / 150 degrees F
      FPC 9 PE2 Temp Sensor          OK          50 degrees C / 122 degrees F
      FPC 9 PE3 Temp Sensor          OK          65 degrees C / 149 degrees F
      FPC 9 PE4 Temp Sensor          OK          51 degrees C / 123 degrees F
      FPC 9 PE5 Temp Sensor          OK          68 degrees C / 154 degrees F
      FPC 9 LCPU Temp Sensor         OK          46 degrees C / 114 degrees F
Power Power Supply 0                 OK          22 degrees C / 71 degrees F
      Power Supply 1                 OK          23 degrees C / 73 degrees F
      Power Supply 2                 OK          23 degrees C / 73 degrees F
      Power Supply 3                 OK          21 degrees C / 69 degrees F
      Power Supply 4                 OK          22 degrees C / 71 degrees F
```

```
      Power Supply 5                OK          25 degrees C / 77 degrees F
      Power Supply 6                OK          21 degrees C / 69 degrees F
      Power Supply 7                Absent
      Power Supply 8                Absent
      Power Supply 9                Absent
Fans  Fan Tray 0 Fan 0              OK          Spinning at normal speed
      Fan Tray 0 Fan 1              OK          Spinning at normal speed
      Fan Tray 0 Fan 2              OK          Spinning at normal speed
      Fan Tray 0 Fan 3              OK          Spinning at normal speed
      Fan Tray 0 Fan 4              OK          Spinning at normal speed
      Fan Tray 0 Fan 5              OK          Spinning at normal speed
      Fan Tray 0 Fan 6              OK          Spinning at normal speed
      Fan Tray 0 Fan 7              OK          Spinning at normal speed
      Fan Tray 0 Fan 8              OK          Spinning at normal speed
      Fan Tray 0 Fan 9              OK          Spinning at normal speed
      Fan Tray 0 Fan 10             OK          Spinning at normal speed
      Fan Tray 0 Fan 11             OK          Spinning at normal speed
      Fan Tray 0 Fan 12             OK          Spinning at normal speed
      Fan Tray 0 Fan 13             OK          Spinning at normal speed
      Fan Tray 0 Fan 14             OK          Spinning at normal speed
      Fan Tray 0 Fan 15             OK          Spinning at normal speed
      Fan Tray 0 Fan 16             OK          Spinning at normal speed
      Fan Tray 0 Fan 17             OK          Spinning at normal speed
      Fan Tray 0 Fan 18             OK          Spinning at normal speed
      Fan Tray 0 Fan 19             OK          Spinning at normal speed
      Fan Tray 0 Fan 20             OK          Spinning at normal speed
      Fan Tray 1 Fan 0              OK          Spinning at normal speed
      Fan Tray 1 Fan 1              OK          Spinning at normal speed
      Fan Tray 1 Fan 2              OK          Spinning at normal speed
      Fan Tray 1 Fan 3              OK          Spinning at normal speed
      Fan Tray 1 Fan 4              OK          Spinning at normal speed
      Fan Tray 1 Fan 5              OK          Spinning at normal speed
      Fan Tray 1 Fan 6              OK          Spinning at normal speed
      Fan Tray 1 Fan 7              OK          Spinning at normal speed
      Fan Tray 1 Fan 8              OK          Spinning at normal speed
      Fan Tray 1 Fan 9              OK          Spinning at normal speed
      Fan Tray 1 Fan 10             OK          Spinning at normal speed
      Fan Tray 1 Fan 11             OK          Spinning at normal speed
      Fan Tray 1 Fan 12             OK          Spinning at normal speed
      Fan Tray 1 Fan 13             OK          Spinning at normal speed
      Fan Tray 1 Fan 14             OK          Spinning at normal speed
      Fan Tray 1 Fan 15             OK          Spinning at normal speed
      Fan Tray 1 Fan 16             OK          Spinning at normal speed
      Fan Tray 1 Fan 17             OK          Spinning at normal speed
```

```
Fan Tray 1 Fan 18              OK          Spinning at normal speed
Fan Tray 1 Fan 19              OK          Spinning at normal speed
Fan Tray 1 Fan 20              OK          Spinning at normal speed
SIB 0 Intake-A Temp Sensor     OK          20 degrees C / 68 degrees F
SIB 0 Intake-B Temp Sensor     OK          20 degrees C / 68 degrees F
SIB 0 Intake-C Temp Sensor     OK          16 degrees C / 60 degrees F
SIB 0 Exhaust-A Temp Sensor    OK          28 degrees C / 82 degrees F
SIB 0 Exhaust-B Temp Sensor    OK          28 degrees C / 82 degrees F
SIB 0 Exhaust-C Temp Sensor    OK          23 degrees C / 73 degrees F
SIB 0 PF0 Temp Sensor          OK          30 degrees C / 86 degrees F
SIB 0 PF1 Temp Sensor          OK          30 degrees C / 86 degrees F
SIB 0 PF2 Temp Sensor          OK          31 degrees C / 87 degrees F
SIB 0 PF3 Temp Sensor          OK          32 degrees C / 89 degrees F
SIB 0 PF4 Temp Sensor          OK          27 degrees C / 80 degrees F
SIB 0 PF5 Temp Sensor          OK          26 degrees C / 78 degrees F
SIB 1 Intake-A Temp Sensor     OK          22 degrees C / 71 degrees F
SIB 1 Intake-B Temp Sensor     OK          22 degrees C / 71 degrees F
SIB 1 Intake-C Temp Sensor     OK          16 degrees C / 60 degrees F
SIB 1 Exhaust-A Temp Sensor    OK          29 degrees C / 84 degrees F
SIB 1 Exhaust-B Temp Sensor    OK          31 degrees C / 87 degrees F
SIB 1 Exhaust-C Temp Sensor    OK          23 degrees C / 73 degrees F
SIB 1 PF0 Temp Sensor          OK          32 degrees C / 89 degrees F
SIB 1 PF1 Temp Sensor          OK          31 degrees C / 87 degrees F
SIB 1 PF2 Temp Sensor          OK          33 degrees C / 91 degrees F
SIB 1 PF3 Temp Sensor          OK          38 degrees C / 100 degrees F
SIB 1 PF4 Temp Sensor          OK          28 degrees C / 82 degrees F
SIB 1 PF5 Temp Sensor          OK          26 degrees C / 78 degrees F
SIB 2 Intake-A Temp Sensor     OK          24 degrees C / 75 degrees F
SIB 2 Intake-B Temp Sensor     OK          21 degrees C / 69 degrees F
SIB 2 Intake-C Temp Sensor     OK          16 degrees C / 60 degrees F
SIB 2 Exhaust-A Temp Sensor    OK          28 degrees C / 82 degrees F
SIB 2 Exhaust-B Temp Sensor    OK          32 degrees C / 89 degrees F
SIB 2 Exhaust-C Temp Sensor    OK          23 degrees C / 73 degrees F
SIB 2 PF0 Temp Sensor          OK          31 degrees C / 87 degrees F
SIB 2 PF1 Temp Sensor          OK          30 degrees C / 86 degrees F
SIB 2 PF2 Temp Sensor          OK          33 degrees C / 91 degrees F
SIB 2 PF3 Temp Sensor          OK          41 degrees C / 105 degrees F
SIB 2 PF4 Temp Sensor          OK          27 degrees C / 80 degrees F
SIB 2 PF5 Temp Sensor          OK          26 degrees C / 78 degrees F
SIB 3 Intake-A Temp Sensor     OK          22 degrees C / 71 degrees F
SIB 3 Intake-B Temp Sensor     OK          23 degrees C / 73 degrees F
SIB 3 Intake-C Temp Sensor     OK          16 degrees C / 60 degrees F
SIB 3 Exhaust-A Temp Sensor    OK          29 degrees C / 84 degrees F
SIB 3 Exhaust-B Temp Sensor    OK          31 degrees C / 87 degrees F
```

```
      SIB 3 Exhaust-C Temp Sensor    OK         24 degrees C / 75 degrees F
      SIB 3 PF0 Temp Sensor          OK         32 degrees C / 89 degrees F
      SIB 3 PF1 Temp Sensor          OK         30 degrees C / 86 degrees F
      SIB 3 PF2 Temp Sensor          OK         31 degrees C / 87 degrees F
      SIB 3 PF3 Temp Sensor          OK         39 degrees C / 102 degrees F
      SIB 3 PF4 Temp Sensor          OK         27 degrees C / 80 degrees F
      SIB 3 PF5 Temp Sensor          OK         26 degrees C / 78 degrees F
      SIB 4 Intake-A Temp Sensor     OK         22 degrees C / 71 degrees F
      SIB 4 Intake-B Temp Sensor     OK         25 degrees C / 77 degrees F
      SIB 4 Intake-C Temp Sensor     OK         16 degrees C / 60 degrees F
      SIB 4 Exhaust-A Temp Sensor    OK         29 degrees C / 84 degrees F
      SIB 4 Exhaust-B Temp Sensor    OK         32 degrees C / 89 degrees F
      SIB 4 Exhaust-C Temp Sensor    OK         23 degrees C / 73 degrees F
      SIB 4 PF0 Temp Sensor          OK         32 degrees C / 89 degrees F
      SIB 4 PF1 Temp Sensor          OK         31 degrees C / 87 degrees F
      SIB 4 PF2 Temp Sensor          OK         32 degrees C / 89 degrees F
      SIB 4 PF3 Temp Sensor          OK         40 degrees C / 104 degrees F
      SIB 4 PF4 Temp Sensor          OK         26 degrees C / 78 degrees F
      SIB 4 PF5 Temp Sensor          OK         25 degrees C / 77 degrees F
      SIB 5 Intake-A Temp Sensor     OK         21 degrees C / 69 degrees F
      SIB 5 Intake-B Temp Sensor     OK         20 degrees C / 68 degrees F
      SIB 5 Intake-C Temp Sensor     OK         16 degrees C / 60 degrees F
      SIB 5 Exhaust-A Temp Sensor    OK         27 degrees C / 80 degrees F
      SIB 5 Exhaust-B Temp Sensor    OK         27 degrees C / 80 degrees F
      SIB 5 Exhaust-C Temp Sensor    OK         23 degrees C / 73 degrees F
      SIB 5 PF0 Temp Sensor          OK         30 degrees C / 86 degrees F
      SIB 5 PF1 Temp Sensor          OK         29 degrees C / 84 degrees F
      SIB 5 PF2 Temp Sensor          OK         30 degrees C / 86 degrees F
      SIB 5 PF3 Temp Sensor          OK         32 degrees C / 89 degrees F
      SIB 5 PF4 Temp Sensor          OK         28 degrees C / 82 degrees F
      SIB 5 PF5 Temp Sensor          OK         27 degrees C / 80 degrees F
```

show chassis environment (ACX2000 Universal Metro Router)

`user@host>` **show chassis environment**

```
Class Item                           Status     Measurement
      PCB Left                       OK         44 degrees C / 111 degrees F
      SFP+ Xcvr                      OK         50 degrees C / 122 degrees F
      FEB                            OK         70 degrees C / 158 degrees F
      PCB Up                         OK         63 degrees C / 145 degrees F
      PCB Mid                        OK         66 degrees C / 150 degrees F
      Telecom Mod                    OK         65 degrees C / 149 degrees F
```

```
      Routing Engine                OK         54 degrees C / 129 degrees F
      Heater off
```

show chassis environment (ACX4000 Universal Metro Router)

On the ACX4000 router, the MIC output of the **show chassis environment** command varies depending on the number of temperature channels present in the installed MIC.

`user@host>` **show chassis environment**

```
Class Item                          Status     Measurement
Temp  PEM 0                         OK         33 degrees C / 91 degrees F
      PEM 1                         Absent
      PCB Bottom                    OK         30 degrees C / 86 degrees F
      PCB Middle                    OK         34 degrees C / 93 degrees F
      BCM56445                      OK         33 degrees C / 91 degrees F
      SFP+ Xcvr                     OK         32 degrees C / 89 degrees F
      Fan tray inlet                OK         39 degrees C / 102 degrees F
      Exhaust                       OK         30 degrees C / 86 degrees F
      Routing Engine                OK         32 degrees C / 89 degrees F
      Heater off
Pic   PIC 0/0 Channel 0             OK         28 degrees C / 82 degrees F
      PIC 0/0 Channel 1             OK         29 degrees C / 84 degrees F
      PIC 0/0 Channel 2             OK         0 degrees C / 32 degrees F
      PIC 0/0 Channel 3             OK         0 degrees C / 32 degrees F
      PIC 0/0 Channel 4             OK         0 degrees C / 32 degrees F
      PIC 0/0 Channel 5             OK         0 degrees C / 32 degrees F
      PIC 0/0 Channel 6             OK         0 degrees C / 32 degrees F
      PIC 0/0 Channel 7             OK         0 degrees C / 32 degrees F
      PIC 0/0 Channel 8             OK         0 degrees C / 32 degrees F
      PIC 0/0 Channel 9             OK         0 degrees C / 32 degrees F
      PIC 1/0 Channel 0             OK         33 degrees C / 91 degrees F
      PIC 1/0 Channel 1             OK         31 degrees C / 87 degrees F
      PIC 1/0 Channel 2             OK         30 degrees C / 86 degrees F
      PIC 1/0 Channel 3             OK         0 degrees C / 32 degrees F
      PIC 1/0 Channel 4             OK         0 degrees C / 32 degrees F
      PIC 1/0 Channel 5             OK         0 degrees C / 32 degrees F
      PIC 1/0 Channel 6             OK         0 degrees C / 32 degrees F
      PIC 1/0 Channel 7             OK         0 degrees C / 32 degrees F
      PIC 1/0 Channel 8             OK         0 degrees C / 32 degrees F
      PIC 1/1 Channel 0             OK         31 degrees C / 87 degrees F
      PIC 1/1 Channel 1             OK         29 degrees C / 84 degrees F
      PIC 1/1 Channel 2             OK         28 degrees C / 82 degrees F
```

```
      PIC 1/1 Channel 3             OK          0 degrees C / 32 degrees F
      PIC 1/1 Channel 4             OK          0 degrees C / 32 degrees F
      PIC 1/1 Channel 5             OK          0 degrees C / 32 degrees F
      PIC 1/1 Channel 6             OK          0 degrees C / 32 degrees F
      PIC 1/1 Channel 7             OK          0 degrees C / 32 degrees F
      PIC 1/1 Channel 8             OK          0 degrees C / 32 degrees F
Fans  Fan 1                         OK          Spinning at normal speed
      Fan 2                         OK          Spinning at normal speed
```

show chassis environment (ACX5048 Router)

`user@host>` **show chassis environment**

```
Class Item                          Status      Measurement
Power FPC 0 Power Supply 0          Absent
      FPC 0 Power Supply 1          OK
Temp  FPC 0 Sensor TopMiddle E      OK          23 degrees C / 73 degrees F
      FPC 0 Sensor TopRight C       OK          18 degrees C / 64 degrees F
      FPC 0 Sensor TopLeft C        OK          21 degrees C / 69 degrees F
      FPC 0 Sensor TopRight E       OK          20 degrees C / 68 degrees F
      FPC 0 Sensor CPURight C       OK          23 degrees C / 73 degrees F
      FPC 0 Sensor CPULeft E        OK          22 degrees C / 71 degrees F
      FPC 0 Sensor CPU Die Temp     OK          39 degrees C / 102 degrees F
Fans  FPC 0 Fan Tray 0              OK          Spinning at normal speed
      FPC 0 Fan Tray 1              OK          Spinning at normal speed
      FPC 0 Fan Tray 2              OK          Spinning at normal speed
      FPC 0 Fan Tray 3              OK          Spinning at normal speed
      FPC 0 Fan Tray 4              OK          Spinning at normal speed
```

show chassis environment (ACX5096 Router)

`user@host>` **show chassis environment**

```
Class Item                          Status      Measurement
Power FPC 0 Power Supply 0          OK
      FPC 0 Power Supply 1          OK
Temp  FPC 0 Sensor TopMiddle E      OK          32 degrees C / 89 degrees F
      FPC 0 Sensor TopRight I       OK          29 degrees C / 84 degrees F
      FPC 0 Sensor TopLeft I        OK          23 degrees C / 73 degrees F
      FPC 0 Sensor TopRight E       OK          28 degrees C / 82 degrees F
      FPC 0 Sensor CPURight I       OK          30 degrees C / 86 degrees F
```

```
      FPC 0 Sensor CPULeft I        OK          29 degrees C / 84 degrees F
      FPC 0 Sensor Die Temp         OK          46 degrees C / 114 degrees F
      FPC 0 Mezz Temp               OK          23 degrees C / 73 degrees F
Fans  FPC 0 Fan Tray 0              OK          Spinning at normal speed
      FPC 0 Fan Tray 1              OK          Spinning at normal speed
      FPC 0 Fan Tray 2              OK          Spinning at normal speed
```

show chassis environment (ACX500 Router)

user@host> **show chassis environment**

```
Class Item                          Status      Measurement
      Power Mod                     OK          47 degrees C / 116 degrees F
      BCM54610                      OK          46 degrees C / 114 degrees F
      DPLL31404                     OK          45 degrees C / 113 degrees F
      CPLD                          OK          42 degrees C / 107 degrees F
      1588-FPGA                     OK          43 degrees C / 109 degrees F
      NPU                           OK          62 degrees C / 143 degrees F
      MAC sensor 1                  OK          40 degrees C / 104 degrees F
      MAC sensor 2                  OK          38 degrees C / 100 degrees F
      SFP PHY                       OK          38 degrees C / 100 degrees F
      Combo/RJ45 PHY                OK          37 degrees C / 98 degrees F
      SFP sensor 1                  OK          35 degrees C / 95 degrees F
      SFP sensor 2                  OK          33 degrees C / 91 degrees F
      SFP sensor 3                  OK          32 degrees C / 89 degrees F
      Routing Engine                OK          54 degrees C / 129 degrees F
      Heater off
```

show chassis environment adc

Syntax

```
show chassis environment adc
<adc-slot-number>
<all-members>
<local>
<member member-id>
```

Release Information

Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 Universal Routing Platforms.
all-members, **local**, and **member *member-id*** options introduced in Junos OS Release 15.1 for MX2020 and MX2010 routers.
Command introduced in Junos OS Release 17.2 for MX2008 Universal Routing Platforms.

Description

Display chassis environmental information about the adapter cards.

Options

none—Display environmental information about all adapter cards.

adc-slot-number—(Optional) Display environmental information about the specified adapter card. For MX2020 routers, replace ***adc-slot-number*** with a value of **0** through **19**. For MX2010 and MX2008 routers, replace ***adc-slot-number*** with a value of **0** through **9**.

all-members—(Optional) Display chassis environmental information about the adapter cards (ADCs) in all members of the Virtual Chassis configuration.

local—(Optional) Display chassis environmental information about the ADCs in the local member of the Virtual Chassis.

member *member-id*—(Optional) Display chassis environmental information about the ADCs in the specified member of the Virtual Chassis. Replace ***member-id*** with the value 0 or 1.

Required Privilege Level

view

RELATED DOCUMENTATION

show chassis adc | 697

List of Sample Output

show chassis environment adc (MX2020 Router) on page 873
show chassis environment adc (MX2010 Router) on page 882
show chassis environment adc (MX2008 Router) on page 886

Output Fields

Table 39 on page 873 lists the output fields for the **show chassis environment adc** command. Output fields are listed in the approximate order in which they appear.

Table 39: show chassis environment adc Output Fields

Field Name	Field Description
State	Status of the adapter card. • **Online**—The adapter card is online and running. • **Offline**—Adapter card is powered down.
Temperature	Temperature in Celsius (C) and Fahrenheit (F) of the air flowing past the adapter card. • **Intake Temperature**—Measures the temperature of the air intake. • **Exhaust Temperature**—Measures the temperature of the hot air exhaust. • **ADC-XF1**—Measures the temperature of the ADC chipset, ADC-XF1. • **ADC-XF0**—Measures the temperature of the ADC chipset, ADC-XF0.
Power	Power required and measured on the adapter card. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.

Sample Output

show chassis environment adc (MX2020 Router)

```
user@host> show chassis environment adc
```

```
ADC 0 status:
  State                      Online
  Intake Temperature         39 degrees C / 102 degrees F
  Exhaust Temperature        50 degrees C / 122 degrees F
  ADC-XF1 Temperature        58 degrees C / 136 degrees F
  ADC-XF0 Temperature        64 degrees C / 147 degrees F
  Power
    LTC3880-XF0-1.0v-RAIL     1029 mV
    LTC3880-XF0-1.0v-CH0      1029 mV
    LTC3880-XF0-1.0v-CH1      1033 mV
```

```
    LTC3880-XF0-1.5v-RAIL     1499 mV
    LTC3880-XF0-1.5v-CH0      1499 mV
    LTC3880-XF0-1.5v-CH1      1501 mV
    LTC3880-XF1-1.0v-RAIL     1029 mV
    LTC3880-XF1-1.0v-CH0      1029 mV
    LTC3880-XF1-1.0v-CH1      1033 mV
    LTC3880-XF1-1.5v-RAIL     1499 mV
    LTC3880-XF1-1.5v-CH0      1499 mV
    LTC3880-XF1-1.5v-CH1      1502 mV
ADC 1 status:
  State                       Online
  Intake Temperature          38 degrees C / 100 degrees F
  Exhaust Temperature         48 degrees C / 118 degrees F
  ADC-XF1 Temperature         59 degrees C / 138 degrees F
  ADC-XF0 Temperature         61 degrees C / 141 degrees F
  Power
    LTC3880-XF0-1.0v-RAIL     1029 mV
    LTC3880-XF0-1.0v-CH0      1029 mV
    LTC3880-XF0-1.0v-CH1      1033 mV
    LTC3880-XF0-1.5v-RAIL     1500 mV
    LTC3880-XF0-1.5v-CH0      1500 mV
    LTC3880-XF0-1.5v-CH1      1501 mV
    LTC3880-XF1-1.0v-RAIL     1029 mV
    LTC3880-XF1-1.0v-CH0      1029 mV
    LTC3880-XF1-1.0v-CH1      1033 mV
    LTC3880-XF1-1.5v-RAIL     1500 mV
    LTC3880-XF1-1.5v-CH0      1500 mV
    LTC3880-XF1-1.5v-CH1      1502 mV
ADC 2 status:
  State                       Online
  Intake Temperature          36 degrees C / 96 degrees F
  Exhaust Temperature         50 degrees C / 122 degrees F
  ADC-XF1 Temperature         52 degrees C / 125 degrees F
  ADC-XF0 Temperature         59 degrees C / 138 degrees F
  Power
    LTC3880-XF0-1.0v-RAIL     1030 mV
    LTC3880-XF0-1.0v-CH0      1030 mV
    LTC3880-XF0-1.0v-CH1      1033 mV
    LTC3880-XF0-1.5v-CH0      1499 mV
    LTC3880-XF1-1.0v-RAIL     1029 mV
    LTC3880-XF1-1.0v-CH0      1029 mV
    LTC3880-XF1-1.0v-CH1      1033 mV
    LTC3880-XF1-1.5v-CH0      1500 mV
ADC 3 status:
```

```
  State                       Online
  Intake Temperature          39 degrees C / 102 degrees F
  Exhaust Temperature         50 degrees C / 122 degrees F
  ADC-XF1 Temperature         61 degrees C / 141 degrees F
  ADC-XF0 Temperature         63 degrees C / 145 degrees F
  Power
    LTC3880-XF0-1.0v-RAIL     1030 mV
    LTC3880-XF0-1.0v-CH0      1030 mV
    LTC3880-XF0-1.0v-CH1      1033 mV
    LTC3880-XF0-1.5v-RAIL     1500 mV
    LTC3880-XF0-1.5v-CH0      1500 mV
    LTC3880-XF0-1.5v-CH1      1501 mV
    LTC3880-XF1-1.0v-RAIL     1029 mV
    LTC3880-XF1-1.0v-CH0      1029 mV
    LTC3880-XF1-1.0v-CH1      1033 mV
    LTC3880-XF1-1.5v-RAIL     1500 mV
    LTC3880-XF1-1.5v-CH0      1500 mV
    LTC3880-XF1-1.5v-CH1      1502 mV
ADC 4 status:
  State                       Online
  Intake Temperature          38 degrees C / 100 degrees F
  Exhaust Temperature         49 degrees C / 120 degrees F
  ADC-XF1 Temperature         60 degrees C / 140 degrees F
  ADC-XF0 Temperature         62 degrees C / 143 degrees F
  Power
    LTC3880-XF0-1.0v-RAIL     1029 mV
    LTC3880-XF0-1.0v-CH0      1029 mV
    LTC3880-XF0-1.0v-CH1      1033 mV
    LTC3880-XF0-1.5v-RAIL     1500 mV
    LTC3880-XF0-1.5v-CH0      1500 mV
    LTC3880-XF0-1.5v-CH1      1501 mV
    LTC3880-XF1-1.0v-RAIL     1029 mV
    LTC3880-XF1-1.0v-CH0      1029 mV
    LTC3880-XF1-1.0v-CH1      1033 mV
    LTC3880-XF1-1.5v-RAIL     1500 mV
    LTC3880-XF1-1.5v-CH0      1500 mV
    LTC3880-XF1-1.5v-CH1      1502 mV
ADC 5 status:
  State                       Online
  Intake Temperature          37 degrees C / 98 degrees F
  Exhaust Temperature         52 degrees C / 125 degrees F
  ADC-XF1 Temperature         55 degrees C / 131 degrees F
  ADC-XF0 Temperature         66 degrees C / 150 degrees F
  Power
```

```
    LTC3880-XF0-1.0v-RAIL     1029 mV
    LTC3880-XF0-1.0v-CH0      1029 mV
    LTC3880-XF0-1.0v-CH1      1033 mV
    LTC3880-XF0-1.5v-CH0      1500 mV
    LTC3880-XF1-1.0v-RAIL     1030 mV
    LTC3880-XF1-1.0v-CH0      1030 mV
    LTC3880-XF1-1.0v-CH1      1033 mV
    LTC3880-XF1-1.5v-CH0      1500 mV
ADC 6 status:
  State                     Online
  Intake Temperature        39 degrees C / 102 degrees F
  Exhaust Temperature       51 degrees C / 123 degrees F
  ADC-XF1 Temperature       58 degrees C / 136 degrees F
  ADC-XF0 Temperature       64 degrees C / 147 degrees F
  Power
    LTC3880-XF0-1.0v-RAIL     1029 mV
    LTC3880-XF0-1.0v-CH0      1029 mV
    LTC3880-XF0-1.0v-CH1      1033 mV
    LTC3880-XF0-1.5v-RAIL     1499 mV
    LTC3880-XF0-1.5v-CH0      1499 mV
    LTC3880-XF0-1.5v-CH1      1501 mV
    LTC3880-XF1-1.0v-RAIL     1029 mV
    LTC3880-XF1-1.0v-CH0      1029 mV
    LTC3880-XF1-1.0v-CH1      1033 mV
    LTC3880-XF1-1.5v-RAIL     1499 mV
    LTC3880-XF1-1.5v-CH0      1499 mV
    LTC3880-XF1-1.5v-CH1      1502 mV
ADC 7 status:
  State                     Online
  Intake Temperature        38 degrees C / 100 degrees F
  Exhaust Temperature       52 degrees C / 125 degrees F
  ADC-XF1 Temperature       61 degrees C / 141 degrees F
  ADC-XF0 Temperature       69 degrees C / 156 degrees F
  Power
    LTC3880-XF0-1.0v-RAIL     1029 mV
    LTC3880-XF0-1.0v-CH0      1029 mV
    LTC3880-XF0-1.0v-CH1      1033 mV
    LTC3880-XF0-1.5v-CH0      1499 mV
    LTC3880-XF1-1.0v-RAIL     1029 mV
    LTC3880-XF1-1.0v-CH0      1029 mV
    LTC3880-XF1-1.0v-CH1      1033 mV
    LTC3880-XF1-1.5v-CH0      1500 mV
ADC 8 status:
  State                     Online
```

```
  Intake Temperature         38 degrees C / 100 degrees F
  Exhaust Temperature        50 degrees C / 122 degrees F
  ADC-XF1 Temperature        63 degrees C / 145 degrees F
  ADC-XF0 Temperature        64 degrees C / 147 degrees F
  Power
    LTC3880-XF0-1.0v-RAIL     1029 mV
    LTC3880-XF0-1.0v-CH0      1029 mV
    LTC3880-XF0-1.0v-CH1      1033 mV
    LTC3880-XF0-1.5v-RAIL     1499 mV
    LTC3880-XF0-1.5v-CH0      1499 mV
    LTC3880-XF0-1.5v-CH1      1501 mV
    LTC3880-XF1-1.0v-RAIL     1030 mV
    LTC3880-XF1-1.0v-CH0      1030 mV
    LTC3880-XF1-1.0v-CH1      1033 mV
    LTC3880-XF1-1.5v-RAIL     1499 mV
    LTC3880-XF1-1.5v-CH0      1499 mV
    LTC3880-XF1-1.5v-CH1      1502 mV
ADC 9 status:
  State                      Online
  Intake Temperature         40 degrees C / 104 degrees F
  Exhaust Temperature        50 degrees C / 122 degrees F
  ADC-XF1 Temperature        59 degrees C / 138 degrees F
  ADC-XF0 Temperature        62 degrees C / 143 degrees F
  Power
    LTC3880-XF0-1.0v-RAIL     1029 mV
    LTC3880-XF0-1.0v-CH0      1029 mV
    LTC3880-XF0-1.0v-CH1      1033 mV
    LTC3880-XF0-1.5v-RAIL     1500 mV
    LTC3880-XF0-1.5v-CH0      1500 mV
    LTC3880-XF0-1.5v-CH1      1501 mV
    LTC3880-XF1-1.0v-RAIL     1029 mV
    LTC3880-XF1-1.0v-CH0      1029 mV
    LTC3880-XF1-1.0v-CH1      1033 mV
    LTC3880-XF1-1.5v-RAIL     1499 mV
    LTC3880-XF1-1.5v-CH0      1499 mV
    LTC3880-XF1-1.5v-CH1      1502 mV
ADC 10 status:
  State                      Online
  Intake Temperature         46 degrees C / 114 degrees F
  Exhaust Temperature        52 degrees C / 125 degrees F
  ADC-XF1 Temperature        66 degrees C / 150 degrees F
  ADC-XF0 Temperature        65 degrees C / 149 degrees F
  Power
    LTC3880-XF0-1.0v-RAIL     1030 mV
```

```
    LTC3880-XF0-1.0v-CH0      1030 mV
    LTC3880-XF0-1.0v-CH1      1033 mV
    LTC3880-XF0-1.5v-RAIL     1499 mV
    LTC3880-XF0-1.5v-CH0      1499 mV
    LTC3880-XF0-1.5v-CH1      1501 mV
    LTC3880-XF1-1.0v-RAIL     1029 mV
    LTC3880-XF1-1.0v-CH0      1029 mV
    LTC3880-XF1-1.0v-CH1      1033 mV
    LTC3880-XF1-1.5v-RAIL     1500 mV
    LTC3880-XF1-1.5v-CH0      1500 mV
    LTC3880-XF1-1.5v-CH1      1502 mV
ADC 11 status:
  State                       Online
  Intake Temperature          47 degrees C / 116 degrees F
  Exhaust Temperature         53 degrees C / 127 degrees F
  ADC-XF1 Temperature         64 degrees C / 147 degrees F
  ADC-XF0 Temperature         65 degrees C / 149 degrees F
  Power
    LTC3880-XF0-1.0v-RAIL     1030 mV
    LTC3880-XF0-1.0v-CH0      1030 mV
    LTC3880-XF0-1.0v-CH1      1033 mV
    LTC3880-XF0-1.5v-RAIL     1500 mV
    LTC3880-XF0-1.5v-CH0      1500 mV
    LTC3880-XF0-1.5v-CH1      1501 mV
    LTC3880-XF1-1.0v-RAIL     1029 mV
    LTC3880-XF1-1.0v-CH0      1029 mV
    LTC3880-XF1-1.0v-CH1      1033 mV
    LTC3880-XF1-1.5v-RAIL     1499 mV
    LTC3880-XF1-1.5v-CH0      1499 mV
    LTC3880-XF1-1.5v-CH1      1502 mV
ADC 12 status:
  State                       Online
  Intake Temperature          48 degrees C / 118 degrees F
  Exhaust Temperature         54 degrees C / 129 degrees F
  ADC-XF1 Temperature         66 degrees C / 150 degrees F
  ADC-XF0 Temperature         65 degrees C / 149 degrees F
  Power
    LTC3880-XF0-1.0v-RAIL     1029 mV
    LTC3880-XF0-1.0v-CH0      1029 mV
    LTC3880-XF0-1.0v-CH1      1033 mV
    LTC3880-XF0-1.5v-RAIL     1500 mV
    LTC3880-XF0-1.5v-CH0      1500 mV
    LTC3880-XF0-1.5v-CH1      1501 mV
    LTC3880-XF1-1.0v-RAIL     1029 mV
```

```
    LTC3880-XF1-1.0v-CH0      1029 mV
    LTC3880-XF1-1.0v-CH1      1033 mV
    LTC3880-XF1-1.5v-RAIL     1499 mV
    LTC3880-XF1-1.5v-CH0      1499 mV
    LTC3880-XF1-1.5v-CH1      1502 mV
ADC 13 status:
  State                       Online
  Intake Temperature          48 degrees C / 118 degrees F
  Exhaust Temperature         55 degrees C / 131 degrees F
  ADC-XF1 Temperature         66 degrees C / 150 degrees F
  ADC-XF0 Temperature         67 degrees C / 152 degrees F
  Power
    LTC3880-XF0-1.0v-RAIL     1029 mV
    LTC3880-XF0-1.0v-CH0      1029 mV
    LTC3880-XF0-1.0v-CH1      1033 mV
    LTC3880-XF0-1.5v-RAIL     1500 mV
    LTC3880-XF0-1.5v-CH0      1500 mV
    LTC3880-XF0-1.5v-CH1      1501 mV
    LTC3880-XF1-1.0v-RAIL     1030 mV
    LTC3880-XF1-1.0v-CH0      1030 mV
    LTC3880-XF1-1.0v-CH1      1034 mV
    LTC3880-XF1-1.5v-RAIL     1500 mV
    LTC3880-XF1-1.5v-CH0      1500 mV
    LTC3880-XF1-1.5v-CH1      1503 mV
ADC 14 status:
  State                       Online
  Intake Temperature          50 degrees C / 122 degrees F
  Exhaust Temperature         57 degrees C / 134 degrees F
  ADC-XF1 Temperature         68 degrees C / 154 degrees F
  ADC-XF0 Temperature         72 degrees C / 161 degrees F
  Power
    LTC3880-XF0-1.0v-RAIL     1030 mV
    LTC3880-XF0-1.0v-CH0      1030 mV
    LTC3880-XF0-1.0v-CH1      1034 mV
    LTC3880-XF0-1.5v-RAIL     1499 mV
    LTC3880-XF0-1.5v-CH0      1499 mV
    LTC3880-XF0-1.5v-CH1      1501 mV
    LTC3880-XF1-1.0v-RAIL     1030 mV
    LTC3880-XF1-1.0v-CH0      1030 mV
    LTC3880-XF1-1.0v-CH1      1034 mV
    LTC3880-XF1-1.5v-RAIL     1499 mV
    LTC3880-XF1-1.5v-CH0      1499 mV
    LTC3880-XF1-1.5v-CH1      1502 mV
ADC 15 status:
```

```
  State                      Online
  Intake Temperature         49 degrees C / 120 degrees F
  Exhaust Temperature        56 degrees C / 132 degrees F
  ADC-XF1 Temperature        68 degrees C / 154 degrees F
  ADC-XF0 Temperature        68 degrees C / 154 degrees F
  Power
    LTC3880-XF0-1.0v-RAIL     1030 mV
    LTC3880-XF0-1.0v-CH0      1030 mV
    LTC3880-XF0-1.0v-CH1      1034 mV
    LTC3880-XF0-1.5v-RAIL     1499 mV
    LTC3880-XF0-1.5v-CH0      1499 mV
    LTC3880-XF0-1.5v-CH1      1501 mV
    LTC3880-XF1-1.0v-RAIL     1030 mV
    LTC3880-XF1-1.0v-CH0      1030 mV
    LTC3880-XF1-1.0v-CH1      1034 mV
    LTC3880-XF1-1.5v-RAIL     1499 mV
    LTC3880-XF1-1.5v-CH0      1499 mV
    LTC3880-XF1-1.5v-CH1      1502 mV
ADC 16 status:
  State                      Online
  Intake Temperature         51 degrees C / 123 degrees F
  Exhaust Temperature        56 degrees C / 132 degrees F
  ADC-XF1 Temperature        67 degrees C / 152 degrees F
  ADC-XF0 Temperature        68 degrees C / 154 degrees F
  Power
    LTC3880-XF0-1.0v-RAIL     1029 mV
    LTC3880-XF0-1.0v-CH0      1029 mV
    LTC3880-XF0-1.0v-CH1      1033 mV
    LTC3880-XF0-1.5v-RAIL     1499 mV
    LTC3880-XF0-1.5v-CH0      1499 mV
    LTC3880-XF0-1.5v-CH1      1501 mV
    LTC3880-XF1-1.0v-RAIL     1029 mV
    LTC3880-XF1-1.0v-CH0      1029 mV
    LTC3880-XF1-1.0v-CH1      1033 mV
    LTC3880-XF1-1.5v-RAIL     1500 mV
    LTC3880-XF1-1.5v-CH0      1500 mV
    LTC3880-XF1-1.5v-CH1      1502 mV
ADC 17 status:
  State                      Online
  Intake Temperature         51 degrees C / 123 degrees F
  Exhaust Temperature        56 degrees C / 132 degrees F
  ADC-XF1 Temperature        68 degrees C / 154 degrees F
  ADC-XF0 Temperature        69 degrees C / 156 degrees F
  Power
```

```
    LTC3880-XF0-1.0v-RAIL     1030 mV
    LTC3880-XF0-1.0v-CH0      1030 mV
    LTC3880-XF0-1.0v-CH1      1033 mV
    LTC3880-XF0-1.5v-RAIL     1500 mV
    LTC3880-XF0-1.5v-CH0      1500 mV
    LTC3880-XF0-1.5v-CH1      1501 mV
    LTC3880-XF1-1.0v-RAIL     1030 mV
    LTC3880-XF1-1.0v-CH0      1030 mV
    LTC3880-XF1-1.0v-CH1      1034 mV
    LTC3880-XF1-1.5v-RAIL     1500 mV
    LTC3880-XF1-1.5v-CH0      1500 mV
    LTC3880-XF1-1.5v-CH1      1502 mV
ADC 18 status:
  State                       Online
  Intake Temperature          52 degrees C / 125 degrees F
  Exhaust Temperature         57 degrees C / 134 degrees F
  ADC-XF1 Temperature         66 degrees C / 150 degrees F
  ADC-XF0 Temperature         71 degrees C / 159 degrees F
  Power
    LTC3880-XF0-1.0v-RAIL     1030 mV
    LTC3880-XF0-1.0v-CH0      1030 mV
    LTC3880-XF0-1.0v-CH1      1034 mV
    LTC3880-XF0-1.5v-RAIL     1499 mV
    LTC3880-XF0-1.5v-CH0      1499 mV
    LTC3880-XF0-1.5v-CH1      1501 mV
    LTC3880-XF1-1.0v-RAIL     1030 mV
    LTC3880-XF1-1.0v-CH0      1030 mV
    LTC3880-XF1-1.0v-CH1      1034 mV
    LTC3880-XF1-1.5v-RAIL     1500 mV
    LTC3880-XF1-1.5v-CH0      1500 mV
    LTC3880-XF1-1.5v-CH1      1502 mV
ADC 19 status:
  State                       Online
  Intake Temperature          49 degrees C / 120 degrees F
  Exhaust Temperature         56 degrees C / 132 degrees F
  ADC-XF1 Temperature         67 degrees C / 152 degrees F
  ADC-XF0 Temperature         70 degrees C / 158 degrees F
  Power
    LTC3880-XF0-1.0v-RAIL     1029 mV
    LTC3880-XF0-1.0v-CH0      1029 mV
    LTC3880-XF0-1.0v-CH1      1033 mV
    LTC3880-XF0-1.5v-RAIL     1499 mV
    LTC3880-XF0-1.5v-CH0      1499 mV
    LTC3880-XF0-1.5v-CH1      1501 mV
```

```
    LTC3880-XF1-1.0v-RAIL     1030 mV
    LTC3880-XF1-1.0v-CH0      1030 mV
    LTC3880-XF1-1.0v-CH1      1033 mV
    LTC3880-XF1-1.5v-RAIL     1500 mV
    LTC3880-XF1-1.5v-CH0      1500 mV
    LTC3880-XF1-1.5v-CH1      1502 mV
```

show chassis environment adc (MX2010 Router)

`user@host>` **show chassis environment adc**

```
ADC 0 status:
  State                      Online
  Intake Temperature         33 degrees C / 91 degrees F
  Exhaust Temperature        42 degrees C / 107 degrees F
  ADC-XF1 Temperature        46 degrees C / 114 degrees F
  ADC-XF0 Temperature        53 degrees C / 127 degrees F
  Power
    LTC3880-XF0-1.0v-RAIL      998 mV
    LTC3880-XF0-1.0v-CH0       998 mV
    LTC3880-XF0-1.0v-CH1      1001 mV
    LTC3880-XF0-1.5v-RAIL     1454 mV
    LTC3880-XF0-1.5v-CH0      1454 mV
    LTC3880-XF0-1.5v-CH1      1456 mV
    LTC3880-XF1-1.0v-RAIL      998 mV
    LTC3880-XF1-1.0v-CH0       998 mV
    LTC3880-XF1-1.0v-CH1      1002 mV
    LTC3880-XF1-1.5v-RAIL     1454 mV
    LTC3880-XF1-1.5v-CH0      1454 mV
    LTC3880-XF1-1.5v-CH1      1457 mV
ADC 1 status:
  State                      Online
  Intake Temperature         32 degrees C / 89 degrees F
  Exhaust Temperature        42 degrees C / 107 degrees F
  ADC-XF1 Temperature        44 degrees C / 111 degrees F
  ADC-XF0 Temperature        52 degrees C / 125 degrees F
  Power
    LTC3880-XF0-1.0v-RAIL      998 mV
    LTC3880-XF0-1.0v-CH0       998 mV
    LTC3880-XF0-1.0v-CH1      1002 mV
    LTC3880-XF0-1.5v-RAIL     1454 mV
    LTC3880-XF0-1.5v-CH0      1454 mV
    LTC3880-XF0-1.5v-CH1      1456 mV
    LTC3880-XF1-1.0v-RAIL      999 mV
```

```
    LTC3880-XF1-1.0v-CH0       999 mV
    LTC3880-XF1-1.0v-CH1      1002 mV
    LTC3880-XF1-1.5v-RAIL     1454 mV
    LTC3880-XF1-1.5v-CH0      1454 mV
    LTC3880-XF1-1.5v-CH1      1456 mV
ADC 2 status:
  State                       Online
  Intake Temperature          35 degrees C / 95 degrees F
  Exhaust Temperature         42 degrees C / 107 degrees F
  ADC-XF1 Temperature         48 degrees C / 118 degrees F
  ADC-XF0 Temperature         54 degrees C / 129 degrees F
  Power
    LTC3880-XF0-1.0v-RAIL     1030 mV
    LTC3880-XF0-1.0v-CH0      1030 mV
    LTC3880-XF0-1.0v-CH1      1033 mV
    LTC3880-XF0-1.5v-RAIL     1500 mV
    LTC3880-XF0-1.5v-CH0      1500 mV
    LTC3880-XF0-1.5v-CH1      1501 mV
    LTC3880-XF1-1.0v-RAIL     1029 mV
    LTC3880-XF1-1.0v-CH0      1029 mV
    LTC3880-XF1-1.0v-CH1      1033 mV
    LTC3880-XF1-1.5v-RAIL     1499 mV
    LTC3880-XF1-1.5v-CH0      1499 mV
LTC3880-XF1-1.5v-CH1      1502 mV
ADC 3 status:
  State                       Online
  Intake Temperature          35 degrees C / 95 degrees F
  Exhaust Temperature         40 degrees C / 104 degrees F
  ADC-XF1 Temperature         44 degrees C / 111 degrees F
  ADC-XF0 Temperature         51 degrees C / 123 degrees F
  Power
    LTC3880-XF0-1.0v-RAIL      999 mV
    LTC3880-XF0-1.0v-CH0       999 mV
    LTC3880-XF0-1.0v-CH1      1002 mV
    LTC3880-XF0-1.5v-RAIL     1454 mV
    LTC3880-XF0-1.5v-CH0      1454 mV
    LTC3880-XF0-1.5v-CH1      1456 mV
    LTC3880-XF1-1.0v-RAIL      999 mV
    LTC3880-XF1-1.0v-CH0       999 mV
    LTC3880-XF1-1.0v-CH1      1002 mV
    LTC3880-XF1-1.5v-RAIL     1454 mV
    LTC3880-XF1-1.5v-CH0      1454 mV
    LTC3880-XF1-1.5v-CH1      1457 mV
ADC 4 status:
```

```
  State                      Online
  Intake Temperature         31 degrees C / 87 degrees F
  Exhaust Temperature        43 degrees C / 109 degrees F
  ADC-XF1 Temperature        48 degrees C / 118 degrees F
  ADC-XF0 Temperature        56 degrees C / 132 degrees F
  Power
    LTC3880-XF0-1.0v-RAIL     1029 mV
    LTC3880-XF0-1.0v-CH0      1029 mV
    LTC3880-XF0-1.0v-CH1      1033 mV
    LTC3880-XF0-1.5v-RAIL     1499 mV
    LTC3880-XF0-1.5v-CH0      1499 mV
    LTC3880-XF0-1.5v-CH1      1501 mV
    LTC3880-XF1-1.0v-RAIL     1030 mV
    LTC3880-XF1-1.0v-CH0      1030 mV
    LTC3880-XF1-1.0v-CH1      1033 mV
    LTC3880-XF1-1.5v-RAIL     1499 mV
    LTC3880-XF1-1.5v-CH0      1499 mV
    LTC3880-XF1-1.5v-CH1      1502 mV
ADC 5 status:
  State                      Online
  Intake Temperature         33 degrees C / 91 degrees F
  Exhaust Temperature        43 degrees C / 109 degrees F
  ADC-XF1 Temperature        47 degrees C / 116 degrees F
  ADC-XF0 Temperature        54 degrees C / 129 degrees F
  Power
    LTC3880-XF0-1.0v-RAIL      999 mV
    LTC3880-XF0-1.0v-CH0       999 mV
    LTC3880-XF0-1.0v-CH1      1002 mV
    LTC3880-XF0-1.5v-RAIL     1454 mV
    LTC3880-XF0-1.5v-CH0      1454 mV
    LTC3880-XF0-1.5v-CH1      1456 mV
    LTC3880-XF1-1.0v-RAIL      998 mV
    LTC3880-XF1-1.0v-CH0       998 mV
    LTC3880-XF1-1.0v-CH1      1002 mV
    LTC3880-XF1-1.5v-RAIL     1454 mV
 LTC3880-XF1-1.5v-CH0      1454 mV
    LTC3880-XF1-1.5v-CH1      1457 mV
ADC 6 status:
  State                      Online
  Intake Temperature         32 degrees C / 89 degrees F
  Exhaust Temperature        42 degrees C / 107 degrees F
  ADC-XF1 Temperature        47 degrees C / 116 degrees F
  ADC-XF0 Temperature        55 degrees C / 131 degrees F
  Power
```

```
    LTC3880-XF0-1.0v-RAIL     1030 mV
    LTC3880-XF0-1.0v-CH0      1030 mV
    LTC3880-XF0-1.0v-CH1      1033 mV
    LTC3880-XF0-1.5v-RAIL     1499 mV
    LTC3880-XF0-1.5v-CH0      1499 mV
    LTC3880-XF0-1.5v-CH1      1501 mV
    LTC3880-XF1-1.0v-RAIL     1030 mV
    LTC3880-XF1-1.0v-CH0      1030 mV
    LTC3880-XF1-1.0v-CH1      1033 mV
    LTC3880-XF1-1.5v-RAIL     1499 mV
    LTC3880-XF1-1.5v-CH0      1499 mV
    LTC3880-XF1-1.5v-CH1      1502 mV
ADC 7 status:
  State                       Online
  Intake Temperature          36 degrees C / 96 degrees F
  Exhaust Temperature         43 degrees C / 109 degrees F
  ADC-XF1 Temperature         46 degrees C / 114 degrees F
  ADC-XF0 Temperature         55 degrees C / 131 degrees F
  Power
    LTC3880-XF0-1.0v-RAIL     1030 mV
    LTC3880-XF0-1.0v-CH0      1030 mV
    LTC3880-XF0-1.0v-CH1      1033 mV
    LTC3880-XF0-1.5v-RAIL     1500 mV
    LTC3880-XF0-1.5v-CH0      1500 mV
    LTC3880-XF0-1.5v-CH1      1501 mV
    LTC3880-XF1-1.0v-RAIL     1030 mV
    LTC3880-XF1-1.0v-CH0      1030 mV
    LTC3880-XF1-1.0v-CH1      1033 mV
    LTC3880-XF1-1.5v-RAIL     1499 mV
    LTC3880-XF1-1.5v-CH0      1499 mV
    LTC3880-XF1-1.5v-CH1      1502 mV
ADC 8 status:
  State                       Online
  Intake Temperature          35 degrees C / 95 degrees F
  Exhaust Temperature         43 degrees C / 109 degrees F
  ADC-XF1 Temperature         44 degrees C / 111 degrees F
  ADC-XF0 Temperature         51 degrees C / 123 degrees F
  Power
    LTC3880-XF0-1.0v-RAIL      999 mV
    LTC3880-XF0-1.0v-CH0       999 mV
    LTC3880-XF0-1.0v-CH1      1002 mV
    LTC3880-XF0-1.5v-RAIL     1455 mV
    LTC3880-XF0-1.5v-CH0      1455 mV
    LTC3880-XF0-1.5v-CH1      1456 mV
```

```
    LTC3880-XF1-1.0v-RAIL      999 mV
    LTC3880-XF1-1.0v-CH0       999 mV
    LTC3880-XF1-1.0v-CH1      1002 mV
 LTC3880-XF1-1.5v-RAIL     1455 mV
    LTC3880-XF1-1.5v-CH0      1455 mV
    LTC3880-XF1-1.5v-CH1      1457 mV
ADC 9 status:
  State                      Online
  Intake Temperature         31 degrees C / 87 degrees F
  Exhaust Temperature        43 degrees C / 109 degrees F
  ADC-XF1 Temperature        48 degrees C / 118 degrees F
  ADC-XF0 Temperature        56 degrees C / 132 degrees F
  Power
    LTC3880-XF0-1.0v-RAIL     1029 mV
    LTC3880-XF0-1.0v-CH0      1029 mV
    LTC3880-XF0-1.0v-CH1      1033 mV
    LTC3880-XF0-1.5v-RAIL     1455 mV
    LTC3880-XF0-1.5v-CH0      1455 mV
    LTC3880-XF0-1.5v-CH1      1457 mV
    LTC3880-XF1-1.0v-RAIL     1029 mV
    LTC3880-XF1-1.0v-CH0      1029 mV
    LTC3880-XF1-1.0v-CH1      1033 mV
    LTC3880-XF1-1.5v-RAIL     1454 mV
    LTC3880-XF1-1.5v-CH0      1454 mV
    LTC3880-XF1-1.5v-CH1      1457 mV
```

show chassis environment adc (MX2008 Router)

`user@host>` **show chassis environment adc**

```
ADC 7 status:
  State                      Online
  Intake Temperature         32 degrees C / 89 degrees F
  Exhaust Temperature        39 degrees C / 102 degrees F
  ADC-XF1 Temperature        46 degrees C / 114 degrees F
  ADC-XF0 Temperature        54 degrees C / 129 degrees F
  Power
    LTC3880-XF0-1.0v-RAIL       1029 mV
    LTC3880-XF0-1.0v-CH0        1029 mV
    LTC3880-XF0-1.0v-CH1        1033 mV
    LTC3880-XF0-1.5v-RAIL       1499 mV
    LTC3880-XF0-1.5v-CH0        1499 mV
    LTC3880-XF0-1.5v-CH1        1501 mV
    LTC3880-XF1-1.0v-RAIL       1029 mV
```

```
LTC3880-XF1-1.0v-CH0        1029 mV
LTC3880-XF1-1.0v-CH1        1033 mV
LTC3880-XF1-1.5v-RAIL       1499 mV
LTC3880-XF1-1.5v-CH0        1499 mV
LTC3880-XF1-1.5v-CH1        1502 mV
ADC-2.5V                    2851 mV
ADC-3.3V                    3787 mV
```

show chassis environment cb

List of Syntax

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Syntax (TX Matrix Routers) on page 888
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Syntax (MX Series Routers) on page 888
Syntax (MX104 Universal Routing Platforms) on page 888
Syntax (MX2010, MX2020, MX10003, MX204, MX2008, and MX10008 Universal Routing Platforms; EX9251 and EX9253 Switches) on page 889
Syntax (QFabric System) on page 889

Syntax

```
show chassis environment cb
<slot>
```

Syntax (TX Matrix Routers)

```
show chassis environment cb
<lcc number | scc>
<slot>
```

Syntax (TX Matrix Plus Routers)

```
show chassis environment cb
<lcc number | sfc number >
<slot>
```

Syntax (MX Series Routers)

```
show chassis environment cb
<slot>
<all-members>
<local>
<member member-id>
```

Syntax (MX104 Universal Routing Platforms)

```
show chassis environment cb
```

Syntax (MX2010, MX2020, MX10003, MX204, MX2008, and MX10008 Universal Routing Platforms; EX9251 and EX9253 Switches)

```
show chassis environment cb
<slot>
```

Syntax (QFabric System)

```
show chassis environment cb
<slot interconnect-device interconnect-device-name>
< interconnect-device interconnect-device-name slot>
```

Release Information

Command introduced before Junos Release 7.4.
Command introduced in Junos OS Release 9.4 for EX Series switches.
Command introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers.
Command introduced in Junos OS Release 12.1 for T4000 Core Routers.
option introduced for the TX Matrix Plus router in Junos Release 9.6.
Command introduced in Junos OS Release 11.3 for the QFX Series.
Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 Universal Routing Platforms.
Command introduced in Junos OS Release 13.2 for MX104 Universal Routing Platforms.
Command introduced in Junos OS Release 17.2 for MX2008 Universal Routing Platforms and PTX10008 Routers.
Command introduced in Junos OS Release 17.3 for MX10003 Universal Routing Platforms.
Command introduced in Junos OS Release 17.4 for MX204 Universal Routing Platforms.
Command introduced in Junos OS Release 18.1R1 for EX9251 switches.
Command introduced in Junos OS Release 18.2R1 for MX10008 Universal Routing Platforms, and EX9253 switches.

Description

(M120, M320, MX Series, and T Series routers, EX8200 switches, and PTX Series Packet Transport Routers only) Display environmental information about the Control Boards (CBs).

Options

none—Display environmental information about all CBs. For a TX Matrix router, display environmental information about all CBs on the TX Matrix router and its attached T640 routers. For a TX Matrix Plus router, display environmental information about all CBs on the TX Matrix Plus router and its attached T1600 or T4000 routers.

all-members—(MX Series routers only) (Optional) Display environmental information about the CBs on all the members of the Virtual Chassis configuration.

interconnect-device—(QFabric systems only) Display environmental information about CBs on the Interconnect device.

lcc *number*—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

local—(MX Series routers only) (Optional) Display environmental information about the CBs on the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display environmental information about the CBs on the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value of 0 or 1.

scc—(TX Matrix router only) (Optional) Display environmental information about the CBs in the TX Matrix router (switch-card chassis).

sfc *number*—(TX Matrix Plus router only) (Optional) Display environmental information about the CBs in the TX Matrix Plus router (or switch-fabric chassis).

slot—(Optional) Display environmental information about the specified CB. On routers and PTX Series Packet Transport Routers, replace ***slot*** with **0** or **1**. On EX Series switches replace ***slot*** with **0**, **1**, or **2**. On QFX Series switches, replace ***slot*** with **0** or **1**.

Required Privilege Level
view

RELATED DOCUMENTATION

request chassis cb | **602**

Understanding Switching Control Board Redundancy

List of Sample Output
show chassis environment cb (M120 Router) on page 892
show chassis environment cb (M320 Router) on page 893
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show chassis environment cb (MX240 Router) on page 895
show chassis environment cb (MX240 Router with Enhanced MX SCB) on page 895
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show chassis environment cb (MX960 Router) on page 897
show chassis environment cb (MX960 Router with Enhanced MX SCB) on page 898
show chassis environment cb (MX2020 Router) on page 899
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show chassis environment cb (T4000 Core Router) on page 906
show chassis environment cb (TX Matrix Router) on page 907
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show chassis environment cb (EX8200 Switch) on page 913
show chassis environment cb (EX8208 Switch) on page 915
show chassis environment cb (EX9251 Switch) on page 916
show chassis environment cb (EX9253 Switch) on page 918
show chassis environment cb (PTX5000 Packet Transport Router) on page 919
show chassis environment cb (PTX10008 Router) on page 919
show chassis environment cb (PTX10016 Router) on page 921
show chassis environment cb (QFabric System) on page 922
show chassis environment cb 0 (PTX10003-80C and PTX10003-160C Routers) on page 923

Output Fields

Table 40 on page 891 lists the output fields for the **show chassis environment cb** command. Output fields are listed in the approximate order in which they appear.

Table 40: show chassis environment cb Output Fields

Field Name	Field Description
State	Status of the CB. If two CBs are installed and online, one is functioning as the master, and the other is the standby. • **Online**—CB is online and running. • **Offline**— CB is powered down. **NOTE:** On the EX8208 switch, the installation can include three CBs.

Table 40: show chassis environment cb Output Fields *(continued)*

Field Name	Field Description
Temperature	Temperature in Celsius (C) and Fahrenheit (F) of the air flowing past the CB. • **Temperature Intake**—Measures the temperature of the air intake to cool the power supplies. • **Temperature Exhaust**—Measures the temperature of the hot air exhaust. **NOTE:** On the MX2010, MX2020, and MX2008 routers, the intake temperature measures the temperature of the air intake to cool the Control Board (CB). The MX2010, MX2020, and MX2008 routers include intake and exhaust temperatures for multiple zones (**Intake A**, **Intake B**, **Intake C**, **Exhaust A**, **Exhaust B**, and **TCBC**).
Power	Power required and measured on the CB. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
BUS Revision	Revision level of the generic bus device. (Not on switches.)
FPGA Revision	Revision level of the field-programmable gate array (FPGA). (Not on switches.)
PMBus device (on MX240, MX480, and MX960 routers with Enhanced MX SCB)	Enhanced SCB on MX 240, MX480, and MX960 routers allows the system to save power by supplying only the amount of voltage that is required. Configurable PMBus devices are used to provide the voltage for each individual device. There is one PMBus device for each XF ASIC so that the output can be customized to each device. The following PMBus device information is displayed for routers with Enhanced MX SCB: • **Expected voltage** • **Measured voltage** • **Measured current** • **Calculated power**

Sample Output

show chassis environment cb (M120 Router)

```
user@host> show chassis environment cb
```

```
CB 0 status:
  State                    Online Master
  Temperature              33 degrees C / 91 degrees F
  Power
    1.2 V                   1214 mV
```

```
    1.5 V                     1495 mV
    2.5 V                     2494 mV
    3.3 V                     3319 mV
    5.0 V                     5085 mV
    3.3 V bias                3296 mV
  Bus Revision               12
  FPGA Revision              17
CB 1 status:
  State                      Online Standby
  Temperature                34 degrees C / 93 degrees F
  Power
    1.2 V                     1195 mV
    1.5 V                     1495 mV
    2.5 V                     2504 mV
    3.3 V                     3312 mV
    5.0 V                     5111 mV
    3.3 V bias                3296 mV
  Bus Revision               12
  FPGA Revision              17
```

show chassis environment cb (M320 Router)

`user@host>` **show chassis environment cb**

```
CB 0 status:
  State                          Online Master
  Temperature                 29 degrees C / 84 degrees F
  Power:
    1.8 V                    1805 mV
    2.5 V                    2501 mV
    3.3 V                    3293 mV
    4.6 V                    4725 mV
    5.0 V                    5032 mV
    12.0 V                  11975 mV
    3.3 V bias               3286 mV
    8.0 V bias               7589 mV
  BUS Revision                  40
  FPGA Revision                  7
CB 1 status:
  State                          Online Standby
  Temperature                 32 degrees C / 89 degrees F
  Power:
    1.8 V                    1802 mV
    2.5 V                    2482 mV
```

```
    3.3 V                    3289 mV
    4.6 V                    4720 mV
    5.0 V                    5001 mV
    12.0 V                  11946 mV
    3.3 V bias               3274 mV
    8.0 V bias               7562 mV
  BUS Revision                 40
  FPGA Revision                 7
```

show chassis environment cb (MX80 Router)

`user@host>` **show chassis environment cb**

```
CB 0 status:
  State                      Online Master
  Temperature                36 degrees C / 96 degrees F
  Power 1
    1.0 V                     1034 mV
    1.0 V MQ                  1037 mV
    1.0 V LU                  1005 mV
    1.2 V                     1218 mV
    1.5 V                     1524 mV
    1.8 V                     1814 mV
    2.5 V                     2558 mV
    3.3 V                     3296 mV
    5.0 V                     5233 mV
    5.0 V bias                5207 mV
    12.0 V                   12162 mV
```

show chassis environment cb (MX104 Router)

`user@host >` **show chassis environment cb**

```
CB 0 status:
  State                      Online Master
  Temperature                33 degrees C / 91 degrees F
  Power 1
    0.75 V                     751 mV
    1.0 V                     1005 mV
    1.1 V                     1113 mV
    1.5 V                     1494 mV
    2.5 V                     2518 mV
    3.3 V                     3338 mV
```

```
    5.0 V                     4960 mV
    12.0 V                   12006 mV
  FPGA Revision              25
CB 1 status:
  State                      Empty
```

show chassis environment cb (MX240 Router)

`user@host>` **show chassis environment cb**

```
CB 0 status:
  State                      Online Standby
  Temperature                37 degrees C / 98 degrees F
  Power 1
    1.2 V                     1208 mV
    1.5 V                     1521 mV
    1.8 V                     1811 mV
    2.5 V                     2513 mV
    3.3 V                     3332 mV
    5.0 V                     5059 mV
    12.0 V                   12162 mV
    1.25 V                    1260 mV
    3.3 V SM3                 3306 mV
    5.0 V RE                  5085 mV
    12.0 V RE                11872 mV
  Power 2
    11.3 V bias PEM          11272 mV
    4.6 V bias MidPlane       4827 mV
    11.3 V bias FPD          11272 mV
    11.3 V bias POE 0        11292 mV
    11.3 V bias POE 1        11253 mV
  Bus Revision               42
  FPGA Revision              1
```

show chassis environment cb (MX240 Router with Enhanced MX SCB)

`user@host>` **show chassis environment cb**

```
CB 0 status:
  State                      Online Standby
  Temperature                37 degrees C / 98 degrees F
  Power 1
    1.2 V                     1208 mV
```

```
    1.5 V                      1521 mV
    1.8 V                      1811 mV
    2.5 V                      2513 mV
    3.3 V                      3332 mV
    5.0 V                      5059 mV
    12.0 V                    12162 mV
    1.25 V                     1260 mV
    3.3 V SM3                  3306 mV
    5.0 V RE                   5085 mV
    12.0 V RE                 11872 mV
  Power 2
    11.3 V bias PEM           11272 mV
    4.6 V bias MidPlane        4827 mV
    11.3 V bias FPD           11272 mV
    11.3 V bias POE 0         11292 mV
    11.3 V bias POE 1         11253 mV
  Bus Revision                42
  FPGA Revision               1
  PMBus             Expected   Measured   Measured  Calculated
  device            voltage    voltage    current   power
    XF ASIC A        1000 mV     997 mV   11031 mA   10997 mW
    XF ASIC B        1000 mV     996 mV   12125 mA   12076 mW
```

show chassis environment cb (MX480 Router)

`user@host>` **show chassis environment cb**

```
CB 0 status:
  State                      Online Master
  Temperature                41 degrees C / 105 degrees F
  Power 1
    1.2 V                     1202 mV
    1.5 V                     1511 mV
    1.8 V                     1798 mV
    2.5 V                     2507 mV
    3.3 V                     3312 mV
    5.0 V                     5027 mV
    12.0 V                   12200 mV
    1.25 V                    1260 mV
    3.3 V SM3                 3293 mV
    5 V RE                    5040 mV
    12 V RE                  11910 mV
  Power 2
    11.3 V bias PEM          11156 mV
```

```
    4.6 V bias MidPlane       4801 mV
    11.3 V bias FPD          11214 mV
    11.3 V bias POE 0        11098 mV
    11.3 V bias POE 1        11330 mV
  Bus Revision               42
  FPGA Revision              1
```

show chassis environment cb (MX480 Router with Enhanced MX SCB)

```
user@host> show chassis environment cb
```

```
CB 0 status:
  State                      Online Master
  Temperature                41 degrees C / 105 degrees F
  Power 1
    1.2 V                     1202 mV
    1.5 V                     1511 mV
    1.8 V                     1798 mV
    2.5 V                     2507 mV
    3.3 V                     3312 mV
    5.0 V                     5027 mV
    12.0 V                   12200 mV
    1.25 V                    1260 mV
    3.3 V SM3                 3293 mV
    5 V RE                    5040 mV
    12 V RE                  11910 mV
  Power 2
    11.3 V bias PEM          11156 mV
    4.6 V bias MidPlane       4801 mV
    11.3 V bias FPD          11214 mV
    11.3 V bias POE 0        11098 mV
    11.3 V bias POE 1        11330 mV
  Bus Revision               42
  FPGA Revision              1
  PMBus             Expected   Measured   Measured  Calculated
  device            voltage    voltage    current   power
    XF ASIC A        1000 mV     997 mV   11031 mA   10997 mW
    XF ASIC B        1000 mV     996 mV   12125 mA   12076 mW
```

show chassis environment cb (MX960 Router)

```
user@host> show chassis environment cb
```

```
CB 0 status:
  State                     Online Master
  Temperature               24 degrees C / 75 degrees F
  Power 1
    1.2 V                    1965 mV
    1.5 V                    2465 mV
    1.8 V                    2990 mV
    2.5 V                    3296 mV
    3.3 V                    3296 mV
    5.0 V                    6593 mV
    12.0 V                  13187 mV
    3.3 V bias               3296 mV
    1.25 V                   1994 mV
    3.3 V SM3                3296 mV
    5 V RE                   6593 mV
    12 V RE                 13174 mV
  Power 2                   Sensor failure
  Bus Revision              4
  FPGA Revision             3
```

show chassis environment cb (MX960 Router with Enhanced MX SCB)

`user@host>` **show chassis environment cb**

```
CB 0 status:
  State                     Online Master
  Temperature               24 degrees C / 75 degrees F
  Power 1
    1.2 V                    1965 mV
    1.5 V                    2465 mV
    1.8 V                    2990 mV
    2.5 V                    3296 mV
    3.3 V                    3296 mV
    5.0 V                    6593 mV
    12.0 V                  13187 mV
    3.3 V bias               3296 mV
    1.25 V                   1994 mV
    3.3 V SM3                3296 mV
    5 V RE                   6593 mV
    12 V RE                 13174 mV
  Power 2                   Sensor failure
  Bus Revision              4
  FPGA Revision             3
  PMBus             Expected   Measured   Measured  Calculated
```

```
  device            voltage    voltage    current   power
    XF ASIC A        1000 mV     997 mV   11031 mA   10997 mW
    XF ASIC B        1000 mV     996 mV   12125 mA   12076 mW
```

show chassis environment cb (MX2020 Router)

`user@host>` **show chassis environment cb**

```
CB 0 status:
  State                      Online Master
  IntakeA-Zone0 Temperature  44 degrees C / 111 degrees F
  IntakeB-Zone1 Temperature  34 degrees C / 93 degrees F
  IntakeC-Zone0 Temperature  45 degrees C / 113 degrees F
  ExhaustA-Zone0 Temperature 43 degrees C / 109 degrees F
  ExhaustB-Zone1 Temperature 36 degrees C / 96 degrees F
  TCBC-Zone0 Temperature     39 degrees C / 102 degrees F
  Power 1
    1.0 V                     1011 mV
    1.2 V                     1208 mV
    1.8 V                     1801 mV
    2.5 V                     2552 mV
    3.3 V                     3312 mV
    5.0 V                     5040 mV
    5.0 V RE                  4988 mV
    12.0 V                   12065 mV
    12.0 V RE                12046 mV
  Bus Revision               99
  FPGA Revision              270
CB 1 status:
  State                      Online Standby
  IntakeA-Zone0 Temperature  45 degrees C / 113 degrees F
  IntakeB-Zone1 Temperature  41 degrees C / 105 degrees F
  IntakeC-Zone0 Temperature  46 degrees C / 114 degrees F
  ExhaustA-Zone0 Temperature 44 degrees C / 111 degrees F
  ExhaustB-Zone1 Temperature 41 degrees C / 105 degrees F
  TCBC-Zone0 Temperature     45 degrees C / 113 degrees F
  Power 1
    1.0 V                     1008 mV
    1.2 V                     1208 mV
    1.8 V                     1798 mV
    2.5 V                     2539 mV
    3.3 V                     3325 mV
    5.0 V                     5033 mV
    5.0 V RE                  4950 mV
```

```
    12.0 V                   12046 mV
    12.0 V RE                11968 mV
  Bus Revision               99
  FPGA Revision              0
```

show chassis environment cb (MX2010 Router)

`user@host>` **show chassis environment cb**

```
CB 0 status:
  State                      Online Master
  IntakeA-Zone0 Temperature  36 degrees C / 96 degrees F
  IntakeB-Zone1 Temperature  30 degrees C / 86 degrees F
  IntakeC-Zone0 Temperature  38 degrees C / 100 degrees F
  ExhaustA-Zone0 Temperature 36 degrees C / 96 degrees F
  ExhaustB-Zone1 Temperature 32 degrees C / 89 degrees F
  TCBC-Zone0 Temperature     34 degrees C / 93 degrees F
  Power 1
    1.0 V                     1015 mV
    1.2 V                     1205 mV
    1.8 V                     1804 mV
    2.5 V                     2552 mV
    3.3 V                     3325 mV
    5.0 V                     5020 mV
    5.0 V RE                  4988 mV
    12.0 V                   12104 mV
    12.0 V RE                12026 mV
  Bus Revision               100
  FPGA Revision              270
CB 1 status:
  State                      Online
  IntakeA-Zone0 Temperature  35 degrees C / 95 degrees F
  IntakeB-Zone1 Temperature  28 degrees C / 82 degrees F
  IntakeC-Zone0 Temperature  37 degrees C / 98 degrees F
  ExhaustA-Zone0 Temperature 34 degrees C / 93 degrees F
  ExhaustB-Zone1 Temperature 29 degrees C / 84 degrees F
  TCBC-Zone0 Temperature     32 degrees C / 89 degrees F
  Power 1
    1.0 V                     1011 mV
    1.2 V                     1208 mV
    1.8 V                     1788 mV
    2.5 V                     2526 mV
    3.3 V                     3319 mV
    5.0 V                     5046 mV
```

```
    5.0 V RE                  4975 mV
    12.0 V                   12046 mV
    12.0 V RE                12007 mV
  Bus Revision               100
  FPGA Revision              0
```

show chassis environment cb (MX2008 Router)

`user@host>` **show chassis environment cb**

```
CB 0 status:
  State                      Online Master
  Inlet1 Temperature         37 degrees C / 98 degrees F
  Inlet2 Temperature         45 degrees C / 113 degrees F
  Inlet3 Temperature         44 degrees C / 111 degrees F
  Inlet4 Temperature         42 degrees C / 107 degrees F
  Exhaust1 Temperature       30 degrees C / 86 degrees F
  Exhaust2 Temperature       40 degrees C / 104 degrees F
  Exhaust3 Temperature       48 degrees C / 118 degrees F
  Exhaust4 Temperature       46 degrees C / 114 degrees F
  Power 1
    1.0 V PHY                   989 mV
    1.15 V                     1150 mV
    1.2 V bias                 1189 mV
    1.5 V                      1488 mV
    1.8 V                      1772 mV
    2.5 V                      2462 mV
    3.3 V bias                 3296 mV
    VCCIO                      1028 mV
  Power 2
    1.1 V                      1099 mV
    3.3 V                      3300 mV
  Power 3
    0.95 V XL710                949 mV
    1.05 V                     1050 mV
  Power 4
    1.2 V                      1199 mV
    5.0 V                      4999 mV
  Power 5
    1.0 V                      1000 mV
    1.2 V PHY                  1199 mV
  Bus Revision               114
  FPGA Revision              1
CB 1 status:
```

```
  State                       Online Standby
  Inlet1 Temperature          30 degrees C / 86 degrees F
  Inlet2 Temperature          31 degrees C / 87 degrees F
  Inlet3 Temperature          29 degrees C / 84 degrees F
  Inlet4 Temperature          32 degrees C / 89 degrees F
  Exhaust1 Temperature        30 degrees C / 86 degrees F
  Exhaust2 Temperature        33 degrees C / 91 degrees F
  Exhaust3 Temperature        34 degrees C / 93 degrees F
  Exhaust4 Temperature        35 degrees C / 95 degrees F
  Power 1
    1.0 V PHY                    986 mV
    1.15 V                      1153 mV
    1.2 V bias                  1195 mV
    1.5 V                       1498 mV
    1.8 V                       1798 mV
    2.5 V                       2494 mV
    3.3 V bias                  3296 mV
    VCCIO                       1034 mV
  Power 2
    1.1 V                       1100 mV
    3.3 V                       3300 mV
  Power 3
    0.95 V XL710                 949 mV
    1.05 V                      1050 mV
  Power 4
    1.2 V                       1199 mV
    5.0 V                       5000 mV
  Power 5
    1.0 V                       1000 mV
    1.2 V PHY                   1199 mV
  Bus Revision                114
  FPGA Revision               1
```

show chassis environment cb (MX10003 Router)

`user@host>` **show chassis environment cb**

```
CB 0 status:
  State                       Online Master
  CB 0 Exhaust Temp Sensor 0x49 35 degrees C / 95 degrees F
  CB 0 Inlet Temp Sensor 0x49 28 degrees C / 82 degrees F
  Power
    VDD1V5_PCH                  1489 mV
```

```
    VDDIO                         940 mV
    VDD3V3_PCH                   3332 mV
    VDD2V5_AB                    2508 mV
    VDD1V8_CLC                   1764 mV
    VDD3V3                       3292 mV
    VDD2V5_CD                    2508 mV
    VDD1V2_CBC_GTX                  0 mV
    VDD1V8_GLS_GTX                  0 mV
    VDD1V2_CBC                      0 mV
    VDD1V8_GLS                      0 mV
    BIAS3V3_BP                      0 mV
    VDD1V2_GH                    1200 mV
    VDD3V3_CBC                   3299 mV
    VDD1V2_CD                    1199 mV
    BIAS3V3                      3340 mV
    VDD1V2_AB                    1200 mV
    VDD5V0                       5000 mV
    VDD1V05                      1049 mV
    VDD1V05                      1050 mV
    VCORE                        1780 mV
         12V                        12272 mV    3952 mA   48984 mW
CB 1 status:
  State                       Online Standby
  CB 1 Exhaust Temp Sensor 0x49 35 degrees C / 95 degrees F
  CB 1 Inlet Temp Sensor 0x49 31 degrees C / 87 degrees F
  Power
    VDD1V5_PCH                   1489 mV
    VDDIO                         940 mV
    VDD3V3_PCH                   3351 mV
    VDD2V5_AB                    2508 mV
    VDD1V8_CLC                   1764 mV
    VDD3V3                       3312 mV
    VDD2V5_CD                    2508 mV
    VDD1V2_CBC_GTX               1195 mV
    VDD1V8_GLS_GTX               1764 mV
    VDD1V2_CBC                   1195 mV
    VDD1V8_GLS                   1783 mV
    BIAS3V3_BP                   4096 mV
    VDD1V2_GH                    1200 mV
    VDD3V3_CBC                   3300 mV
    VDD1V2_CD                    1200 mV
    BIAS3V3                      3339 mV
    VDD1V2_AB                    1200 mV
    VDD5V0                       5000 mV
```

```
    VDD1V05                     1050 mV
    VDD1V05                     1050 mV
    VCORE                       1780 mV
         12V                        12351 mV    3823 mA   45007 mW
```

show chassis environment cb (MX204 Router)

`user@host>` **show chassis environment cb**

```
CB 0 status:
  State                      Online Master
  CB 0 Top Right Inlet Sensor35 degrees C / 95 degrees F
  CB 0 Top Left Inlet Sensor 37 degrees C / 98 degrees F
  CB 0 Top Right Exhaust Sensor43 degrees C / 109 degrees F
  CB 0 Top Left Exhaust Sensor50 degrees C / 122 degrees F
  CB 0 CPU Core-0 Temp       48 degrees C / 118 degrees F
  CB 0 CPU Core-1 Temp       48 degrees C / 118 degrees F
  CB 0 CPU Core-2 Temp       48 degrees C / 118 degrees F
  CB 0 CPU Core-3 Temp       47 degrees C / 116 degrees F
  CB 0 CPU Core-4 Temp       47 degrees C / 116 degrees F
  CB 0 CPU Core-5 Temp       47 degrees C / 116 degrees F
  CB 0 CPU Core-6 Temp       47 degrees C / 116 degrees F
  CB 0 CPU Core-7 Temp       47 degrees C / 116 degrees F
  Power
    VDD1V5_PCH                  1509 mV
    VDDIO                        950 mV
    VDD3V3_PCH                  3312 mV
    VDD2V5_AB                   2508 mV
    VDD1V8_FRMR                 1813 mV
    VDD3V3                      3312 mV
    VDD2V5_CD                   2508 mV
    VDD1V8_PLL                  1813 mV
    VDD1V5                      1499 mV
    EA0_1V5                     1499 mV
    EA0_1V04                    1038 mV
    EA0_PLL_1V0                  999 mV
    EA0_2V5                     2508 mV
    BIAS3V                      3332 mV
    VDD1V2_CD                   1214 mV
    VDD1V2_AB                   1215 mV
    VDD1V05                     1050 mV
    BIAS3V3                     3309 mV
    VDD1V0                      1015 mV
```

```
    VDD1V8                      1804 mV
    VDD1V2                      1199 mV
    VDD2V5                      2504 mV
    EA0_VDD0V9                   949 mV
    EA0_HM1_VDD0V9               899 mV
    EA0_VDD0V9R2                 952 mV
    EA0_VDD1V0                  1000 mV
    VDD3V3                      3304 mV
    EA0_XR_VDD1V2               1199 mV
    EA0_XR_VDD0V9                903 mV
    EA0_HM_VDDM1V2              1199 mV
    EA0_HM_VDD1V2               1199 mV
    VDDCPU0                     1770 mV
         12V Hotswap A             11968 mV    4696 mA   55466 mW
         12V Hotswap B             12048 mV   14936 mA  180652 mW
```

show chassis environment cb (MX10008 Router)

`user@host>` **show chassis environment cb**

```
CB 0 status:
  State                      Online Master
  CB 0 Intake A Temp Sensor              24 degrees C / 75 degrees F
  CB 0 Intake B Temp Sensor              24 degrees C / 75 degrees F
  CB 0 Exhaust A Temp Sensor             28 degrees C / 82 degrees F
  CB 0 Exhaust B Temp Sensor             30 degrees C / 86 degrees F
  CB 0 Middle Temp Sensor                28 degrees C / 82 degrees F
  Power
    GESW_VDD1V0                 1000 mV
    VDD1V0                      1000 mV
    VDD1V2                      1199 mV
    VDD3V3                      3299 mV
    XL710_VCCD                   950 mV
    VDD1V05                     1050 mV
    VDD2V5                      2500 mV
    FPGA_VDD1V2                 1200 mV
    VDD1V8                      1800 mV
    VDD1V15                     1150 mV
    VDD1V1                      1099 mV
    VCCIO                        950 mV
    PHY_VDD1V0                  1000 mV
    VDD5V0                      4998 mV
    FPGA_VDD1V5                 1496 mV
    VDD1V5                      1496 mV
```

```
        12V                        12281 mV    7700 mA   92400 mW
CB 1 status:
  State                       Online Standby
  CB 1 Intake A Temp Sensor              24 degrees C / 75 degrees F
  CB 1 Intake B Temp Sensor              23 degrees C / 73 degrees F
  CB 1 Exhaust A Temp Sensor             27 degrees C / 80 degrees F
  CB 1 Exhaust B Temp Sensor             30 degrees C / 86 degrees F
  CB 1 Middle Temp Sensor                28 degrees C / 82 degrees F
  Power
    GESW_VDD1V0                 999 mV
    VDD1V0                     1000 mV
    VDD1V2                     1199 mV
    VDD3V3                     3299 mV
    XL710_VCCD                  950 mV
    VDD1V05                    1050 mV
    VDD2V5                     2499 mV
    FPGA_VDD1V2                1200 mV
    VDD1V8                     1799 mV
    VDD1V15                    1150 mV
    VDD1V1                     1100 mV
    VCCIO                       949 mV
    PHY_VDD1V0                  999 mV
    VDD5V0                     5000 mV
    FPGA_VDD1V5                1502 mV
    VDD1V5                     1496 mV
        12V                        12281 mV    8002 mA   96024 mW
```

show chassis environment cb (T4000 Core Router)

`user@host>` **show chassis environment cb**

```
CB 0 status:
  State                       Online Master
  Temperature                 33 degrees C / 91 degrees F
  Power 1
    1.8 V                      1805 mV
    2.5 V                      2523 mV
    3.3 V                      3324 mV
    3.3 V bias                 3296 mV
    4.6 V                      4680 mV
    5.0 V                      4893 mV
    8.0 V bias                 7572 mV
    12.0 V                    11916 mV
  Power 2
```

```
    1.0 V                        993 mV
    1.2 V                       1210 mV
    3.3 V RE                    3330 mV
  Bus Revision                 51
  FPGA Revision                5
CB 1 status:
  State                        Online Standby
  Temperature                  33 degrees C / 91 degrees F
  Power 1
    1.8 V                       1810 mV
    2.5 V                       2496 mV
    3.3 V                       3308 mV
    3.3 V bias                  3286 mV
    4.6 V                       4692 mV
    5.0 V                       4954 mV
    8.0 V bias                  7282 mV
    12.0 V                     11926 mV
  Power 2
    1.0 V                        993 mV
    1.2 V                       1185 mV
    3.3 V RE                    3316 mV
  Bus Revision                 51
  FPGA Revision                5
```

show chassis environment cb (TX Matrix Router)

`user@host>` **show chassis environment cb**

```
---------------------------------------------------------------------------
CB 0 status:
  State                           Online Master
  Temperature                   32 degrees C / 89 degrees F
  Power:
    1.8 V                      1797 mV
    2.5 V                      2477 mV
    3.3 V                      3311 mV
    4.6 V                      4727 mV
    5.0 V                      5015 mV
    12.0 V                    12185 mV
    3.3 V bias                 3304 mV
    8.0 V bias                 7870 mV
  BUS Revision                   40
  FPGA Revision                   1
CB 1 status:
```

```
  State                           Online Standby
...

lcc0-re0:
--------------------------------------------------------------------------
CB 0 status:
  State                           Online Master
  Temperature                  32 degrees C / 89 degrees F
  Power:
    1.8 V                    1787 mV
    2.5 V                    2473 mV
    3.3 V                    3306 mV
    4.6 V                    4793 mV
    5.0 V                    5025 mV
    12.0 V                  12156 mV
    3.3 V bias               3289 mV
    8.0 V bias               7609 mV
  BUS Revision                 40
  FPGA Revision                 5
CB 1 status:
  State                           Online Standby
 ....
  BUS Revision                 40
  FPGA Revision                 5

lcc2-re0:
--------------------------------------------------------------------------
CB 0 status:
  State                           Online Master
 ...
CB 1 status:
  State                           Online Standby
 ...
```

show chassis environment cb (TX Matrix Plus Router)

`user@host>` **show chassis environment cb**

```
sfc0-re0:
--------------------------------------------------------------------------
CB 0 status:
  State                       Online Master
  Temperature                 38 degrees C / 100 degrees F
  Power 1
```

```
    1.0 V                      1005 mV
    1.1 V                      1108 mV
    1.2 V                      1205 mV
    1.25 V                     1269 mV
    1.5 V                      1508 mV
    1.8 V                      1814 mV
    2.5 V                      2507 mV
    3.3 V                      3306 mV
    3.3 V bias                 3300 mV
    9.0 V                      9058 mV
    9.0 V RE                   9107 mV
  Power 2
    3.9 V                      3963 mV
    5.0 V                      5020 mV
    9.0 V                      9087 mV
  Bus Revision                79
  FPGA Revision               23
CB 1 status:
  State                       Online Standby
  Temperature                 39 degrees C / 102 degrees F
  Power 1
    1.0 V                      1002 mV
    1.1 V                      1105 mV
    1.2 V                      1198 mV
    1.25 V                     1276 mV
    1.5 V                      1504 mV
    1.8 V                      1804 mV
    2.5 V                      2507 mV
    3.3 V                      3300 mV
    3.3 V bias                 3293 mV
    9.0 V                      9039 mV
    9.0 V RE                   9049 mV
  Power 2
    3.9 V                      3892 mV
    5.0 V                      5040 mV
    9.0 V                      9058 mV
  Bus Revision                79
  FPGA Revision               23

lcc0-re0:
--------------------------------------------------------------------------
CB 0 status:
  State                       Online Master
  Temperature                 39 degrees C / 102 degrees F
```

```
  Power 1
    1.8 V                       1799 mV
    2.5 V                       2499 mV
    3.3 V                       3327 mV
    3.3 V bias                  3299 mV
    4.6 V                       4673 mV
    5.0 V                       4918 mV
    8.0 V bias                  7308 mV
    12.0 V                     11887 mV
  Power 2
    1.0 V                        996 mV
    1.2 V                       1199 mV
    3.3 V RE                    3319 mV
  Bus Revision                 51
  FPGA Revision                3
CB 1 status:
  State                        Online Standby
  Temperature                  40 degrees C / 104 degrees F
  Power 1
    1.8 V                       1800 mV
    2.5 V                       2496 mV
    3.3 V                       3322 mV
    3.3 V bias                  3284 mV
    4.6 V                       4680 mV
    5.0 V                       4954 mV
    8.0 V bias                  7284 mV
    12.0 V                     11902 mV
  Power 2
    1.0 V                        998 mV
    1.2 V                       1205 mV
    3.3 V RE                    3327 mV
  Bus Revision                 51
  FPGA Revision                3

lcc1-re0:
--------------------------------------------------------------------------
CB 0 status:
  State                        Online Master
  Temperature                  41 degrees C / 105 degrees F
  Power 1
    1.8 V                       1804 mV
    2.5 V                       2517 mV
    3.3 V                       3300 mV
    3.3 V bias                  3284 mV
```

```
    4.6 V                      4681 mV
    5.0 V                      4927 mV
    8.0 V bias                 7357 mV
    12.0 V                    11907 mV
  Power 2
    1.0 V                       991 mV
    1.2 V                      1202 mV
    3.3 V RE                   3301 mV
  Bus Revision                51
  FPGA Revision               3
CB 1 status:
  State                       Online Standby
  Temperature                 40 degrees C / 104 degrees F
  Power 1
    1.8 V                      1805 mV
    2.5 V                      2528 mV
    3.3 V                      3324 mV
    3.3 V bias                 3289 mV
    4.6 V                      4694 mV
    5.0 V                      4959 mV
    8.0 V bias                 7311 mV
    12.0 V                    11926 mV
  Power 2
    1.0 V                       998 mV
    1.2 V                      1200 mV
    3.3 V RE                   3313 mV
  Bus Revision                51
  FPGA Revision               3

lcc2-re0:
--------------------------------------------------------------------------
CB 0 status:
  State                       Online Master
  Temperature                 41 degrees C / 105 degrees F
  Power 1
    1.8 V                      1805 mV
    2.5 V                      2494 mV
    3.3 V                      3333 mV
    3.3 V bias                 3296 mV
    4.6 V                      4673 mV
    5.0 V                      4901 mV
    8.0 V bias                 7343 mV
    12.0 V                    11916 mV
  Power 2
```

```
    1.0 V                       993 mV
    1.2 V                      1213 mV
    3.3 V RE                   3328 mV
  Bus Revision                51
  FPGA Revision               3
CB 1 status:
  State                       Online Standby
  Temperature                 41 degrees C / 105 degrees F
  Power 1
    1.8 V                      1804 mV
    2.5 V                      2523 mV
    3.3 V                      3334 mV
    3.3 V bias                 3291 mV
    4.6 V                      4697 mV
    5.0 V                      4969 mV
    8.0 V bias                 7308 mV
    12.0 V                    11936 mV
  Power 2
    1.0 V                       996 mV
    1.2 V                      1200 mV
    3.3 V RE                   3328 mV
  Bus Revision                51
  FPGA Revision               3

lcc3-re0:
--------------------------------------------------------------------------
CB 0 status:
  State                       Online Master
  Temperature                 37 degrees C / 98 degrees F
  Power 1
    1.8 V                      1809 mV
    2.5 V                      2510 mV
    3.3 V                      3296 mV
    3.3 V bias                 3291 mV
    4.6 V                      4670 mV
    5.0 V                      4905 mV
    8.0 V bias                 7211 mV
    12.0 V                    11882 mV
  Power 2
    1.0 V                       996 mV
    1.2 V                      1188 mV
    3.3 V RE                   3326 mV
  Bus Revision                51
  FPGA Revision               5
```

```
CB 1 status:
  State                       Online Standby
  Temperature                 38 degrees C / 100 degrees F
  Power 1
    1.8 V                      1813 mV
    2.5 V                      2510 mV
    3.3 V                      3322 mV
    3.3 V bias                 3289 mV
    4.6 V                      4692 mV
    5.0 V                      4967 mV
    8.0 V bias                 7194 mV
    12.0 V                    11916 mV
  Power 2
    1.0 V                       996 mV
    1.2 V                      1205 mV
    3.3 V RE                   3273 mV
  Bus Revision                51
  FPGA Revision               5
```

show chassis environment cb (EX8200 Switch)

`user@host>` **show chassis environment cb**

```
CB 0 status:
  State                       Online Master
  Temperature Intake          20 degrees C / 68 degrees F
  Temperature Exhaust         24 degrees C / 75 degrees F
  Power 1
    1.1 V                      1086 mV
    1.2 V                      1179 mV
    1.2 V *                    1182 mV
    1.2 V *                    1182 mV
    1.25 V                     1211 mV
    1.5 V                      1472 mV
    1.8 V                      1756 mV
    2.5 V                      2449 mV
    3.3 V                      3254 mV
    3.3 V bias                 3300 mV
    5.0 V                      4911 mV
    12.0 V                    11891 mV
  Power 2
    3.3 V bias *               3615 mV
    3.3 V bias *               3615 mV
```

```
    3.3 V bias *              3567 mV
    3.3 V bias *              3664 mV
    4.3 V bias *              4224 mV
    4.3 V bias *              4215 mV
    4.3 V bias *              4224 mV
    4.3 V bias *              4205 mV
    4.3 V bias *              4195 mV
    4.3 V bias *              4215 mV
    5.0 V bias                4920 mV
CB 1 status:
  State                     Online Standby
  Temperature Intake        19 degrees C / 66 degrees F
  Temperature Exhaust       23 degrees C / 73 degrees F
  Power 1
    1.1 V                    1082 mV
    1.2 V                    1169 mV
    1.2 V *                  1179 mV
    1.2 V *                  1179 mV
    1.25 V                   1214 mV
    1.5 V                    1482 mV
    1.8 V                    1759 mV
    2.5 V                    2481 mV
    3.3 V                    3248 mV
    3.3 V bias               3306 mV
    5.0 V                    4911 mV
    12.0 V                  11910 mV
  Power 2
    3.3 V bias *             3644 mV
    3.3 V bias *             3664 mV
    3.3 V bias *             3586 mV
    3.3 V bias *             3654 mV
    4.3 V bias *             4224 mV
    4.3 V bias *             4215 mV
    4.3 V bias *             4224 mV
    4.3 V bias *             4205 mV
    4.3 V bias *             4244 mV
    4.3 V bias *             4215 mV
    5.0 V bias               4930 mV
CB 2 status:
  State                     Online
  Temperature Intake        19 degrees C / 66 degrees F
  Temperature Exhaust       23 degrees C / 73 degrees F
  Power 1
    1.2 V                    1195 mV
```

```
    1.5 V                     1511 mV
    1.8 V                     1804 mV
    2.5 V                     2526 mV
    3.3 V                     3300 mV
    3.3 V bias                3306 mV
    12.0 V                   12220 mV
```

show chassis environment cb (EX8208 Switch)

`user@host>` **show chassis environment cb**

```
CB 0 status:
  State                      Online Master
  Temperature Intake         20 degrees C / 68 degrees F
  Temperature Exhaust        24 degrees C / 75 degrees F
  Power 1
    1.1 V                     1086 mV
    1.2 V                     1179 mV
    1.2 V *                   1182 mV
    1.2 V *                   1182 mV
    1.25 V                    1211 mV
    1.5 V                     1466 mV
    1.8 V                     1759 mV
    2.5 V                     2455 mV
    3.3 V                     3261 mV
    3.3 V bias                3300 mV
    5.0 V                     4930 mV
    12.0 V                   11891 mV
  Power 2
    3.3 V bias *              3606 mV
    3.3 V bias *              3615 mV
    3.3 V bias *              3567 mV
    3.3 V bias *              3673 mV
    4.3 V bias *              4224 mV
    4.3 V bias *              4215 mV
    4.3 V bias *              4234 mV
    4.3 V bias *              4205 mV
    4.3 V bias *              4186 mV
    4.3 V bias *              4215 mV
    5.0 V bias                4940 mV
CB 1 status:
  State                      Online Standby
  Temperature Intake         19 degrees C / 66 degrees F
  Temperature Exhaust        23 degrees C / 73 degrees F
```

```
  Power 1
    1.1 V                      1086 mV
    1.2 V                      1169 mV
    1.2 V *                    1179 mV
    1.2 V *                    1179 mV
    1.25 V                     1211 mV
    1.5 V                      1479 mV
    1.8 V                      1759 mV
    2.5 V                      2475 mV
    3.3 V                      3235 mV
    3.3 V bias                 3306 mV
    5.0 V                      4930 mV
    12.0 V                    11891 mV
  Power 2
    3.3 V bias *               3644 mV
    3.3 V bias *               3664 mV
    3.3 V bias *               3586 mV
    3.3 V bias *               3654 mV
    4.3 V bias *               4215 mV
    4.3 V bias *               4224 mV
    4.3 V bias *               4215 mV
    4.3 V bias *               4215 mV
    4.3 V bias *               4234 mV
    4.3 V bias *               4224 mV
    5.0 V bias                 4920 mV
CB 2 status:
  State                      Online
  Temperature Intake         20 degrees C / 68 degrees F
  Temperature Exhaust        24 degrees C / 75 degrees F
  Power 1
    1.2 V                      1202 mV
    1.5 V                      1508 mV
    1.8 V                      1804 mV
    2.5 V                      2520 mV
    3.3 V                      3300 mV
    3.3 V bias                 3300 mV
    12.0 V                    12200 mV
```

show chassis environment cb (EX9251 Switch)

`user@switch>` **show chassis environment cb**

```
CB 0 status:
  State                      Online Master
```

```
CB 0 Top Right Inlet Sensor29 degrees C / 84 degrees F
CB 0 Top Left Inlet Sensor 28 degrees C / 82 degrees F
CB 0 Top Right Exhaust Sensor40 degrees C / 104 degrees F
CB 0 Top Left Exhaust Sensor59 degrees C / 138 degrees F
CB 0 CPU Core-0 Temp       45 degrees C / 113 degrees F
CB 0 CPU Core-1 Temp       44 degrees C / 111 degrees F
CB 0 CPU Core-2 Temp       44 degrees C / 111 degrees F
CB 0 CPU Core-3 Temp       44 degrees C / 111 degrees F
CB 0 CPU Core-4 Temp       45 degrees C / 113 degrees F
CB 0 CPU Core-5 Temp       44 degrees C / 111 degrees F
CB 0 CPU Core-6 Temp       44 degrees C / 111 degrees F
CB 0 CPU Core-7 Temp       43 degrees C / 109 degrees F
Power
  VDD1V5_PCH                  1499 mV
  VDDIO                        950 mV
  VDD3V3_PCH                  3312 mV
  VDD2V5_AB                   2489 mV
  VDD1V8_FRMR                 1793 mV
  VDD3V3                      3292 mV
  VDD2V5_CD                   2508 mV
  VDD1V8_PLL                  1793 mV
  VDD1V5                      1499 mV
  EA0_1V5                     1499 mV
  EA0_1V04                     999 mV
  EA0_PLL_1V0                  999 mV
  EA0_2V5                     2508 mV
  BIAS3V                      3292 mV
  VDD1V2_CD                   1215 mV
  VDD1V2_AB                   1214 mV
  VDD1V05                     1050 mV
  BIAS3V3                     3309 mV
  VDD1V0                      1014 mV
  VDD1V8                      1805 mV
  VDD1V2                      1200 mV
  VDD2V5                      2504 mV
  EA0_VDD0V9                   949 mV
  EA0_HM1_VDD0V9               899 mV
  EA0_VDD0V9R2                 952 mV
  EA0_VDD1V0                   999 mV
  VDD3V3                      3305 mV
  EA0_XR_VDD1V2               1199 mV
  EA0_XR_VDD0V9                903 mV
  EA0_HM_VDDM1V2              1199 mV
  EA0_HM_VDD1V2               1199 mV
```

```
    VDDCPU0                     1770 mV
         12V Hotswap A              11955 mV    4861 mA   59347 mW
         12V Hotswap B              11916 mV   15046 mA  180887 mW
```

show chassis environment cb (EX9253 Switch)

`user@switch>` **show chassis environment cb**

```
CB 0 status:
  State                      Online Master
  CB 0 Exhaust Temp Sensor   38 degrees C / 100 degrees F
  CB 0 Inlet Temp Sensor     32 degrees C / 89 degrees F
  CB 0 CPU DIE Temp Sensor   43 degrees C / 109 degrees F
  Power
    VDD1V5_PCH                  1489 mV
    VDDIO                        940 mV
    VDD3V3_PCH                  3332 mV
    VDD2V5_AB                   2508 mV
    VDD1V8_CLC                  1783 mV
    VDD3V3                      3312 mV
    VDD2V5_CD                   2508 mV
    VDD1V2_CBC_GTX              1195 mV
    VDD1V8_GLS_GTX              1783 mV
    VDD1V2_CBC                  1176 mV
    VDD1V8_GLS                  1783 mV
    BIAS3V3_BP                  3978 mV
    VDD1V2_GH                   1200 mV
    VDD3V3_CBC                  3299 mV
    VDD1V2_CD                   1200 mV
    BIAS3V3                     3340 mV
    VDD1V2_AB                   1199 mV
    VDD5V0                      5000 mV
    VDD1V05                     1050 mV
    VDD1V05                     1050 mV
    VCORE                       1770 mV
         12V                        12061 mV    4806 mA   57841 mW
CB 1 status:
  State                      Offline
  CB 1 Exhaust Temp Sensor   32 degrees C / 89 degrees F
  CB 1 Inlet Temp Sensor     29 degrees C / 84 degrees F
  CB 1 CPU DIE Temp Sensor   43 degrees C / 109 degrees F
  Power                      Disabled
```

show chassis environment cb (PTX5000 Packet Transport Router)

```
user@host> show chassis environment cb
```

```
CB 0 status:
  State                      Online Master
  Intake Temperature         38 degrees C / 100 degrees F
  Exhaust A Temperature      45 degrees C / 113 degrees F
  Exhaust B Temperature      42 degrees C / 107 degrees F
  Power 1
    1.2 V                     1200 mV
    1.25 V                    1250 mV
    2.5 V                     2500 mV
    3.3 V                     3300 mV
  Power 2
    1.0 V                     1000 mV
    3.3 V bias                3293 mV
    3.9 V                     3921 mV
  Bus Revision               132
  FPGA Revision              27
CB 1 status:
  State                      Online Standby
  Intake Temperature         34 degrees C / 93 degrees F
  Exhaust A Temperature      39 degrees C / 102 degrees F
  Exhaust B Temperature      36 degrees C / 96 degrees F
  Power 1
    1.2 V                     1199 mV
    1.25 V                    1250 mV
    2.5 V                     2499 mV
    3.3 V                     3299 mV
  Power 2
    1.0 V                     1000 mV
    3.3 V bias                3312 mV
    3.9 V                     3961 mV
  Bus Revision               132
  FPGA Revision              28
```

show chassis environment cb (PTX10008 Router)

```
user@host> show chassis environment cb
```

```
CB 0 status:
  State                      Online Master
  CB 0 Intake Temp Sensor    28 degrees C / 82 degrees F
  CB 0 Exhaust Temp Sensor   32 degrees C / 89 degrees F
```

```
  Power
    VDD 2.5V                    2489 mV
    Bias 3.3V                   3332 mV
    VDD 3.3V                    3292 mV
    VCC 1.8V                    1822 mV
    VDD 1.2V                    1205 mV
    VCC 1V                       999 mV
    VCC CPU 1.8V                1803 mV
    VDD 2.5V                    2489 mV
    VCC Aux 5V                  5115 mV
    VDD DDR 1.5V                1499 mV
    VTT SA CPU 0.8V              803 mV
    VTT CPU 1.05V               1048 mV
    VCC Core CPU                 901 mV
    VCC PCH 1.5V                1519 mV
    VDD 1.05V                   1048 mV
    VCC 2.5V                    2508 mV
    FORT VCCA 1V                 960 mV
    VDD .85V                     862 mV
    VTT DDRA .75V                744 mV
    VTT DDRB .75V                744 mV
         12V                       12285 mV    3779 mA   46339 mW
CB 1 status:
  State                      Online Standby
  CB 1 Intake Temp Sensor    27 degrees C / 80 degrees F
  CB 1 Exhaust Temp Sensor   32 degrees C / 89 degrees F
  Power
    VDD 2.5V                    2489 mV
    Bias 3.3V                   3332 mV
    VDD 3.3V                    3273 mV
    VCC 1.8V                    1822 mV
    VDD 1.2V                    1195 mV
    VCC 1V                       999 mV
    VCC CPU 1.8V                1783 mV
    VDD 2.5V                    2489 mV
    VCC Aux 5V                  5056 mV
    VDD DDR 1.5V                1499 mV
    VTT SA CPU 0.8V              793 mV
    VTT CPU 1.05V               1048 mV
    VCC Core CPU                 882 mV
    VCC PCH 1.5V                1509 mV
    VDD 1.05V                   1048 mV
    VCC 2.5V                    2489 mV
    FORT VCCA 1V                 960 mV
```

```
    VDD .85V                     862 mV
    VTT DDRA .75V                744 mV
    VTT DDRB .75V                744 mV
         12V                        12391 mV    3779 mA   46727 mW
```

show chassis environment cb (PTX10016 Router)

`user@host>` **show chassis environment cb**

```
CB 0 status:
  State                      Online Master
  CB 0 Intake Temp Sensor    20 degrees C / 68 degrees F
  CB 0 Exhaust Temp Sensor   24 degrees C / 75 degrees F
  Power
    VDD 2.5V                    2508 mV
    Bias 3.3V                   3351 mV
    VDD 3.3V                    3292 mV
    VCC 1.8V                    1832 mV
    VDD 1.2V                    1205 mV
    VCC 1V                       999 mV
    VCC CPU 1.8V                1793 mV
    VDD 2.5V                    2508 mV
    VCC Aux 5V                  5056 mV
    VDD DDR 1.5V                1509 mV
    VTT SA CPU 0.8V              803 mV
    VTT CPU 1.05V               1048 mV
    VCC Core CPU                 960 mV
    VCC PCH 1.5V                1519 mV
    VDD 1.05V                   1058 mV
    VCC 2.5V                    2528 mV
    FORT VCCA 1V                 960 mV
    VDD .85V                     852 mV
    VTT DDRA .75V                744 mV
    VTT DDRB .75V                744 mV
         12V                        12259 mV    3649 mA   45173 mW
CB 1 status:
  State                      Online Standby
  CB 1 Intake Temp Sensor    20 degrees C / 68 degrees F
  CB 1 Exhaust Temp Sensor   23 degrees C / 73 degrees F
  Power
    VDD 2.5V                    2508 mV
    Bias 3.3V                   3312 mV
    VDD 3.3V                    3273 mV
    VCC 1.8V                    1822 mV
```

```
    VDD 1.2V                    1195 mV
    VCC 1V                       989 mV
    VCC CPU 1.8V                1783 mV
    VDD 2.5V                    2489 mV
    VCC Aux 5V                  5086 mV
    VDD DDR 1.5V                1499 mV
    VTT SA CPU 0.8V              803 mV
    VTT CPU 1.05V               1048 mV
    VCC Core CPU                1029 mV
    VCC PCH 1.5V                1519 mV
    VDD 1.05V                   1048 mV
    VCC 2.5V                    2528 mV
    FORT VCCA 1V                 960 mV
    VDD .85V                     862 mV
    VTT DDRA .75V                744 mV
    VTT DDRB .75V                744 mV
         12V                        12285 mV    3952 mA   48447 mW
```

show chassis environment cb (QFabric System)

`user@switch>` **show chassis environment cb interconnect-device IC-123 0**

```
CB 0 status:
  State                       Online Master
  Left Intake Temperature     33 degrees C / 91 degrees F
  Right Intake Temperature    33 degrees C / 91 degrees F
  Left Exhaust Temperature    36 degrees C / 96 degrees F
  Right Exhaust Temperature   35 degrees C / 95 degrees F
  Power                       OK
    VDD 3V3                    3294 mV
    VDD 2V5                    2436 mV
    VDD 1V8                    1746 mV
    VDD 1V5                    1460 mV
    VDD 1V25                   1210 mV
    VDD 1V2                    1164 mV
    CPU CORE 1V2               1120 mV
    VDD 1V0                     968 mV
    VDD 5V0                    5088 mV
    CPU MP BIAS 4V3            4050 mV
    BIAS 3V3                   3180 mV
    VTT 0V9                     866 mV
```

show chassis environment cb 0 (PTX10003-80C and PTX10003-160C Routers)

```
user@router> show chassis environment cb 0
```

```
CB 0 status:
  State                      Online Master
  Power 1
    PCIe SW0 power, CORE 0.9 V     894 mV
  Power 2
    CLOCK MAIN, 2.5 V           2495 mV
    PCIe SW0 power, SERDES 0.9 V     897 mV
  Power 3
    PCIe SW1 power, CORE 0.9 V     897 mV
  Power 4
    PCIe SW1 power, SERDES 0.9 V     894 mV
  Power 5
    Ethernet SW0 power, 1.0 V     998 mV
  Power 6
    Ethernet SW1 power, CORE 1.0 V     998 mV
  Power 7
    12 V                       12034 mV
  Bus Revision               0
  FPGA Revision              0
```

Starting in Junos OS Evolved Release 19.1R1, on PTX10003-80C and PTX10003-160C devices, the **show chassis environment cb** command does not show the Bus and FPGA revision information. If you want to view the FPGA revision or version information for the CB, use the **show system firmware** command.

show chassis environment ccg

Syntax

```
show chassis environment ccg
<slot>
```

Release Information

Command introduced in Junos OS Release 12.1.

Description

(PTX5000 Packet Transport Routers only) Display environmental information about the Centralized Clock Generators (CCGs).

Options

none—Display environmental information about all CCGs on the router.

slot —(Optional) Display environmental information about the specified CCG. Replace *slot* with 0 or 1.

Required Privilege Level

view

RELATED DOCUMENTATION

> *Clock Sources for PTX Series Packet Transport Routers*
>
> show chassis environment | 759

List of Sample Output

show chassis environment ccg (PTX5000) on page 925

Output Fields

Table 41 on page 924 lists the output fields for the **show chassis environment ccg** command. Output fields are listed in the approximate order in which they appear.

Table 41: show chassis environment cb Output Fields

Field Name	Field Description
State	Status of the CCG: **Online - Master clock** , **Online - Standby**, or **Offline**. If two CCGs are installed and online, one is functioning as the master clock, and the other is the standby clock.

Table 41: show chassis environment cb Output Fields *(continued)*

Field Name	Field Description
Temperature	Temperature of the air flowing past the CCG.
Power	Power required and measured on the CCG. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
BUS Revision	Revision level of the generic bus device.

Sample Output

show chassis environment ccg (PTX5000)

```
user@host> show chassis environment ccg
```

```
CCG 0 status:
  State                     Online -  Master clock
  Temperature               31 degrees C / 87 degrees F
  Power
    1.2 V bias               1200 mV
    1.8 V                    1799 mV
    3.3 V                    3300 mV
    3.3 V bias               3300 mV
  Bus Revision              103
CCG 1 status:
  State                     Offline
  Power                     Disabled
  Temperature               31 degrees C / 87 degrees F
  Power
    1.2 V bias               1198 mV
    1.8 V                     161 mV
    3.3 V                     451 mV
    3.3 V bias               3311 mV
  Bus Revision              103
```

show chassis environment fan

Syntax

```
show chassis environment fan
<all-members>
<fantray-slot-number>
<local>
<member member-id>
```

Release Information

Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 Universal Routing Platforms.
all-members, **local**, and **member *member-id*** options introduced in Junos OS Release 15.1 for MX2020 and MX2010 routers.
Command introduced in Junos OS Release 17.2 for PTX10008 Routers.
Command introduced in Junos OS Release 18.2R1 for MX10008 Routers.

Description

(MX2020 and MX2010 routers only) Display environmental information about the fans and fan trays.

Options

none—Display environmental information about all fans and fan trays.

all-members—(Optional) Display environmental information about the fan and fan trays in all members of the Virtual Chassis configuration.

fantray-slot-number—(Optional) Display environmental information about the specified fan tray. Replace *fantray-slot-number* with a value from **0** through **3**.

local—(Optional) Display environmental information about the fans and fan trays in the local member of the Virtual Chassis.

member *member-id*—(Optional) Display environmental information about the fans and fan trays in the specified member of the Virtual Chassis. Replace ***member-id*** with the value 0 or 1.

Required Privilege Level

view

RELATED DOCUMENTATION

show chassis environment | 759

show chassis fan | 1463

List of Sample Output

show chassis environment fan (MX2020 routers) on page 927
show chassis environment fan 3 (MX2020 routers) on page 928
show chassis environment fan (PTX10008 routers) on page 929
show chassis environment fan (PTX10016 routers) on page 929
show chassis environment fan (MX10008 routers) on page 929

Output Fields

Table 40 on page 891 lists the output fields for the **show chassis environment fan** command. Output fields are listed in the approximate order in which they appear.

Table 42: show chassis environment fan Output Fields

Field Name	Field Description
Fan Tray Status	Status of the fan tray.
Temperature	Temperature in Celsius (C) and Fahrenheit (F) maintained by the fans.
Power	Power required and measured on the fan tray. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
Max Power Consumption	Maximum power consumed by the fan tray.

Sample Output

show chassis environment fan (MX2020 routers)

```
user@host> show chassis environment fan
```

```
Fan Tray 0 status:
  Temperature                23 degrees C / 73 degrees F
  Power
    1.2 V                     1189 mV
    3.3 V                     3293 mV
    5.0 V                     5230 mV
    5.0 V bias                5278 mV
    52.0 V A                 49944 mV
    52.0 V B                   435 mV
  Max Power Consumption       1150 Watts
Fan Tray 1 status:
  Temperature                22 degrees C / 71 degrees F
```

```
  Power
    1.2 V                   1192 mV
    3.3 V                   3300 mV
    5.0 V                   5230 mV
    5.0 V bias              5230 mV
    52.0 V A               50205 mV
    52.0 V B                 435 mV
  Max Power Consumption     1150 Watts
Fan Tray 2 status:
  Temperature               31 degrees C / 87 degrees F
  Power
    1.2 V                   1192 mV
    3.3 V                   3287 mV
    5.0 V                   5211 mV
    5.0 V bias              5220 mV
    52.0 V A               50031 mV
    52.0 V B                 435 mV
  Max Power Consumption     1150 Watts
Fan Tray 3 status:
  Temperature               31 degrees C / 87 degrees F
  Power
    1.2 V                   1208 mV
    3.3 V                   3306 mV
    5.0 V                   5240 mV
    5.0 V bias              5259 mV
    52.0 V A               50553 mV
    52.0 V B                 435 mV
  Max Power Consumption     1150 Watts
```

show chassis environment fan 3 (MX2020 routers)

`user@host>` **show chassis environment fan 3**

```
Fan Tray 3 status:
  Temperature               31 degrees C / 87 degrees F
  Power
    1.2 V                   1208 mV
    3.3 V                   3306 mV
    5.0 V                   5240 mV
    5.0 V bias              5259 mV
    52.0 V A               50553 mV
    52.0 V B                 435 mV
  Max Power Consumption     1150 Watts
```

show chassis environment fan (PTX10008 routers)

user@host> **show chassis environment fan**

```
Fan Tray 0  status:
         HS 0                       12338 mV    4035 mA   40623 mW
         HS 1                       12325 mV    3044 mA   36483 mW
         HS 2                       12272 mV    3374 mA   38388 mW
         HS 3                       12364 mV    2218 mA   37918 mW
  Temperature                             28 degrees C / 82 degrees F

Fan Tray 1  status:
         HS 0                       12232 mV    3209 mA   50455 mW
         HS 1                       12311 mV    3760 mA   50196 mW
         HS 2                       12311 mV    5356 mA   47397 mW
         HS 3                       12259 mV    3264 mA   15807 mW
  Temperature                             28 degrees C / 82 degrees F
```

show chassis environment fan (PTX10016 routers)

user@host> **show chassis environment fan**

```
Aug 02 21:13:00
Fan Tray 0  status:
  HS 0                       12364 mV    4200 mA   48926 mW
  HS 1                       12285 mV    3264 mA   69885 mW
  HS 2                       12285 mV    4365 mA   57559 mW
  HS 3                       12259 mV    2714 mA   67768 mW
  Temperature                             25 degrees C / 77 degrees F
Fan Tray 1  status:
  HS 0                       12325 mV    1888 mA   76354 mW
  HS 1                       12325 mV    5026 mA   70779 mW
  HS 2                       12285 mV    4200 mA   50032 mW
  HS 3                       12311 mV    5246 mA   55630 mW
  Temperature                             24 degrees C / 75 degrees F
```

show chassis environment fan (MX10008 routers)

user@host> **show chassis environment fan**

```
Fan Tray 0  status:
         HS 0                        12298 mV    4200 mA   59676 mW
         HS 1                        12338 mV    4585 mA   48856 mW
         HS 2                        12325 mV    4530 mA   63863 mW
         HS 3                        12311 mV    2879 mA   37800 mW
  Temperature                              26 degrees C / 78 degrees F
Fan Tray 1  status:
         HS 0                        12298 mV    4145 mA   57559 mW
         HS 1                        12298 mV    2934 mA   60288 mW
         HS 2                        12325 mV    5026 mA   46715 mW
         HS 3                        12272 mV    1833 mA   47209 mW
  Temperature                              25 degrees C / 77 degrees F
```

show chassis environment fpc

List of Syntax

Syntax on page 931
Syntax (TX Matrix and TX Matrix Plus Routers) on page 931
Syntax (MX Series Routers) on page 931
Syntax (MX2010, MX10003, MX204, MX2008, and MX10008, OCX Series, PTX3000, PTX10008 devices and Junos OS Evolved platforms) on page 931
Syntax (MX2020 Universal Routing Platforms) on page 931
Syntax (QFX Series) on page 932

Syntax

```
show chassis environment fpc
<slot>
```

Syntax (TX Matrix and TX Matrix Plus Routers)

```
show chassis environment fpc
<lcc number>
<slot>
```

Syntax (MX Series Routers)

```
show chassis environment fpc
<slot>
<all-members>
<local>
<member member-id>
```

Syntax (MX2010, MX10003, MX204, MX2008, and MX10008, OCX Series, PTX3000, PTX10008 devices and Junos OS Evolved platforms)

```
show chassis environment fpc
<slot>
```

Syntax (MX2020 Universal Routing Platforms)

```
show chassis environment fpc
<slot>
<satellite [fpc-slot slot-id |device-alias alias-name]
```

Syntax (QFX Series)

```
show chassis environment fpc
<fpc-slot>
interconnect-device name
```

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
Command introduced in Junos OS Release 11.1 for QFX Series.
Command introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers.
Command introduced in Junos OS Release 12.1 for T4000 Core Routers.
Command introduced in Junos OS Release 12.3 for MX 2010 and MX2020 Universal Routing Platforms.
Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.
satellite option introduced in Junos OS Release 14.2R3.
Command introduced in Junos OS Release 17.2 for MX2008 Universal Routing Platforms and PTX10008 Routers.
Command introduced in Junos OS Release 17.3 for MX10003 Universal Routing Platforms.
Command introduced in Junos OS Release 17.4 for MX204 Universal Routing Platforms.
Command introduced in Junos OS Release 18.1R1 for EX9251 switches.
Command introduced in Junos OS Release 18.2R1 for MX10008 Universal Routing Platforms and EX9253 Switches.

Description

(M40e, M120, M160, M320, MX Series, T Series routers, EX Series, QFX Series, and PTX Series routers only) Display environmental information about Flexible PIC Concentrators (FPCs).

Options

none—Display environmental information about all FPCs. On a TX Matrix router, display environmental information about all FPCs on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about all FPCs on the TX Matrix Plus router and its attached routers.

all-members—(MX Series routers only) (Optional) Display environmental information for the FPCs in all the members of the Virtual Chassis configuration.

interconnect-device *name*—(QFabric systems only) (Optional) Display chassis environmental information for the Interconnect device.

lcc *number*—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

local—(MX Series routers only) (Optional) Display environmental information for the FPCs in the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display environmental information for the FPCs in the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value of 0 or 1.

satellite [fpc-slot *slot-id* | device-alias *alias-name*]—(Junos Fusion only)(Optional) Display environmental information for the FPCs in the specified satellite device in a Junos Fusion, or for all satellite devices in the Junos Fusion if no satellite devices are specified.

slot* or *fpc-slot—(Optional) Display environmental information about an individual FPC:

- (TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, if you specify the number of the T640 router by using only the **lcc *number*** option (the recommended method), replace ***slot*** with a value from **0** through **7**. Similarly, on a TX Matrix Plus router, if you specify the number of the router by using only the **lcc *number*** option (the recommended method), replace ***slot*** with a value from **0** through **7**. Otherwise, replace ***slot*** with a value from **0** through **31**. For example, the following commands have the same result:

  ```
  user@host> show chassis environment fpc 1 lcc 1
  user@host> show chassis environment fpc 9
  ```

- M120 router—Replace ***slot*** with a value from **0** through **5.**
- MX240 router—Replace ***slot*** with a value from **0** through **2**.
- MX480 router—Replace ***slot*** with a value from **0** through **5**.
- MX960 router—Replace ***slot*** with a value from **0** through **11**.
- MX2010 router—Replace ***slot*** with a value from **0** through **9**.
- MX2020 router—Replace ***slot*** with a value from **0** through **19**.
- MX2008 router—Replace ***slot*** with a value from **0** through **9**.
- Other routers—Replace ***slot*** with a value from **0** through **7**.

- EX Series switches:
  - EX3200 switches and EX4200 standalone switches—Replace ***slot*** with 0.
  - EX4200 switches in a Virtual Chassis configuration—Replace ***slot*** with a value from 0 through 9 (switch's member ID).
  - EX6210 switches–Replace ***slot*** with a value from 0 through 3 (line card only), 4 or 5 (line card or Switch Fabric and Rotuing Engine (SRE) module), or 6 through 9 (line card only).
  - EX8208 switches—Replace ***slot*** with a value from 0 through 7 (line card).
  - EX8216 switches—Replace ***slot*** with a value from 0 through 15 (line card).
- QFX3500 switches —Replace ***fpc-slot*** with 0 through 15.
- PTX5000 Packet Transport Router—Replace ***fpc-slot*** with 0 through 7.
- PTX3000 Packet Transport Router—Replace ***fpc-slot*** with 0 through 15.

Required Privilege Level
view

RELATED DOCUMENTATION

request chassis fpc | **623**

show chassis fpc | **1507**

show chassis fpc-feb-connectivity | **1568**

Resynchronizing FPC Sequence Numbers with Active FPCs when an FPC Comes Online | **196**

MX960 Flexible PIC Concentrator Description

List of Sample Output

show chassis environment fpc (M120 Router) on page 937
show chassis environment fpc (M160 Router) on page 938
show chassis environment fpc (M320 Router) on page 939
show chassis environment fpc (MX2020 Router) on page 940
show chassis environment fpc (MX2010 Router) on page 943
show chassis environment fpc (MX2008 Router) on page 947
show chassis environment fpc (MX240 Router) on page 952
show chassis environment fpc (MX480 Router) on page 954
show chassis environment fpc (MX960 Router MPC10E-15C-MRATE) on page 954
show chassis environment fpc (MX960 Router) on page 959
show chassis environment fpc (MX480 Router with 100-Gigabit Ethernet CFP) on page 960

show chassis environment fpc (MX240, MX480, MX960 with Application Services Modular Line Card on page 962
show chassis environment fpc (MX10003 Router) on page 962
show chassis environment fpc (MX204 Router) on page 967
show chassis environment fpc (MX10008 Router) on page 967
show chassis environment fpc (T320, T640, and T1600 Routers) on page 977
show chassis environment fpc (T4000 Router) on page 978
show chassis environment fpc lcc (TX Matrix Router) on page 985
show chassis environment fpc lcc (TX Matrix Plus Router) on page 986
show chassis environment fpc (QFX Series and OCX Series) on page 987
show chassis environment fpc interconnect-device (QFabric Systems) on page 987
show chassis environment fpc 5(PTX3000 Packet Transport Router) on page 988
show chassis environment fpc 0 (PTX5000 Packet Transport Router) on page 988
show chassis environment fpc 07 (PTX5000 Packet Transport Router with FPC2-PTX-P1A) on page 989
show chassis environment fpc (PTX10008 router) on page 991
show chassis environment fpc (PTX10016 router) on page 996
show chassis environment FPC 1 (MX Routers with Media Services Blade [MSB]) on page 1000
show chassis environment FPC (Junos OS Evolved) on page 1001

Output Fields

Table 43 on page 935 lists the output fields for the **show chassis environment fpc** command. Output fields are listed in the approximate order in which they appear.

Table 43: show chassis environment fpc Output Fields

Field Name	Field Description
State	Status of the FPC: • **Unknown**—FPC is not detected by the router. • **Empty**—No FPC is present. • **Present**—FPC is detected by the chassis daemon but is either not supported by the current version of the Junos OS, or the FPC is coming up but not yet online. • **Ready**—FPC is in intermediate or transition state. • **Announce online**—Intermediate state during which the FPC is coming up but not yet online, and the chassis manager acknowledges the chassisd FPC online initiative. • **Online**—FPC is online and running. • **Offline**—FPC is powered down. • **Diagnostics**—FPC is set to operate in diagnostics mode.
Temperature	(M40e and M160 routers and QFX Series only) Temperature of the air flowing past the FPC.

Table 43: show chassis environment fpc Output Fields *(continued)*

Field Name	Field Description
PMB Temperature	(PTX Series only) Temperature of the air flowing past the PMB (bottom of the FPC). The PTX5000 Packet Transport Router with FPC2-PTX-P1A include multiple temperatures for PMB (**TEMP0** and **TEMP1**).
PMB CPU Temperature	(PTX5000 Packet Transport Router with FPC2-PTX-P1A only) Temperature of the air flowing past the PMB CPU.
Temperature Intake	(M320 routers, MX2010 routers, MX2020 routers, MX2008 routers, and PTX Series only) Temperature of the air flowing into the chassis.
Temperature Top	(T Series routers only) Temperature of the air flowing past the top of the FPC.
Temperature Exhaust	(M120 and M320 routers, MX2010 routers, MX2020 routers, MX2008 routers, and PTX Series only) Temperature of the air flowing out of the chassis. The PTX Series Packet Transport Routers, and the MX2010, MX2020, and MX2008 routers include exhaust temperatures for multiple zones (**Exhaust A** and **Exhaust B**).
Temperature Bottom	(T Series routers only) Temperature of the air flowing past the bottom of the FPC.
TL *n* Temperature	(PTX Series only) Temperature of the air flowing past the specified TL area of the packet forwarding engine (PFE) on the FPC.
TQ *n* Temperature	(PTX Series only) Temperature of the air flowing past the specified TQ area of the packet forwarding engine (PFE) on the FPC.
Temperature MMBO	(T640 router only) Temperature of the air flowing past the type 3 FPC.
Temperature MMB1	(M320 and T Series routers only) Temperature of the air flowing past the type 1, type 2, and type 3 FPC.
Power	Information about the voltage supplied to the FPC. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
CMB Revision or **BUS revision**	Revision level of the chassis management bus device (M Series router) or bus (T Series routers).

Sample Output

show chassis environment fpc (M120 Router)

```
user@host> show chassis environment fpc
```

```
FPC 2 status:
  State                       Online
  Temperature Exhaust A       32 degrees C / 89 degrees F
  Temperature Exhaust B       31 degrees C / 87 degrees F
  Power A-Board
    1.2 V                      1202 mV
    1.5 V                      1508 mV
    1.8 V                      1798 mV
    2.5 V                      2507 mV
    3.3 V                      3351 mV
    5.0 V                      4995 mV
    3.3 V bias                 3296 mV
    1.2 V Rocket IO            1205 mV
    1.5 V Rocket IO            1501 mV
  I2C Slave Revision          12
FPC 3 status:
  State                       Online
  Temperature Exhaust A       31 degrees C / 87 degrees F
  Temperature Exhaust B       33 degrees C / 91 degrees F
  Power A-Board
    1.2 V                      1211 mV
    1.5 V                      1501 mV
    1.8 V                      1798 mV
    2.5 V                      2471 mV
    3.3 V                      3293 mV
    5.0 V                      4930 mV
    3.3 V bias                 3296 mV
    1.2 V Rocket IO            1205 mV
    1.5 V Rocket IO            1501 mV
  Power B-Board
    1.2 V                      1214 mV
    1.5 V                      1501 mV
    2.5 V                      2471 mV
    3.3 V                      3300 mV
    5.0 V                      4943 mV
    3.3 V bias                 3296 mV
    1.2 V Rocket IO            1205 mV
    1.5 V Rocket IO            1501 mV
  I2C Slave Revision          12
```

```
FPC 4 status:
  State                       Online
  Temperature Exhaust A       32 degrees C / 89 degrees F
  Temperature Exhaust B       30 degrees C / 86 degrees F
  Power A-Board
    1.2 V                      1195 mV
    1.5 V                      1504 mV
    1.8 V                      1801 mV
    2.5 V                      2504 mV
    3.3 V                      3293 mV
    5.0 V                      4917 mV
    3.3 V bias                 3296 mV
    1.2 V Rocket IO            1202 mV
    1.5 V Rocket IO            1492 mV
  I2C Slave Revision          12
```

show chassis environment fpc (M160 Router)

`user@host>` **show chassis environment fpc**

```
FPC 0 status:
  State                         Online
  Temperature                42 degrees C / 107 degrees F
  Power:
    1.5 V                  1500 mV
    2.5 V                  2509 mV
    3.3 V                  3308 mV
    5.0 V                  4991 mV
    5.0 V bias             4952 mV
    8.0 V bias             8307 mV
  CMB Revision               12
FPC 1 status:
  State                         Online
  Temperature                45 degrees C / 113 degrees F
  Power:
    1.5 V                  1498 mV
    2.5 V                  2501 mV
    3.3 V                  3319 mV
    5.0 V                  5020 mV
    5.0 V bias             5025 mV
    8.0 V bias             8307 mV
  CMB Revision               12
```

show chassis environment fpc (M320 Router)

user@host> **show chassis environment fpc**

```
FPC 0 status:
  State                           Online
  Temperature Intake           27 degrees C / 80 degrees F
  Temperature Exhaust          38 degrees C / 100 degrees F
  Temperature MMB1             31 degrees C / 87 degrees F
  Power:
    1.5 V                    1487 mV
    1.5 V *                  1494 mV
    1.8 V                    1821 mV
    2.5 V                    2533 mV
    3.3 V                    3323 mV
    5.0 V                    5028 mV
    3.3 V bias               3296 mV
    5.0 V bias               4984 mV
  CMB Revision                 16
FPC 1 status:
  State                           Online
  Temperature Intake           27 degrees C / 80 degrees F
  Temperature Exhaust          37 degrees C / 98 degrees F
  Temperature MMB1             32 degrees C / 89 degrees F
  Power:
    1.5 V                    1504 mV
    1.5 V *                  1499 mV
    1.8 V                    1820 mV
    2.5 V                    2529 mV
    3.3 V                    3328 mV
    5.0 V                    5013 mV
    3.3 V bias               3294 mV
    5.0 V bias               4984 mV
  CMB Revision                 16
FPC 2 status:
  State                           Online
  Temperature Intake           28 degrees C / 82 degrees F
  Temperature Exhaust          38 degrees C / 100 degrees F
  Temperature MMB1             32 degrees C / 89 degrees F
  Power:
    1.5 V                    1498 mV
    1.5 V *                  1487 mV
    1.8 V                    1816 mV
    2.5 V                    2531 mV
    3.3 V                    3324 mV
```

```
    5.0 V                    5025 mV
    3.3 V bias               3277 mV
    5.0 V bias               5013 mV
  CMB Revision                 17
FPC 3 status:
...
```

show chassis environment fpc (MX2020 Router)

`user@host>` **show chassis environment fpc**

```
FPC 0 status:
  State                      Online
  Temperature Intake         41 degrees C / 105 degrees F
  Temperature Exhaust A      48 degrees C / 118 degrees F
  Temperature Exhaust B      60 degrees C / 140 degrees F
  Temperature LU 0 TSen      56 degrees C / 132 degrees F
  Temperature LU 0 Chip      59 degrees C / 138 degrees F
  Temperature LU 1 TSen      56 degrees C / 132 degrees F
  Temperature LU 1 Chip      61 degrees C / 141 degrees F
  Temperature LU 2 TSen      56 degrees C / 132 degrees F
  Temperature LU 2 Chip      52 degrees C / 125 degrees F
  Temperature LU 3 TSen      56 degrees C / 132 degrees F
  Temperature LU 3 Chip      52 degrees C / 125 degrees F
  Temperature MQ 0 TSen      49 degrees C / 120 degrees F
  Temperature MQ 0 Chip      49 degrees C / 120 degrees F
  Temperature MQ 1 TSen      49 degrees C / 120 degrees F
  Temperature MQ 1 Chip      52 degrees C / 125 degrees F
  Temperature MQ 2 TSen      49 degrees C / 120 degrees F
  Temperature MQ 2 Chip      45 degrees C / 113 degrees F
  Temperature MQ 3 TSen      49 degrees C / 120 degrees F
  Temperature MQ 3 Chip      46 degrees C / 114 degrees F
  Power
    AS-BIAS3V3-zl2105         3299 mV
    AS-VDD1V8-zl2006          1807 mV
    AS-VDD2V5-zl2006          2512 mV
    AS-AVDD1V0-zl2004          997 mV
    AS-PCIE_1V0-zl2004         996 mV
    AS-VDD3V3-zl2004          3294 mV
    AS-VDD_1V5A-zl2004        1501 mV
    AS-VDD_1V5B-zl2004        1498 mV
    AS-LU0_1V0-zl2004          998 mV
    AS-LU1_1V0-zl2004         1002 mV
    AS-MQ0_1V0-zl2004          999 mV
```

```
    AS-MQ1_1V0-zl2004          994 mV
    AS-LU2_1V0-zl2004         1000 mV
    AS-LU3_1V0-zl2004          998 mV
    AS-MQ2_1V0-zl2004         1002 mV
    AS-MQ3_1V0-zl2004          999 mV
    AS-PMB_1V1-zl2006         1096 mV
  I2C Slave Revision          68
FPC 1 status:
  State                       Online
  Temperature Intake          39 degrees C / 102 degrees F
  Temperature Exhaust A       48 degrees C / 118 degrees F
  Temperature Exhaust B       55 degrees C / 131 degrees F
  Temperature LU 0 TSen       52 degrees C / 125 degrees F
  Temperature LU 0 Chip       54 degrees C / 129 degrees F
  Temperature LU 1 TSen       52 degrees C / 125 degrees F
  Temperature LU 1 Chip       56 degrees C / 132 degrees F
  Temperature LU 2 TSen       52 degrees C / 125 degrees F
  Temperature LU 2 Chip       49 degrees C / 120 degrees F
  Temperature LU 3 TSen       52 degrees C / 125 degrees F
  Temperature LU 3 Chip       50 degrees C / 122 degrees F
  Temperature MQ 0 TSen       48 degrees C / 118 degrees F
  Temperature MQ 0 Chip       48 degrees C / 118 degrees F
  Temperature MQ 1 TSen       48 degrees C / 118 degrees F
  Temperature MQ 1 Chip       51 degrees C / 123 degrees F
  Temperature MQ 2 TSen       48 degrees C / 118 degrees F
  Temperature MQ 2 Chip       45 degrees C / 113 degrees F
  Temperature MQ 3 TSen       48 degrees C / 118 degrees F
  Temperature MQ 3 Chip       45 degrees C / 113 degrees F
  Power
    AS-BIAS3V3-zl2105         3291 mV
    AS-VDD1V8-zl2006          1786 mV
    AS-VDD2V5-zl2006          2496 mV
    AS-AVDD1V0-zl2004         1000 mV
    AS-PCIE_1V0-zl2004        1000 mV
    AS-VDD3V3-zl2004          3294 mV
    AS-VDD_1V5A-zl2004        1500 mV
    AS-VDD_1V5B-zl2004        1498 mV
    AS-LU0_1V0-zl2004         1003 mV
    AS-LU1_1V0-zl2004         1000 mV
    AS-MQ0_1V0-zl2004         1000 mV
    AS-MQ1_1V0-zl2004          995 mV
    AS-LU2_1V0-zl2004         1002 mV
    AS-LU3_1V0-zl2004          997 mV
    AS-MQ2_1V0-zl2004         1000 mV
```

```
    AS-MQ3_1V0-zl2004          998 mV
    AS-PMB_1V1-zl2006         1096 mV
  I2C Slave Revision          68
FPC 2 status:
  State                       Online
  Temperature Intake          39 degrees C / 102 degrees F
  Temperature Exhaust A       48 degrees C / 118 degrees F
  Temperature Exhaust B       58 degrees C / 136 degrees F
  Temperature LU 0 TSen       55 degrees C / 131 degrees F
  Temperature LU 0 Chip       57 degrees C / 134 degrees F
  Temperature LU 1 TSen       55 degrees C / 131 degrees F
  Temperature LU 1 Chip       63 degrees C / 145 degrees F
  Temperature LU 2 TSen       55 degrees C / 131 degrees F
  Temperature LU 2 Chip       51 degrees C / 123 degrees F
  Temperature LU 3 TSen       55 degrees C / 131 degrees F
  Temperature LU 3 Chip       52 degrees C / 125 degrees F
  Temperature MQ 0 TSen       48 degrees C / 118 degrees F
  Temperature MQ 0 Chip       50 degrees C / 122 degrees F
  Temperature MQ 1 TSen       48 degrees C / 118 degrees F
  Temperature MQ 1 Chip       52 degrees C / 125 degrees F
  Temperature MQ 2 TSen       48 degrees C / 118 degrees F
  Temperature MQ 2 Chip       47 degrees C / 116 degrees F
  Temperature MQ 3 TSen       48 degrees C / 118 degrees F
  Temperature MQ 3 Chip       47 degrees C / 116 degrees F
  Power
    AS-BIAS3V3-zl2105         3299 mV
    AS-VDD1V8-zl2006          1805 mV
    AS-VDD2V5-zl2006          2510 mV
    AS-AVDD1V0-zl2004          999 mV
    AS-PCIE_1V0-zl2004         998 mV
    AS-VDD3V3-zl2004          3296 mV
    AS-VDD_1V5A-zl2004        1492 mV
    AS-VDD_1V5B-zl2004        1497 mV
    AS-LU0_1V0-zl2004          997 mV
    AS-LU1_1V0-zl2004         1000 mV
    AS-MQ0_1V0-zl2004          998 mV
    AS-MQ1_1V0-zl2004         1001 mV
    AS-LU2_1V0-zl2004          996 mV
    AS-LU3_1V0-zl2004          995 mV
    AS-MQ2_1V0-zl2004          998 mV
    AS-MQ3_1V0-zl2004          997 mV
    AS-PMB_1V1-zl2006         1100 mV
  I2C Slave Revision          68
FPC 3 status:
```

```
  State                     Online
  Temperature Intake        41 degrees C / 105 degrees F
  Temperature Exhaust A     48 degrees C / 118 degrees F
  Temperature Exhaust B     58 degrees C / 136 degrees F
  Temperature LU 0 TSen     56 degrees C / 132 degrees F
  Temperature LU 0 Chip     59 degrees C / 138 degrees F
  Temperature LU 1 TSen     56 degrees C / 132 degrees F
  Temperature LU 1 Chip     61 degrees C / 141 degrees F
  Temperature LU 2 TSen     56 degrees C / 132 degrees F
  Temperature LU 2 Chip     51 degrees C / 123 degrees F
  Temperature LU 3 TSen     56 degrees C / 132 degrees F
  Temperature LU 3 Chip     53 degrees C / 127 degrees F
  Temperature MQ 0 TSen     50 degrees C / 122 degrees F
  Temperature MQ 0 Chip     51 degrees C / 123 degrees F
  Temperature MQ 1 TSen     50 degrees C / 122 degrees F
  Temperature MQ 1 Chip     55 degrees C / 131 degrees F
  Temperature MQ 2 TSen     50 degrees C / 122 degrees F
  Temperature MQ 2 Chip     47 degrees C / 116 degrees F
  Temperature MQ 3 TSen     50 degrees C / 122 degrees F
  Temperature MQ 3 Chip     50 degrees C / 122 degrees F
  Power
    AS-BIAS3V3-zl2105        3305 mV
    AS-VDD1V8-zl2006         1810 mV
    AS-VDD2V5-zl2006         2508 mV
    AS-AVDD1V0-zl2004         999 mV
    AS-PCIE_1V0-zl2004       1001 mV
    AS-VDD3V3-zl2004         3294 mV
    AS-VDD_1V5A-zl2004       1500 mV
    AS-VDD_1V5B-zl2004       1498 mV
    AS-LU0_1V0-zl2004         998 mV
    AS-LU1_1V0-zl2004         998 mV
    AS-MQ0_1V0-zl2004         999 mV
    AS-MQ1_1V0-zl2004         998 mV
    AS-LU2_1V0-zl2004        1000 mV
    AS-LU3_1V0-zl2004        1001 mV
    AS-MQ2_1V0-zl2004         996 mV
    AS-MQ3_1V0-zl2004         998 mV
    AS-PMB_1V1-zl2006        1098 mV
  I2C Slave Revision        68
FPC 4 status:
...
```

show chassis environment fpc (MX2010 Router)

`user@host>` **show chassis environment fpc**

```
FPC 0 status:
  State                       Online
  Temperature Intake          36 degrees C / 96 degrees F
  Temperature Exhaust A       42 degrees C / 107 degrees F
  Temperature Exhaust B       51 degrees C / 123 degrees F
  Temperature LU 0 TSen       49 degrees C / 120 degrees F
  Temperature LU 0 Chip       50 degrees C / 122 degrees F
  Temperature LU 1 TSen       49 degrees C / 120 degrees F
  Temperature LU 1 Chip       54 degrees C / 129 degrees F
  Temperature LU 2 TSen       49 degrees C / 120 degrees F
  Temperature LU 2 Chip       45 degrees C / 113 degrees F
  Temperature LU 3 TSen       49 degrees C / 120 degrees F
  Temperature LU 3 Chip       46 degrees C / 114 degrees F
  Temperature MQ 0 TSen       40 degrees C / 104 degrees F
  Temperature MQ 0 Chip       41 degrees C / 105 degrees F
  Temperature MQ 1 TSen       40 degrees C / 104 degrees F
  Temperature MQ 1 Chip       44 degrees C / 111 degrees F
  Temperature MQ 2 TSen       40 degrees C / 104 degrees F
  Temperature MQ 2 Chip       38 degrees C / 100 degrees F
  Temperature MQ 3 TSen       40 degrees C / 104 degrees F
  Temperature MQ 3 Chip       41 degrees C / 105 degrees F
  Power
    AS-BIAS3V3-zl2105          3300 mV
    AS-VDD1V8-zl2006           1805 mV
    AS-VDD2V5-zl2006           2505 mV
    AS-AVDD1V0-zl2004           998 mV
    AS-PCIE_1V0-zl2004          999 mV
    AS-VDD3V3-zl2004           3303 mV
    AS-VDD_1V5A-zl2004         1497 mV
    AS-VDD_1V5B-zl2004         1497 mV
    AS-LU0_1V0-zl2004           998 mV
    AS-LU1_1V0-zl2004          1003 mV
    AS-MQ0_1V0-zl2004           998 mV
    AS-MQ1_1V0-zl2004           998 mV
    AS-LU2_1V0-zl2004           997 mV
    AS-LU3_1V0-zl2004          1001 mV
    AS-MQ2_1V0-zl2004           996 mV
    AS-MQ3_1V0-zl2004           994 mV
    AS-PMB_1V1-zl2006          1097 mV
  I2C Slave Revision          68
FPC 1 status:
  State                       Online
  Temperature Intake          34 degrees C / 93 degrees F
  Temperature Exhaust A       46 degrees C / 114 degrees F
```

```
  Temperature Exhaust B      54 degrees C / 129 degrees F
  Temperature LU 0 TSen      45 degrees C / 113 degrees F
  Temperature LU 0 Chip      55 degrees C / 131 degrees F
  Temperature LU 1 TSen      45 degrees C / 113 degrees F
  Temperature LU 1 Chip      44 degrees C / 111 degrees F
  Temperature LU 2 TSen      45 degrees C / 113 degrees F
  Temperature LU 2 Chip      50 degrees C / 122 degrees F
  Temperature LU 3 TSen      45 degrees C / 113 degrees F
  Temperature LU 3 Chip      58 degrees C / 136 degrees F
  Temperature XM 0 TSen      45 degrees C / 113 degrees F
  Temperature XM 0 Chip      51 degrees C / 123 degrees F
  Temperature XF 0 TSen      45 degrees C / 113 degrees F
  Temperature XF 0 Chip      63 degrees C / 145 degrees F
  Temperature PLX Switch TSen45 degrees C / 113 degrees F
  Temperature PLX Switch Chip47 degrees C / 116 degrees F
  Power
    MPC-BIAS3V3-zl2105        3300 mV
    MPC-VDD3V3-zl6100         3294 mV
    MPC-VDD2V5-zl6100         2505 mV
    MPC-VDD1V8-zl2004         1796 mV
    MPC-AVDD1V0-zl2004         991 mV
    MPC-VDD1V2-zl6100         1196 mV
    MPC-VDD1V5A-zl2004        1491 mV
    MPC-VDD1V5B-zl2004        1492 mV
    MPC-XF_0V9-zl2004          996 mV
    MPC-PCIE_1V0-zl6100       1003 mV
    MPC-LU0_1V0-zl2004         996 mV
    MPC-LU1_1V0-zl2004         996 mV
    MPC-LU2_1V0-zl2004         998 mV
    MPC-LU3_1V0-zl2004         994 mV
    MPC-12VA-BMR453          12031 mV
    MPC-12VB-BMR453          12003 mV
    MPC-PMB_1V1-zl2006        1104 mV
    MPC-PMB_1V2-zl2106        1194 mV
    MPC-XM_0V9-vt273m          911 mV
  I2C Slave Revision         110
FPC 8 status:
  State                      Online
  Temperature Intake         32 degrees C / 89 degrees F
  Temperature Exhaust A      44 degrees C / 111 degrees F
  Temperature Exhaust B      37 degrees C / 98 degrees F
  Temperature LU 0 TCAM TSen 41 degrees C / 105 degrees F
  Temperature LU 0 TCAM Chip 49 degrees C / 120 degrees F
  Temperature LU 0 TSen      41 degrees C / 105 degrees F
```

```
  Temperature LU 0 Chip      52 degrees C / 125 degrees F
  Temperature MQ 0 TSen      41 degrees C / 105 degrees F
  Temperature MQ 0 Chip      47 degrees C / 116 degrees F
  Temperature LU 1 TCAM TSen 39 degrees C / 102 degrees F
  Temperature LU 1 TCAM Chip 42 degrees C / 107 degrees F
  Temperature LU 1 TSen      39 degrees C / 102 degrees F
  Temperature LU 1 Chip      46 degrees C / 114 degrees F
  Temperature MQ 1 TSen      39 degrees C / 102 degrees F
  Temperature MQ 1 Chip      45 degrees C / 113 degrees F
  Power
    MPC-BIAS3V3-zl2105        3296 mV
    MPC-VDD3V3-zl2006         3298 mV
    MPC-VDD2V5-zl2006         2505 mV
    MPC-TCAM_1V0-zl2004        997 mV
    MPC-AVDD1V0-zl2006        1007 mV
    MPC-VDD1V8-zl2006         1803 mV
    MPC-PCIE_1V0-zl2006       1004 mV
    MPC-LU0_1V0-zl2004        1000 mV
    MPC-MQ0_1V0-zl2004         999 mV
    MPC-VDD_1V5-zl2004        1498 mV
    MPC-PMB_1V1-zl2006        1102 mV
    MPC-9VA-BMR453            9009 mV
    MPC-9VB-BMR453            8960 mV
    MPC-PMB_1V2-zl2105        1202 mV
    MPC-LU1_1V0-zl2004        1005 mV
    MPC-MQ1_1V0-zl2004        1000 mV
  I2C Slave Revision         70
FPC 9 status:
  State                      Online
  Temperature Intake         34 degrees C / 93 degrees F
  Temperature Exhaust A      41 degrees C / 105 degrees F
  Temperature Exhaust B      54 degrees C / 129 degrees F
  Temperature LU 0 TSen      51 degrees C / 123 degrees F
  Temperature LU 0 Chip      52 degrees C / 125 degrees F
  Temperature LU 1 TSen      51 degrees C / 123 degrees F
  Temperature LU 1 Chip      55 degrees C / 131 degrees F
  Temperature LU 2 TSen      51 degrees C / 123 degrees F
  Temperature LU 2 Chip      47 degrees C / 116 degrees F
  Temperature LU 3 TSen      51 degrees C / 123 degrees F
  Temperature LU 3 Chip      47 degrees C / 116 degrees F
  Temperature MQ 0 TSen      40 degrees C / 104 degrees F
  Temperature MQ 0 Chip      42 degrees C / 107 degrees F
  Temperature MQ 1 TSen      40 degrees C / 104 degrees F
  Temperature MQ 1 Chip      44 degrees C / 111 degrees F
```

```
  Temperature MQ 2 TSen      40 degrees C / 104 degrees F
  Temperature MQ 2 Chip      38 degrees C / 100 degrees F
  Temperature MQ 3 TSen      40 degrees C / 104 degrees F
  Temperature MQ 3 Chip      40 degrees C / 104 degrees F
  Power
    AS-BIAS3V3-zl2105         3302 mV
    AS-VDD1V8-zl2006          1808 mV
    AS-VDD2V5-zl2006          2513 mV
    AS-AVDD1V0-zl2004          997 mV
    AS-PCIE_1V0-zl2004         999 mV
    AS-VDD3V3-zl2004          3294 mV
    AS-VDD_1V5A-zl2004        1503 mV
    AS-VDD_1V5B-zl2004        1502 mV
    AS-LU0_1V0-zl2004          996 mV
    AS-LU1_1V0-zl2004          999 mV
    AS-MQ0_1V0-zl2004          997 mV
    AS-MQ1_1V0-zl2004          999 mV
    AS-LU2_1V0-zl2004          997 mV
    AS-LU3_1V0-zl2004          998 mV
    AS-MQ2_1V0-zl2004         1000 mV
    AS-MQ3_1V0-zl2004         1000 mV
    AS-PMB_1V1-zl2006         1102 mV
  I2C Slave Revision         68
```

show chassis environment fpc (MX2008 Router)

`user@host>` **show chassis environment fpc**

```
FPC 0 status:
  State                      Online
  Temperature Intake         29 degrees C / 84 degrees F
  Temperature Exhaust A      43 degrees C / 109 degrees F
  Temperature Exhaust B      42 degrees C / 107 degrees F
  Temperature XL 0 TSen      38 degrees C / 100 degrees F
  Temperature XL 0 Chip      53 degrees C / 127 degrees F
  Temperature XL 0 XR2 0 TSen38 degrees C / 100 degrees F
  Temperature XL 0 XR2 0 Chip60 degrees C / 140 degrees F
  Temperature XL 0 XR2 1 TSen38 degrees C / 100 degrees F
  Temperature XL 0 XR2 1 Chip60 degrees C / 140 degrees F
  Temperature XL 1 TSen      30 degrees C / 86 degrees F
  Temperature XL 1 Chip      43 degrees C / 109 degrees F
  Temperature XL 1 XR2 0 TSen30 degrees C / 86 degrees F
  Temperature XL 1 XR2 0 Chip50 degrees C / 122 degrees F
  Temperature XL 1 XR2 1 TSen30 degrees C / 86 degrees F
```

```
  Temperature XL 1 XR2 1 Chip50 degrees C / 122 degrees F
  Temperature XM 0 TSen      42 degrees C / 107 degrees F
  Temperature XM 0 Chip      49 degrees C / 120 degrees F
  Temperature XM 1 TSen      42 degrees C / 107 degrees F
  Temperature XM 1 Chip      42 degrees C / 107 degrees F
  Temperature XM 2 TSen      42 degrees C / 107 degrees F
  Temperature XM 2 Chip      42 degrees C / 107 degrees F
  Temperature XM 3 TSen      42 degrees C / 107 degrees F
  Temperature XM 3 Chip      40 degrees C / 104 degrees F
  Temperature PCIe Switch TSen42 degrees C / 107 degrees F
  Temperature PCIe Switch Chip22 degrees C / 71 degrees F
  Power
    MPC-VDD_3V3-vt273m          3304 mV
    MPC-VDD_2V5-vt273m          2503 mV
    MPC-VDD_1V5-vt273m          1499 mV
    MPC-PCIE_0V9-vt273m          900 mV
    MPC-VDD_1V8-vt273m          1799 mV
    MPC-VDD_1V2-vt273m          1203 mV
    MPC-XM01_AVDD_1V0-vt273     1001 mV
    MPC-XM23_AVDD_1V0-vt273     1001 mV
    MPC-XM0_0V9-vt273m           900 mV
    MPC-XM1_0V9-vt273m           901 mV
    MPC-XM2_0V9-vt273m           903 mV
    MPC-XM3_0V9-vt273m           899 mV
    MPC-XL0_XR0_0V9-vt273m       899 mV
    MPC-XL0_XR1_0V9-vt273m       903 mV
    MPC-XL0_0V9-vt273m           899 mV
    MPC-XL0_AVDD_1V0-vt273m     1000 mV
    MPC-XL0_VDD_1V5-vt273m      1498 mV
    MPC-XL0_XR_1V2-vt273m       1200 mV
    MPC-XL1_XR0_0V9-vt273m       899 mV
    MPC-XL1_XR1_0V9-vt273m       899 mV
    MPC-XL1_0V9-vt273m           900 mV
    MPC-XL1_AVDD_1V0-vt273m     1000 mV
    MPC-XL1_VDD_1V5-vt273m      1501 mV
    MPC-XL1_XR_1V2-vt273m       1199 mV
    MPC-PMB-1V05-ltc2978        1049 mV
    MPC-PMB-1V5-ltc2978         1500 mV
    MPC-PMB-2V5-ltc2978         2500 mV
    MPC-PMB-3V3-ltc2978         3298 mV
  I2C Slave Revision         20
FPC 1 status:
  State                      Online
  Temperature Intake         29 degrees C / 84 degrees F
```

```
Temperature Exhaust A      52 degrees C / 125 degrees F
Temperature Exhaust B      44 degrees C / 111 degrees F
Temperature EA0 TSen       55 degrees C / 131 degrees F
Temperature EA0 Chip       48 degrees C / 118 degrees F
Temperature EA0_XR0 TSen   55 degrees C / 131 degrees F
Temperature EA0_XR0 Chip   57 degrees C / 134 degrees F
Temperature EA0_XR1 TSen   55 degrees C / 131 degrees F
Temperature EA0_XR1 Chip   54 degrees C / 129 degrees F
Temperature EA1 TSen       55 degrees C / 131 degrees F
Temperature EA1 Chip       50 degrees C / 122 degrees F
Temperature EA1_XR0 TSen   55 degrees C / 131 degrees F
Temperature EA1_XR0 Chip   59 degrees C / 138 degrees F
Temperature EA1_XR1 TSen   55 degrees C / 131 degrees F
Temperature EA1_XR1 Chip   59 degrees C / 138 degrees F
Temperature PEX TSen       55 degrees C / 131 degrees F
Temperature PEX Chip       39 degrees C / 102 degrees F
Temperature EA2 TSen       43 degrees C / 109 degrees F
Temperature EA2 Chip       39 degrees C / 102 degrees F
Temperature EA2_XR0 TSen   43 degrees C / 109 degrees F
Temperature EA2_XR0 Chip   45 degrees C / 113 degrees F
Temperature EA2_XR1 TSen   43 degrees C / 109 degrees F
Temperature EA2_XR1 Chip   43 degrees C / 109 degrees F
Temperature EA3 TSen       43 degrees C / 109 degrees F
Temperature EA3 Chip       41 degrees C / 105 degrees F
Temperature EA3_XR0 TSen   43 degrees C / 109 degrees F
Temperature EA3_XR0 Chip   50 degrees C / 122 degrees F
Temperature EA3_XR1 TSen   43 degrees C / 109 degrees F
Temperature EA3_XR1 Chip   46 degrees C / 114 degrees F
Temperature EA0_HMC0 Logic die 61 degrees C / 141 degrees F
Temperature EA0_HMC0 DRAM botm 58 degrees C / 136 degrees F
Temperature EA0_HMC1 Logic die 62 degrees C / 143 degrees F
Temperature EA0_HMC1 DRAM botm 59 degrees C / 138 degrees F
Temperature EA0_HMC2 Logic die 59 degrees C / 138 degrees F
Temperature EA0_HMC2 DRAM botm 56 degrees C / 132 degrees F
Temperature EA1_HMC0 Logic die 67 degrees C / 152 degrees F
Temperature EA1_HMC0 DRAM botm 64 degrees C / 147 degrees F
Temperature EA1_HMC1 Logic die 65 degrees C / 149 degrees F
Temperature EA1_HMC1 DRAM botm 62 degrees C / 143 degrees F
Temperature EA1_HMC2 Logic die 63 degrees C / 145 degrees F
Temperature EA1_HMC2 DRAM botm 60 degrees C / 140 degrees F
Temperature EA2_HMC0 Logic die 51 degrees C / 123 degrees F
Temperature EA2_HMC0 DRAM botm 48 degrees C / 118 degrees F
Temperature EA2_HMC1 Logic die 55 degrees C / 131 degrees F
Temperature EA2_HMC1 DRAM botm 52 degrees C / 125 degrees F
```

```
Temperature EA2_HMC2 Logic die 52 degrees C / 125 degrees F
Temperature EA2_HMC2 DRAM botm 49 degrees C / 120 degrees F
Temperature EA3_HMC0 Logic die 51 degrees C / 123 degrees F
Temperature EA3_HMC0 DRAM botm 48 degrees C / 118 degrees F
Temperature EA3_HMC1 Logic die 52 degrees C / 125 degrees F
Temperature EA3_HMC1 DRAM botm 49 degrees C / 120 degrees F
Temperature EA3_HMC2 Logic die 52 degrees C / 125 degrees F
Temperature EA3_HMC2 DRAM botm 49 degrees C / 120 degrees F
Power
  MPC-EA0_0V9-vt1527mb         950 mV
  MPC-EA1_0V9-vt1527mb         950 mV
  MPC-EA2_0V9-vt1527mb         925 mV
  MPC-EA3_0V9-vt1527mb         924 mV
  MAX20751-1V0                1020 mV
  MAX20731-0V9                 891 mV
  MAX20751-EA0-AVDD1V0        1000 mV
  MAX20731-EA0-1V2            1189 mV
  MAX20731-EA0-HMC-1V2        1182 mV
  MAX20731-EA0-0V906           899 mV
  MAX20731-EA0-HMC-0V9         891 mV
  MAX20751-EA1-AVDD1V0        1000 mV
  MAX20731-EA1-1V2            1189 mV
  MAX20731-EA1-HMC-1V2        1182 mV
  MAX20731-EA1-0V906           899 mV
  MAX20731-EA1-HMC-0V9         889 mV
  MAX20751-EA2-AVDD1V0        1000 mV
  MAX20731-EA2-1V2            1186 mV
  MAX20731-EA2-HMC-1V2        1193 mV
  MAX20731-EA2-0V906           899 mV
  MAX20731-EA2-HMC-0V9         889 mV
  MAX20751-EA3-AVDD1V0        1000 mV
  MAX20731-EA3-1V2            1186 mV
  MAX20731-EA3-HMC-1V2        1193 mV
  MAX20731-EA3-0V906           897 mV
  MAX20731-EA3-HMC-0V9         894 mV
  MAX20731-3V3                3268 mV
  UCD9090_0-CH_1-EA0_PLL_     1010 mV
  UCD9090_0-CH_2-EA0_1V04     1038 mV
  UCD9090_0-CH_3-EA0_2V5      2499 mV
  UCD9090_0-CH_4-EA0_1V5      1494 mV
  UCD9090_0-CH_5-EA1_PLL_     1012 mV
  UCD9090_0-CH_6-EA1_1V04     1038 mV
  UCD9090_0-CH_7-EA1_2V5      2497 mV
  UCD9090_0-CH_8-EA1_1V5      1498 mV
```

```
    UCD9090_0-CH_9-VDD_1V8      1804 mV
    UCD9090_0-CH_10-VDD_2V5     2499 mV
    UCD9090_1-CH_1-EA2_PLL_     1017 mV
    UCD9090_1-CH_2-EA2_1V04     1041 mV
    UCD9090_1-CH_3-EA2_2V5      2499 mV
    UCD9090_1-CH_4-EA2_1V5      1503 mV
    UCD9090_1-CH_5-EA3_PLL_     1015 mV
    UCD9090_1-CH_6-EA3_1V04     1048 mV
    UCD9090_1-CH_7-EA3_2V5      2499 mV
    UCD9090_1-CH_8-EA3_1V5      1500 mV
    UCD9090_1-CH_9-VDD_1V5      1497 mV
    UCD9090_1-CH_10-VDD_1V2     1216 mV
    PMB PVCC 0.7V - 1.05V        802 mV
    PMB PVNN 0V - 1.02V          976 mV
    PMB 1.0V                    1002 mV
    PMB 1.1V                    1076 mV
    PMB 1.35V                   1347 mV
    PMB VDDQ 1.5V               1504 mV
    PMB 1.8V                    1804 mV
    PMB VDD 3.3V                3292 mV
    PMB BIAS 5.0V               5008 mV
    PMB USB 5.0V                5000 mV
    PMB 12V                    10866 mV
  I2C Slave Revision         112
FPC 7 status:
  State                      Online
  Temperature Intake         31 degrees C / 87 degrees F
  Temperature Exhaust A      46 degrees C / 114 degrees F
  Temperature Exhaust B      38 degrees C / 100 degrees F
  Temperature QX 0 TSen      49 degrees C / 120 degrees F
  Temperature QX 0 Chip      52 degrees C / 125 degrees F
  Temperature LU 0 TCAM TSen 49 degrees C / 120 degrees F
  Temperature LU 0 TCAM Chip 52 degrees C / 125 degrees F
  Temperature LU 0 TSen      49 degrees C / 120 degrees F
  Temperature LU 0 Chip      51 degrees C / 123 degrees F
  Temperature MQ 0 TSen      49 degrees C / 120 degrees F
  Temperature MQ 0 Chip      55 degrees C / 131 degrees F
  Temperature QX 1 TSen      41 degrees C / 105 degrees F
  Temperature QX 1 Chip      42 degrees C / 107 degrees F
  Temperature LU 1 TCAM TSen 41 degrees C / 105 degrees F
  Temperature LU 1 TCAM Chip 43 degrees C / 109 degrees F
  Temperature LU 1 TSen      41 degrees C / 105 degrees F
  Temperature LU 1 Chip      46 degrees C / 114 degrees F
  Temperature MQ 1 TSen      41 degrees C / 105 degrees F
```

```
  Temperature MQ 1 Chip      47 degrees C / 116 degrees F
  Power
    MPC-BIAS3V3-zl2105          3302 mV
    MPC-VDD3V3-zl2006           3307 mV
    MPC-VDD2V5-zl2006           2505 mV
    MPC-TCAM_1V0-zl2004         1000 mV
    MPC-AVDD1V0-zl2006          1006 mV
    MPC-VDD1V8-zl2006           1800 mV
    MPC-PCIE_1V0-zl2006         1000 mV
    MPC-LU0_1V0-zl2004           997 mV
    MPC-MQ0_1V0-zl2004           999 mV
    MPC-VDD_1V5-zl2004          1495 mV
    MPC-PMB_1V1-zl2006          1096 mV
    MPC-9VA-BMR453              9051 mV
    MPC-9VB-BMR453              8990 mV
    MPC-PMB_1V2-zl2106          1200 mV
    MPC-LU1_1V0-zl2004           997 mV
    MPC-MQ1_1V0-zl2004           998 mV
    MPC-QXM0_1V0-zl2006         1000 mV
    MPC-QXM1_1V0-zl2006          999 mV
  I2C Slave Revision          70
```

show chassis environment fpc (MX240 Router)

`user@host>` **show chassis environment fpc**

```
FPC 1 status:
  State                       Online
  Temperature Intake          34 degrees C / 93 degrees F
  Temperature Exhaust A       39 degrees C / 102 degrees F
  Temperature Exhaust B       53 degrees C / 127 degrees F
  Temperature I3 0 TSensor    51 degrees C / 123 degrees F
  Temperature I3 0 Chip       54 degrees C / 129 degrees F
  Temperature I3 1 TSensor    50 degrees C / 122 degrees F
  Temperature I3 1 Chip       53 degrees C / 127 degrees F
  Temperature I3 2 TSensor    48 degrees C / 118 degrees F
  Temperature I3 2 Chip       51 degrees C / 123 degrees F
  Temperature I3 3 TSensor    45 degrees C / 113 degrees F
  Temperature I3 3 Chip       48 degrees C / 118 degrees F
  Temperature IA 0 TSensor    45 degrees C / 113 degrees F
  Temperature IA 0 Chip       45 degrees C / 113 degrees F
  Temperature IA 1 TSensor    45 degrees C / 113 degrees F
  Temperature IA 1 Chip       49 degrees C / 120 degrees F
  Power
```

```
    1.5 V                     1492 mV
    2.5 V                     2507 mV
    3.3 V                     3306 mV
    1.8 V PFE 0               1801 mV
    1.8 V PFE 1               1804 mV
    1.8 V PFE 2               1798 mV
    1.8 V PFE 3               1798 mV
    1.2 V PFE 0               1169 mV
    1.2 V PFE 1               1189 mV
    1.2 V PFE 2               1182 mV
    1.2 V PFE 3               1176 mV
  I2C Slave Revision          42
FPC 2 status:
  State                       Online
  Temperature Intake          33 degrees C / 91 degrees F
  Temperature Exhaust A       41 degrees C / 105 degrees F
  Temperature Exhaust B       53 degrees C / 127 degrees F
  Temperature I3 0 TSensor    53 degrees C / 127 degrees F
  Temperature I3 0 Chip       58 degrees C / 136 degrees F
  Temperature I3 1 TSensor    52 degrees C / 125 degrees F
  Temperature I3 1 Chip       56 degrees C / 132 degrees F
  Temperature I3 2 TSensor    50 degrees C / 122 degrees F
  Temperature I3 2 Chip       52 degrees C / 125 degrees F
  Temperature I3 3 TSensor    46 degrees C / 114 degrees F
  Temperature I3 3 Chip       49 degrees C / 120 degrees F
  Temperature IA 0 TSensor    51 degrees C / 123 degrees F
  Temperature IA 0 Chip       49 degrees C / 120 degrees F
  Temperature IA 1 TSensor    48 degrees C / 118 degrees F
  Temperature IA 1 Chip       53 degrees C / 127 degrees F
  Power
    1.5 V                     1492 mV
    2.5 V                     2445 mV
    3.3 V                     3293 mV
    1.8 V PFE 0               1827 mV
    1.8 V PFE 1               1775 mV
    1.8 V PFE 2               1788 mV
    1.8 V PFE 3               1798 mV
    1.2 V PFE 0               1250 mV
    1.2 V PFE 1               1234 mV
    1.2 V PFE 2               1231 mV
    1.2 V PFE 3               1192 mV
  I2C Slave Revision          42
```

show chassis environment fpc (MX480 Router)

`user@host>` **show chassis environment fpc**

```
FPC 1 status:
  State                       Online
  Temperature Intake          36 degrees C / 96 degrees F
  Temperature Exhaust A       41 degrees C / 105 degrees F
  Temperature Exhaust B       55 degrees C / 131 degrees F
  Temperature I3 0 TSensor    55 degrees C / 131 degrees F
  Temperature I3 0 Chip       57 degrees C / 134 degrees F
  Temperature I3 1 TSensor    53 degrees C / 127 degrees F
  Temperature I3 1 Chip       53 degrees C / 127 degrees F
  Temperature I3 2 TSensor    52 degrees C / 125 degrees F
  Temperature I3 2 Chip       49 degrees C / 120 degrees F
  Temperature I3 3 TSensor    47 degrees C / 116 degrees F
  Temperature I3 3 Chip       47 degrees C / 116 degrees F
  Temperature IA 0 TSensor    54 degrees C / 129 degrees F
  Temperature IA 0 Chip       58 degrees C / 136 degrees F
  Temperature IA 1 TSensor    48 degrees C / 118 degrees F
  Temperature IA 1 Chip       53 degrees C / 127 degrees F
  Power
    1.5 V                      1479 mV
    2.5 V                      2542 mV
    3.3 V                      3319 mV
    1.8 V PFE 0                1811 mV
    1.8 V PFE 1                1804 mV
    1.8 V PFE 2                1804 mV
    1.8 V PFE 3                1814 mV
    1.2 V PFE 0                1192 mV
    1.2 V PFE 1                1202 mV
    1.2 V PFE 2                1205 mV
    1.2 V PFE 3                1189 mV
  I2C Slave Revision          40
```

show chassis environment fpc (MX960 Router MPC10E-15C-MRATE)

`user@router>` **show chassis environment fpc 8**

```
FPC 8 status:
  State                       Online
  Temperature Intake                    37 degrees C / 98 degrees F

  Temperature Exhaust A                 50 degrees C / 122 degrees F
```

```
Temperature Exhaust B                 56 degrees C / 132 degrees F
Temperature ZT0 Chip                  83 degrees C / 181 degrees F
Temperature ZT1 Chip                  80 degrees C / 176 degrees F
Temperature ZT2 Chip                  81 degrees C / 177 degrees F
Temperature PCIE_SW Chip              64 degrees C / 147 degrees F
Temperature ZT0 TestMacro             73 degrees C / 163 degrees F
Temperature ZT0 hbmio_grp3            74 degrees C / 165 degrees F
Temperature ZT0 hbmio_grp0            76 degrees C / 168 degrees F
Temperature ZT0 gumem1                78 degrees C / 172 degrees F
Temperature ZT0 llm                   80 degrees C / 176 degrees F
Temperature ZT0 wanio_sd              78 degrees C / 172 degrees F
Temperature ZT0 fabio_sd              84 degrees C / 183 degrees F
Temperature ZT0 flexmem               84 degrees C / 183 degrees F
Temperature ZT1 TestMacro             70 degrees C / 158 degrees F
Temperature ZT1 hbmio_grp3            71 degrees C / 159 degrees F
Temperature ZT1 hbmio_grp0            74 degrees C / 165 degrees F
Temperature ZT1 gumem1                75 degrees C / 167 degrees F
Temperature ZT1 llm                   78 degrees C / 172 degrees F
Temperature ZT1 wanio_sd              76 degrees C / 168 degrees F
Temperature ZT1 fabio_sd              78 degrees C / 172 degrees F
Temperature ZT1 flexmem               82 degrees C / 179 degrees F
Temperature ZT2 TestMacro             71 degrees C / 159 degrees F
```

```
Temperature ZT2 hbmio_grp3              72 degrees C / 161 degrees F

Temperature ZT2 hbmio_grp0              75 degrees C / 167 degrees F

Temperature ZT2 gumem1                  76 degrees C / 168 degrees F

Temperature ZT2 llm                     78 degrees C / 172 degrees F

Temperature ZT2 wanio_sd                78 degrees C / 172 degrees F

Temperature ZT2 fabio_sd                80 degrees C / 176 degrees F

Temperature ZT2 flexmem                 76 degrees C / 168 degrees F

Temperature ZT0 HBM0                    74 degrees C / 165 degrees F

Temperature ZT0 HBM1                    74 degrees C / 165 degrees F

Temperature ZT1 HBM0                    74 degrees C / 165 degrees F

Temperature ZT1 HBM1                    75 degrees C / 167 degrees F

Temperature ZT2 HBM0                    73 degrees C / 163 degrees F

Temperature ZT2 HBM1                    73 degrees C / 163 degrees F

Temperature FAB RT1.0                   73 degrees C / 163 degrees F

Temperature FAB RT2.0                   75 degrees C / 167 degrees F

Temperature FAB RT3.0                   73 degrees C / 163 degrees F

Temperature FAB RT4.0                   70 degrees C / 158 degrees F

Temperature FAB RT5.0                   67 degrees C / 152 degrees F

Temperature FAB RT6.0                   67 degrees C / 152 degrees F

Temperature FAB RT7.0                   65 degrees C / 149 degrees F

Temperature FAB RT8.0                   66 degrees C / 150 degrees F

Temperature WAN RT9.0                   64 degrees C / 147 degrees F
```

```
Temperature WAN RT9.1                   62 degrees C / 143 degrees F

Temperature WAN RT10.0                  65 degrees C / 149 degrees F

Temperature WAN RT10.1                  63 degrees C / 145 degrees F

Temperature WAN RT11.0                  51 degrees C / 123 degrees F

Temperature WAN RT11.1                  49 degrees C / 120 degrees F

Temperature PIM4820 T1                  72 degrees C / 161 degrees F

Temperature BMR456-12V-BRICK-A T1       83 degrees C / 181 degrees F

Temperature BMR456-12V-BRICK-B T1       91 degrees C / 195 degrees F

Temperature MAX20730-ZT0-AVDDH T1       72 degrees C / 161 degrees F

Temperature MAX20730-ZT0-HBM-VDDQ T1    64 degrees C / 147 degrees F

Temperature MAX20730-ZT0-HBM-VDDC T1    65 degrees C / 149 degrees F

Temperature MAX20730-ZT1-AVDDH T1       65 degrees C / 149 degrees F

Temperature MAX20730-ZT1-HBM-VDDQ T1    60 degrees C / 140 degrees F

Temperature MAX20730-ZT1-HBM-VDDC T1    57 degrees C / 134 degrees F

Temperature MAX20730-ZT2-AVDDH T1       65 degrees C / 149 degrees F

Temperature MAX20730-ZT2-HBM-VDDQ T1    58 degrees C / 136 degrees F

Temperature MAX20730-ZT2-HBM-VDDC T1    55 degrees C / 131 degrees F

Temperature CPU0_PMB                    61 degrees C / 141 degrees F

Temperature CPU7_PMB                    61 degrees C / 141 degrees F

Temperature DDR4 A                      38 degrees C / 100 degrees F

Temperature DDR4 B                      37 degrees C / 98 degrees F

Power
```

```
PIM4820                   56967 mV
BMR456-12V-BRICK-A        12016 mV
BMR456-12V-BRICK-B        12039 mV
MAX20743-RT01-DVDD          724 mV
MAX20743-RT234-DVDD         724 mV
MAX20743-RT567-DVDD         724 mV
MAX20754-ZT0-VDD            750 mV
MAX20754-ZT0-VDDM           799 mV
MAX20743-ZT0-AVDD           904 mV
MAX20730-ZT0-AVDDH         1103 mV
MAX20730-ZT0-HBM-VDDQ      1198 mV
MAX20730-ZT0-HBM-VDDC      1202 mV
MAX20730-VDD-1V25          1246 mV
MAX20754-ZT1-VDD            724 mV
MAX20754-ZT1-VDDM           800 mV
MAX20743-ZT1-AVDD           904 mV
MAX20730-ZT1-AVDDH         1103 mV
MAX20730-ZT1-HBM-VDDQ      1202 mV
MAX20730-ZT1-HBM-VDDC      1198 mV
MAX20730-PCIE-0V9           901 mV
MAX20754-ZT2-VDD            724 mV
MAX20754-ZT2-VDDM           799 mV
MAX20743-ZT2-AVDD           904 mV
MAX20730-ZT2-AVDDH         1103 mV
MAX20730-ZT2-HBM-VDDQ      1198 mV
MAX20730-ZT2-HBM-VDDC      1198 mV
MAX20730-VDD3V3            3308 mV
MAX20754-WAN-VDD3V3        3301 mV
MAX20754-WAN-DVDD0V8        799 mV
MAX20743-WAN-VDD1V0A       1003 mV
MAX20743-WAN-AVDD0V8        800 mV
MAX20743-WAN-VDD1V0C       1003 mV
TPS53631-1V2-VDDQ-PMB      1225 mV
TPS53641-VCCIN-PMB         1770 mV
TPS53641-VCCSBUS-PMB       1040 mV
MAX20730-BIAS3P30-PMB      3308 mV
MAX20730-BIAS5P0-PMB       5063 mV
MAX20730-VPP-V2P5-PMB      2503 mV
MAX20730-VDD1V2            1195 mV
MAX20730-VDD1V5            1496 mV
MAX20730-VDD1V8            1799 mV
MAX20730-VDD2V5            2511 mV
MAX20754-RT-AVDD-0V8        800 mV
MAX20743-XGE-VDD-AVS       1012 mV
```

```
    PMB VCC1P05_PCH_SW          1048 mV
    PMB VCC1P3                  1294 mV
    PMB VCC1P5                  1485 mV
    PMB VCC1P7                  1705 mV
    PMB DDR4_VPP                2519 mV
    PMB VCC3P3                  3336 mV
    PMB VCC3P3_PCH              3332 mV
  I2C Slave Revision         124
```

show chassis environment fpc (MX960 Router)

`user@host>` **show chassis environment fpc**

```
FPC 5 status:
  State                       Online
  Temperature Intake          27 degrees C / 80 degrees F
  Temperature Exhaust A       34 degrees C / 93 degrees F
  Temperature Exhaust B       40 degrees C / 104 degrees F
  Temperature I3 0 TSensor    39 degrees C / 102 degrees F
  Temperature I3 0 Chip       41 degrees C / 105 degrees F
  Temperature I3 1 TSensor    38 degrees C / 100 degrees F
  Temperature I3 1 Chip       37 degrees C / 98 degrees F
  Temperature I3 2 TSensor    37 degrees C / 98 degrees F
  Temperature I3 2 Chip       34 degrees C / 93 degrees F
  Temperature I3 3 TSensor    32 degrees C / 89 degrees F
  Temperature I3 3 Chip       33 degrees C / 91 degrees F
  Temperature IA 0 TSensor    39 degrees C / 102 degrees F
  Temperature IA 0 Chip       44 degrees C / 111 degrees F
  Temperature IA 1 TSensor    36 degrees C / 96 degrees F
  Temperature IA 1 Chip       44 degrees C / 111 degrees F
  Power
    1.5 V                      1479 mV
    2.5 V                      2523 mV
    3.3 V                      3254 mV
    1.8 V PFE 0                1798 mV
    1.8 V PFE 1                1798 mV
    1.8 V PFE 2                1807 mV
    1.8 V PFE 3                1791 mV
    1.2 V PFE 0                1173 mV
    1.2 V PFE 1                1179 mV
    1.2 V PFE 2                1179 mV
    1.2 V PFE 3                1185 mV
  I2C Slave Revision         6
FPC 6 status:
```

```
  State                       Online
  Temperature Intake          25 degrees C / 77 degrees F
  Temperature Exhaust A       38 degrees C / 100 degrees F
  Temperature Exhaust B       38 degrees C / 100 degrees F
  Temperature I3 0 TSensor    40 degrees C / 104 degrees F
  Temperature I3 0 Chip       40 degrees C / 104 degrees F
  Temperature I3 1 TSensor    40 degrees C / 104 degrees F
  Temperature I3 1 Chip       38 degrees C / 100 degrees F
  Temperature I3 2 TSensor    37 degrees C / 98 degrees F
  Temperature I3 2 Chip       32 degrees C / 89 degrees F
  Temperature I3 3 TSensor    34 degrees C / 93 degrees F
  Temperature I3 3 Chip       33 degrees C / 91 degrees F
  Temperature IA 0 TSensor    45 degrees C / 113 degrees F
  Temperature IA 0 Chip       47 degrees C / 116 degrees F
  Temperature IA 1 TSensor    37 degrees C / 98 degrees F
  Temperature IA 1 Chip       42 degrees C / 107 degrees F
  Power
    1.5 V                      1485 mV
    2.5 V                      2510 mV
    3.3 V                      3332 mV
    1.8 V PFE 0                1801 mV
    1.8 V PFE 1                1814 mV
    1.8 V PFE 2                1804 mV
    1.8 V PFE 3                1820 mV
    1.2 V PFE 0                1192 mV
    1.2 V PFE 1                1189 mV
    1.2 V PFE 2                1202 mV
    1.2 V PFE 3                1156 mV
  I2C Slave Revision          40
```

show chassis environment fpc (MX480 Router with 100-Gigabit Ethernet CFP)

`user@host>` **show chassis environment fpc**

```
FPC 0 status:
  State                       Online
  Temperature Intake          32 degrees C / 89 degrees F
  Temperature Exhaust A       39 degrees C / 102 degrees F
  Temperature Exhaust B       37 degrees C / 98 degrees F
  Temperature QX 0 TSen       44 degrees C / 111 degrees F
  Temperature QX 0 Chip       48 degrees C / 118 degrees F
  Temperature LU 0 TCAM TSen 44 degrees C / 111 degrees F
  Temperature LU 0 TCAM Chip 47 degrees C / 116 degrees F
  Temperature LU 0 TSen       44 degrees C / 111 degrees F
```

```
  Temperature LU 0 Chip      48 degrees C / 118 degrees F
  Temperature MQ 0 TSen      44 degrees C / 111 degrees F
  Temperature MQ 0 Chip      47 degrees C / 116 degrees F
  Power
    MPC-BIAS3V3-zl2105        3297 mV
    MPC-VDD3V3-zl2105         3306 mV
    MPC-VDD2V5-zl2105         2498 mV
    MPC-TCAM_1V0-zl2004        999 mV
    MPC-AVDD1V0-zl2006         999 mV
    MPC-VDD1V8-zl2006         1796 mV
    MPC-PCIE_1V0-zl2006       1002 mV
    MPC-LU0_1V0-zl2004         997 mV
    MPC-MQ0_1V0-zl2004         995 mV
    MPC-VDD_1V5-zl2004        1496 mV
    MPC-PMB_1V1-zl2006        1094 mV
    MPC-9VA-BMR453            9054 mV
    MPC-9VB-BMR453            9037 mV
    MPC-PMB_1V2-zl2106        1191 mV
    MPC-QXM0_1V0-zl2006       1000 mV
  I2C Slave Revision         66
FPC 1 status:
  State                      Online
  Temperature Intake         35 degrees C / 95 degrees F
  Temperature Exhaust A      50 degrees C / 122 degrees F
  Temperature Exhaust B      56 degrees C / 132 degrees F
  Temperature LU 0 TSen      46 degrees C / 114 degrees F
  Temperature LU 0 Chip      59 degrees C / 138 degrees F
  Temperature LU 1 TSen      46 degrees C / 114 degrees F
  Temperature LU 1 Chip      45 degrees C / 113 degrees F
  Temperature LU 2 TSen      46 degrees C / 114 degrees F
  Temperature LU 2 Chip      60 degrees C / 140 degrees F
  Temperature LU 3 TSen      46 degrees C / 114 degrees F
  Temperature LU 3 Chip      71 degrees C / 159 degrees F
  Temperature XM 0 TSen      46 degrees C / 114 degrees F
  Temperature XM 0 Chip      -18 degrees C / 0 degrees F
  Temperature XF 0 TSen      46 degrees C / 114 degrees F
  Temperature XF 0 Chip      76 degrees C / 168 degrees F
  Power
    MPC-BIAS3V3-zl2105        3292 mV
    MPC-VDD3V3-zl6100         3303 mV
    MPC-VDD2V5-zl6100         2501 mV
    MPC-VDD1V8-zl2004         1801 mV
    MPC-AVDD1V0-zl2006         996 mV
    MPC-VDD1V2-zl6100         1199 mV
```

```
    MPC-VDD1V5A-zl2004        1493 mV
    MPC-VDD1V5B-zl2004        1498 mV
    MPC-XF_0V9-zl2006          996 mV
    MPC-PCIE_1V0-zl6100       1000 mV
    MPC-LU0_1V0-zl2004         994 mV
    MPC-LU1_1V0-zl2004         994 mV
    MPC-LU2_1V0-zl2004         992 mV
    MPC-LU3_1V0-zl2004         993 mV
    MPC-12VA-BMR453          12003 mV
    MPC-12VB-BMR453          12043 mV
    MPC-PMB_1V1-zl2006        1091 mV
    MPC-PMB_1V2-zl2106        1196 mV
    MPC-XM_0V9-vt273m          899 mV
  I2C Slave Revision         106
```

show chassis environment fpc (MX240, MX480, MX960 with Application Services Modular Line Card

`user@host>` **show chassis environment fpc 1**

```
FPC 1 status:
  State                     Online
  Temperature Intake        36 degrees C / 96 degrees F
  Temperature Exhaust A     39 degrees C / 102 degrees F
  Temperature LU TSen       52 degrees C / 125 degrees F
  Temperature LU Chip       54 degrees C / 129 degrees F
  Temperature XM TSen       52 degrees C / 125 degrees F
  Temperature XM Chip       60 degrees C / 140 degrees F
  Temperature PCIe TSen     52 degrees C / 125 degrees F
  Temperature PCIe Chip     69 degrees C / 156 degrees F
  Power
    MPC-BIAS3V3-zl2106       3302 mV
    MPC-VDD3V3-zl6100        3325 mV
    MPC-AVDD1V0-zl6100       1007 mV
    MPC-PCIE_1V0-zl6100       904 mV
    MPC-LU0_1V0-zl2004        996 mV
    MPC-VDD_1V5-zl2004       1498 mV
    MPC-12VA-BMR453         11733 mV
    MPC-12VB-BMR453         11728 mV
    MPC-XM_0V9-vt273m         900 mV
  I2C Slave Revision        81
```

show chassis environment fpc (MX10003 Router)

`user@host>` **show chassis environment fpc**

```
FPC 0 status:
  State                      Online
  FPC 0 Intake Temp Sensor   29 degrees C / 84 degrees F
  FPC 0 Exhaust-A Temp Sensor56 degrees C / 132 degrees F
  FPC 0 Exhaust-B Temp Sensor44 degrees C / 111 degrees F
  FPC 0 EA0 Chip             58 degrees C / 136 degrees F
  FPC 0 EA0-XR0 Chip         61 degrees C / 141 degrees F
  FPC 0 EA0-XR1 Chip         62 degrees C / 143 degrees F
  FPC 0 EA1 Chip             67 degrees C / 152 degrees F
  FPC 0 EA1-XR0 Chip         72 degrees C / 161 degrees F
  FPC 0 EA1-XR1 Chip         72 degrees C / 161 degrees F
  FPC 0 PEX Chip             77 degrees C / 170 degrees F
  FPC 0 EA2 Chip             48 degrees C / 118 degrees F
  FPC 0 EA2-XR0 Chip         54 degrees C / 129 degrees F
  FPC 0 EA2-XR1 Chip         56 degrees C / 132 degrees F
  FPC 0 PF Chip              68 degrees C / 154 degrees F
  FPC 0 EA0_HMC0 Logic die   72 degrees C / 161 degrees F
  FPC 0 EA0_HMC0 DRAM botm   69 degrees C / 156 degrees F
  FPC 0 EA0_HMC1 Logic die   71 degrees C / 159 degrees F
  FPC 0 EA0_HMC1 DRAM botm   68 degrees C / 154 degrees F
  FPC 0 EA0_HMC2 Logic die   75 degrees C / 167 degrees F
  FPC 0 EA0_HMC2 DRAM botm   72 degrees C / 161 degrees F
  FPC 0 EA1_HMC0 Logic die   81 degrees C / 177 degrees F
  FPC 0 EA1_HMC0 DRAM botm   78 degrees C / 172 degrees F
  FPC 0 EA1_HMC1 Logic die   80 degrees C / 176 degrees F
  FPC 0 EA1_HMC1 DRAM botm   77 degrees C / 170 degrees F
  FPC 0 EA1_HMC2 Logic die   82 degrees C / 179 degrees F
  FPC 0 EA1_HMC2 DRAM botm   79 degrees C / 174 degrees F
  FPC 0 EA2_HMC0 Logic die   60 degrees C / 140 degrees F
  FPC 0 EA2_HMC0 DRAM botm   57 degrees C / 134 degrees F
  FPC 0 EA2_HMC1 Logic die   61 degrees C / 141 degrees F
  FPC 0 EA2_HMC1 DRAM botm   58 degrees C / 136 degrees F
  FPC 0 EA2_HMC2 Logic die   63 degrees C / 145 degrees F
  FPC 0 EA2_HMC2 DRAM botm   60 degrees C / 140 degrees F
  Power
    LTC3887-PF-VDD0V9-RAIL       898 mV
    LTC3887-PF-VDD0V9-DEV0-      898 mV
    LTC3887-PF-VDD0V9-DEV0-      900 mV
    LTC3887-PF-VDD0V9-DEV1-      899 mV
    LTC3887-PF-VDD0V9-DEV1-      901 mV
    LTC3887-PF-AVDD1V0-RAIL      998 mV
    LTC3887-PF-AVDD1V0-CH0       998 mV
    LTC3887-PF-AVDD1V0-CH1       999 mV
```

```
LTC3887-ETHSW-VDD1V0        1000 mV
LTC3887-VDD2V5              2499 mV
LTC3887-PCIE-VDD0V9          899 mV
LTC3887-V1P0                 999 mV
LTC3887-PHY-VDD1V0-A         999 mV
LTC3887-3V3                 3300 mV
LTC3887-VDD1V8              1799 mV
UCD9090_0-CH_1-EA0_PLL_     1005 mV
UCD9090_0-CH_2-EA0_1V4      1049 mV
UCD9090_0-CH_3-EA0_2V5      2499 mV
UCD9090_0-CH_4-EA0_1V5      1499 mV
UCD9090_0-CH_5-EA1_PLL_      999 mV
UCD9090_0-CH_6-EA1_1V4      1037 mV
UCD9090_0-CH_7-EA1_2V5      2499 mV
UCD9090_0-CH_8-EA1_1V5      1510 mV
UCD9090_0-CH_9-PVCC          797 mV
UCD9090_0-CH_10-PVNN         991 mV
UCD9090_1-CH_1-EA2_PLL_     1008 mV
UCD9090_1-CH_2-EA2_1V4      1009 mV
UCD9090_1-CH_3-EA2_2V5      2499 mV
UCD9090_1-CH_4-EA2_1V5      1513 mV
UCD9090_1-CH_5-1V0_PFPL     1009 mV
UCD9090_1-CH_6-V1P1         1075 mV
UCD9090_1-CH_7-V1P5         1531 mV
UCD9090_1-CH_8-V1P35        1359 mV
UCD9090_1-CH_9-VDD1V5       1511 mV
UCD9090_1-CH_10-VDD1V2      1210 mV
LTC3887-EA0-VDD0V9-RAIL      949 mV
LTC3887-EA0-VDD0V9-DEV0      949 mV
LTC3887-EA0-VDD0V9-DEV0      951 mV
LTC3887-EA0-VDD0V9-DEV1      949 mV
LTC3887-EA0-VDD0V9-DEV1      951 mV
LTC3887-EA0-VDD0V9R2-RA      947 mV
LTC3887-EA0-VDD0V9R2-CH      947 mV
LTC3887-EA0-VDD0V9R2-CH      949 mV
LTC3887-EA0-VDD1V0-RAIL      999 mV
LTC3887-EA0-VDD1V0-CH0       999 mV
LTC3887-EA0-VDD1V0-CH1      1001 mV
LTC3887-EA0-XR-VDD0V9        900 mV
LTC3887-EA0-XR-VDD1V2       1199 mV
LTC3887-EA0-HM1-VDD0V9       899 mV
LTC3887-EA0-HM-VDD1V2       1200 mV
LTC3887-EA0-HM-VDDM1V2      1199 mV
LTC3887-EA1-VDD0V9-RAIL      949 mV
```

```
    LTC3887-EA1-VDD0V9-DEV0      952 mV
    LTC3887-EA1-VDD0V9-DEV0      952 mV
    LTC3887-EA1-VDD0V9-DEV1      951 mV
    LTC3887-EA1-VDD0V9-DEV1      951 mV
    LTC3887-EA1-VDD0V9R2-RA      948 mV
    LTC3887-EA1-VDD0V9R2-CH      948 mV
    LTC3887-EA1-VDD0V9R2-CH      950 mV
    LTC3887-EA1-VDD1V0-RAIL     1000 mV
    LTC3887-EA1-VDD1V0-CH0      1000 mV
    LTC3887-EA1-VDD1V0-CH1      1001 mV
  I2C Slave Revision         13
FPC 1 status:
  State                      Online
  FPC 1 Intake Temp Sensor   27 degrees C / 80 degrees F
  FPC 1 Exhaust-A Temp Sensor60 degrees C / 140 degrees F
  FPC 1 Exhaust-B Temp Sensor46 degrees C / 114 degrees F
  FPC 1 EA0 Chip             63 degrees C / 145 degrees F
  FPC 1 EA0-XR0 Chip         67 degrees C / 152 degrees F
  FPC 1 EA0-XR1 Chip         68 degrees C / 154 degrees F
  FPC 1 EA1 Chip             70 degrees C / 158 degrees F
  FPC 1 EA1-XR0 Chip         75 degrees C / 167 degrees F
  FPC 1 EA1-XR1 Chip         75 degrees C / 167 degrees F
  FPC 1 PEX Chip             89 degrees C / 192 degrees F
  FPC 1 EA2 Chip             49 degrees C / 120 degrees F
  FPC 1 EA2-XR0 Chip         53 degrees C / 127 degrees F
  FPC 1 EA2-XR1 Chip         56 degrees C / 132 degrees F
  FPC 1 PF Chip              71 degrees C / 159 degrees F
  FPC 1 EA0_HMC0 Logic die   74 degrees C / 165 degrees F
  FPC 1 EA0_HMC0 DRAM botm   71 degrees C / 159 degrees F
  FPC 1 EA0_HMC1 Logic die   78 degrees C / 172 degrees F
  FPC 1 EA0_HMC1 DRAM botm   75 degrees C / 167 degrees F
  FPC 1 EA0_HMC2 Logic die   78 degrees C / 172 degrees F
  FPC 1 EA0_HMC2 DRAM botm   75 degrees C / 167 degrees F
  FPC 1 EA1_HMC0 Logic die   84 degrees C / 183 degrees F
  FPC 1 EA1_HMC0 DRAM botm   81 degrees C / 177 degrees F
  FPC 1 EA1_HMC1 Logic die   82 degrees C / 179 degrees F
  FPC 1 EA1_HMC1 DRAM botm   79 degrees C / 174 degrees F
  FPC 1 EA1_HMC2 Logic die   85 degrees C / 185 degrees F
  FPC 1 EA1_HMC2 DRAM botm   82 degrees C / 179 degrees F
  FPC 1 EA2_HMC0 Logic die   62 degrees C / 143 degrees F
  FPC 1 EA2_HMC0 DRAM botm   59 degrees C / 138 degrees F
  FPC 1 EA2_HMC1 Logic die   60 degrees C / 140 degrees F
  FPC 1 EA2_HMC1 DRAM botm   57 degrees C / 134 degrees F
  FPC 1 EA2_HMC2 Logic die   65 degrees C / 149 degrees F
```

```
FPC 1 EA2_HMC2 DRAM botm   62 degrees C / 143 degrees F
Power
  LTC3887-PF-VDD0V9-RAIL       899 mV
  LTC3887-PF-VDD0V9-DEV0-      899 mV
  LTC3887-PF-VDD0V9-DEV0-      901 mV
  LTC3887-PF-VDD0V9-DEV1-      899 mV
  LTC3887-PF-VDD0V9-DEV1-      901 mV
  LTC3887-PF-AVDD1V0-RAIL      998 mV
  LTC3887-PF-AVDD1V0-CH0       998 mV
  LTC3887-PF-AVDD1V0-CH1       999 mV
  LTC3887-ETHSW-VDD1V0         999 mV
  LTC3887-VDD2V5              2499 mV
  LTC3887-PCIE-VDD0V9          900 mV
  LTC3887-V1P0                1000 mV
  LTC3887-PHY-VDD1V0-A        1000 mV
  LTC3887-3V3                 3300 mV
  LTC3887-VDD1V8              1799 mV
  UCD9090_0-CH_1-EA0_PLL_     1004 mV
  UCD9090_0-CH_2-EA0_1V4      1004 mV
  UCD9090_0-CH_3-EA0_2V5      2499 mV
  UCD9090_0-CH_4-EA0_1V5      1511 mV
  UCD9090_0-CH_5-EA1_PLL_      999 mV
  UCD9090_0-CH_6-EA1_1V4      1008 mV
  UCD9090_0-CH_7-EA1_2V5      2499 mV
  UCD9090_0-CH_8-EA1_1V5      1510 mV
  UCD9090_0-CH_9-PVCC          839 mV
  UCD9090_0-CH_10-PVNN        1016 mV
  UCD9090_1-CH_1-EA2_PLL_     1011 mV
  UCD9090_1-CH_2-EA2_1V4      1046 mV
  UCD9090_1-CH_3-EA2_2V5      2499 mV
  UCD9090_1-CH_4-EA2_1V5      1501 mV
  UCD9090_1-CH_5-1V0_PFPL     1000 mV
  UCD9090_1-CH_6-V1P1         1037 mV
  UCD9090_1-CH_7-V1P5         1530 mV
  UCD9090_1-CH_8-V1P35        1360 mV
  UCD9090_1-CH_9-VDD1V5       1513 mV
  UCD9090_1-CH_10-VDD1V2      1217 mV
  LTC3887-EA0-VDD0V9-RAIL      949 mV
  LTC3887-EA0-VDD0V9-DEV0      949 mV
  LTC3887-EA0-VDD0V9-DEV0      951 mV
  LTC3887-EA0-VDD0V9-DEV1      949 mV
  LTC3887-EA0-VDD0V9-DEV1      952 mV
  LTC3887-EA0-VDD0V9R2-RA      947 mV
  LTC3887-EA0-VDD0V9R2-CH      947 mV
```

```
    LTC3887-EA0-VDD0V9R2-CH      949 mV
    LTC3887-EA0-VDD1V0-RAIL     1000 mV
    LTC3887-EA0-VDD1V0-CH0      1000 mV
    LTC3887-EA0-VDD1V0-CH1      1001 mV
    LTC3887-EA0-XR-VDD0V9        899 mV
    LTC3887-EA0-XR-VDD1V2       1200 mV
    LTC3887-EA0-HM1-VDD0V9       899 mV
    LTC3887-EA0-HM-VDD1V2       1199 mV
    LTC3887-EA0-HM-VDDM1V2      1199 mV
    LTC3887-EA1-VDD0V9-RAIL      948 mV
    LTC3887-EA1-VDD0V9-DEV0      950 mV
    LTC3887-EA1-VDD0V9-DEV0      950 mV
    LTC3887-EA1-VDD0V9-DEV1      951 mV
    LTC3887-EA1-VDD0V9-DEV1      951 mV
    LTC3887-EA1-VDD0V9R2-RA      947 mV
    LTC3887-EA1-VDD0V9R2-CH      947 mV
    LTC3887-EA1-VDD0V9R2-CH      949 mV
    LTC3887-EA1-VDD1V0-RAIL     1000 mV
    LTC3887-EA1-VDD1V0-CH0      1000 mV
    LTC3887-EA1-VDD1V0-CH1      1002 mV
  I2C Slave Revision         99
```

show chassis environment fpc (MX204 Router)

`user@host>` **show chassis environment fpc**

```
FPC 0 status:
  State                       Online
  FPC 0 EA0_HMC0 Logic die    77 degrees C / 170 degrees F
  FPC 0 EA0_HMC0 DRAM botm    74 degrees C / 165 degrees F
  FPC 0 EA0_HMC1 Logic die    80 degrees C / 176 degrees F
  FPC 0 EA0_HMC1 DRAM botm    77 degrees C / 170 degrees F
  FPC 0 EA0 Chip              93 degrees C / 199 degrees F
  FPC 0 EA0-XR0 Chip          63 degrees C / 145 degrees F
  FPC 0 EA0-XR1 Chip          64 degrees C / 147 degrees F
  Power
  I2C Slave Revision          0
```

show chassis environment fpc (MX10008 Router)

`user@host>` **show chassis environment fpc**

```
FPC 0 status:
  State                       Online
  FPC 0 Intake-A Temp Sensor              32 degrees C / 89 degrees F
  FPC 0 Exhaust-A Temp Sensor             44 degrees C / 111 degrees F
  FPC 0 Exhaust-B Temp Sensor             50 degrees C / 122 degrees F
  FPC 0 EA0 Temp Sensor                   67 degrees C / 152 degrees F
  FPC 0 EA0_XR0 Temp Sensor               69 degrees C / 156 degrees F
  FPC 0 EA0_XR1 Temp Sensor               73 degrees C / 163 degrees F
  FPC 0 EA1 Temp Sensor                   61 degrees C / 141 degrees F
  FPC 0 EA1_XR0 Temp Sensor               65 degrees C / 149 degrees F
  FPC 0 EA1_XR1 Temp Sensor               63 degrees C / 145 degrees F
  FPC 0 EA2 Temp Sensor                   69 degrees C / 156 degrees F
  FPC 0 EA2_XR0 Temp Sensor               73 degrees C / 163 degrees F
  FPC 0 EA2_XR1 Temp Sensor               72 degrees C / 161 degrees F
  FPC 0 EA3 Temp Sensor                   64 degrees C / 147 degrees F
  FPC 0 EA3_XR0 Temp Sensor               66 degrees C / 150 degrees F
  FPC 0 EA3_XR1 Temp Sensor               66 degrees C / 150 degrees F
  FPC 0 EA4 Temp Sensor                   70 degrees C / 158 degrees F
  FPC 0 EA4_XR0 Temp Sensor               72 degrees C / 161 degrees F
  FPC 0 EA4_XR1 Temp Sensor               72 degrees C / 161 degrees F
  FPC 0 EA5 Temp Sensor                   58 degrees C / 136 degrees F
  FPC 0 EA5_XR0 Temp Sensor               61 degrees C / 141 degrees F
  FPC 0 EA5_XR1 Temp Sensor               64 degrees C / 147 degrees F
  FPC 0 EA0_HMC0 Logic die                75 degrees C / 167 degrees F
  FPC 0 EA0_HMC0 DRAM botm                72 degrees C / 161 degrees F
  FPC 0 EA0_HMC1 Logic die                76 degrees C / 168 degrees F
  FPC 0 EA0_HMC1 DRAM botm                73 degrees C / 163 degrees F
  FPC 0 EA0_HMC2 Logic die                77 degrees C / 170 degrees F
  FPC 0 EA0_HMC2 DRAM botm                74 degrees C / 165 degrees F
  FPC 0 EA1_HMC0 Logic die                72 degrees C / 161 degrees F
  FPC 0 EA1_HMC0 DRAM botm                69 degrees C / 156 degrees F
  FPC 0 EA1_HMC1 Logic die                73 degrees C / 163 degrees F
  FPC 0 EA1_HMC1 DRAM botm                70 degrees C / 158 degrees F
  FPC 0 EA1_HMC2 Logic die                72 degrees C / 161 degrees F
  FPC 0 EA1_HMC2 DRAM botm                69 degrees C / 156 degrees F
  FPC 0 EA2_HMC0 Logic die                80 degrees C / 176 degrees F
  FPC 0 EA2_HMC0 DRAM botm                77 degrees C / 170 degrees F
  FPC 0 EA2_HMC1 Logic die                81 degrees C / 177 degrees F
  FPC 0 EA2_HMC1 DRAM botm                78 degrees C / 172 degrees F
  FPC 0 EA2_HMC2 Logic die                80 degrees C / 176 degrees F
  FPC 0 EA2_HMC2 DRAM botm                77 degrees C / 170 degrees F
  FPC 0 EA3_HMC0 Logic die                77 degrees C / 170 degrees F
  FPC 0 EA3_HMC0 DRAM botm                74 degrees C / 165 degrees F
  FPC 0 EA3_HMC1 Logic die                78 degrees C / 172 degrees F
```

```
FPC 0 EA3_HMC1 DRAM botm                75 degrees C / 167 degrees F
FPC 0 EA3_HMC2 Logic die                77 degrees C / 170 degrees F
FPC 0 EA3_HMC2 DRAM botm                74 degrees C / 165 degrees F
FPC 0 EA4_HMC0 Logic die                80 degrees C / 176 degrees F
FPC 0 EA4_HMC0 DRAM botm                77 degrees C / 170 degrees F
FPC 0 EA4_HMC1 Logic die                81 degrees C / 177 degrees F
FPC 0 EA4_HMC1 DRAM botm                78 degrees C / 172 degrees F
FPC 0 EA4_HMC2 Logic die                80 degrees C / 176 degrees F
FPC 0 EA4_HMC2 DRAM botm                77 degrees C / 170 degrees F
FPC 0 EA5_HMC0 Logic die                69 degrees C / 156 degrees F
FPC 0 EA5_HMC0 DRAM botm                66 degrees C / 150 degrees F
FPC 0 EA5_HMC1 Logic die                68 degrees C / 154 degrees F
FPC 0 EA5_HMC1 DRAM botm                65 degrees C / 149 degrees F
FPC 0 EA5_HMC2 Logic die                68 degrees C / 154 degrees F
FPC 0 EA5_HMC2 DRAM botm                65 degrees C / 149 degrees F
Power
       12V SS 1                    12259 mV    9841 mA  120642 mW
       12V SS 2                    12259 mV   21054 mA  258104 mW
       12V SS 3                    12285 mV    9841 mA  120902 mW
       12V SS 4                    12232 mV   20968 mA  256496 mW
       12V SS 5                    12179 mV   14993 mA  182614 mW
       VDD 1.0V_A                   1000 mV   95375 mA   95375 mW
       VDD 1.0V_B                      0 mV       0 mA       0 mW
       VDD 3.3V                     3298 mV   12500 mA   41235 mW
       VDD 0.9V                      894 mV    3569 mA    3192 mW
       ETH SW 1V                     980 mV    4500 mA    4410 mW
       VDD 1.8V                     1809 mV     895 mA    1619 mW
       PVCC                          951 mV       0 mA       0 mW
       PVNN                         1009 mV       0 mA       0 mW
       V1P0                         1006 mV       0 mA       0 mW
       V1P1                         1070 mV       0 mA       0 mW
       V1P3                         1351 mV       0 mA       0 mW
       VDDQ                         1500 mV       0 mA       0 mW
       V1P8                         1816 mV       0 mA       0 mW
       VDD3V3                       3296 mV       0 mA       0 mW
       V5V0_BIAS                    5025 mV       0 mA       0 mW
       VDD12V0                     12174 mV       0 mA       0 mW
       EA0 Core 0.9V                 900 mV   40625 mA   36578 mW
       EA0 AVDD 1.0V                1000 mV   32500 mA   32500 mW
       EA0 HMC Core 0.9V             894 mV   10081 mA    9017 mW
       EA0 1.2V                     1189 mV   15081 mA   17945 mW
       EA01_HMC_VDDM 1.2V           1193 mV    -151 mA    -180 mW
       EA0_XR 0.906V                 905 mV   13802 mA   12496 mW
       EA1 Core 0.9V                 900 mV   41000 mA   36916 mW
```

```
EA1 AVDD 1.0V              1000 mV   28000 mA   28000 mW
EA1 HMC Core 0.9V           897 mV    9848 mA    8835 mW
EA1 1.2V                   1197 mV   15313 mA   18332 mW
EA0_PLL_1V0                1003 mV       0 mA       0 mW
EA0_1V04                   1032 mV       0 mA       0 mW
EA0_2V5                    2445 mV       0 mA       0 mW
EA0_1V5                    1512 mV       0 mA       0 mW
EA1_PLL_1V0                1000 mV       0 mA       0 mW
EA1_1V04                   1051 mV       0 mA       0 mW
EA1_2V5                    2516 mV       0 mA       0 mW
EA1_1V5                    1503 mV       0 mA       0 mW
EA1_XR 0.906V               908 mV   14151 mA   12850 mW
EA2 Core 0.9V               899 mV   40625 mA   36538 mW
EA2 AVDD 1.0V              1000 mV   27250 mA   27276 mW
EA2 HMC Core 0.9V           897 mV    9616 mA    8627 mW
EA2 1.2V                   1193 mV   15779 mA   18832 mW
EA23_HMC_VDDM 1.2V         1197 mV      81 mA      97 mW
EA2_XR 0.906V               908 mV   14848 mA   13484 mW
EA3 Core 0.9V               899 mV   40625 mA   36538 mW
EA3 AVDD 1.0V              1000 mV   28000 mA   28000 mW
EA3 HMC Core 0.9V           897 mV   10546 mA    9461 mW
EA3 1.2V                   1197 mV   15895 mA   19028 mW
EA2_PLL_1V0                1025 mV       0 mA       0 mW
EA2_1V04                   1048 mV       0 mA       0 mW
EA2_2V5                    2516 mV       0 mA       0 mW
EA2_1V5                    1500 mV       0 mA       0 mW
EA3_PLL_1V0                1009 mV       0 mA       0 mW
EA3_1V04                   1032 mV       0 mA       0 mW
EA3_2V5                    2551 mV       0 mA       0 mW
EA3_1V5                    1496 mV       0 mA       0 mW
EA3_XR 0.906V               908 mV   15895 mA   14434 mW
EA4 Core 0.9V               900 mV   41000 mA   36916 mW
EA4 AVDD 1.0V               999 mV   31250 mA   31219 mW
EA4 HMC Core 0.9V           894 mV    9965 mA    8913 mW
EA4 1.2V                   1197 mV   15779 mA   18889 mW
EA45_HMC_VDDM 1.2V         1197 mV     546 mA     654 mW
EA4_XR 0.906V               908 mV   15197 mA   13801 mW
EA5 Core 0.9V               900 mV   39750 mA   35790 mW
EA5 AVDD 1.0V              1000 mV   28000 mA   28000 mW
EA5 HMC Core 0.9V           897 mV    9965 mA    8940 mW
EA5 1.2V                   1197 mV   15546 mA   18610 mW
EA4_PLL_1V0                1003 mV       0 mA       0 mW
EA4_1V04                   1041 mV       0 mA       0 mW
EA4_2V5                    2541 mV       0 mA       0 mW
```

```
        EA4_1V5                    1506 mV       0 mA       0 mW
        EA5_PLL_1V0                1022 mV       0 mA       0 mW
        EA5_1V04                   1048 mV       0 mA       0 mW
        EA5_2V5                    2532 mV       0 mA       0 mW
        EA5_1V5                    1509 mV       0 mA       0 mW
        VDD2V5                     2503 mV       0 mA       0 mW
        VDD1V5                     1509 mV       0 mA       0 mW
        VDD1V2                     1206 mV       0 mA       0 mW
        EA5_XR 0.906V               902 mV   14500 mA   13088 mW
FPC 2 status:
  State                      Online
  FPC 2 Intake-A Temp Sensor             33 degrees C / 91 degrees F
  FPC 2 Exhaust-A Temp Sensor            52 degrees C / 125 degrees F
  FPC 2 Exhaust-B Temp Sensor            50 degrees C / 122 degrees F
  FPC 2 EA0 Temp Sensor                  72 degrees C / 161 degrees F
  FPC 2 EA0_XR0 Temp Sensor              76 degrees C / 168 degrees F
  FPC 2 EA0_XR1 Temp Sensor              79 degrees C / 174 degrees F
  FPC 2 EA1 Temp Sensor                  64 degrees C / 147 degrees F
  FPC 2 EA1_XR0 Temp Sensor              68 degrees C / 154 degrees F
  FPC 2 EA1_XR1 Temp Sensor              66 degrees C / 150 degrees F
  FPC 2 EA2 Temp Sensor                  75 degrees C / 167 degrees F
  FPC 2 EA2_XR0 Temp Sensor              81 degrees C / 177 degrees F
  FPC 2 EA2_XR1 Temp Sensor              81 degrees C / 177 degrees F
  FPC 2 EA3 Temp Sensor                  67 degrees C / 152 degrees F
  FPC 2 EA3_XR0 Temp Sensor              69 degrees C / 156 degrees F
  FPC 2 EA3_XR1 Temp Sensor              69 degrees C / 156 degrees F
  FPC 2 EA4 Temp Sensor                  76 degrees C / 168 degrees F
  FPC 2 EA4_XR0 Temp Sensor              77 degrees C / 170 degrees F
  FPC 2 EA4_XR1 Temp Sensor              76 degrees C / 168 degrees F
  FPC 2 EA5 Temp Sensor                  60 degrees C / 140 degrees F
  FPC 2 EA5_XR0 Temp Sensor              65 degrees C / 149 degrees F
  FPC 2 EA5_XR1 Temp Sensor              65 degrees C / 149 degrees F
  FPC 2 EA0_HMC0 Logic die               84 degrees C / 183 degrees F
  FPC 2 EA0_HMC0 DRAM botm               81 degrees C / 177 degrees F
  FPC 2 EA0_HMC1 Logic die               86 degrees C / 186 degrees F
  FPC 2 EA0_HMC1 DRAM botm               83 degrees C / 181 degrees F
  FPC 2 EA0_HMC2 Logic die               83 degrees C / 181 degrees F
  FPC 2 EA0_HMC2 DRAM botm               80 degrees C / 176 degrees F
  FPC 2 EA1_HMC0 Logic die               76 degrees C / 168 degrees F
  FPC 2 EA1_HMC0 DRAM botm               73 degrees C / 163 degrees F
  FPC 2 EA1_HMC1 Logic die               77 degrees C / 170 degrees F
  FPC 2 EA1_HMC1 DRAM botm               74 degrees C / 165 degrees F
  FPC 2 EA1_HMC2 Logic die               76 degrees C / 168 degrees F
  FPC 2 EA1_HMC2 DRAM botm               73 degrees C / 163 degrees F
```

```
FPC 2 EA2_HMC0 Logic die                87 degrees C / 188 degrees F
FPC 2 EA2_HMC0 DRAM botm                84 degrees C / 183 degrees F
FPC 2 EA2_HMC1 Logic die                89 degrees C / 192 degrees F
FPC 2 EA2_HMC1 DRAM botm                86 degrees C / 186 degrees F
FPC 2 EA2_HMC2 Logic die                88 degrees C / 190 degrees F
FPC 2 EA2_HMC2 DRAM botm                85 degrees C / 185 degrees F
FPC 2 EA3_HMC0 Logic die                80 degrees C / 176 degrees F
FPC 2 EA3_HMC0 DRAM botm                77 degrees C / 170 degrees F
FPC 2 EA3_HMC1 Logic die                81 degrees C / 177 degrees F
FPC 2 EA3_HMC1 DRAM botm                78 degrees C / 172 degrees F
FPC 2 EA3_HMC2 Logic die                81 degrees C / 177 degrees F
FPC 2 EA3_HMC2 DRAM botm                78 degrees C / 172 degrees F
FPC 2 EA4_HMC0 Logic die                88 degrees C / 190 degrees F
FPC 2 EA4_HMC0 DRAM botm                85 degrees C / 185 degrees F
FPC 2 EA4_HMC1 Logic die                90 degrees C / 194 degrees F
FPC 2 EA4_HMC1 DRAM botm                87 degrees C / 188 degrees F
FPC 2 EA4_HMC2 Logic die                81 degrees C / 177 degrees F
FPC 2 EA4_HMC2 DRAM botm                78 degrees C / 172 degrees F
FPC 2 EA5_HMC0 Logic die                73 degrees C / 163 degrees F
FPC 2 EA5_HMC0 DRAM botm                70 degrees C / 158 degrees F
FPC 2 EA5_HMC1 Logic die                69 degrees C / 156 degrees F
FPC 2 EA5_HMC1 DRAM botm                66 degrees C / 150 degrees F
FPC 2 EA5_HMC2 Logic die                73 degrees C / 163 degrees F
FPC 2 EA5_HMC2 DRAM botm                70 degrees C / 158 degrees F
Power
       12V SS 1                  12285 mV    9408 mA  115582 mW
       12V SS 2                  12338 mV   20881 mA  257637 mW
       12V SS 3                  12351 mV   10317 mA  127430 mW
       12V SS 4                  12285 mV   21054 mA  258660 mW
       12V SS 5                  12153 mV   13954 mA  169591 mW
       VDD 1.0V_A                 1000 mV   91000 mA   91000 mW
       VDD 1.0V_B                    0 mV       0 mA       0 mW
       VDD 3.3V                   3298 mV    9125 mA   30101 mW
       VDD 0.9V                    897 mV    3337 mA    2993 mW
       ETH SW 1V                     0 mV       0 mA       0 mW
       VDD 1.8V                   1809 mV    1127 mA    2040 mW
       PVCC                        835 mV       0 mA       0 mW
       PVNN                       1000 mV       0 mA       0 mW
       V1P0                       1003 mV       0 mA       0 mW
       V1P1                       1070 mV       0 mA       0 mW
       V1P3                       1348 mV       0 mA       0 mW
       VDDQ                       1493 mV       0 mA       0 mW
       V1P8                       1806 mV       0 mA       0 mW
       VDD3V3                     3303 mV       0 mA       0 mW
```

```
V5V0_BIAS                 5000 mV       0 mA       0 mW
VDD12V0                  12116 mV       0 mA       0 mW
EA0 Core 0.9V              900 mV   38875 mA   35002 mW
EA0 AVDD 1.0V              999 mV   31875 mA   31843 mW
EA0 HMC Core 0.9V          894 mV    9034 mA    8081 mW
EA0 1.2V                  1197 mV   15430 mA   18471 mW
EA01_HMC_VDDM 1.2V        1200 mV    -267 mA    -321 mW
EA0_XR 0.906V              908 mV   15430 mA   14012 mW
EA1 Core 0.9V              900 mV   38875 mA   35002 mW
EA1 AVDD 1.0V             1000 mV   28250 mA   28250 mW
EA1 HMC Core 0.9V          899 mV    8802 mA    7920 mW
EA1 1.2V                  1197 mV   15081 mA   18054 mW
EA0_PLL_1V0               1003 mV       0 mA       0 mW
EA0_1V04                  1048 mV       0 mA       0 mW
EA0_2V5                   2425 mV       0 mA       0 mW
EA0_1V5                   1483 mV       0 mA       0 mW
EA1_PLL_1V0               1019 mV       0 mA       0 mW
EA1_1V04                  1019 mV       0 mA       0 mW
EA1_2V5                   2490 mV       0 mA       0 mW
EA1_1V5                   1480 mV       0 mA       0 mW
EA1_XR 0.906V              908 mV   14965 mA   13590 mW
EA2 Core 0.9V              900 mV   44000 mA   39617 mW
EA2 AVDD 1.0V             1000 mV   28625 mA   28625 mW
EA2 HMC Core 0.9V          891 mV   10546 mA    9404 mW
EA2 1.2V                  1200 mV   15313 mA   18387 mW
EA23_HMC_VDDM 1.2V        1193 mV    -267 mA    -319 mW
EA2_XR 0.906V              908 mV   15197 mA   13801 mW
EA3 Core 0.9V              900 mV   39750 mA   35790 mW
EA3 AVDD 1.0V             1000 mV   27750 mA   27750 mW
EA3 HMC Core 0.9V          897 mV    9267 mA    8314 mW
EA3 1.2V                  1197 mV   15430 mA   18471 mW
EA2_PLL_1V0               1009 mV       0 mA       0 mW
EA2_1V04                  1041 mV       0 mA       0 mW
EA2_2V5                   2496 mV       0 mA       0 mW
EA2_1V5                   1493 mV       0 mA       0 mW
EA3_PLL_1V0               1003 mV       0 mA       0 mW
EA3_1V04                  1041 mV       0 mA       0 mW
EA3_2V5                   2490 mV       0 mA       0 mW
EA3_1V5                   1500 mV       0 mA       0 mW
EA3_XR 0.906V              908 mV   15081 mA   13695 mW
EA4 Core 0.9V              899 mV   45750 mA   41148 mW
EA4 AVDD 1.0V             1000 mV   32250 mA   32250 mW
EA4 HMC Core 0.9V          897 mV   10779 mA    9670 mW
EA4 1.2V                  1193 mV   16011 mA   19110 mW
```

```
        EA45_HMC_VDDM 1.2V          1200 mV    -267 mA    -321 mW
        EA4_XR 0.906V                905 mV   15779 mA   14286 mW
        EA5 Core 0.9V                900 mV   38375 mA   34552 mW
        EA5 AVDD 1.0V               1000 mV   27750 mA   27777 mW
        EA5 HMC Core 0.9V            899 mV    8453 mA    7606 mW
        EA5 1.2V                    1200 mV   14732 mA   17689 mW
        EA4_PLL_1V0                 1012 mV       0 mA       0 mW
        EA4_1V04                    1029 mV       0 mA       0 mW
        EA4_2V5                     2496 mV       0 mA       0 mW
        EA4_1V5                     1490 mV       0 mA       0 mW
        EA5_PLL_1V0                 1003 mV       0 mA       0 mW
        EA5_1V04                    1032 mV       0 mA       0 mW
        EA5_2V5                     2503 mV       0 mA       0 mW
        EA5_1V5                     1480 mV       0 mA       0 mW
        VDD2V5                      2461 mV       0 mA       0 mW
        VDD1V5                      1490 mV       0 mA       0 mW
        VDD1V2                      1212 mV       0 mA       0 mW
        EA5_XR 0.906V                910 mV   13686 mA   12466 mW
FPC 3 status:
  State                       Online
  FPC 3 Intake-A Temp Sensor              30 degrees C / 86 degrees F
  FPC 3 Exhaust-A Temp Sensor             48 degrees C / 118 degrees F
  FPC 3 Exhaust-B Temp Sensor             45 degrees C / 113 degrees F
  FPC 3 EA0 Temp Sensor                   60 degrees C / 140 degrees F
  FPC 3 EA0_XR0 Temp Sensor               65 degrees C / 149 degrees F
  FPC 3 EA0_XR1 Temp Sensor               67 degrees C / 152 degrees F
  FPC 3 EA1 Temp Sensor                   54 degrees C / 129 degrees F
  FPC 3 EA1_XR0 Temp Sensor               60 degrees C / 140 degrees F
  FPC 3 EA1_XR1 Temp Sensor               58 degrees C / 136 degrees F
  FPC 3 EA2 Temp Sensor                   62 degrees C / 143 degrees F
  FPC 3 EA2_XR0 Temp Sensor               67 degrees C / 152 degrees F
  FPC 3 EA2_XR1 Temp Sensor               67 degrees C / 152 degrees F
  FPC 3 EA3 Temp Sensor                   55 degrees C / 131 degrees F
  FPC 3 EA3_XR0 Temp Sensor               57 degrees C / 134 degrees F
  FPC 3 EA3_XR1 Temp Sensor               57 degrees C / 134 degrees F
  FPC 3 EA4 Temp Sensor                   69 degrees C / 156 degrees F
  FPC 3 EA4_XR0 Temp Sensor               71 degrees C / 159 degrees F
  FPC 3 EA4_XR1 Temp Sensor               70 degrees C / 158 degrees F
  FPC 3 EA5 Temp Sensor                   55 degrees C / 131 degrees F
  FPC 3 EA5_XR0 Temp Sensor               58 degrees C / 136 degrees F
  FPC 3 EA5_XR1 Temp Sensor               59 degrees C / 138 degrees F
  FPC 3 EA0_HMC0 Logic die                69 degrees C / 156 degrees F
  FPC 3 EA0_HMC0 DRAM botm                66 degrees C / 150 degrees F
  FPC 3 EA0_HMC1 Logic die                70 degrees C / 158 degrees F
```

```
FPC 3 EA0_HMC1 DRAM botm                67 degrees C / 152 degrees F
FPC 3 EA0_HMC2 Logic die                70 degrees C / 158 degrees F
FPC 3 EA0_HMC2 DRAM botm                67 degrees C / 152 degrees F
FPC 3 EA1_HMC0 Logic die                68 degrees C / 154 degrees F
FPC 3 EA1_HMC0 DRAM botm                65 degrees C / 149 degrees F
FPC 3 EA1_HMC1 Logic die                65 degrees C / 149 degrees F
FPC 3 EA1_HMC1 DRAM botm                62 degrees C / 143 degrees F
FPC 3 EA1_HMC2 Logic die                64 degrees C / 147 degrees F
FPC 3 EA1_HMC2 DRAM botm                61 degrees C / 141 degrees F
FPC 3 EA2_HMC0 Logic die                74 degrees C / 165 degrees F
FPC 3 EA2_HMC0 DRAM botm                71 degrees C / 159 degrees F
FPC 3 EA2_HMC1 Logic die                77 degrees C / 170 degrees F
FPC 3 EA2_HMC1 DRAM botm                74 degrees C / 165 degrees F
FPC 3 EA2_HMC2 Logic die                74 degrees C / 165 degrees F
FPC 3 EA2_HMC2 DRAM botm                71 degrees C / 159 degrees F
FPC 3 EA3_HMC0 Logic die                70 degrees C / 158 degrees F
FPC 3 EA3_HMC0 DRAM botm                67 degrees C / 152 degrees F
FPC 3 EA3_HMC1 Logic die                68 degrees C / 154 degrees F
FPC 3 EA3_HMC1 DRAM botm                65 degrees C / 149 degrees F
FPC 3 EA3_HMC2 Logic die                68 degrees C / 154 degrees F
FPC 3 EA3_HMC2 DRAM botm                65 degrees C / 149 degrees F
FPC 3 EA4_HMC0 Logic die                82 degrees C / 179 degrees F
FPC 3 EA4_HMC0 DRAM botm                79 degrees C / 174 degrees F
FPC 3 EA4_HMC1 Logic die                80 degrees C / 176 degrees F
FPC 3 EA4_HMC1 DRAM botm                77 degrees C / 170 degrees F
FPC 3 EA4_HMC2 Logic die                81 degrees C / 177 degrees F
FPC 3 EA4_HMC2 DRAM botm                78 degrees C / 172 degrees F
FPC 3 EA5_HMC0 Logic die                69 degrees C / 156 degrees F
FPC 3 EA5_HMC0 DRAM botm                66 degrees C / 150 degrees F
FPC 3 EA5_HMC1 Logic die                70 degrees C / 158 degrees F
FPC 3 EA5_HMC1 DRAM botm                67 degrees C / 152 degrees F
FPC 3 EA5_HMC2 Logic die                69 degrees C / 156 degrees F
FPC 3 EA5_HMC2 DRAM botm                66 degrees C / 150 degrees F
Power
       12V SS 1                  12259 mV    9538 mA  116927 mW
       12V SS 2                  12259 mV   20491 mA  251202 mW
       12V SS 3                  12298 mV    9711 mA  119433 mW
       12V SS 4                  12219 mV   20491 mA  250391 mW
       12V SS 5                  12206 mV   10447 mA  127520 mW
       VDD 1.0V_A                 1000 mV   42250 mA   42291 mW
       VDD 1.0V_B                  996 mV    8918 mA    8890 mW
       VDD 3.3V                   3301 mV   10375 mA   34255 mW
       VDD 0.9V                    897 mV    3569 mA    3202 mW
       ETH SW 1V                   983 mV    4267 mA    4195 mW
```

```
VDD 1.8V                  1812 mV    1825 mA    3309 mW
PVCC                       974 mV       0 mA       0 mW
PVNN                      1003 mV       0 mA       0 mW
V1P0                      1003 mV       0 mA       0 mW
V1P1                      1070 mV       0 mA       0 mW
V1P3                      1351 mV       0 mA       0 mW
VDDQ                      1496 mV       0 mA       0 mW
V1P8                      1809 mV       0 mA       0 mW
VDD3V3                    3309 mV       0 mA       0 mW
V5V0_BIAS                 4987 mV       0 mA       0 mW
VDD12V0                  12212 mV       0 mA       0 mW
EA0 Core 0.9V              900 mV   38125 mA   34327 mW
EA0 AVDD 1.0V              999 mV   31125 mA   31094 mW
EA0 HMC Core 0.9V          897 mV    9500 mA    8522 mW
EA0 1.2V                  1193 mV   15430 mA   18416 mW
EA01_HMC_VDDM 1.2V        1193 mV     313 mA     374 mW
EA0_XR 0.906V              913 mV   14965 mA   13671 mW
EA1 Core 0.9V              900 mV   39750 mA   35790 mW
EA1 AVDD 1.0V             1000 mV   26000 mA   26000 mW
EA1 HMC Core 0.9V          897 mV    8918 mA    8001 mW
EA1 1.2V                  1200 mV   15779 mA   18946 mW
EA0_PLL_1V0               1003 mV       0 mA       0 mW
EA0_1V04                  1019 mV       0 mA       0 mW
EA0_2V5                   2448 mV       0 mA       0 mW
EA0_1V5                   1470 mV       0 mA       0 mW
EA1_PLL_1V0               1016 mV       0 mA       0 mW
EA1_1V04                  1035 mV       0 mA       0 mW
EA1_2V5                   2506 mV       0 mA       0 mW
EA1_1V5                   1483 mV       0 mA       0 mW
EA1_XR 0.906V              908 mV   13918 mA   12639 mW
EA2 Core 0.9V              900 mV   38625 mA   34777 mW
EA2 AVDD 1.0V             1000 mV   26375 mA   26400 mW
EA2 HMC Core 0.9V          897 mV    9383 mA    8418 mW
EA2 1.2V                  1200 mV   15779 mA   18946 mW
EA23_HMC_VDDM 1.2V        1193 mV      81 mA      97 mW
EA2_XR 0.906V              908 mV   13918 mA   12639 mW
EA3 Core 0.9V              899 mV   40250 mA   36201 mW
EA3 AVDD 1.0V             1000 mV   26750 mA   26776 mW
EA3 HMC Core 0.9V          894 mV    9267 mA    8289 mW
EA3 1.2V                  1197 mV   16127 mA   19306 mW
EA2_PLL_1V0                993 mV       0 mA       0 mW
EA2_1V04                  1045 mV       0 mA       0 mW
EA2_2V5                   2474 mV       0 mA       0 mW
EA2_1V5                   1490 mV       0 mA       0 mW
```

```
        EA3_PLL_1V0                 980 mV       0 mA       0 mW
        EA3_1V04                   1032 mV       0 mA       0 mW
        EA3_2V5                    2506 mV       0 mA       0 mW
        EA3_1V5                    1474 mV       0 mA       0 mW
        EA3_XR 0.906V               910 mV   14732 mA   13419 mW
        EA4 Core 0.9V               900 mV   42500 mA   38266 mW
        EA4 AVDD 1.0V              1000 mV   32250 mA   32281 mW
        EA4 HMC Core 0.9V           899 mV   10081 mA    9071 mW
        EA4 1.2V                   1193 mV   16360 mA   19526 mW
        EA45_HMC_VDDM 1.2V         1193 mV     662 mA     791 mW
        EA4_XR 0.906V               908 mV   15430 mA   14012 mW
        EA5 Core 0.9V               899 mV   37000 mA   33278 mW
        EA5 AVDD 1.0V              1000 mV   26125 mA   26150 mW
        EA5 HMC Core 0.9V           897 mV    9267 mA    8314 mW
        EA5 1.2V                   1197 mV   15662 mA   18750 mW
        EA4_PLL_1V0                1000 mV       0 mA       0 mW
        EA4_1V04                   1029 mV       0 mA       0 mW
        EA4_2V5                    2487 mV       0 mA       0 mW
        EA4_1V5                    1496 mV       0 mA       0 mW
        EA5_PLL_1V0                1009 mV       0 mA       0 mW
        EA5_1V04                   1032 mV       0 mA       0 mW
        EA5_2V5                    2503 mV       0 mA       0 mW
        EA5_1V5                    1496 mV       0 mA       0 mW
        VDD2V5                     2483 mV       0 mA       0 mW
        VDD1V5                     1470 mV       0 mA       0 mW
        VDD1V2                     1203 mV       0 mA       0 mW
        EA5_XR 0.906V               908 mV   14500 mA   13167 mW
```

show chassis environment fpc (T320, T640, and T1600 Routers)

`user@host>` **show chassis environment fpc**

```
FPC 0 status:
  State                          Online
  Temperature Top              42 degrees C / 107 degrees F
  Temperature Bottom           36 degrees C / 96 degrees F
  Temperature MMB1             39 degrees C / 102 degrees F
  Power:
    1.8 V                    1959 mV
    2.5 V                    2495 mV
    3.3 V                    3344 mV
    5.0 V                    5047 mV
    1.8 V bias               1787 mV
    3.3 V bias               3291 mV
```

```
    5.0 V bias              4998 mV
    8.0 V bias              7343 mV
  BUS Revision                40
FPC 1 status:
  State                         Online
  Temperature Top             42 degrees C / 107 degrees F
  Temperature Bottom          39 degrees C / 102 degrees F
  Temperature MMB1            40 degrees C / 104 degrees F
  Power:
    1.8 V                   1956 mV
    2.5 V                   2498 mV
    3.3 V                   3340 mV
    5.0 V                   5023 mV
    1.8 V bias              1782 mV
    3.3 V bias              3277 mV
    5.0 V bias              4989 mV
    8.0 V bias              7289 mV
  BUS Revision                40
FPC 2 status:
  State                         Online
  Temperature Top             43 degrees C / 109 degrees F
  Temperature Bottom          39 degrees C / 102 degrees F
  Temperature MMB1            41 degrees C / 105 degrees F
  Power:
    1.8 V                   1963 mV
    2.5 V                   2503 mV
    3.3 V                   3340 mV
    5.0 V                   5042 mV
    1.8 V bias              1797 mV
    3.3 V bias              3311 mV
    5.0 V bias              5013 mV
    8.0 V bias              7221 mV
  BUS Revision                40
```

show chassis environment fpc (T4000 Router)

`user@host>` **show chassis environment fpc**

```
FPC 0 status:
  State                     Online
  Fan Intake                34 degrees C / 93 degrees F
  Fan Exhaust               48 degrees C / 118 degrees F
  PMB                       47 degrees C / 116 degrees F
  LMB0                      50 degrees C / 122 degrees F
```

```
LMB1                        41 degrees C / 105 degrees F
LMB2                        35 degrees C / 95 degrees F
PFE1 LU2                    46 degrees C / 114 degrees F
PFE1 LU0                    41 degrees C / 105 degrees F
PFE0 LU0                    57 degrees C / 134 degrees F
XF1                         47 degrees C / 116 degrees F
XF0                         52 degrees C / 125 degrees F
XM1                         41 degrees C / 105 degrees F
XM0                         50 degrees C / 122 degrees F
PFE0 LU1                    56 degrees C / 132 degrees F
PFE0 LU2                    45 degrees C / 113 degrees F
PFE1 LU1                    37 degrees C / 98 degrees F
Power 1
  1.0 V                      991 mV
  1.2 V bias                1195 mV
  1.8 V                     1788 mV
  2.5 V                     2483 mV
  3.3 V                     3289 mV
  3.3 V bias                3299 mV
  12.0 V A                 10608 mV
  12.0 V B                 10637 mV
Power 2
  0.9 V                      881 mV
  0.9 V PFE0                 916 mV
  0.9 V PFE1                 903 mV
  1.0 V PFE0                1012 mV
  1.0 V PFE1                1002 mV
  1.1 V                     1095 mV
  1.5 V_0                   1494 mV
  1.5 V_1                   1479 mV
Power 3
  1.0 V PFE0                1000 mV
  1.0 V PFE1                1002 mV
  1.0 V PFE0 *               995 mV
  1.0 V PFE1 *               995 mV
  1.8 V PFE 0               1788 mV
  1.8 V PFE 1               1789 mV
  2.5 V                     2482 mV
  12.0 V                   11614 mV
Power 4
  1.0 V PFE0 LU0            1003 mV
  1.0 V PFE1 LU0            1003 mV
  1.0 V PFE1 LU2            1004 mV
  1.0 V PFE0 LU0 *           995 mV
```

```
    1.0 V PFE1 LU0 *           998 mV
    1.0 V PFE1 LU2 *           996 mV
    12.0 V                   11643 mV
    12.0 V C                 11711 mV
  Power (Base/PMB/MMB)
    LMB0 VDD2V5               2488 mV
    LMB0 VDD1V8               1788 mV
    LMB0 VDD1V5               1496 mV
    LMB0 PFE0 LU0 AVDD1V0     1002 mV
    LMB0 PFE0 LU0 VDD1V0      1000 mV
    LMB0 VDD12V0             10752 mV
    LMB1 VDD2V5               2472 mV
    LMB1 VDD1V8               1792 mV
    LMB1 VDD1V5               1480 mV
    LMB1 PFE0 LU2 AVDD1V0      994 mV
    LMB1 PFE0 LU2 VDD1V0      1002 mV
    LMB1 VDD12V0             10800 mV
    LMB2 VDD2V5               2472 mV
    LMB2 VDD1V8               1792 mV
    LMB2 VDD1V5               1486 mV
    LMB2 PFE1 LU1 AVDD1V0      996 mV
    LMB2 PFE1 LU1 VDD1V0       998 mV
    LMB2 VDD12V0             10704 mV
    PMB 1.05v                 1049 mV
    PMB 1.5v                  1500 mV
    PMB 2.5v                  2500 mV
    PMB 3.3v                  3299 mV
  Bus Revision               113
FPC 3 status:
  State                      Online
  Fan Intake                 37 degrees C / 98 degrees F
  Fan Exhaust                51 degrees C / 123 degrees F
  PMB                        43 degrees C / 109 degrees F
  LMB0                       57 degrees C / 134 degrees F
  LMB1                       54 degrees C / 129 degrees F
  LMB2                       38 degrees C / 100 degrees F
  PFE1 LU2                   63 degrees C / 145 degrees F
  PFE1 LU0                   45 degrees C / 113 degrees F
  PFE0 LU0                   69 degrees C / 156 degrees F
  XF1                        62 degrees C / 143 degrees F
  XF0                        63 degrees C / 145 degrees F
  XM1                        43 degrees C / 109 degrees F
  XM0                        67 degrees C / 152 degrees F
  PFE0 LU1                   63 degrees C / 145 degrees F
```

```
PFE0 LU2                    66 degrees C / 150 degrees F
PFE1 LU1                    41 degrees C / 105 degrees F
Power 1
  1.0 V                      1002 mV
  1.2 V bias                 1201 mV
  1.8 V                      1785 mV
  2.5 V                      2485 mV
  3.3 V                      3288 mV
  3.3 V bias                 3285 mV
  12.0 V A                  10412 mV
  12.0 V B                  10515 mV
Power 2
  0.9 V                       882 mV
  0.9 V PFE0                  920 mV
  0.9 V PFE1                  905 mV
  1.0 V PFE0                 1015 mV
  1.0 V PFE1                 1001 mV
  1.1 V                      1094 mV
  1.5 V_0                    1495 mV
  1.5 V_1                    1478 mV
Power 3
  0.92 V PFE1                 998 mV
  1.0 V PFE0                  997 mV
  1.0 V PFE0 *                992 mV
  1.0 V PFE1 *                991 mV
  1.8 V PFE 0                1780 mV
  1.8 V PFE 1                1797 mV
  2.5 V                      2492 mV
  12.0 V                    11604 mV
Power 4
  1.0 V PFE0 LU0             1003 mV
  1.0 V PFE1 LU0             1004 mV
  1.0 V PFE1 LU2             1003 mV
  1.0 V PFE0 LU0 *           1000 mV
  1.0 V PFE1 LU0 *           1001 mV
  1.0 V PFE1 LU2 *           1003 mV
  12.0 V                    11653 mV
  12.0 V C                  11672 mV
Power (Base/PMB/MMB)
  LMB0 VDD2V5                2512 mV
  LMB0 VDD1V8                1790 mV
  LMB0 VDD1V5                1500 mV
  LMB0 PFE0 LU0 AVDD1V0      1004 mV
  LMB0 PFE0 LU0 VDD1V0       1002 mV
```

```
    LMB0 VDD12V0             10608 mV
    LMB1 VDD2V5               2472 mV
    LMB1 VDD1V8               1788 mV
    LMB1 VDD1V5               1480 mV
    LMB1 PFE0 LU2 AVDD1V0     1000 mV
    LMB1 PFE0 LU2 VDD1V0      1004 mV
    LMB1 VDD12V0             10672 mV
    LMB2 VDD2V5               2488 mV
    LMB2 VDD1V8               1798 mV
    LMB2 VDD1V5               1494 mV
    LMB2 PFE1 LU1 AVDD1V0     1000 mV
    LMB2 PFE1 LU1 VDD1V0      1004 mV
    LMB2 VDD12V0             10528 mV
    PMB 1.05v                 1050 mV
    PMB 1.5v                  1500 mV
    PMB 2.5v                  2499 mV
    PMB 3.3v                  3299 mV
  Bus Revision               113
FPC 5 status:
  State                      Online
  Temperature Top            39 degrees C / 102 degrees F
  Temperature Bottom         38 degrees C / 100 degrees F
  Power
    1.8 V                     1804 mV
    1.8 V bias                1802 mV
    3.3 V                     3294 mV
    3.3 V bias                3277 mV
    5.0 V bias                5008 mV
    5.0 V TOP                 5067 mV
    8.0 V bias                6642 mV
  Power (Base/PMB/MMB)
    1.2 V                     1202 mV
    1.5 V                     1504 mV
    5.0 V BOT                 5079 mV
    12.0 V TOP Base          11848 mV
    12.0 V BOT Base          11780 mV
    1.1 V PMB                 1111 mV
    1.2 V PMB                 1189 mV
    1.5 V PMB                 1494 mV
    1.8 V PMB                 1819 mV
    2.5 V PMB                 2503 mV
    3.3 V PMB                 3294 mV
    5.0 V PMB                 5035 mV
    12.0  V PMB              11788 mV
```

```
    0.75 MMB TOP              766 mV
    1.5 V MMB TOP            1484 mV
    1.8 V MMB TOP            1772 mV
    2.5 V MMB TOP            2485 mV
    1.2 V MMB TOP            1137 mV
    5.0 V MMB TOP            4946 mV
    12.0 V MMB TOP          11772 mV
    3.3 V MMB TOP            3289 mV
    0.75 MMB BOT              759 mV
    1.5 V MMB BOT            1482 mV
    1.8 V MMB BOT            1792 mV
    2.5 V MMB BOT            2490 mV
    1.2 V MMB BOT            1145 mV
    5.0 V MMB BOT            4922 mV
    12.0 V MMB BOT          11625 mV
    3.3 V MMB BOT            3282 mV
    APS 00                   2495 mV
    APS 01                   3308 mV
    APS 02                   3301 mV
    5.0 V PIC 0              4967 mV
    APS 10                   2512 mV
    APS 11                   3316 mV
    APS 12                   3304 mV
    5.0 V PIC 1              5081 mV
  Bus Revision               49
FPC 6 status:
  State                      Online
  Fan Intake                 34 degrees C / 93 degrees F
  Fan Exhaust                49 degrees C / 120 degrees F
  PMB                        40 degrees C / 104 degrees F
  LMB0                       60 degrees C / 140 degrees F
  LMB1                       58 degrees C / 136 degrees F
  LMB2                       40 degrees C / 104 degrees F
  PFE1 LU2                   69 degrees C / 156 degrees F
  PFE1 LU0                   45 degrees C / 113 degrees F
  PFE0 LU0                   71 degrees C / 159 degrees F
  XF1                        58 degrees C / 136 degrees F
  XF0                        65 degrees C / 149 degrees F
  XM1                        40 degrees C / 104 degrees F
  XM0                        66 degrees C / 150 degrees F
  PFE0 LU1                   69 degrees C / 156 degrees F
  PFE0 LU2                   68 degrees C / 154 degrees F
  PFE1 LU1                   42 degrees C / 107 degrees F
  Power 1
```

```
  1.0 V                      998 mV
  1.2 V bias                1191 mV
  1.8 V                     1781 mV
  2.5 V                     2487 mV
  3.3 V                     3302 mV
  3.3 V bias                3300 mV
  12.0 V A                 10388 mV
  12.0 V B                 10388 mV
Power 2
  0.9 V                      902 mV
  0.9 V PFE0                 921 mV
  0.9 V PFE1                 907 mV
  1.0 V PFE0                 996 mV
  1.0 V PFE1                 974 mV
  1.1 V                     1095 mV
  1.5 V_0                   1495 mV
  1.5 V_1                   1478 mV
Power 3
  1.0 V PFE0                 997 mV
  1.0 V PFE1                 998 mV
  1.0 V PFE0 *               993 mV
  1.0 V PFE1 *               991 mV
  1.8 V PFE 0               1796 mV
  1.8 V PFE 1               1789 mV
  2.5 V                     2465 mV
  12.0 V                   11609 mV
Power 4
  1.0 V PFE0 LU0            1003 mV
  1.0 V PFE1 LU0            1006 mV
  1.0 V PFE1 LU2            1002 mV
  1.0 V PFE0 LU0 *          1000 mV
  1.0 V PFE1 LU0 *           998 mV
  1.0 V PFE1 LU2 *           998 mV
  12.0 V                   11638 mV
  12.0 V C                 11702 mV
Power (Base/PMB/MMB)
  LMB0 VDD2V5               2484 mV
  LMB0 VDD1V8               1780 mV
  LMB0 VDD1V5               1496 mV
  LMB0 PFE0 LU0 AVDD1V0      998 mV
  LMB0 PFE0 LU0 VDD1V0      1004 mV
  LMB0 VDD12V0             10528 mV
  LMB1 VDD2V5               2472 mV
  LMB1 VDD1V8               1776 mV
```

```
    LMB1 VDD1V5               1474 mV
    LMB1 PFE0 LU2 AVDD1V0      994 mV
    LMB1 PFE0 LU2 VDD1V0      1004 mV
    LMB1 VDD12V0             10544 mV
    LMB2 VDD2V5               2476 mV
    LMB2 VDD1V8               1790 mV
    LMB2 VDD1V5               1492 mV
    LMB2 PFE1 LU1 AVDD1V0      996 mV
    LMB2 PFE1 LU1 VDD1V0      1010 mV
    LMB2 VDD12V0             10528 mV
    PMB 1.05v                 1050 mV
    PMB 1.5v                  1499 mV
    PMB 2.5v                  2500 mV
    PMB 3.3v                  3300 mV
  Bus Revision                80
```

show chassis environment fpc lcc (TX Matrix Router)

`user@host>` **show chassis environment fpc lcc 0**

```
lcc0-re0:
--------------------------------------------------------------------------
FPC 1 status:
  State                          Online
  Temperature Top              30 degrees C / 86 degrees F
  Temperature Bottom           25 degrees C / 77 degrees F
  Temperature MMB0                Absent
  Temperature MMB1             27 degrees C / 80 degrees F
  Power:
    1.8 V                     1813 mV
    2.5 V                     2504 mV
    3.3 V                     3338 mV
    5.0 V                     5037 mV
    1.8 V bias                1797 mV
    3.3 V bias                3301 mV
    5.0 V bias                5013 mV
    8.0 V bias                7345 mV
  BUS Revision                  40
FPC 2 status:
  State                          Online
  Temperature Top              37 degrees C / 98 degrees F
  Temperature Bottom           26 degrees C / 78 degrees F
  Temperature MMB0             32 degrees C / 89 degrees F
  Temperature MMB1             27 degrees C / 80 degrees F
```

```
  Power:
    1.8 V                    1791 mV
    2.5 V                    2517 mV
    3.3 V                    3308 mV
    5.0 V                    5052 mV
    1.8 V bias               1797 mV
    3.3 V bias               3289 mV
    5.0 V bias               4991 mV
    8.0 V bias               7477 mV
  BUS Revision                 40
```

show chassis environment fpc lcc (TX Matrix Plus Router)

`user@host>` **show chassis environment fpc lcc 0**

```
lcc0-re0:
--------------------------------------------------------------------------
FPC 1 status:
  State                      Online
  Temperature Top            46 degrees C / 114 degrees F
  Temperature Bottom         47 degrees C / 116 degrees F
  Power
    1.8 V                     1788 mV
    1.8 V bias                1787 mV
    3.3 V                     3321 mV
    3.3 V bias                3306 mV
    5.0 V bias                5018 mV
    5.0 V TOP                 5037 mV
    8.0 V bias                7223 mV
  Power (Base/PMB/MMB)
    1.2 V                     1205 mV
    1.5 V                     1503 mV
    5.0 V BOT                 5084 mV
    12.0 V TOP Base          11775 mV
    12.0 V BOT Base          11794 mV
    1.1 V PMB                 1108 mV
    1.2 V PMB                 1196 mV
    1.5 V PMB                 1499 mV
    1.8 V PMB                 1811 mV
    2.5 V PMB                 2515 mV
    3.3 V PMB                 3318 mV
    5.0 V PMB                 5030 mV
    12.0  V PMB              11832 mV
    0.75 MMB TOP               752 mV
```

```
    1.5 V MMB TOP             1489 mV
    1.8 V MMB TOP             1782 mV
    2.5 V MMB TOP             2498 mV
    1.2 V MMB TOP             1155 mV
    5.0 V MMB TOP             4902 mV
    12.0 V MMB TOP           11721 mV
    3.3 V MMB TOP             3316 mV
    0.75 MMB BOT               754 mV
    1.5 V MMB BOT             1482 mV
    1.8 V MMB BOT             1758 mV
    2.5 V MMB BOT             2488 mV
    1.2 V MMB BOT             1157 mV
    5.0 V MMB BOT             4962 mV
    12.0 V MMB BOT           11691 mV
    3.3 V MMB BOT             3308 mV
    APS 00                    1484 mV
    APS 01                    2503 mV
    APS 02                    3313 mV
    5.0 V PIC 0               5025 mV
    APS 10                    1501 mV
    APS 11                    2466 mV
    APS 12                    3311 mV
    5.0 V PIC 1               5081 mV
  Bus Revision                49
```

show chassis environment fpc (QFX Series and OCX Series)

```
user@switch> show chassis environment fpc 0
```

```
FPC 0 status:
  State                       Online
  Temperature                 42 degrees C / 107 degrees F
```

show chassis environment fpc interconnect-device (QFabric Systems)

```
user@switch> show chassis environment fpc interconnect-device interconnect1 0
```

```
FC 0 FPC 0 status:
  State                       Online
  Left Intake Temperature     24 degrees C / 75 degrees F
  Right Intake Temperature    24 degrees C / 75 degrees F
  Left Exhaust Temperature    27 degrees C / 80 degrees F
  Right Exhaust Temperature   27 degrees C / 80 degrees F
```

```
  Power
    BIAS 3V3                    3330 mV
    VDD 3V3                     3300 mV
    VDD 2V5                     2502 mV
    VDD 1V5                     1496 mV
    VDD 1V2                     1194 mV
    VDD 1V0                     1000 mV
    SW0 VDD  1V0                1020 mV
    SW0 CVDD 1V025              1032 mV
    SW1 VDD  1V0                1022 mV
    SW1 CVDD 1V025              1030 mV
    VDD 12V0 DIV3_33            3414 mV
```

show chassis environment fpc 5(PTX3000 Packet Transport Router)

`user@host>` **show chassis environment fpc 5**

```
FPC 5 status:
  State                       Online
  Intake Temperature          31 degrees C / 87 degrees F
  Exhaust Temperature         41 degrees C / 105 degrees F
  Power
    FPC 12.0v                   12221 mV
    FPC VCC 0.5-1.3v             1640 mV
    FPC VNN 0.5-1.3v             1640 mV
    FPC 1.0v                     1640 mV
    FPC 1.1v                     1640 mV
    FPC 1.35v                    1640 mV
    FPC VDDQ 1.5v                1640 mV
    FPC 1.8v                     1640 mV
    FPC 3.3v                     3280 mV
    FPC 5.0v bias                5143 mV
    FPC 5.0v usb                 5143 mV
    FPC VCC 12.0v               12289 mV
    FPC Vref 3.3v                3280 mV
    MAIN 12.0v-i                 2265 mA
```

show chassis environment fpc 0 (PTX5000 Packet Transport Router)

`user@host>` **show chassis environment fpc 0**

```
FPC 0 status:
  State                       Online
```

```
PMB Temperature            35 degrees C / 95 degrees F
Intake Temperature         33 degrees C / 91 degrees F
Exhaust A Temperature      51 degrees C / 123 degrees F
Exhaust B Temperature      43 degrees C / 109 degrees F
TL0 Temperature            48 degrees C / 118 degrees F
TQ0 Temperature            53 degrees C / 127 degrees F
TL1 Temperature            56 degrees C / 132 degrees F
TQ1 Temperature            58 degrees C / 136 degrees F
TL2 Temperature            55 degrees C / 131 degrees F
TQ2 Temperature            57 degrees C / 134 degrees F
TL3 Temperature            59 degrees C / 138 degrees F
TQ3 Temperature            59 degrees C / 138 degrees F
Power
  PMB   1.05v               1049 mV
  PMB   1.5v                1500 mV
  PMB   2.5v                2500 mV
  PMB   3.3v                3299 mV
  PFE0  1.5v                1500 mV
  PFE0  1.0v                 999 mV
  TQ0   0.9v                 900 mV
  TL0   0.9v                 900 mV
  PFE1  1.5v                1499 mV
  PFE1  1.0v                 999 mV
  TQ1   0.9v                 899 mV
  TL1   0.9v                 900 mV
  PFE2  1.5v                1500 mV
  PFE2  1.0v                1000 mV
  TQ2   0.9v                 900 mV
  TL2   0.9v                 900 mV
  PFE3  1.5v                1499 mV
  PFE3  1.0v                1000 mV
  TQ3   0.9v                 900 mV
  TL3   0.9v                 900 mV
  Bias  3.3v                3327 mV
  FPC   3.3v                3300 mV
  FPC   2.5v                2500 mV
  SAM   0.9v                 900 mV
  A    12.0v                2014 mV
  B    12.0v                2030 mV
```

show chassis environment fpc 07 (PTX5000 Packet Transport Router with FPC2-PTX-P1A)

`user@host>` **show chassis environment fpc 07**

```
FPC 7 status:
  State                       Online
  PMB TEMP0 Temperature       32 degrees C / 89 degrees F
  PMB TEMP1 Temperature       28 degrees C / 82 degrees F
  PMB CPU Temperature         46 degrees C / 114 degrees F
  Intake Temperature          35 degrees C / 95 degrees F
  Exhaust A Temperature       55 degrees C / 131 degrees F
  Exhaust B Temperature       54 degrees C / 129 degrees F
  TL5 Temperature             59 degrees C / 138 degrees F
  TQ5 Temperature             57 degrees C / 134 degrees F
  TL6 Temperature             57 degrees C / 134 degrees F
  TQ6 Temperature             51 degrees C / 123 degrees F
  TL1 Temperature             76 degrees C / 168 degrees F
  TQ1 Temperature             58 degrees C / 136 degrees F
  TL2 Temperature             75 degrees C / 167 degrees F
  TQ2 Temperature             57 degrees C / 134 degrees F
  TL4 Temperature             52 degrees C / 125 degrees F
  TQ4 Temperature             66 degrees C / 150 degrees F
  TL7 Temperature             52 degrees C / 125 degrees F
  TQ7 Temperature             60 degrees C / 140 degrees F
  TL0 Temperature             72 degrees C / 161 degrees F
  TQ0 Temperature             73 degrees C / 163 degrees F
  TL3 Temperature             64 degrees C / 147 degrees F
  TQ3 Temperature             70 degrees C / 158 degrees F
  Power
    PMB   1.05v               1049 mV
    PMB   3.3v                3299 mV
    PMB   1.1v-a              1100 mV
    PMB   1.5v                1499 mV
    PMB   1.1v-b              1100 mV
    Base  3.3v                3300 mV
    FPC Base  2.5v            2499 mV
    TL1   0.9v                 897 mV
    TQ1   0.9v                 897 mV
    PFE1  1.0v                 999 mV
    PFE1  1.5v                1499 mV
    TL2   0.9v                 897 mV
    TQ2   0.9v                 897 mV
    PFE2  1.0v                 999 mV
    PFE2  1.5v                1499 mV
    FPC Base  1.0v            1000 mV
    FPC Base  1.2v            1199 mV
    TL5   0.9v                 898 mV
    TQ5   0.9v                 898 mV
```

```
    PFE5  1.0v                1000 mV
    PFE5  1.5v                1500 mV
    TL6   0.9v                 897 mV
    TQ6   0.9v                 897 mV
    PFE6  1.0v                1000 mV
    PFE6  1.5v                1499 mV
    Mezz Base  2.5v           2500 mV
    TL0   0.9v                 896 mV
    TQ0   0.9v                 896 mV
    PFE0  1.0v                 999 mV
    PFE0  1.5v                1499 mV
```

show chassis environment fpc (PTX10008 router)

`user@host>` **show chassis environment fpc**

```
FPC 0 status:
  State                       Online
  FPC 0 Intake-A Temp Sensor 37 degrees C / 98 degrees F
  FPC 0 Intake-B Temp Sensor 34 degrees C / 93 degrees F
  FPC 0 Exhaust-A Temp Sensor37 degrees C / 98 degrees F
  FPC 0 Exhaust-B Temp Sensor38 degrees C / 100 degrees F
  FPC 0 Exhaust-C Temp Sensor40 degrees C / 104 degrees F
  FPC 0 PE0 Temp Sensor      41 degrees C / 105 degrees F
  FPC 0 PE1 Temp Sensor      42 degrees C / 107 degrees F
  FPC 0 PE2 Temp Sensor      44 degrees C / 111 degrees F
  FPC 0 LCPU Temp Sensor     40 degrees C / 104 degrees F
  Power
         PE0 Core 0.9V               872 mV   28777 mA   25146 mW
         PE0 HMC0 Core 0.9V          899 mV   10359 mA    9328 mW
         PE1 Core 0.9V               896 mV   29476 mA   26414 mW
         PE1 HMC0 Core 0.9V          899 mV   10218 mA    9187 mW
         PE2 Core 0.9V               872 mV   28839 mA   25199 mW
         PE2 HMC0 Core 0.9V          900 mV   10296 mA    9265 mW
         PE0 Serdes 1.0V            1020 mV   29000 mA   29593 mW
         PE1 Serdes 1.0V            1019 mV   29109 mA   29718 mW
         PE2 Serdes 1.0V            1019 mV   28484 mA   29078 mW
         LCPU Platform 1.1V         1099 mV    3515 mA    3867 mW
         LCPU Core 1.0V             1000 mV    8750 mA    8703 mW
         PHY VDD B 1.0V             1000 mV   17062 mA   17031 mW
         PHY VDD A 1.0V              999 mV   15640 mA   15625 mW
         BCM Core 1.0V               999 mV    7054 mA    7054 mW
         BCM PEX 1.0V                999 mV    3562 mA    3558 mW
         HMC Core 1.2V              1199 mV    1280 mA    1513 mW
```

```
        HMC Serdes 1.2V            1199 mV   32937 mA   39500 mW
        VDD 1.5V                   1500 mV    2824 mA    4234 mW
        VDD 2.5V                   2449 mV    3812 mA    9343 mW
        VDD 3.3V                   3299 mV    5085 mA   16796 mW
        12V                       12259 mV   29609 mA  368196 mW
FPC 1 status:
  State                     Online
  FPC 1 Intake-A Temp Sensor 37 degrees C / 98 degrees F
  FPC 1 Intake-B Temp Sensor 34 degrees C / 93 degrees F
  FPC 1 Exhaust-A Temp Sensor38 degrees C / 100 degrees F
  FPC 1 Exhaust-B Temp Sensor38 degrees C / 100 degrees F
  FPC 1 Exhaust-C Temp Sensor40 degrees C / 104 degrees F
  FPC 1 PE0 Temp Sensor      41 degrees C / 105 degrees F
  FPC 1 PE1 Temp Sensor      42 degrees C / 107 degrees F
  FPC 1 PE2 Temp Sensor      44 degrees C / 111 degrees F
  FPC 1 LCPU Temp Sensor     39 degrees C / 102 degrees F
  Power
        PE0 Core 0.9V               898 mV   29351 mA   26421 mW
        PE0 HMC0 Core 0.9V          899 mV    9734 mA    8750 mW
        PE1 Core 0.9V               873 mV   28539 mA   24933 mW
        PE1 HMC0 Core 0.9V          899 mV    9937 mA    8937 mW
        PE2 Core 0.9V               875 mV   28906 mA   25316 mW
        PE2 HMC0 Core 0.9V          899 mV   10140 mA    9125 mW
        PE0 Serdes 1.0V            1019 mV   28312 mA   28890 mW
        PE1 Serdes 1.0V            1020 mV   28656 mA   29234 mW
        PE2 Serdes 1.0V            1020 mV   29437 mA   30015 mW
        LCPU Platform 1.1V         1100 mV    4617 mA    5078 mW
        LCPU Core 1.0V             1000 mV    8781 mA    8781 mW
        PHY VDD B 1.0V             1000 mV   15953 mA   15984 mW
        PHY VDD A 1.0V             1000 mV   15484 mA   15484 mW
        BCM Core 1.0V               999 mV    7945 mA    7937 mW
        BCM PEX 1.0V                999 mV    3515 mA    3515 mW
        HMC Core 1.2V              1199 mV    1269 mA    1521 mW
        HMC Serdes 1.2V            1199 mV   33000 mA   39593 mW
        VDD 1.5V                   1500 mV    2691 mA    4062 mW
        VDD 2.5V                   2449 mV    3582 mA    8781 mW
        VDD 3.3V                   3300 mV    2563 mA    8458 mW
        12V                       12311 mV   29002 mA  357577 mW
FPC 2 status:
  State                     Online
  FPC 2 Intake-A Temp Sensor 43 degrees C / 109 degrees F
  FPC 2 Intake-B Temp Sensor 30 degrees C / 86 degrees F
  FPC 2 Exhaust-A Temp Sensor50 degrees C / 122 degrees F
  FPC 2 Exhaust-B Temp Sensor52 degrees C / 125 degrees F
```

```
  FPC 2 Exhaust-C Temp Sensor51 degrees C / 123 degrees F
  FPC 2 PE0 Temp Sensor      48 degrees C / 118 degrees F
  FPC 2 PE1 Temp Sensor      56 degrees C / 132 degrees F
  FPC 2 PE2 Temp Sensor      48 degrees C / 118 degrees F
  FPC 2 PE3 Temp Sensor      57 degrees C / 134 degrees F
  FPC 2 PE4 Temp Sensor      48 degrees C / 118 degrees F
  FPC 2 PE5 Temp Sensor      60 degrees C / 140 degrees F
  FPC 2 LCPU Temp Sensor     47 degrees C / 116 degrees F
  Power
         PE0 Core 0.9V               874 mV   28117 mA   24617 mW
         PE1 Core 0.9V               899 mV   29601 mA   26632 mW
         PE0 Serdes 1.0V            1019 mV   41031 mA   41843 mW
         PE1 Serdes 1.0V            1019 mV   35656 mA   36343 mW
         PE0 HMC Core 0.9V           899 mV    8125 mA    7312 mW
         PE0,1 HMC Memory 1.2V      1199 mV     565 mA     688 mW
         PE1 HMC Core 0.9V           899 mV    7921 mA    7125 mW
         PE0,1 HMC Serdes 1.2V      1199 mV   21281 mA   25562 mW
         PE2 Core 0.9V               899 mV   29187 mA   26242 mW
         PE3 Core 0.9V               899 mV   29976 mA   27074 mW
         PE2 Serdes 1.0V            1019 mV   38562 mA   39343 mW
         PE3 Serdes 1.0V            1019 mV   34937 mA   35656 mW
         PE2 HMC Core 0.9V           899 mV    8093 mA    7281 mW
         PE2,3 HMC Memory 1.2V      1199 mV     610 mA     732 mW
         PE3 HMC Core 0.9V           899 mV    7710 mA    6937 mW
         PE2,3 HMC Serdes 1.2V      1199 mV   21500 mA   25812 mW
         VDD 3.3V                   3300 mV    7937 mA   26187 mW
         VDD 1.5V                   1499 mV    3234 mA    4851 mW
         VDD 2.5V                   2449 mV    4539 mA   11109 mW
         PE4 Core 0.9V               874 mV   29914 mA   26183 mW
         PE5 Core 0.9V               874 mV   29820 mA   26031 mW
         PE4 Serdes 1.0V            1020 mV   43968 mA   44843 mW
         PE5 Serdes 1.0V            1019 mV   27453 mA   28031 mW
         PE4 HMC Core 0.9V           900 mV    7937 mA    7140 mW
         PE4,5 HMC Memory 1.2V      1200 mV    1185 mA    1421 mW
         PE5 HMC Core 0.9V           899 mV    8718 mA    7843 mW
         PE4,5 HMC Serdes 1.2V      1199 mV   21125 mA   25343 mW
         LCPU platform 1.1V         1099 mV    3777 mA    4156 mW
         LCPU core 1.0V             1000 mV    9062 mA    9062 mW
         BCM core 1.0V              1000 mV    9328 mA    9328 mW
         BCM & PEX Serdes 1.0V       999 mV    4125 mA    4125 mW
         12V                       12311 mV   53347 mA  660345 mW
FPC 3 status:
  State                      Online
  FPC 3 Intake-A Temp Sensor 43 degrees C / 109 degrees F
```

```
FPC 3 Intake-B Temp Sensor 30 degrees C / 86 degrees F
FPC 3 Exhaust-A Temp Sensor48 degrees C / 118 degrees F
FPC 3 Exhaust-B Temp Sensor49 degrees C / 120 degrees F
FPC 3 Exhaust-C Temp Sensor47 degrees C / 116 degrees F
FPC 3 PE0 Temp Sensor      48 degrees C / 118 degrees F
FPC 3 PE1 Temp Sensor      55 degrees C / 131 degrees F
FPC 3 PE2 Temp Sensor      47 degrees C / 116 degrees F
FPC 3 PE3 Temp Sensor      54 degrees C / 129 degrees F
FPC 3 PE4 Temp Sensor      48 degrees C / 118 degrees F
FPC 3 PE5 Temp Sensor      58 degrees C / 136 degrees F
FPC 3 LCPU Temp Sensor     46 degrees C / 114 degrees F
Power
       PE0 Core 0.9V               899 mV   29695 mA   26718 mW
       PE1 Core 0.9V               899 mV   29695 mA   26710 mW
       PE0 Serdes 1.0V            1020 mV   40156 mA   40906 mW
       PE1 Serdes 1.0V            1020 mV   35281 mA   35968 mW
       PE0 HMC Core 0.9V           900 mV    7492 mA    6742 mW
       PE0,1 HMC Memory 1.2V      1199 mV     569 mA     683 mW
       PE1 HMC Core 0.9V           899 mV    7570 mA    6812 mW
       PE0,1 HMC Serdes 1.2V      1199 mV   20562 mA   24656 mW
       PE2 Core 0.9V               899 mV   29734 mA   26765 mW
       PE3 Core 0.9V               900 mV   29960 mA   26968 mW
       PE2 Serdes 1.0V            1019 mV   37718 mA   38500 mW
       PE3 Serdes 1.0V            1020 mV   35250 mA   35937 mW
       PE2 HMC Core 0.9V           899 mV    7750 mA    6976 mW
       PE2,3 HMC Memory 1.2V      1200 mV     546 mA     656 mW
       PE3 HMC Core 0.9V           899 mV    7718 mA    6945 mW
       PE2,3 HMC Serdes 1.2V      1199 mV   20625 mA   24750 mW
       VDD 3.3V                   3299 mV    5917 mA   19515 mW
       VDD 1.5V                   1499 mV    4015 mA    6015 mW
       VDD 2.5V                   2449 mV    4335 mA   10625 mW
       PE4 Core 0.9V               899 mV   29835 mA   26875 mW
       PE5 Core 0.9V               924 mV   30554 mA   28277 mW
       PE4 Serdes 1.0V            1019 mV   43281 mA   44187 mW
       PE5 Serdes 1.0V            1020 mV   27140 mA   27703 mW
       PE4 HMC Core 0.9V           899 mV    7476 mA    6726 mW
       PE4,5 HMC Memory 1.2V      1199 mV     531 mA     637 mW
       PE5 HMC Core 0.9V           899 mV    7539 mA    6781 mW
       PE4,5 HMC Serdes 1.2V      1199 mV   20375 mA   24468 mW
       LCPU platform 1.1V         1099 mV    3453 mA    3796 mW
       LCPU core 1.0V              999 mV    8984 mA    8984 mW
       BCM core 1.0V               999 mV    7929 mA    7921 mW
       BCM & PEX Serdes 1.0V      1000 mV    4046 mA    4046 mW
       12V                       12351 mV   51918 mA  644880 mW
```

```
FPC 5 status:
  State                       Online
  FPC 5 Intake-A Temp Sensor Failed
  FPC 5 Intake-B Temp Sensor Failed
  FPC 5 Exhaust-A Temp Sensor41 degrees C / 105 degrees F
  FPC 5 Exhaust-B Temp Sensor41 degrees C / 105 degrees F
  FPC 5 Exhaust-C Temp Sensor42 degrees C / 107 degrees F
  FPC 5 PE0 Temp Sensor      47 degrees C / 116 degrees F
  FPC 5 PE1 Temp Sensor      49 degrees C / 120 degrees F
  FPC 5 PE2 Temp Sensor      53 degrees C / 127 degrees F
  FPC 5 LCPU Temp Sensor     Failed
  Power
         PE0 Core 0.9V                923 mV   30976 mA   28578 mW
         PE0 HMC0 Core 0.9V           899 mV   10093 mA    9078 mW
         PE1 Core 0.9V                897 mV   29398 mA   26414 mW
         PE1 HMC0 Core 0.9V           899 mV    9734 mA    8750 mW
         PE2 Core 0.9V                922 mV   30226 mA   27886 mW
         PE2 HMC0 Core 0.9V           899 mV    9984 mA    8968 mW
         PE0 Serdes 1.0V             1019 mV   29296 mA   29890 mW
         PE1 Serdes 1.0V             1020 mV   28687 mA   29296 mW
         PE2 Serdes 1.0V             1020 mV   28187 mA   28765 mW
         LCPU Platform 1.1V          1100 mV    3664 mA    4031 mW
         LCPU Core 1.0V               999 mV    9125 mA    9125 mW
         PHY VDD B 1.0V               999 mV   15593 mA   15593 mW
         PHY VDD A 1.0V              1000 mV   15453 mA   15453 mW
         BCM Core 1.0V                999 mV    7773 mA    7765 mW
         BCM PEX 1.0V                1000 mV    3460 mA    3464 mW
         HMC Core 1.2V               1199 mV    1328 mA    1628 mW
         HMC Serdes 1.2V             1199 mV   32203 mA   38625 mW
         VDD 1.5V                    1499 mV    2675 mA    4007 mW
         VDD 2.5V                    2450 mV    3675 mA    9000 mW
         VDD 3.3V                    3300 mV    1814 mA    5980 mW
         12V                        12272 mV   29045 mA  361369 mW
FPC 6 status:
  State                       Online
  FPC 6 Intake-A Temp Sensor 41 degrees C / 105 degrees F
  FPC 6 Intake-B Temp Sensor 37 degrees C / 98 degrees F
  FPC 6 Exhaust-A Temp Sensor40 degrees C / 104 degrees F
  FPC 6 Exhaust-B Temp Sensor40 degrees C / 104 degrees F
  FPC 6 Exhaust-C Temp Sensor40 degrees C / 104 degrees F
  FPC 6 PE0 Temp Sensor      45 degrees C / 113 degrees F
  FPC 6 PE1 Temp Sensor      47 degrees C / 116 degrees F
  FPC 6 PE2 Temp Sensor      51 degrees C / 123 degrees F
  FPC 6 LCPU Temp Sensor     41 degrees C / 105 degrees F
```

```
  Power
         PE0 Core 0.9V                897 mV   30214 mA   27179 mW
         PE0 HMC0 Core 0.9V           899 mV   10000 mA    8984 mW
         PE1 Core 0.9V                873 mV   29332 mA   25601 mW
         PE1 HMC0 Core 0.9V           899 mV    9828 mA    8828 mW
         PE2 Core 0.9V                898 mV   30781 mA   27675 mW
         PE2 HMC0 Core 0.9V           899 mV   10328 mA    9296 mW
         PE0 Serdes 1.0V             1019 mV   28921 mA   29531 mW
         PE1 Serdes 1.0V             1020 mV   29437 mA   30046 mW
         PE2 Serdes 1.0V             1019 mV   29671 mA   30281 mW
         LCPU Platform 1.1V          1100 mV    3671 mA    4039 mW
         LCPU Core 1.0V              1000 mV    8218 mA    8187 mW
         PHY VDD B 1.0V              1000 mV   15984 mA   15984 mW
         PHY VDD A 1.0V               999 mV   16093 mA   16093 mW
         BCM Core 1.0V               1000 mV    8046 mA    8062 mW
         BCM PEX 1.0V                1000 mV    3500 mA    3500 mW
         HMC Core 1.2V               1199 mV    1327 mA    1579 mW
         HMC Serdes 1.2V             1199 mV   33031 mA   39593 mW
         VDD 1.5V                    1499 mV    2722 mA    4078 mW
         VDD 2.5V                    2449 mV    3539 mA    8671 mW
         VDD 3.3V                    3299 mV    8082 mA   26656 mW
         12V                        12311 mV   31124 mA  385270 mW
```

show chassis environment fpc (PTX10016 router)

`user@host>` **show chassis environment fpc**

```
FPC 1 status:
  State                       Online
  FPC 1 Intake-A Temp Sensor 36 degrees C / 96 degrees F
  FPC 1 Intake-B Temp Sensor 32 degrees C / 89 degrees F
  FPC 1 Exhaust-A Temp Sensor37 degrees C / 98 degrees F
  FPC 1 Exhaust-B Temp Sensor36 degrees C / 96 degrees F
  FPC 1 Exhaust-C Temp Sensor36 degrees C / 96 degrees F
  FPC 1 PE0 Temp Sensor      45 degrees C / 113 degrees F
  FPC 1 PE1 Temp Sensor      46 degrees C / 114 degrees F
  FPC 1 PE2 Temp Sensor      53 degrees C / 127 degrees F
  FPC 1 LCPU Temp Sensor     35 degrees C / 95 degrees F
  Power
         PE0 Core 0.9V                897 mV   28992 mA   26027 mW
         PE0 HMC0 Core 0.9V           899 mV   10156 mA    9156 mW
         PE1 Core 0.9V                871 mV   28800 mA   25164 mW
         PE1 HMC0 Core 0.9V           899 mV   10125 mA    9109 mW
         PE2 Core 0.9V                898 mV   29914 mA   26906 mW
```

```
        PE2 HMC0 Core 0.9V          899 mV   10343 mA    9296 mW
        PE0 Serdes 1.0V            1019 mV   27515 mA   28093 mW
        PE1 Serdes 1.0V            1020 mV   27968 mA   28546 mW
        PE2 Serdes 1.0V            1019 mV   27796 mA   28359 mW
        LCPU Platform 1.1V         1100 mV    3347 mA    3289 mW
        LCPU Core 1.0V             1000 mV    7960 mA    7960 mW
        PHY VDD B 1.0V             1000 mV   16437 mA   16437 mW
        PHY VDD A 1.0V              999 mV   15656 mA   15656 mW
        BCM Core 1.0V              1000 mV    7289 mA    7335 mW
        BCM PEX 1.0V                999 mV    3453 mA    3453 mW
        HMC Core 1.2V              1199 mV    1218 mA    1453 mW
        HMC Serdes 1.2V            1199 mV   32093 mA   38562 mW
        VDD 1.5V                   1500 mV    2859 mA    4289 mW
        VDD 2.5V                   2449 mV    3875 mA    9500 mW
        VDD 3.3V                   3299 mV    2806 mA    9257 mW
        12V                       12351 mV   28569 mA  354877 mW
FPC 3 status:
  State                      Online
  FPC 3 Intake-A Temp Sensor 35 degrees C / 95 degrees F
  FPC 3 Intake-B Temp Sensor 31 degrees C / 87 degrees F
  FPC 3 Exhaust-A Temp Sensor36 degrees C / 96 degrees F
  FPC 3 Exhaust-B Temp Sensor34 degrees C / 93 degrees F
  FPC 3 Exhaust-C Temp Sensor33 degrees C / 91 degrees F
  FPC 3 PE0 Temp Sensor      43 degrees C / 109 degrees F
  FPC 3 PE1 Temp Sensor      45 degrees C / 113 degrees F
  FPC 3 PE2 Temp Sensor      49 degrees C / 120 degrees F
  FPC 3 LCPU Temp Sensor     35 degrees C / 95 degrees F
  Power
        PE0 Core 0.9V               897 mV   28832 mA   25871 mW
        PE0 HMC0 Core 0.9V          899 mV   10359 mA    9328 mW
        PE1 Core 0.9V               873 mV   28230 mA   24671 mW
        PE1 HMC0 Core 0.9V          899 mV   10468 mA    9421 mW
        PE2 Core 0.9V               898 mV   29539 mA   26539 mW
        PE2 HMC0 Core 0.9V          899 mV   10656 mA    9593 mW
        PE0 Serdes 1.0V            1020 mV   27484 mA   28031 mW
        PE1 Serdes 1.0V            1019 mV   27515 mA   28078 mW
        PE2 Serdes 1.0V            1020 mV   27625 mA   28187 mW
        LCPU Platform 1.1V         1099 mV    3050 mA    3355 mW
        LCPU Core 1.0V              999 mV    7820 mA    7804 mW
        PHY VDD B 1.0V              999 mV   15406 mA   15406 mW
        PHY VDD A 1.0V             1000 mV   14953 mA   14953 mW
        BCM Core 1.0V              1000 mV    7648 mA    7648 mW
        BCM PEX 1.0V               1000 mV    3531 mA    3531 mW
        HMC Core 1.2V              1200 mV    1234 mA    1476 mW
```

```
        HMC Serdes 1.2V            1199 mV   34671 mA   41593 mW
        VDD 1.5V                   1499 mV    3484 mA    5226 mW
        VDD 2.5V                   2449 mV    3218 mA    7890 mW
        VDD 3.3V                   3299 mV    2468 mA    8148 mW
        12V                       12311 mV   28785 mA  355950 mW
FPC 6 status:
  State                     Online
  FPC 6 Intake-A Temp Sensor 34 degrees C / 93 degrees F
  FPC 6 Intake-B Temp Sensor 31 degrees C / 87 degrees F
  FPC 6 Exhaust-A Temp Sensor34 degrees C / 93 degrees F
  FPC 6 Exhaust-B Temp Sensor35 degrees C / 95 degrees F
  FPC 6 Exhaust-C Temp Sensor35 degrees C / 95 degrees F
  FPC 6 PE0 Temp Sensor      42 degrees C / 107 degrees F
  FPC 6 PE1 Temp Sensor      43 degrees C / 109 degrees F
  FPC 6 PE2 Temp Sensor      47 degrees C / 116 degrees F
  FPC 6 LCPU Temp Sensor     34 degrees C / 93 degrees F
  Power
        PE0 Core 0.9V               922 mV   29394 mA   27160 mW
        PE0 HMC0 Core 0.9V          899 mV   10078 mA    9062 mW
        PE1 Core 0.9V               923 mV   29636 mA   27304 mW
        PE1 HMC0 Core 0.9V          899 mV    9890 mA    8890 mW
        PE2 Core 0.9V               898 mV   29734 mA   26757 mW
        PE2 HMC0 Core 0.9V          899 mV    9968 mA    8968 mW
        PE0 Serdes 1.0V            1020 mV   26968 mA   27515 mW
        PE1 Serdes 1.0V            1019 mV   27421 mA   27984 mW
        PE2 Serdes 1.0V            1019 mV   27625 mA   28171 mW
        LCPU Platform 1.1V         1099 mV    3230 mA    4742 mW
        LCPU Core 1.0V              999 mV    8171 mA    8171 mW
        PHY VDD B 1.0V             1000 mV   15671 mA   15687 mW
        PHY VDD A 1.0V              999 mV   15703 mA   15703 mW
        BCM Core 1.0V               999 mV    7500 mA    7492 mW
        BCM PEX 1.0V               1000 mV    3480 mA    3468 mW
        HMC Core 1.2V              1199 mV    1199 mA    1440 mW
        HMC Serdes 1.2V            1199 mV   31046 mA   37250 mW
        VDD 1.5V                   1499 mV    2804 mA    4203 mW
        VDD 2.5V                   2449 mV    3746 mA    9171 mW
        VDD 3.3V                   3300 mV    3173 mA   10476 mW
        12V                       12311 mV   28786 mA  355654 mW
FPC 8 status:
  State                     Online
  FPC 8 Intake-A Temp Sensor 34 degrees C / 93 degrees F
  FPC 8 Intake-B Temp Sensor 30 degrees C / 86 degrees F
  FPC 8 Exhaust-A Temp Sensor37 degrees C / 98 degrees F
  FPC 8 Exhaust-B Temp Sensor37 degrees C / 98 degrees F
```

```
  FPC 8 Exhaust-C Temp Sensor37 degrees C / 98 degrees F
  FPC 8 PE0 Temp Sensor      42 degrees C / 107 degrees F
  FPC 8 PE1 Temp Sensor      44 degrees C / 111 degrees F
  FPC 8 PE2 Temp Sensor      47 degrees C / 116 degrees F
  FPC 8 LCPU Temp Sensor     33 degrees C / 91 degrees F
  Power
         PE0 Core 0.9V                897 mV   29382 mA   26437 mW
         PE0 HMC0 Core 0.9V           899 mV   10265 mA    9250 mW
         PE1 Core 0.9V                872 mV   28867 mA   25175 mW
         PE1 HMC0 Core 0.9V           899 mV   10171 mA    9109 mW
         PE2 Core 0.9V                899 mV   30210 mA   27214 mW
         PE2 HMC0 Core 0.9V           900 mV   10187 mA    9171 mW
         PE0 Serdes 1.0V             1020 mV   27843 mA   28421 mW
         PE1 Serdes 1.0V             1020 mV   28265 mA   28828 mW
         PE2 Serdes 1.0V             1019 mV   28406 mA   29000 mW
         LCPU Platform 1.1V          1099 mV    3000 mA    3300 mW
         LCPU Core 1.0V              1000 mV    7937 mA    7937 mW
         PHY VDD B 1.0V              1000 mV   15843 mA   15843 mW
         PHY VDD A 1.0V              1000 mV   15250 mA   15250 mW
         BCM Core 1.0V                999 mV    6914 mA    6898 mW
         BCM PEX 1.0V                 999 mV    3445 mA    3445 mW
         HMC Core 1.2V               1199 mV    1162 mA    1390 mW
         HMC Serdes 1.2V             1199 mV   33437 mA   40125 mW
         VDD 1.5V                    1499 mV    2851 mA    4273 mW
         VDD 2.5V                    2450 mV    3867 mA    9484 mW
         VDD 3.3V                    3300 mV    3258 mA   10753 mW
         12V                        12338 mV   28656 mA  356171 mW
FPC 9 status:
  State                      Online
  FPC 9 Intake-A Temp Sensor 44 degrees C / 111 degrees F
  FPC 9 Intake-B Temp Sensor 28 degrees C / 82 degrees F
  FPC 9 Exhaust-A Temp Sensor51 degrees C / 123 degrees F
  FPC 9 Exhaust-B Temp Sensor52 degrees C / 125 degrees F
  FPC 9 Exhaust-C Temp Sensor48 degrees C / 118 degrees F
  FPC 9 PE0 Temp Sensor      52 degrees C / 125 degrees F
  FPC 9 PE1 Temp Sensor      65 degrees C / 149 degrees F
  FPC 9 PE2 Temp Sensor      50 degrees C / 122 degrees F
  FPC 9 PE3 Temp Sensor      65 degrees C / 149 degrees F
  FPC 9 PE4 Temp Sensor      50 degrees C / 122 degrees F
  FPC 9 PE5 Temp Sensor      67 degrees C / 152 degrees F
  FPC 9 LCPU Temp Sensor     45 degrees C / 113 degrees F
  Power
         PE0 Core 0.9V                875 mV   28316 mA   24808 mW
         PE1 Core 0.9V                875 mV   28546 mA   24996 mW
```

```
        PE0 Serdes 1.0V             1019 mV   38906 mA   39687 mW
        PE1 Serdes 1.0V             1020 mV   33078 mA   33781 mW
        PE0 HMC Core 0.9V            899 mV    7718 mA    6945 mW
        PE0,1 HMC Memory 1.2V       1199 mV     579 mA     695 mW
        PE1 HMC Core 0.9V            899 mV    7289 mA    6570 mW
        PE0,1 HMC Serdes 1.2V       1199 mV   20187 mA   24250 mW
        PE2 Core 0.9V                924 mV   29062 mA   26894 mW
        PE3 Core 0.9V                900 mV   28914 mA   26039 mW
        PE2 Serdes 1.0V             1020 mV   36375 mA   37093 mW
        PE3 Serdes 1.0V             1019 mV   32640 mA   33296 mW
        PE2 HMC Core 0.9V            900 mV    7695 mA    6921 mW
        PE2,3 HMC Memory 1.2V       1199 mV     562 mA     674 mW
        PE3 HMC Core 0.9V            899 mV    7554 mA    6796 mW
        PE2,3 HMC Serdes 1.2V       1199 mV   20156 mA   24218 mW
        VDD 3.3V                    3300 mV    8964 mA   29609 mW
        VDD 1.5V                    1499 mV    3968 mA    5945 mW
        VDD 2.5V                    2449 mV    4414 mA   10890 mW
        PE4 Core 0.9V                900 mV   28527 mA   25679 mW
        PE5 Core 0.9V                899 mV   28902 mA   26035 mW
        PE4 Serdes 1.0V             1019 mV   41281 mA   42125 mW
        PE5 Serdes 1.0V             1019 mV   25781 mA   26328 mW
        PE4 HMC Core 0.9V            900 mV    7382 mA    6648 mW
        PE4,5 HMC Memory 1.2V       1199 mV     626 mA     750 mW
        PE5 HMC Core 0.9V            899 mV    7562 mA    6796 mW
        PE4,5 HMC Serdes 1.2V       1199 mV   20312 mA   24375 mW
        LCPU platform 1.1V          1099 mV    3687 mA    4054 mW
        LCPU core 1.0V              1000 mV    9000 mA    9000 mW
        BCM core 1.0V                999 mV    7843 mA    7835 mW
        BCM & PEX Serdes 1.0V        999 mV    4062 mA    4062 mW
        12V                        12417 mV   51659 mA  643215 mW
```

show chassis environment FPC 1 (MX Routers with Media Services Blade [MSB])

`user@switch>` **show chassis environment fpc 1**

```
FPC 1 status:
  State                       Online
  Temperature Intake          36 degrees C / 96 degrees F
  Temperature Exhaust A       39 degrees C / 102 degrees F
  Temperature LU TSen         52 degrees C / 125 degrees F
  Temperature LU Chip         54 degrees C / 129 degrees F
  Temperature XM TSen         52 degrees C / 125 degrees F
  Temperature XM Chip         60 degrees C / 140 degrees F
  Temperature PCIe TSen       52 degrees C / 125 degrees F
```

```
  Temperature PCIe Chip      69 degrees C / 156 degrees F
  Power
    MPC-BIAS3V3-zl2106        3302 mV
    MPC-VDD3V3-zl6100         3325 mV
    MPC-AVDD1V0-zl6100        1007 mV
    MPC-PCIE_1V0-zl6100        904 mV
    MPC-LU0_1V0-zl2004         996 mV
    MPC-VDD_1V5-zl2004        1498 mV
    MPC-12VA-BMR453          11733 mV
    MPC-12VB-BMR453          11728 mV
    MPC-XM_0V9-vt273m          900 mV
  I2C Slave Revision         81
```

show chassis environment FPC (Junos OS Evolved)

`user@switch>` **show chassis environment fpc**

```
FPC 0 status:
  State                      Online
  Intake Temperature         32 degrees C / 89 degrees F
  Exhaust-A Temperature      43 degrees C / 109 degrees F
  Exhaust-B Temperature      32 degrees C / 89 degrees F
  PE0 Temperature            34 degrees C / 93 degrees F
  PE1 Temperature            38 degrees C / 100 degrees F
  PE2 Temperature            38 degrees C / 100 degrees F
  PE3 Temperature            36 degrees C / 96 degrees F
  PE4 Temperature            35 degrees C / 95 degrees F
  PE5 Temperature            35 degrees C / 95 degrees F
  Power 1
    RT_1  1.0v                  1018 mV
    RT_2  1.0v                  1018 mV
  Power 2
    FPC 1 1.0v                   999 mV
    FPC 2 1.0v                   998 mV
  Power 3
    FPC   2.5v                  2499 mV
    FPC   3.3v                  3299 mV
  Power 4
    FPC   0.9v                   899 mV
    FPC   1.5v                  1499 mV
  Power 5
    PE0 1 1.0v                  1039 mV
    PE0 2 1.0v                  1039 mV
```

```
Power 6
  PE0 1 0.9v                    900 mV
  PE0 2 0.9v                    900 mV
Power 7
  PE0 3 0.9v                    902 mV
  PE0 4 0.9v                    902 mV
Power 8
  PE0 H 0.9v                    899 mV
  PE0 H 1.2v                   1199 mV
Power 9
  PE1 1 1.0v                   1040 mV
  PE1 2 1.0v                   1039 mV
Power 10
  PE1 1 0.9v                    901 mV
  PE1 2 0.9v                    901 mV
Power 11
  PE1 3 0.9v                    900 mV
  PE1 4 0.9v                    900 mV
Power 12
  PE1 H 0.9v                    899 mV
  PE1 H 1.2v                   1199 mV
Power 13
  PE2 1 1.0v                   1039 mV
  PE2 2 1.0v                   1039 mV
Power 14
  PE2 1 0.9v                    900 mV
  PE2 2 0.9v                    900 mV
Power 15
  PE2 3 0.9v                    900 mV
  PE2 4 0.9v                    900 mV
Power 16
  PE2 H 0.9v                    899 mV
  PE2 H 1.2v                   1199 mV
Power 17
  PE3 1 1.0v                   1039 mV
  PE3 2 1.0v                   1039 mV
Power 18
  PE3 1 0.9v                    899 mV
  PE3 2 0.9v                    900 mV
Power 19
  PE3 3 0.9v                    899 mV
  PE3 4 0.9v                    900 mV
Power 20
  PE3 H 0.9v                    899 mV
```

```
    PE3 H 1.2v                 1199 mV
  Power 21
    PE4 1 1.0v                 1039 mV
    PE4 2 1.0v                 1039 mV
  Power 22
    PE4 1 0.9v                  900 mV
    PE4 2 0.9v                  900 mV
  Power 23
    PE4 3 0.9v                  901 mV
    PE4 4 0.9v                  901 mV
  Power 24
    PE4 H 0.9v                  899 mV
    PE4 H 1.2v                 1199 mV
  Power 25
    PE5 1 1.0v                 1040 mV
    PE5 2 1.0v                 1039 mV
  Power 26
    PE5 1 0.9v                  901 mV
    PE5 2 0.9v                  901 mV
  Power 27
    PE5 3 0.9v                  901 mV
    PE5 4 0.9v                  901 mV
  Power 28
    PE5 H 0.9v                  899 mV
    PE5 H 1.2v                 1199 mV
  Power 29
    PIC0 12.0v                12342 mV
  Power 30
    PIC1 12.0v                12342 mV
  Power 31
    A    12.0v                12375 mV
    B    12.0v                 1008 mV
  Bus Revision              115
FPC 1 status:
  State                     Online
  Intake Temperature        33 degrees C / 91 degrees F
  Exhaust-A Temperature     44 degrees C / 111 degrees F
  Exhaust-B Temperature     33 degrees C / 91 degrees F
  PE0 Temperature           34 degrees C / 93 degrees F
  PE1 Temperature           38 degrees C / 100 degrees F
  PE2 Temperature           37 degrees C / 98 degrees F
  PE3 Temperature           36 degrees C / 96 degrees F
  PE4 Temperature           34 degrees C / 93 degrees F
  PE5 Temperature           36 degrees C / 96 degrees F
```

```
Power 1
  RT_1  1.0v                  1018 mV
  RT_2  1.0v                  1018 mV
Power 2
  FPC 1 1.0v                   999 mV
  FPC 2 1.0v                   999 mV
Power 3
  FPC   2.5v                  2499 mV
  FPC   3.3v                  3300 mV
Power 4
  FPC   0.9v                   899 mV
  FPC   1.5v                  1500 mV
Power 5
  PE0 1 1.0v                  1039 mV
  PE0 2 1.0v                  1039 mV
Power 6
  PE0 1 0.9v                   925 mV
  PE0 2 0.9v                   925 mV
Power 7
  PE0 3 0.9v                   925 mV
  PE0 4 0.9v                   926 mV
Power 8
  PE0 H 0.9v                   899 mV
  PE0 H 1.2v                  1199 mV
Power 9
  PE1 1 1.0v                  1040 mV
  PE1 2 1.0v                  1039 mV
Power 10
  PE1 1 0.9v                   900 mV
  PE1 2 0.9v                   901 mV
Power 11
  PE1 3 0.9v                   899 mV
  PE1 4 0.9v                   900 mV
Power 12
  PE1 H 0.9v                   899 mV
  PE1 H 1.2v                  1199 mV
Power 13
  PE2 1 1.0v                  1040 mV
  PE2 2 1.0v                  1039 mV
Power 14
  PE2 1 0.9v                   926 mV
  PE2 2 0.9v                   926 mV
Power 15
  PE2 3 0.9v                   927 mV
```

```
  PE2 4 0.9v                  927 mV
Power 16
  PE2 H 0.9v                  899 mV
  PE2 H 1.2v                 1199 mV
Power 17
  PE3 1 1.0v                 1039 mV
  PE3 2 1.0v                 1039 mV
Power 18
  PE3 1 0.9v                  926 mV
  PE3 2 0.9v                  927 mV
Power 19
  PE3 3 0.9v                  925 mV
  PE3 4 0.9v                  926 mV
Power 20
  PE3 H 0.9v                  899 mV
  PE3 H 1.2v                 1199 mV
Power 21
  PE4 1 1.0v                 1039 mV
  PE4 2 1.0v                 1040 mV
Power 22
  PE4 1 0.9v                  925 mV
  PE4 2 0.9v                  925 mV
Power 23
  PE4 3 0.9v                  925 mV
  PE4 4 0.9v                  926 mV
Power 24
  PE4 H 0.9v                  900 mV
  PE4 H 1.2v                 1199 mV
Power 25
  PE5 1 1.0v                 1039 mV
  PE5 2 1.0v                 1039 mV
Power 26
  PE5 1 0.9v                  898 mV
  PE5 2 0.9v                  899 mV
Power 27
  PE5 3 0.9v                  900 mV
  PE5 4 0.9v                  900 mV
Power 28
  PE5 H 0.9v                  899 mV
  PE5 H 1.2v                 1199 mV
Power 29
  PIC0 12.0v                    0 mV
Power 30
  PIC1 12.0v                12402 mV
```

```
  Power 31
    A    12.0v                12344 mV
    B    12.0v                 1008 mV
  Bus Revision              115
FPC 2 status:
  State                     Online
  Intake Temperature        31 degrees C / 87 degrees F
  Exhaust-A Temperature     38 degrees C / 100 degrees F
  Exhaust-B Temperature     28 degrees C / 82 degrees F
  PE0 Temperature           28 degrees C / 82 degrees F
  PE1 Temperature           33 degrees C / 91 degrees F
  PE2 Temperature           34 degrees C / 93 degrees F
  PE3 Temperature           31 degrees C / 87 degrees F
  Power 1
    RT_1  1.0v                 1018 mV
    RT_2  1.0v                 1018 mV
  Power 2
    FPC 1 1.0v                  999 mV
    FPC 2 1.0v                  999 mV
  Power 3
    FPC   2.5v                 2499 mV
    FPC   3.3v                 3299 mV
  Power 4
    FPC   0.9v                  899 mV
    FPC   1.5v                 1500 mV
  Power 5
    PE0 1 1.0v                 1039 mV
    PE0 2 1.0v                 1040 mV
  Power 6
    PE0 1 0.9v                  900 mV
    PE0 2 0.9v                  901 mV
  Power 7
    PE0 3 0.9v                  900 mV
    PE0 4 0.9v                  900 mV
  Power 8
    PE0 H 0.9v                  899 mV
    PE0 H 1.2v                 1199 mV
  Power 9
    PE1 1 1.0v                 1039 mV
    PE1 2 1.0v                 1039 mV
  Power 10
    PE1 1 0.9v                  875 mV
    PE1 2 0.9v                  876 mV
  Power 11
```

```
    PE1 3 0.9v                   875 mV
    PE1 4 0.9v                   875 mV
  Power 12
    PE1 H 0.9v                   899 mV
    PE1 H 1.2v                  1199 mV
  Power 13
    PE2 1 1.0v                  1039 mV
    PE2 2 1.0v                  1039 mV
  Power 14
    PE2 1 0.9v                   900 mV
    PE2 2 0.9v                   900 mV
  Power 15
    PE2 3 0.9v                   900 mV
    PE2 4 0.9v                   900 mV
  Power 16
    PE2 H 0.9v                   899 mV
    PE2 H 1.2v                  1199 mV
  Power 17
    PE3 1 1.0v                  1039 mV
    PE3 2 1.0v                  1039 mV
  Power 18
    PE3 1 0.9v                   875 mV
    PE3 2 0.9v                   875 mV
  Power 19
    PE3 3 0.9v                   875 mV
    PE3 4 0.9v                   875 mV
  Power 20
    PE3 H 0.9v                   899 mV
    PE3 H 1.2v                  1200 mV
  Power 21
    PIC0 12.0v                 12281 mV
  Power 22
    PIC1 12.0v                     0 mV
  Power 23
    A    12.0v                 12406 mV
    B    12.0v                  1006 mV
  Bus Revision                 115
FPC 3 status:
  State                        Online
  Intake Temperature           33 degrees C / 91 degrees F
  Exhaust-A Temperature        44 degrees C / 111 degrees F
  Exhaust-B Temperature        30 degrees C / 86 degrees F
  PE0 Temperature              33 degrees C / 91 degrees F
  PE1 Temperature              37 degrees C / 98 degrees F
```

```
PE2 Temperature           38 degrees C / 100 degrees F
PE3 Temperature           34 degrees C / 93 degrees F
PE4 Temperature           33 degrees C / 91 degrees F
PE5 Temperature           36 degrees C / 96 degrees F
Power 1
  RT_1  1.0v                 1018 mV
  RT_2  1.0v                 1018 mV
Power 2
  FPC 1 1.0v                  999 mV
  FPC 2 1.0v                  999 mV
Power 3
  FPC   2.5v                 2500 mV
  FPC   3.3v                 3299 mV
Power 4
  FPC   0.9v                  899 mV
  FPC   1.5v                 1500 mV
Power 5
  PE0 1 1.0v                 1039 mV
  PE0 2 1.0v                 1039 mV
Power 6
  PE0 1 0.9v                  900 mV
  PE0 2 0.9v                  900 mV
Power 7
  PE0 3 0.9v                  898 mV
  PE0 4 0.9v                  899 mV
Power 8
  PE0 H 0.9v                  899 mV
  PE0 H 1.2v                 1199 mV
Power 9
  PE1 1 1.0v                 1040 mV
  PE1 2 1.0v                 1039 mV
Power 10
  PE1 1 0.9v                  926 mV
  PE1 2 0.9v                  926 mV
Power 11
  PE1 3 0.9v                  925 mV
  PE1 4 0.9v                  925 mV
Power 12
  PE1 H 0.9v                  900 mV
  PE1 H 1.2v                 1199 mV
Power 13
  PE2 1 1.0v                 1039 mV
  PE2 2 1.0v                 1039 mV
Power 14
```

```
  PE2 1 0.9v                  873 mV
  PE2 2 0.9v                  873 mV
Power 15
  PE2 3 0.9v                  875 mV
  PE2 4 0.9v                  875 mV
Power 16
  PE2 H 0.9v                  899 mV
  PE2 H 1.2v                 1199 mV
Power 17
  PE3 1 1.0v                 1039 mV
  PE3 2 1.0v                 1039 mV
Power 18
  PE3 1 0.9v                  899 mV
  PE3 2 0.9v                  900 mV
Power 19
  PE3 3 0.9v                  899 mV
  PE3 4 0.9v                  899 mV
Power 20
  PE3 H 0.9v                  899 mV
  PE3 H 1.2v                 1199 mV
Power 21
  PE4 1 1.0v                 1040 mV
  PE4 2 1.0v                 1040 mV
Power 22
  PE4 1 0.9v                  949 mV
  PE4 2 0.9v                  950 mV
Power 23
  PE4 3 0.9v                  950 mV
  PE4 4 0.9v                  951 mV
Power 24
  PE4 H 0.9v                  899 mV
  PE4 H 1.2v                 1199 mV
Power 25
  PE5 1 1.0v                 1039 mV
  PE5 2 1.0v                 1039 mV
Power 26
  PE5 1 0.9v                  900 mV
  PE5 2 0.9v                  900 mV
Power 27
  PE5 3 0.9v                  900 mV
  PE5 4 0.9v                  900 mV
Power 28
  PE5 H 0.9v                  899 mV
  PE5 H 1.2v                 1199 mV
```

```
  Power 29
    PIC0 12.0v                    0 mV
  Power 30
    PIC1 12.0v                    0 mV
  Power 31
    A    12.0v                12406 mV
    B    12.0v                 1008 mV
  Bus Revision              115
FPC 6 status:
  State                     Onlining
  Bus Revision              115
```

show chassis environment fpm

List of Syntax

Syntax on page 1011
Syntax (TX Matrix Routers) on page 1011
Syntax (TX Matrix Plus Routers) on page 1011

Syntax

```
show chassis environment fpm
```

Syntax (TX Matrix Routers)

```
show chassis environment fpm
<lcc number | scc>
```

Syntax (TX Matrix Plus Routers)

```
show chassis environment fpm
<lcc number | sfc number>
```

Release Information

Command introduced before Junos OS Release 7.4.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
Command introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers.
Command introduced in Junos OS Release 12.1 for T4000 Core Routers.
Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 Universal Routing Platforms.
Command introduced in Junos OS Release 17.2 for MX2008 Universal Routing Platforms.

Description

(M40e, M120, M160, M320, MX Series, and T Series routers and the PTX Series Packet Transport Routers only) Display environmental information about the front panel module in the router.

Options

none—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, display environmental information about the front panel modules (craft interfaces) on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about the front panel modules (craft interfaces) on the TX Matrix Plus router and its attached routers.

lcc *number*——(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

scc—(TX Matrix router only) (Optional) Display environmental information about the front panel module (craft interface) on the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus router only) (Optional) Display environmental information about the front panel module (craft interface) on the TX Matrix Plus router (or switch-fabric chassis).

Required Privilege Level
view

RELATED DOCUMENTATION

request chassis fpm resync | 630

List of Sample Output
show chassis environment fpm (M40e and M160 Routers) on page 1014
show chassis environment fpm (M320 Router) on page 1014
show chassis environment fpm (MX2010 Router) on page 1014
show chassis environment fpm (MX2020 Router) on page 1014
show chassis environment fpm (MX2008 Router) on page 1015
show chassis environment fpm (MX240 Router) on page 1015
show chassis environment fpm (MX480 Router) on page 1015
show chassis environment fpm (T Series Routers) on page 1015
show chassis environment fpm lcc (TX Matrix Router) on page 1016
show chassis environment fpm scc (TX Matrix Router) on page 1016
show chassis environment fpm sfc (TX Matrix Plus Router) on page 1017
show chassis environment fpm (T4000 Core Router) on page 1018
show chassis environment fpm (PTX5000 Packet Transport Router) on page 1019

Output Fields

Table 44 on page 1013 lists the output fields for the **show chassis environment fpm** command. Output fields are listed in the approximate order in which they appear.

Table 44: show chassis environment fpm Output Fields

Field Name	Field Description
State	FPM status: • **Online**—FPM is online and running. • **Offline**—FPM is powered down.
FPM CMB Voltage	(M40e and M160 routers only) Information about the voltage supplied to the FPM chassis management bus (CMB) device. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
FPM GBUS Voltage	(M320 and T Series routers only) Information about the voltage supplied to the FPM generic bus (GBUS) device. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
FPM I2CS Voltage	(PTX Series only) Information about the voltage supplied to the FPM generic bus (I2CS) device. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
FPM Display Voltage	Information about the voltage supplied to the FPM display. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
FPM CMB Temperature	(M40e and M160 routers only) Temperature of the air flowing past the FPM CMB device
FPM GBUS Temperature	(M320 and T Series routers only) Temperature of the air flowing past the FPM GBUS device.
FPM I2CS Temperature	(PTX Series only) Temperature of the air flowing past the FPM I2CS device.
FPM Display Temperature	Temperature of the air flowing past the FPM display.
CMB Revision	(M40e and M160 routers only) Revision level of the CMB device.
GBUS Revision	(M320 and T Series routers only) Revision level of the GBUS device.
I2CS Revision	(MX2010 routers, MX2020 routers, MX2008 routers, and PTX Series only) Revision level of the I2CS device.

Sample Output

show chassis environment fpm (M40e and M160 Routers)

```
user@host> show chassis environment fpm
```

```
FPM status:
  State                       Online
  FPM CMB Voltage:
    5.0 V bias           5030 mV
    8.0 V bias           8083 mV
  FPM Display Voltage:
    5.0 V bias           4998 mV
  FPM CMB temperature      34 degrees C / 93 degrees F
  FPM Display temperature  35 degrees C / 95 degrees F
  CMB Revision             12
```

show chassis environment fpm (M320 Router)

```
user@host> show chassis environment fpm
```

```
FPM status:
  State                           Online
  FPM GBUS Voltage:
    5.0 V                    5006 mV
    1.8 V bias               1799 mV
    3.3 V bias               3294 mV
    5.0 V bias               4998 mV
    8.0 V bias               7682 mV
  FPM GBUS temperature         30 degrees C / 86 degrees F
  GBUS Revision                51
```

show chassis environment fpm (MX2010 Router)

```
user@host > show chassis environment fpm
```

```
FPM status:
  State                     Online
  I2CS Revision             4
```

show chassis environment fpm (MX2020 Router)

```
user@host > show chassis environment fpm
```

```
FPM status:
  State                       Online
  I2CS Revision               3
```

show chassis environment fpm (MX2008 Router)

`user@host >` **show chassis environment fpm**

```
FPM status:
  State                       Online
  I2CS Revision               5
```

show chassis environment fpm (MX240 Router)

`user@host>` **show chassis environment fpm**

```
FPM status:
  State                       Online
  I2CS Revision               41
```

show chassis environment fpm (MX480 Router)

`user@host>` **show chassis environment fpm**

```
FPM status:
  State                       Online
  I2CS Revision               41
```

show chassis environment fpm (T Series Routers)

`user@host>` **show chassis environment fpm**

```
FPM status:
  State                            Online
  FPM GBUS Voltage:
    1.8 V bias                1787 mV
    3.3 V bias                3286 mV
    5.0 V bias                4991 mV
    8.0 V bias                7162 mV
  FPM Display Voltage:
    5.0 V                     4996 mV
```

```
  FPM GBUS temperature         29 degrees C / 84 degrees F
  FPM Display temperature      26 degrees C / 78 degrees F
  GBUS Revision                37
```

show chassis environment fpm lcc (TX Matrix Router)

`user@host>` **show chassis environment fpm lcc 0**

```
lcc0-re0:
--------------------------------------------------------------------------
FPM status:
  State                           Online
  FPM GBUS Voltage:
    1.8 V bias               1797 mV
    3.3 V bias               3294 mV
    5.0 V bias               5015 mV
    8.0 V bias               7470 mV
  FPM Display Voltage:
    5.0 V                    5018 mV
  FPM GBUS temperature         25 degrees C / 77 degrees F
  FPM Display temperature      29 degrees C / 84 degrees F
  GBUS Revision                37
```

show chassis environment fpm scc (TX Matrix Router)

`user@host>` **show chassis environment fpm scc**

```
scc-re0:
--------------------------------------------------------------------------
FPM status:
  State                           Online
  FPM GBUS Voltage:
    1.8 V bias               1789 mV
    3.3 V bias               3296 mV
    5.0 V bias               5003 mV
    8.0 V bias               7592 mV
  FPM Display Voltage:
    5.0 V                    5010 mV
  FPM GBUS temperature         22 degrees C / 71 degrees F
  FPM Display temperature      27 degrees C / 80 degrees F
  GBUS Revision                37
```

show chassis environment fpm sfc (TX Matrix Plus Router)

user@host> **show chassis environment fpm sfc**

```
sfc0-re0:
--------------------------------------------------------------------------
FPM status:
  State                      Online
  FPM I2CS Voltage:
    3.3 V                     3300 mV
    5.0 V                     5001 mV
    9.0 V FPD                 8672 mV
  FPM I2CS temperature       33 degrees C / 91 degrees F
  I2CS Revision              69

lcc0-re0:
--------------------------------------------------------------------------
FPM status:
  State                      Online
  FPM GBUS Voltage:
    1.8 V bias                1802 mV
    3.3 V bias                3301 mV
    5.0 V bias                4984 mV
    8.0 V bias                7377 mV
  FPM Display Voltage:
    5.0 V                     5015 mV
  FPM GBUS temperature       30 degrees C / 86 degrees F
  FPM Display temperature    32 degrees C / 89 degrees F
  GBUS Revision              37

lcc1-re0:
--------------------------------------------------------------------------
FPM status:
  State                      Online
  FPM GBUS Voltage:
    1.8 V bias                1789 mV
    3.3 V bias                3311 mV
    5.0 V bias                5013 mV
    8.0 V bias                7467 mV
  FPM Display Voltage:
    5.0 V                     5015 mV
  FPM GBUS temperature       29 degrees C / 84 degrees F
  FPM Display temperature    31 degrees C / 87 degrees F
  GBUS Revision              37
```

show chassis environment fpm (T4000 Core Router)

`user@host>` **show chassis environment fpm**

```
CB 0 status:
  State                       Online Master
  Temperature                 34 degrees C / 93 degrees F
  Power 1
    1.8 V                      1804 mV
    2.5 V                      2499 mV
    3.3 V                      3317 mV
    3.3 V bias                 3291 mV
    4.6 V                      4663 mV
    5.0 V                      4905 mV
    8.0 V bias                 7658 mV
    12.0 V                    11877 mV
  Power 2
    1.0 V                       996 mV
    1.2 V                      1207 mV
    3.3 V RE                   3354 mV
  Bus Revision                51
  FPGA Revision               5
CB 1 status:
  State                       Online Standby
  Temperature                 36 degrees C / 96 degrees F
  Power 1
    1.8 V                      1791 mV
    2.5 V                      2494 mV
    3.3 V                      3321 mV
    3.3 V bias                 3301 mV
    4.6 V                      4666 mV
    5.0 V                      4945 mV
    8.0 V bias                 7645 mV
    12.0 V                    11897 mV
  Power 2
    1.0 V                       991 mV
    1.2 V                      1201 mV
    3.3 V RE                   3289 mV
  Bus Revision                51
  FPGA Revision               5

user@host> show chassis environment fpm
FPM status:
  State                       Online
  FPM GBUS Voltage:
```

```
    1.8 V bias                1802 mV
    3.3 V bias                3294 mV
    5.0 V bias                5003 mV
    8.0 V bias                7306 mV
  FPM Display Voltage:
    5.0 V                     5010 mV
  FPM GBUS temperature       26 degrees C / 78 degrees F
  FPM Display temperature    29 degrees C / 84 degrees F
  GBUS Revision              37
```

show chassis environment fpm (PTX5000 Packet Transport Router)

user@host> **show chassis environment fpm**

```
FPM status:
  State                     Online
  FPM I2CS Voltage:
    3.3 V                     3300 mV
    5.0 V                     4975 mV
  FPM I2CS temperature       37 degrees C / 98 degrees F
  I2CS Revision              109
```

show chassis environment monitored

List of Syntax

Syntax on page 1020
Syntax (MX2020, MX2010, and MX2008 Routers) on page 1020

Syntax

```
show chassis environment monitored
```

Syntax (MX2020, MX2010, and MX2008 Routers)

```
show chassis environment monitored
<all-members>
<local>
<member member-id>
```

Release Information

Command introduced in Junos OS Release 12.1 for PTX Series Packet Transport Routers.
Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 Universal Routing Platforms.
all-members, **local**, and **member *member-id*** options introduced in Junos OS Release 15.1 for MX2020 and MX2010 routers.
Command introduced in Junos OS Release 17.2 for MX2008 Universal Routing Platforms.
Command introduced in Junos OS Release 18.2 for MX10008 Universal Routing Platforms.

Description

(PTX Series Packet Transport Routers, MX2010, MX2020, MX2008, and MX10008 routers) Display status information for monitored temperatures.

On the PTX Series Packet Transport Routers, and on MX2010, MX2020, MX2008, and MX10008 routers, you can configure which temperatures are monitored for computing temperature alarms. Use this command to display only the temperatures that are monitored. Temperatures that are not included in the temperature alarm computations are not displayed.

Options

none—Display status information for monitored temperatures.

all-members—(MX2010, MX2020, and MX2008 routers only) (Optional) Display chassis information for monitored temperatures in all members of the Virtual Chassis configuration.

local—(MX2010, MX2020, and MX2008 routers only) (Optional) Display chassis information for monitored temperatures in the local member of the Virtual Chassis.

member *member-id*—(MX2010, MX2020, and MX2008 routers only) (Optional) Display chassis information for monitored temperatures in the specified member of the Virtual Chassis. Replace ***member-id*** with the value 0 or 1.

Required Privilege Level
view

RELATED DOCUMENTATION

show chassis environment | 759

Chassis-Level Feature Guide

List of Sample Output

show chassis environment monitored (PTX3000 Packet Transport Router) on page 1022
show chassis environment monitored (PTX5000 Packet Transport Router) on page 1023
show chassis environment monitored (MX2010 Router) on page 1023
show chassis environment monitored (MX2020 Router) on page 1027
show chassis environment monitored (MX2008 Router) on page 1039
show chassis environment monitored (MX10008 Router) on page 1043

Output Fields

Table 45 on page 1021 lists the output fields for the **show chassis environment monitored** command. Output fields are listed in the approximate order in which they appear.

Table 45: show chassis environment monitored Output Fields

Field Name	Field Description
Item	Chassis component: • (PTX Series Packet Transport Routers, and MX2010, MX2020, and Mx2008 routers)—Information about the chassis, Routing Engines, Control Boards (CBs), Switch Interface Boards (SIBs), PICs, and Flexible PIC Concentrators (FPCs).
Status	Status of the specified item: **OK**, **Alarm**, or **Present**.
Measurement	Temperature of the air flowing past the specified chassis component. Temperature is displayed in degrees Celsius (C) and degrees Fahrenheit (F).

Sample Output

show chassis environment monitored (PTX3000 Packet Transport Router)

```
user@host> show chassis environment monitored
```

```
Class Item                           Status     Measurement
      Routing Engine 0 CPU           OK         54 degrees C / 129 degrees F
      Routing Engine 1 CPU           Present
      CB 0 Exhaust A                 OK         25 degrees C / 77 degrees F
      CB 1 Exhaust A                 OK         22 degrees C / 71 degrees F
      SIB 0 Exhaust                  OK         34 degrees C / 93 degrees F
      SIB 0 TF                       OK         42 degrees C / 107 degrees F
      SIB 1 Exhaust                  OK         31 degrees C / 87 degrees F
      SIB 1 TF                       OK         41 degrees C / 105 degrees F
      SIB 2 Exhaust                  OK         32 degrees C / 89 degrees F
      SIB 2 TF                       OK         40 degrees C / 104 degrees F
      SIB 3 Exhaust                  OK         32 degrees C / 89 degrees F
      SIB 3 TF                       OK         40 degrees C / 104 degrees F
      SIB 4 Exhaust                  OK         31 degrees C / 87 degrees F
      SIB 4 TF                       OK         40 degrees C / 104 degrees F
      SIB 5 Exhaust                  OK         31 degrees C / 87 degrees F
      SIB 5 TF                       OK         39 degrees C / 102 degrees F
      SIB 6 Exhaust                  OK         31 degrees C / 87 degrees F
      SIB 6 TF                       OK         39 degrees C / 102 degrees F
      SIB 7 Exhaust                  OK         35 degrees C / 95 degrees F
      SIB 7 TF                       OK         40 degrees C / 104 degrees F
      SIB 8 Exhaust                  OK         32 degrees C / 89 degrees F
      SIB 8 TF                       OK         40 degrees C / 104 degrees F
      FPC 2 PMB CPU                  OK         67 degrees C / 152 degrees F
      FPC 2 Exhaust                  OK         40 degrees C / 104 degrees F
      FPC 2 Intake                   OK         33 degrees C / 91 degrees F
      FPC 2 TL0                      OK         69 degrees C / 156 degrees F
      FPC 2 TQ0                      OK         60 degrees C / 140 degrees F
      FPC 2 TL1                      OK         56 degrees C / 132 degrees F
      FPC 2 TQ1                      OK         45 degrees C / 113 degrees F
      PIC Ambient                    OK         40 degrees C / 104 degrees F
      FPC 6 PMB CPU                  OK         80 degrees C / 176 degrees F
      FPC 6 Exhaust                  OK         53 degrees C / 127 degrees F
      FPC 6 Intake                   OK         36 degrees C / 96 degrees F
      FPC 6 TL0                      OK         69 degrees C / 156 degrees F
      FPC 6 TQ0                      OK         65 degrees C / 149 degrees F
      FPC 6 TL1                      OK         52 degrees C / 125 degrees F
      FPC 6 TQ1                      OK         47 degrees C / 116 degrees F
      PIC Ambient                    OK         46 degrees C / 114 degrees F
```

```
      FPC 12 PMB CPU                 OK          42 degrees C / 107 degrees F
      FPC 12 Intake                  OK          33 degrees C / 91 degrees F
      FPC 12 Exhaust                 OK          41 degrees C / 105 degrees F
      FPC 12 TL0                     OK          48 degrees C / 118 degrees F
      FPC 12 TQ0                     OK          45 degrees C / 113 degrees F
      FPC 12 TL1                     OK          58 degrees C / 136 degrees F
      FPC 12 TQ1                     OK          50 degrees C / 122 degrees F
      PIC Ambient                    OK          56 degrees C / 132 degrees F
      PIC 100G_OTN_LH-12/0/0         OK          74 degrees C / 165 degrees F
      PIC 100G_OTN_LH-12/0/1         OK          93 degrees C / 199 degrees F
```

show chassis environment monitored (PTX5000 Packet Transport Router)

`user@host>` **show chassis environment monitored**

```
Class Item                           Status     Measurement
      Routing Engine 0 CPU           OK         71 degrees C / 159 degrees F
      Routing Engine 1 CPU           OK         62 degrees C / 143 degrees F
      CB 0 Exhaust A                 OK         45 degrees C / 113 degrees F
      CB 0 Exhaust B                 OK         41 degrees C / 105 degrees F
      CB 1 Exhaust A                 OK         39 degrees C / 102 degrees F
      CB 1 Exhaust B                 OK         36 degrees C / 96 degrees F
```

show chassis environment monitored (MX2010 Router)

`user@host >` **show chassis environment monitored**

```
Class Item                           Status     Measurement
Temp  CB 0 IntakeA-Zone0             OK         37 degrees C / 98 degrees F
      CB 0 IntakeB-Zone1             OK         31 degrees C / 87 degrees F
      CB 0 IntakeC-Zone0             OK         39 degrees C / 102 degrees F
      CB 0 ExhaustA-Zone0            OK         36 degrees C / 96 degrees F
      CB 0 ExhaustB-Zone1            OK         32 degrees C / 89 degrees F
      CB 0 TCBC-Zone0                OK         34 degrees C / 93 degrees F
      CB 1 IntakeA-Zone0             OK         36 degrees C / 96 degrees F
      CB 1 IntakeB-Zone1             OK         28 degrees C / 82 degrees F
      CB 1 IntakeC-Zone0             OK         38 degrees C / 100 degrees F
      CB 1 ExhaustA-Zone0            OK         36 degrees C / 96 degrees F
      CB 1 ExhaustB-Zone1            OK         30 degrees C / 86 degrees F
      CB 1 TCBC-Zone0                OK         33 degrees C / 91 degrees F
      SPMB 0 Intake                  OK         30 degrees C / 86 degrees F
```

```
SPMB 1 Intake                OK          28 degrees C / 82 degrees F
Routing Engine 0 CPU         OK          32 degrees C / 89 degrees F
Routing Engine 1 CPU         Present
SFB 0 Intake-Zone0           OK          46 degrees C / 114 degrees F
SFB 0 Exhaust-Zone1          OK          38 degrees C / 100 degrees F
SFB 0 IntakeA-Zone0          OK          35 degrees C / 95 degrees F
SFB 0 IntakeB-Zone1          OK          31 degrees C / 87 degrees F
SFB 0 Exhaust-Zone0          OK          39 degrees C / 102 degrees F
SFB 0 SFB-XF2-Zone1          OK          44 degrees C / 111 degrees F
SFB 0 SFB-XF1-Zone0          OK          47 degrees C / 116 degrees F
SFB 0 SFB-XF0-Zone0          OK          56 degrees C / 132 degrees F
SFB 1 Intake-Zone0           OK          34 degrees C / 93 degrees F
SFB 1 Exhaust-Zone1          OK          34 degrees C / 93 degrees F
SFB 1 IntakeA-Zone0          OK          29 degrees C / 84 degrees F
SFB 1 IntakeB-Zone1          OK          29 degrees C / 84 degrees F
SFB 1 Exhaust-Zone0          OK          32 degrees C / 89 degrees F
SFB 1 SFB-XF2-Zone1          OK          42 degrees C / 107 degrees F
SFB 1 SFB-XF1-Zone0          OK          40 degrees C / 104 degrees F
SFB 1 SFB-XF0-Zone0          OK          42 degrees C / 107 degrees F
SFB 2 Intake-Zone0           OK          33 degrees C / 91 degrees F
SFB 2 Exhaust-Zone1          OK          33 degrees C / 91 degrees F
SFB 2 IntakeA-Zone0          OK          28 degrees C / 82 degrees F
SFB 2 IntakeB-Zone1          OK          28 degrees C / 82 degrees F
SFB 2 Exhaust-Zone0          OK          31 degrees C / 87 degrees F
SFB 2 SFB-XF2-Zone1          OK          41 degrees C / 105 degrees F
SFB 2 SFB-XF1-Zone0          OK          39 degrees C / 102 degrees F
SFB 2 SFB-XF0-Zone0          OK          42 degrees C / 107 degrees F
SFB 3 Intake-Zone0           OK          33 degrees C / 91 degrees F
SFB 3 Exhaust-Zone1          OK          33 degrees C / 91 degrees F
SFB 3 IntakeA-Zone0          OK          29 degrees C / 84 degrees F
SFB 3 IntakeB-Zone1          OK          28 degrees C / 82 degrees F
SFB 3 Exhaust-Zone0          OK          31 degrees C / 87 degrees F
SFB 3 SFB-XF2-Zone1          OK          43 degrees C / 109 degrees F
SFB 3 SFB-XF1-Zone0          OK          40 degrees C / 104 degrees F
SFB 3 SFB-XF0-Zone0          OK          42 degrees C / 107 degrees F
SFB 4 Intake-Zone0           OK          34 degrees C / 93 degrees F
SFB 4 Exhaust-Zone1          OK          34 degrees C / 93 degrees F
SFB 4 IntakeA-Zone0          OK          29 degrees C / 84 degrees F
SFB 4 IntakeB-Zone1          OK          28 degrees C / 82 degrees F
SFB 4 Exhaust-Zone0          OK          32 degrees C / 89 degrees F
SFB 4 SFB-XF2-Zone1          OK          43 degrees C / 109 degrees F
SFB 4 SFB-XF1-Zone0          OK          42 degrees C / 107 degrees F
SFB 4 SFB-XF0-Zone0          OK          43 degrees C / 109 degrees F
SFB 5 Intake-Zone0           OK          34 degrees C / 93 degrees F
```

```
SFB 5 Exhaust-Zone1          OK        34 degrees C / 93 degrees F
SFB 5 IntakeA-Zone0          OK        30 degrees C / 86 degrees F
SFB 5 IntakeB-Zone1          OK        28 degrees C / 82 degrees F
SFB 5 Exhaust-Zone0          OK        32 degrees C / 89 degrees F
SFB 5 SFB-XF2-Zone1          OK        41 degrees C / 105 degrees F
SFB 5 SFB-XF1-Zone0          OK        41 degrees C / 105 degrees F
SFB 5 SFB-XF0-Zone0          OK        44 degrees C / 111 degrees F
SFB 6 Intake-Zone0           OK        35 degrees C / 95 degrees F
SFB 6 Exhaust-Zone1          OK        34 degrees C / 93 degrees F
SFB 6 IntakeA-Zone0          OK        30 degrees C / 86 degrees F
SFB 6 IntakeB-Zone1          OK        29 degrees C / 84 degrees F
SFB 6 Exhaust-Zone0          OK        33 degrees C / 91 degrees F
SFB 6 SFB-XF2-Zone1          OK        44 degrees C / 111 degrees F
SFB 6 SFB-XF1-Zone0          OK        43 degrees C / 109 degrees F
SFB 6 SFB-XF0-Zone0          OK        46 degrees C / 114 degrees F
SFB 7 Intake-Zone0           OK        39 degrees C / 102 degrees F
SFB 7 Exhaust-Zone1          OK        34 degrees C / 93 degrees F
SFB 7 IntakeA-Zone0          OK        34 degrees C / 93 degrees F
SFB 7 IntakeB-Zone1          OK        29 degrees C / 84 degrees F
SFB 7 Exhaust-Zone0          OK        37 degrees C / 98 degrees F
SFB 7 SFB-XF2-Zone1          OK        43 degrees C / 109 degrees F
SFB 7 SFB-XF1-Zone0          OK        47 degrees C / 116 degrees F
SFB 7 SFB-XF0-Zone0          OK        52 degrees C / 125 degrees F
FPC 0 Intake                 OK        36 degrees C / 96 degrees F
FPC 0 Exhaust A              OK        42 degrees C / 107 degrees F
FPC 0 Exhaust B              OK        51 degrees C / 123 degrees F
FPC 0 LU 0 TSen              OK        49 degrees C / 120 degrees F
FPC 0 LU 0 Chip              OK        50 degrees C / 122 degrees F
FPC 0 LU 1 TSen              OK        49 degrees C / 120 degrees F
FPC 0 LU 1 Chip              OK        54 degrees C / 129 degrees F
FPC 0 LU 2 TSen              OK        49 degrees C / 120 degrees F
FPC 0 LU 2 Chip              OK        45 degrees C / 113 degrees F
FPC 0 LU 3 TSen              OK        49 degrees C / 120 degrees F
FPC 0 LU 3 Chip              OK        46 degrees C / 114 degrees F
FPC 0 MQ 0 TSen              OK        40 degrees C / 104 degrees F
FPC 0 MQ 0 Chip              OK        41 degrees C / 105 degrees F
FPC 0 MQ 1 TSen              OK        40 degrees C / 104 degrees F
FPC 0 MQ 1 Chip              OK        44 degrees C / 111 degrees F
FPC 0 MQ 2 TSen              OK        40 degrees C / 104 degrees F
FPC 0 MQ 2 Chip              OK        38 degrees C / 100 degrees F
FPC 0 MQ 3 TSen              OK        40 degrees C / 104 degrees F
FPC 0 MQ 3 Chip              OK        41 degrees C / 105 degrees F
FPC 1 Intake                 OK        34 degrees C / 93 degrees F
FPC 1 Exhaust A              OK        46 degrees C / 114 degrees F
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FPC 1 Exhaust B               OK          54 degrees C / 129 degrees F
FPC 1 LU 0 TSen               OK          45 degrees C / 113 degrees F
FPC 1 LU 0 Chip               OK          55 degrees C / 131 degrees F
FPC 1 LU 1 TSen               OK          45 degrees C / 113 degrees F
FPC 1 LU 1 Chip               OK          44 degrees C / 111 degrees F
FPC 1 LU 2 TSen               OK          45 degrees C / 113 degrees F
FPC 1 LU 2 Chip               OK          50 degrees C / 122 degrees F
FPC 1 LU 3 TSen               OK          45 degrees C / 113 degrees F
FPC 1 LU 3 Chip               OK          58 degrees C / 136 degrees F
FPC 1 XM 0 TSen               OK          45 degrees C / 113 degrees F
FPC 1 XM 0 Chip               OK          52 degrees C / 125 degrees F
FPC 1 XF 0 TSen               OK          45 degrees C / 113 degrees F
FPC 1 XF 0 Chip               OK          63 degrees C / 145 degrees F
FPC 1 PLX Switch TSen         OK          45 degrees C / 113 degrees F
FPC 1 PLX Switch Chip         OK          47 degrees C / 116 degrees F
FPC 8 Intake                  OK          32 degrees C / 89 degrees F
FPC 8 Exhaust A               OK          44 degrees C / 111 degrees F
FPC 8 Exhaust B               OK          37 degrees C / 98 degrees F
FPC 8 LU 0 TCAM TSen          OK          41 degrees C / 105 degrees F
FPC 8 LU 0 TCAM Chip          OK          49 degrees C / 120 degrees F
FPC 8 LU 0 TSen               OK          41 degrees C / 105 degrees F
FPC 8 LU 0 Chip               OK          52 degrees C / 125 degrees F
FPC 8 MQ 0 TSen               OK          41 degrees C / 105 degrees F
FPC 8 MQ 0 Chip               OK          47 degrees C / 116 degrees F
FPC 8 LU 1 TCAM TSen          OK          39 degrees C / 102 degrees F
FPC 8 LU 1 TCAM Chip          OK          42 degrees C / 107 degrees F
FPC 8 LU 1 TSen               OK          39 degrees C / 102 degrees F
FPC 8 LU 1 Chip               OK          46 degrees C / 114 degrees F
FPC 8 MQ 1 TSen               OK          39 degrees C / 102 degrees F
FPC 8 MQ 1 Chip               OK          45 degrees C / 113 degrees F
FPC 9 Intake                  OK          34 degrees C / 93 degrees F
FPC 9 Exhaust A               OK          41 degrees C / 105 degrees F
FPC 9 Exhaust B               OK          54 degrees C / 129 degrees F
FPC 9 LU 0 TSen               OK          51 degrees C / 123 degrees F
FPC 9 LU 0 Chip               OK          52 degrees C / 125 degrees F
FPC 9 LU 1 TSen               OK          51 degrees C / 123 degrees F
FPC 9 LU 1 Chip               OK          55 degrees C / 131 degrees F
FPC 9 LU 2 TSen               OK          51 degrees C / 123 degrees F
FPC 9 LU 2 Chip               OK          47 degrees C / 116 degrees F
FPC 9 LU 3 TSen               OK          51 degrees C / 123 degrees F
FPC 9 LU 3 Chip               OK          47 degrees C / 116 degrees F
FPC 9 MQ 0 TSen               OK          40 degrees C / 104 degrees F
FPC 9 MQ 0 Chip               OK          42 degrees C / 107 degrees F
FPC 9 MQ 1 TSen               OK          40 degrees C / 104 degrees F
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      FPC 9 MQ 1 Chip                 OK          44 degrees C / 111 degrees F
      FPC 9 MQ 2 TSen                 OK          40 degrees C / 104 degrees F
      FPC 9 MQ 2 Chip                 OK          38 degrees C / 100 degrees F
      FPC 9 MQ 3 TSen                 OK          40 degrees C / 104 degrees F
      FPC 9 MQ 3 Chip                 OK          40 degrees C / 104 degrees F
      ADC 0 Intake                    OK          35 degrees C / 95 degrees F
      ADC 0 Exhaust                   OK          44 degrees C / 111 degrees F
      ADC 0 ADC-XF1                   OK          48 degrees C / 118 degrees F
      ADC 0 ADC-XF0                   OK          59 degrees C / 138 degrees F
      ADC 1 Intake                    OK          34 degrees C / 93 degrees F
      ADC 1 Exhaust                   OK          45 degrees C / 113 degrees F
      ADC 1 ADC-XF1                   OK          53 degrees C / 127 degrees F
      ADC 1 ADC-XF0                   OK          56 degrees C / 132 degrees F
      ADC 8 Intake                    OK          35 degrees C / 95 degrees F
      ADC 8 Exhaust                   OK          41 degrees C / 105 degrees F
      ADC 8 ADC-XF1                   OK          52 degrees C / 125 degrees F
      ADC 8 ADC-XF0                   OK          55 degrees C / 131 degrees F
      ADC 9 Intake                    OK          33 degrees C / 91 degrees F
      ADC 9 Exhaust                   OK          42 degrees C / 107 degrees F
      ADC 9 ADC-XF1                   OK          55 degrees C / 131 degrees F
      ADC 9 ADC-XF0                   OK          56 degrees C / 132 degrees F
```

show chassis environment monitored (MX2020 Router)

`user@host >` **show chassis environment monitored**

```
Class Item                            Status     Measurement
Temp  CB 0 IntakeA-Zone0              OK         44 degrees C / 111 degrees F
      CB 0 IntakeB-Zone1              OK         34 degrees C / 93 degrees F
      CB 0 IntakeC-Zone0              OK         46 degrees C / 114 degrees F
      CB 0 ExhaustA-Zone0             OK         44 degrees C / 111 degrees F
      CB 0 ExhaustB-Zone1             OK         36 degrees C / 96 degrees F
      CB 0 TCBC-Zone0                 OK         39 degrees C / 102 degrees F
      CB 1 IntakeA-Zone0              OK         46 degrees C / 114 degrees F
      CB 1 IntakeB-Zone1              OK         43 degrees C / 109 degrees F
      CB 1 IntakeC-Zone0              OK         47 degrees C / 116 degrees F
      CB 1 ExhaustA-Zone0             OK         45 degrees C / 113 degrees F
      CB 1 ExhaustB-Zone1             OK         42 degrees C / 107 degrees F
      CB 1 TCBC-Zone0                 OK         46 degrees C / 114 degrees F
      SPMB 0 Intake                   OK         33 degrees C / 91 degrees F
      SPMB 1 Intake                   OK         43 degrees C / 109 degrees F
      Routing Engine 0 CPU            OK         34 degrees C / 93 degrees F
      Routing Engine 1 CPU            OK         42 degrees C / 107 degrees F
      SFB 0 Intake-Zone0              OK         52 degrees C / 125 degrees F
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SFB 0 Exhaust-Zone1          OK        45 degrees C / 113 degrees F
SFB 0 IntakeA-Zone0          OK        47 degrees C / 116 degrees F
SFB 0 IntakeB-Zone1          OK        38 degrees C / 100 degrees F
SFB 0 Exhaust-Zone0          OK        49 degrees C / 120 degrees F
SFB 0 SFB-XF2-Zone1          OK        59 degrees C / 138 degrees F
SFB 0 SFB-XF1-Zone0          OK        65 degrees C / 149 degrees F
SFB 0 SFB-XF0-Zone0          OK        65 degrees C / 149 degrees F
SFB 1 Intake-Zone0           OK        53 degrees C / 127 degrees F
SFB 1 Exhaust-Zone1          OK        45 degrees C / 113 degrees F
SFB 1 IntakeA-Zone0          OK        48 degrees C / 118 degrees F
SFB 1 IntakeB-Zone1          OK        39 degrees C / 102 degrees F
SFB 1 Exhaust-Zone0          OK        48 degrees C / 118 degrees F
SFB 1 SFB-XF2-Zone1          OK        60 degrees C / 140 degrees F
SFB 1 SFB-XF1-Zone0          OK        64 degrees C / 147 degrees F
SFB 1 SFB-XF0-Zone0          OK        66 degrees C / 150 degrees F
SFB 2 Intake-Zone0           OK        54 degrees C / 129 degrees F
SFB 2 Exhaust-Zone1          OK        46 degrees C / 114 degrees F
SFB 2 IntakeA-Zone0          OK        48 degrees C / 118 degrees F
SFB 2 IntakeB-Zone1          OK        39 degrees C / 102 degrees F
SFB 2 Exhaust-Zone0          OK        50 degrees C / 122 degrees F
SFB 2 SFB-XF2-Zone1          OK        63 degrees C / 145 degrees F
SFB 2 SFB-XF1-Zone0          OK        67 degrees C / 152 degrees F
SFB 2 SFB-XF0-Zone0          OK        67 degrees C / 152 degrees F
SFB 3 Intake-Zone0           OK        54 degrees C / 129 degrees F
SFB 3 Exhaust-Zone1          OK        46 degrees C / 114 degrees F
SFB 3 IntakeA-Zone0          OK        50 degrees C / 122 degrees F
SFB 3 IntakeB-Zone1          OK        40 degrees C / 104 degrees F
SFB 3 Exhaust-Zone0          OK        50 degrees C / 122 degrees F
SFB 3 SFB-XF2-Zone1          OK        64 degrees C / 147 degrees F
SFB 3 SFB-XF1-Zone0          OK        66 degrees C / 150 degrees F
SFB 3 SFB-XF0-Zone0          OK        68 degrees C / 154 degrees F
SFB 4 Intake-Zone0           OK        55 degrees C / 131 degrees F
SFB 4 Exhaust-Zone1          OK        48 degrees C / 118 degrees F
SFB 4 IntakeA-Zone0          OK        51 degrees C / 123 degrees F
SFB 4 IntakeB-Zone1          OK        42 degrees C / 107 degrees F
SFB 4 Exhaust-Zone0          OK        51 degrees C / 123 degrees F
SFB 4 SFB-XF2-Zone1          OK        63 degrees C / 145 degrees F
SFB 4 SFB-XF1-Zone0          OK        66 degrees C / 150 degrees F
SFB 4 SFB-XF0-Zone0          OK        68 degrees C / 154 degrees F
SFB 5 Intake-Zone0           OK        55 degrees C / 131 degrees F
SFB 5 Exhaust-Zone1          OK        49 degrees C / 120 degrees F
SFB 5 IntakeA-Zone0          OK        51 degrees C / 123 degrees F
SFB 5 IntakeB-Zone1          OK        43 degrees C / 109 degrees F
SFB 5 Exhaust-Zone0          OK        51 degrees C / 123 degrees F
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SFB 5 SFB-XF2-Zone1          OK        65 degrees C / 149 degrees F
SFB 5 SFB-XF1-Zone0          OK        66 degrees C / 150 degrees F
SFB 5 SFB-XF0-Zone0          OK        71 degrees C / 159 degrees F
SFB 6 Intake-Zone0           OK        55 degrees C / 131 degrees F
SFB 6 Exhaust-Zone1          OK        49 degrees C / 120 degrees F
SFB 6 IntakeA-Zone0          OK        51 degrees C / 123 degrees F
SFB 6 IntakeB-Zone1          OK        43 degrees C / 109 degrees F
SFB 6 Exhaust-Zone0          OK        51 degrees C / 123 degrees F
SFB 6 SFB-XF2-Zone1          OK        64 degrees C / 147 degrees F
SFB 6 SFB-XF1-Zone0          OK        66 degrees C / 150 degrees F
SFB 6 SFB-XF0-Zone0          OK        68 degrees C / 154 degrees F
SFB 7 Intake-Zone0           OK        55 degrees C / 131 degrees F
SFB 7 Exhaust-Zone1          OK        49 degrees C / 120 degrees F
SFB 7 IntakeA-Zone0          OK        51 degrees C / 123 degrees F
SFB 7 IntakeB-Zone1          OK        43 degrees C / 109 degrees F
SFB 7 Exhaust-Zone0          OK        52 degrees C / 125 degrees F
SFB 7 SFB-XF2-Zone1          OK        66 degrees C / 150 degrees F
SFB 7 SFB-XF1-Zone0          OK        67 degrees C / 152 degrees F
SFB 7 SFB-XF0-Zone0          OK        70 degrees C / 158 degrees F
FPC 0 Intake                 OK        41 degrees C / 105 degrees F
FPC 0 Exhaust A              OK        48 degrees C / 118 degrees F
FPC 0 Exhaust B              OK        60 degrees C / 140 degrees F
FPC 0 LU 0 TSen              OK        56 degrees C / 132 degrees F
FPC 0 LU 0 Chip              OK        59 degrees C / 138 degrees F
FPC 0 LU 1 TSen              OK        56 degrees C / 132 degrees F
FPC 0 LU 1 Chip              OK        61 degrees C / 141 degrees F
FPC 0 LU 2 TSen              OK        56 degrees C / 132 degrees F
FPC 0 LU 2 Chip              OK        52 degrees C / 125 degrees F
FPC 0 LU 3 TSen              OK        56 degrees C / 132 degrees F
FPC 0 LU 3 Chip              OK        52 degrees C / 125 degrees F
FPC 0 MQ 0 TSen              OK        49 degrees C / 120 degrees F
FPC 0 MQ 0 Chip              OK        49 degrees C / 120 degrees F
FPC 0 MQ 1 TSen              OK        49 degrees C / 120 degrees F
FPC 0 MQ 1 Chip              OK        52 degrees C / 125 degrees F
FPC 0 MQ 2 TSen              OK        49 degrees C / 120 degrees F
FPC 0 MQ 2 Chip              OK        45 degrees C / 113 degrees F
FPC 0 MQ 3 TSen              OK        49 degrees C / 120 degrees F
FPC 0 MQ 3 Chip              OK        46 degrees C / 114 degrees F
FPC 1 Intake                 OK        39 degrees C / 102 degrees F
FPC 1 Exhaust A              OK        48 degrees C / 118 degrees F
FPC 1 Exhaust B              OK        55 degrees C / 131 degrees F
FPC 1 LU 0 TSen              OK        52 degrees C / 125 degrees F
FPC 1 LU 0 Chip              OK        54 degrees C / 129 degrees F
FPC 1 LU 1 TSen              OK        52 degrees C / 125 degrees F
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FPC 1 LU 1 Chip                 OK          56 degrees C / 132 degrees F
FPC 1 LU 2 TSen                 OK          52 degrees C / 125 degrees F
FPC 1 LU 2 Chip                 OK          49 degrees C / 120 degrees F
FPC 1 LU 3 TSen                 OK          52 degrees C / 125 degrees F
FPC 1 LU 3 Chip                 OK          50 degrees C / 122 degrees F
FPC 1 MQ 0 TSen                 OK          48 degrees C / 118 degrees F
FPC 1 MQ 0 Chip                 OK          48 degrees C / 118 degrees F
FPC 1 MQ 1 TSen                 OK          48 degrees C / 118 degrees F
FPC 1 MQ 1 Chip                 OK          51 degrees C / 123 degrees F
FPC 1 MQ 2 TSen                 OK          48 degrees C / 118 degrees F
FPC 1 MQ 2 Chip                 OK          45 degrees C / 113 degrees F
FPC 1 MQ 3 TSen                 OK          48 degrees C / 118 degrees F
FPC 1 MQ 3 Chip                 OK          45 degrees C / 113 degrees F
FPC 2 Intake                    OK          39 degrees C / 102 degrees F
FPC 2 Exhaust A                 OK          48 degrees C / 118 degrees F
FPC 2 Exhaust B                 OK          58 degrees C / 136 degrees F
FPC 2 LU 0 TSen                 OK          55 degrees C / 131 degrees F
FPC 2 LU 0 Chip                 OK          57 degrees C / 134 degrees F
FPC 2 LU 1 TSen                 OK          55 degrees C / 131 degrees F
FPC 2 LU 1 Chip                 OK          63 degrees C / 145 degrees F
FPC 2 LU 2 TSen                 OK          55 degrees C / 131 degrees F
FPC 2 LU 2 Chip                 OK          51 degrees C / 123 degrees F
FPC 2 LU 3 TSen                 OK          55 degrees C / 131 degrees F
FPC 2 LU 3 Chip                 OK          52 degrees C / 125 degrees F
FPC 2 MQ 0 TSen                 OK          48 degrees C / 118 degrees F
FPC 2 MQ 0 Chip                 OK          50 degrees C / 122 degrees F
FPC 2 MQ 1 TSen                 OK          48 degrees C / 118 degrees F
FPC 2 MQ 1 Chip                 OK          52 degrees C / 125 degrees F
FPC 2 MQ 2 TSen                 OK          48 degrees C / 118 degrees F
FPC 2 MQ 2 Chip                 OK          47 degrees C / 116 degrees F
FPC 2 MQ 3 TSen                 OK          48 degrees C / 118 degrees F
FPC 2 MQ 3 Chip                 OK          47 degrees C / 116 degrees F
FPC 3 Intake                    OK          41 degrees C / 105 degrees F
FPC 3 Exhaust A                 OK          48 degrees C / 118 degrees F
FPC 3 Exhaust B                 OK          58 degrees C / 136 degrees F
FPC 3 LU 0 TSen                 OK          56 degrees C / 132 degrees F
FPC 3 LU 0 Chip                 OK          59 degrees C / 138 degrees F
FPC 3 LU 1 TSen                 OK          56 degrees C / 132 degrees F
FPC 3 LU 1 Chip                 OK          61 degrees C / 141 degrees F
FPC 3 LU 2 TSen                 OK          56 degrees C / 132 degrees F
FPC 3 LU 2 Chip                 OK          51 degrees C / 123 degrees F
FPC 3 LU 3 TSen                 OK          56 degrees C / 132 degrees F
FPC 3 LU 3 Chip                 OK          53 degrees C / 127 degrees F
FPC 3 MQ 0 TSen                 OK          50 degrees C / 122 degrees F
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FPC 3 MQ 0 Chip              OK        51 degrees C / 123 degrees F
FPC 3 MQ 1 TSen              OK        50 degrees C / 122 degrees F
FPC 3 MQ 1 Chip              OK        55 degrees C / 131 degrees F
FPC 3 MQ 2 TSen              OK        50 degrees C / 122 degrees F
FPC 3 MQ 2 Chip              OK        47 degrees C / 116 degrees F
FPC 3 MQ 3 TSen              OK        50 degrees C / 122 degrees F
FPC 3 MQ 3 Chip              OK        50 degrees C / 122 degrees F
FPC 4 Intake                 OK        41 degrees C / 105 degrees F
FPC 4 Exhaust A              OK        48 degrees C / 118 degrees F
FPC 4 Exhaust B              OK        59 degrees C / 138 degrees F
FPC 4 LU 0 TSen              OK        56 degrees C / 132 degrees F
FPC 4 LU 0 Chip              OK        60 degrees C / 140 degrees F
FPC 4 LU 1 TSen              OK        56 degrees C / 132 degrees F
FPC 4 LU 1 Chip              OK        64 degrees C / 147 degrees F
FPC 4 LU 2 TSen              OK        56 degrees C / 132 degrees F
FPC 4 LU 2 Chip              OK        51 degrees C / 123 degrees F
FPC 4 LU 3 TSen              OK        56 degrees C / 132 degrees F
FPC 4 LU 3 Chip              OK        54 degrees C / 129 degrees F
FPC 4 MQ 0 TSen              OK        49 degrees C / 120 degrees F
FPC 4 MQ 0 Chip              OK        53 degrees C / 127 degrees F
FPC 4 MQ 1 TSen              OK        49 degrees C / 120 degrees F
FPC 4 MQ 1 Chip              OK        55 degrees C / 131 degrees F
FPC 4 MQ 2 TSen              OK        49 degrees C / 120 degrees F
FPC 4 MQ 2 Chip              OK        48 degrees C / 118 degrees F
FPC 4 MQ 3 TSen              OK        49 degrees C / 120 degrees F
FPC 4 MQ 3 Chip              OK        49 degrees C / 120 degrees F
FPC 5 Intake                 OK        42 degrees C / 107 degrees F
FPC 5 Exhaust A              OK        49 degrees C / 120 degrees F
FPC 5 Exhaust B              OK        61 degrees C / 141 degrees F
FPC 5 LU 0 TSen              OK        58 degrees C / 136 degrees F
FPC 5 LU 0 Chip              OK        61 degrees C / 141 degrees F
FPC 5 LU 1 TSen              OK        58 degrees C / 136 degrees F
FPC 5 LU 1 Chip              OK        64 degrees C / 147 degrees F
FPC 5 LU 2 TSen              OK        58 degrees C / 136 degrees F
FPC 5 LU 2 Chip              OK        56 degrees C / 132 degrees F
FPC 5 LU 3 TSen              OK        58 degrees C / 136 degrees F
FPC 5 LU 3 Chip              OK        54 degrees C / 129 degrees F
FPC 5 MQ 0 TSen              OK        51 degrees C / 123 degrees F
FPC 5 MQ 0 Chip              OK        53 degrees C / 127 degrees F
FPC 5 MQ 1 TSen              OK        51 degrees C / 123 degrees F
FPC 5 MQ 1 Chip              OK        55 degrees C / 131 degrees F
FPC 5 MQ 2 TSen              OK        51 degrees C / 123 degrees F
FPC 5 MQ 2 Chip              OK        50 degrees C / 122 degrees F
FPC 5 MQ 3 TSen              OK        51 degrees C / 123 degrees F
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FPC 5 MQ 3 Chip                 OK          49 degrees C / 120 degrees F
FPC 6 Intake                    OK          42 degrees C / 107 degrees F
FPC 6 Exhaust A                 OK          50 degrees C / 122 degrees F
FPC 6 Exhaust B                 OK          61 degrees C / 141 degrees F
FPC 6 LU 0 TSen                 OK          58 degrees C / 136 degrees F
FPC 6 LU 0 Chip                 OK          62 degrees C / 143 degrees F
FPC 6 LU 1 TSen                 OK          58 degrees C / 136 degrees F
FPC 6 LU 1 Chip                 OK          64 degrees C / 147 degrees F
FPC 6 LU 2 TSen                 OK          58 degrees C / 136 degrees F
FPC 6 LU 2 Chip                 OK          56 degrees C / 132 degrees F
FPC 6 LU 3 TSen                 OK          58 degrees C / 136 degrees F
FPC 6 LU 3 Chip                 OK          56 degrees C / 132 degrees F
FPC 6 MQ 0 TSen                 OK          51 degrees C / 123 degrees F
FPC 6 MQ 0 Chip                 OK          58 degrees C / 136 degrees F
FPC 6 MQ 1 TSen                 OK          51 degrees C / 123 degrees F
FPC 6 MQ 1 Chip                 OK          61 degrees C / 141 degrees F
FPC 6 MQ 2 TSen                 OK          51 degrees C / 123 degrees F
FPC 6 MQ 2 Chip                 OK          51 degrees C / 123 degrees F
FPC 6 MQ 3 TSen                 OK          51 degrees C / 123 degrees F
FPC 6 MQ 3 Chip                 OK          51 degrees C / 123 degrees F
FPC 7 Intake                    OK          42 degrees C / 107 degrees F
FPC 7 Exhaust A                 OK          50 degrees C / 122 degrees F
FPC 7 Exhaust B                 OK          61 degrees C / 141 degrees F
FPC 7 LU 0 TSen                 OK          58 degrees C / 136 degrees F
FPC 7 LU 0 Chip                 OK          59 degrees C / 138 degrees F
FPC 7 LU 1 TSen                 OK          58 degrees C / 136 degrees F
FPC 7 LU 1 Chip                 OK          64 degrees C / 147 degrees F
FPC 7 LU 2 TSen                 OK          58 degrees C / 136 degrees F
FPC 7 LU 2 Chip                 OK          54 degrees C / 129 degrees F
FPC 7 LU 3 TSen                 OK          58 degrees C / 136 degrees F
FPC 7 LU 3 Chip                 OK          53 degrees C / 127 degrees F
FPC 7 MQ 0 TSen                 OK          51 degrees C / 123 degrees F
FPC 7 MQ 0 Chip                 OK          53 degrees C / 127 degrees F
FPC 7 MQ 1 TSen                 OK          51 degrees C / 123 degrees F
FPC 7 MQ 1 Chip                 OK          54 degrees C / 129 degrees F
FPC 7 MQ 2 TSen                 OK          51 degrees C / 123 degrees F
FPC 7 MQ 2 Chip                 OK          48 degrees C / 118 degrees F
FPC 7 MQ 3 TSen                 OK          51 degrees C / 123 degrees F
FPC 7 MQ 3 Chip                 OK          48 degrees C / 118 degrees F
FPC 8 Intake                    OK          42 degrees C / 107 degrees F
FPC 8 Exhaust A                 OK          50 degrees C / 122 degrees F
FPC 8 Exhaust B                 OK          61 degrees C / 141 degrees F
FPC 8 LU 0 TSen                 OK          58 degrees C / 136 degrees F
FPC 8 LU 0 Chip                 OK          63 degrees C / 145 degrees F
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FPC 8 LU 1 TSen                 OK          58 degrees C / 136 degrees F
FPC 8 LU 1 Chip                 OK          65 degrees C / 149 degrees F
FPC 8 LU 2 TSen                 OK          58 degrees C / 136 degrees F
FPC 8 LU 2 Chip                 OK          56 degrees C / 132 degrees F
FPC 8 LU 3 TSen                 OK          58 degrees C / 136 degrees F
FPC 8 LU 3 Chip                 OK          56 degrees C / 132 degrees F
FPC 8 MQ 0 TSen                 OK          50 degrees C / 122 degrees F
FPC 8 MQ 0 Chip                 OK          53 degrees C / 127 degrees F
FPC 8 MQ 1 TSen                 OK          50 degrees C / 122 degrees F
FPC 8 MQ 1 Chip                 OK          58 degrees C / 136 degrees F
FPC 8 MQ 2 TSen                 OK          50 degrees C / 122 degrees F
FPC 8 MQ 2 Chip                 OK          48 degrees C / 118 degrees F
FPC 8 MQ 3 TSen                 OK          50 degrees C / 122 degrees F
FPC 8 MQ 3 Chip                 OK          49 degrees C / 120 degrees F
FPC 9 Intake                    OK          43 degrees C / 109 degrees F
FPC 9 Exhaust A                 OK          51 degrees C / 123 degrees F
FPC 9 Exhaust B                 OK          61 degrees C / 141 degrees F
FPC 9 LU 0 TSen                 OK          58 degrees C / 136 degrees F
FPC 9 LU 0 Chip                 OK          61 degrees C / 141 degrees F
FPC 9 LU 1 TSen                 OK          58 degrees C / 136 degrees F
FPC 9 LU 1 Chip                 OK          63 degrees C / 145 degrees F
FPC 9 LU 2 TSen                 OK          58 degrees C / 136 degrees F
FPC 9 LU 2 Chip                 OK          55 degrees C / 131 degrees F
FPC 9 LU 3 TSen                 OK          58 degrees C / 136 degrees F
FPC 9 LU 3 Chip                 OK          54 degrees C / 129 degrees F
FPC 9 MQ 0 TSen                 OK          52 degrees C / 125 degrees F
FPC 9 MQ 0 Chip                 OK          53 degrees C / 127 degrees F
FPC 9 MQ 1 TSen                 OK          52 degrees C / 125 degrees F
FPC 9 MQ 1 Chip                 OK          54 degrees C / 129 degrees F
FPC 9 MQ 2 TSen                 OK          52 degrees C / 125 degrees F
FPC 9 MQ 2 Chip                 OK          48 degrees C / 118 degrees F
FPC 9 MQ 3 TSen                 OK          52 degrees C / 125 degrees F
FPC 9 MQ 3 Chip                 OK          49 degrees C / 120 degrees F
FPC 10 Intake                   OK          44 degrees C / 111 degrees F
FPC 10 Exhaust A                OK          48 degrees C / 118 degrees F
FPC 10 Exhaust B                OK          54 degrees C / 129 degrees F
FPC 10 LU 0 TSen                OK          53 degrees C / 127 degrees F
FPC 10 LU 0 Chip                OK          54 degrees C / 129 degrees F
FPC 10 LU 1 TSen                OK          53 degrees C / 127 degrees F
FPC 10 LU 1 Chip                OK          58 degrees C / 136 degrees F
FPC 10 LU 2 TSen                OK          53 degrees C / 127 degrees F
FPC 10 LU 2 Chip                OK          51 degrees C / 123 degrees F
FPC 10 LU 3 TSen                OK          53 degrees C / 127 degrees F
FPC 10 LU 3 Chip                OK          51 degrees C / 123 degrees F
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FPC 10 MQ 0 TSen              OK          49 degrees C / 120 degrees F
FPC 10 MQ 0 Chip              OK          50 degrees C / 122 degrees F
FPC 10 MQ 1 TSen              OK          49 degrees C / 120 degrees F
FPC 10 MQ 1 Chip              OK          52 degrees C / 125 degrees F
FPC 10 MQ 2 TSen              OK          49 degrees C / 120 degrees F
FPC 10 MQ 2 Chip              OK          48 degrees C / 118 degrees F
FPC 10 MQ 3 TSen              OK          49 degrees C / 120 degrees F
FPC 10 MQ 3 Chip              OK          48 degrees C / 118 degrees F
FPC 11 Intake                 OK          39 degrees C / 102 degrees F
FPC 11 Exhaust A              OK          47 degrees C / 116 degrees F
FPC 11 Exhaust B              OK          51 degrees C / 123 degrees F
FPC 11 LU 0 TSen              OK          50 degrees C / 122 degrees F
FPC 11 LU 0 Chip              OK          52 degrees C / 125 degrees F
FPC 11 LU 1 TSen              OK          50 degrees C / 122 degrees F
FPC 11 LU 1 Chip              OK          55 degrees C / 131 degrees F
FPC 11 LU 2 TSen              OK          50 degrees C / 122 degrees F
FPC 11 LU 2 Chip              OK          49 degrees C / 120 degrees F
FPC 11 LU 3 TSen              OK          50 degrees C / 122 degrees F
FPC 11 LU 3 Chip              OK          49 degrees C / 120 degrees F
FPC 11 MQ 0 TSen              OK          47 degrees C / 116 degrees F
FPC 11 MQ 0 Chip              OK          47 degrees C / 116 degrees F
FPC 11 MQ 1 TSen              OK          47 degrees C / 116 degrees F
FPC 11 MQ 1 Chip              OK          51 degrees C / 123 degrees F
FPC 11 MQ 2 TSen              OK          47 degrees C / 116 degrees F
FPC 11 MQ 2 Chip              OK          45 degrees C / 113 degrees F
FPC 11 MQ 3 TSen              OK          47 degrees C / 116 degrees F
FPC 11 MQ 3 Chip              OK          49 degrees C / 120 degrees F
FPC 12 Intake                 OK          39 degrees C / 102 degrees F
FPC 12 Exhaust A              OK          47 degrees C / 116 degrees F
FPC 12 Exhaust B              OK          50 degrees C / 122 degrees F
FPC 12 LU 0 TSen              OK          49 degrees C / 120 degrees F
FPC 12 LU 0 Chip              OK          51 degrees C / 123 degrees F
FPC 12 LU 1 TSen              OK          49 degrees C / 120 degrees F
FPC 12 LU 1 Chip              OK          54 degrees C / 129 degrees F
FPC 12 LU 2 TSen              OK          49 degrees C / 120 degrees F
FPC 12 LU 2 Chip              OK          47 degrees C / 116 degrees F
FPC 12 LU 3 TSen              OK          49 degrees C / 120 degrees F
FPC 12 LU 3 Chip              OK          49 degrees C / 120 degrees F
FPC 12 MQ 0 TSen              OK          47 degrees C / 116 degrees F
FPC 12 MQ 0 Chip              OK          46 degrees C / 114 degrees F
FPC 12 MQ 1 TSen              OK          47 degrees C / 116 degrees F
FPC 12 MQ 1 Chip              OK          51 degrees C / 123 degrees F
FPC 12 MQ 2 TSen              OK          47 degrees C / 116 degrees F
FPC 12 MQ 2 Chip              OK          45 degrees C / 113 degrees F
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FPC 12 MQ 3 TSen              OK          47 degrees C / 116 degrees F
FPC 12 MQ 3 Chip              OK          47 degrees C / 116 degrees F
FPC 13 Intake                 OK          40 degrees C / 104 degrees F
FPC 13 Exhaust A              OK          48 degrees C / 118 degrees F
FPC 13 Exhaust B              OK          51 degrees C / 123 degrees F
FPC 13 LU 0 TSen              OK          50 degrees C / 122 degrees F
FPC 13 LU 0 Chip              OK          52 degrees C / 125 degrees F
FPC 13 LU 1 TSen              OK          50 degrees C / 122 degrees F
FPC 13 LU 1 Chip              OK          54 degrees C / 129 degrees F
FPC 13 LU 2 TSen              OK          50 degrees C / 122 degrees F
FPC 13 LU 2 Chip              OK          48 degrees C / 118 degrees F
FPC 13 LU 3 TSen              OK          50 degrees C / 122 degrees F
FPC 13 LU 3 Chip              OK          48 degrees C / 118 degrees F
FPC 13 MQ 0 TSen              OK          48 degrees C / 118 degrees F
FPC 13 MQ 0 Chip              OK          47 degrees C / 116 degrees F
FPC 13 MQ 1 TSen              OK          48 degrees C / 118 degrees F
FPC 13 MQ 1 Chip              OK          51 degrees C / 123 degrees F
FPC 13 MQ 2 TSen              OK          48 degrees C / 118 degrees F
FPC 13 MQ 2 Chip              OK          46 degrees C / 114 degrees F
FPC 13 MQ 3 TSen              OK          48 degrees C / 118 degrees F
FPC 13 MQ 3 Chip              OK          47 degrees C / 116 degrees F
FPC 14 Intake                 OK          41 degrees C / 105 degrees F
FPC 14 Exhaust A              OK          49 degrees C / 120 degrees F
FPC 14 Exhaust B              OK          50 degrees C / 122 degrees F
FPC 14 LU 0 TSen              OK          49 degrees C / 120 degrees F
FPC 14 LU 0 Chip              OK          50 degrees C / 122 degrees F
FPC 14 LU 1 TSen              OK          49 degrees C / 120 degrees F
FPC 14 LU 1 Chip              OK          54 degrees C / 129 degrees F
FPC 14 LU 2 TSen              OK          49 degrees C / 120 degrees F
FPC 14 LU 2 Chip              OK          48 degrees C / 118 degrees F
FPC 14 LU 3 TSen              OK          49 degrees C / 120 degrees F
FPC 14 LU 3 Chip              OK          50 degrees C / 122 degrees F
FPC 14 MQ 0 TSen              OK          48 degrees C / 118 degrees F
FPC 14 MQ 0 Chip              OK          48 degrees C / 118 degrees F
FPC 14 MQ 1 TSen              OK          48 degrees C / 118 degrees F
FPC 14 MQ 1 Chip              OK          52 degrees C / 125 degrees F
FPC 14 MQ 2 TSen              OK          48 degrees C / 118 degrees F
FPC 14 MQ 2 Chip              OK          47 degrees C / 116 degrees F
FPC 14 MQ 3 TSen              OK          48 degrees C / 118 degrees F
FPC 14 MQ 3 Chip              OK          50 degrees C / 122 degrees F
FPC 15 Intake                 OK          42 degrees C / 107 degrees F
FPC 15 Exhaust A              OK          51 degrees C / 123 degrees F
FPC 15 Exhaust B              OK          52 degrees C / 125 degrees F
FPC 15 LU 0 TSen              OK          52 degrees C / 125 degrees F
```

```
FPC 15 LU 0 Chip              OK          55 degrees C / 131 degrees F
FPC 15 LU 1 TSen              OK          52 degrees C / 125 degrees F
FPC 15 LU 1 Chip              OK          59 degrees C / 138 degrees F
FPC 15 LU 2 TSen              OK          52 degrees C / 125 degrees F
FPC 15 LU 2 Chip              OK          50 degrees C / 122 degrees F
FPC 15 LU 3 TSen              OK          52 degrees C / 125 degrees F
FPC 15 LU 3 Chip              OK          51 degrees C / 123 degrees F
FPC 15 MQ 0 TSen              OK          51 degrees C / 123 degrees F
FPC 15 MQ 0 Chip              OK          53 degrees C / 127 degrees F
FPC 15 MQ 1 TSen              OK          51 degrees C / 123 degrees F
FPC 15 MQ 1 Chip              OK          60 degrees C / 140 degrees F
FPC 15 MQ 2 TSen              OK          51 degrees C / 123 degrees F
FPC 15 MQ 2 Chip              OK          52 degrees C / 125 degrees F
FPC 15 MQ 3 TSen              OK          51 degrees C / 123 degrees F
FPC 15 MQ 3 Chip              OK          53 degrees C / 127 degrees F
FPC 16 Intake                 OK          44 degrees C / 111 degrees F
FPC 16 Exhaust A              OK          51 degrees C / 123 degrees F
FPC 16 Exhaust B              OK          53 degrees C / 127 degrees F
FPC 16 LU 0 TSen              OK          51 degrees C / 123 degrees F
FPC 16 LU 0 Chip              OK          52 degrees C / 125 degrees F
FPC 16 LU 1 TSen              OK          51 degrees C / 123 degrees F
FPC 16 LU 1 Chip              OK          56 degrees C / 132 degrees F
FPC 16 LU 2 TSen              OK          51 degrees C / 123 degrees F
FPC 16 LU 2 Chip              OK          50 degrees C / 122 degrees F
FPC 16 LU 3 TSen              OK          51 degrees C / 123 degrees F
FPC 16 LU 3 Chip              OK          50 degrees C / 122 degrees F
FPC 16 MQ 0 TSen              OK          51 degrees C / 123 degrees F
FPC 16 MQ 0 Chip              OK          50 degrees C / 122 degrees F
FPC 16 MQ 1 TSen              OK          51 degrees C / 123 degrees F
FPC 16 MQ 1 Chip              OK          55 degrees C / 131 degrees F
FPC 16 MQ 2 TSen              OK          51 degrees C / 123 degrees F
FPC 16 MQ 2 Chip              OK          49 degrees C / 120 degrees F
FPC 16 MQ 3 TSen              OK          51 degrees C / 123 degrees F
FPC 16 MQ 3 Chip              OK          52 degrees C / 125 degrees F
FPC 17 Intake                 OK          45 degrees C / 113 degrees F
FPC 17 Exhaust A              OK          52 degrees C / 125 degrees F
FPC 17 Exhaust B              OK          55 degrees C / 131 degrees F
FPC 17 LU 0 TSen              OK          54 degrees C / 129 degrees F
FPC 17 LU 0 Chip              OK          57 degrees C / 134 degrees F
FPC 17 LU 1 TSen              OK          54 degrees C / 129 degrees F
FPC 17 LU 1 Chip              OK          61 degrees C / 141 degrees F
FPC 17 LU 2 TSen              OK          54 degrees C / 129 degrees F
FPC 17 LU 2 Chip              OK          54 degrees C / 129 degrees F
FPC 17 LU 3 TSen              OK          54 degrees C / 129 degrees F
```

```
FPC 17 LU 3 Chip              OK          55 degrees C / 131 degrees F
FPC 17 MQ 0 TSen              OK          53 degrees C / 127 degrees F
FPC 17 MQ 0 Chip              OK          53 degrees C / 127 degrees F
FPC 17 MQ 1 TSen              OK          53 degrees C / 127 degrees F
FPC 17 MQ 1 Chip              OK          57 degrees C / 134 degrees F
FPC 17 MQ 2 TSen              OK          53 degrees C / 127 degrees F
FPC 17 MQ 2 Chip              OK          51 degrees C / 123 degrees F
FPC 17 MQ 3 TSen              OK          53 degrees C / 127 degrees F
FPC 17 MQ 3 Chip              OK          54 degrees C / 129 degrees F
FPC 18 Intake                 OK          46 degrees C / 114 degrees F
FPC 18 Exhaust A              OK          53 degrees C / 127 degrees F
FPC 18 Exhaust B              OK          57 degrees C / 134 degrees F
FPC 18 LU 0 TSen              OK          56 degrees C / 132 degrees F
FPC 18 LU 0 Chip              OK          58 degrees C / 136 degrees F
FPC 18 LU 1 TSen              OK          56 degrees C / 132 degrees F
FPC 18 LU 1 Chip              OK          63 degrees C / 145 degrees F
FPC 18 LU 2 TSen              OK          56 degrees C / 132 degrees F
FPC 18 LU 2 Chip              OK          54 degrees C / 129 degrees F
FPC 18 LU 3 TSen              OK          56 degrees C / 132 degrees F
FPC 18 LU 3 Chip              OK          56 degrees C / 132 degrees F
FPC 18 MQ 0 TSen              OK          54 degrees C / 129 degrees F
FPC 18 MQ 0 Chip              OK          57 degrees C / 134 degrees F
FPC 18 MQ 1 TSen              OK          54 degrees C / 129 degrees F
FPC 18 MQ 1 Chip              OK          62 degrees C / 143 degrees F
FPC 18 MQ 2 TSen              OK          54 degrees C / 129 degrees F
FPC 18 MQ 2 Chip              OK          53 degrees C / 127 degrees F
FPC 18 MQ 3 TSen              OK          54 degrees C / 129 degrees F
FPC 18 MQ 3 Chip              OK          56 degrees C / 132 degrees F
FPC 19 Intake                 OK          49 degrees C / 120 degrees F
FPC 19 Exhaust A              OK          56 degrees C / 132 degrees F
FPC 19 Exhaust B              OK          62 degrees C / 143 degrees F
FPC 19 LU 0 TSen              OK          62 degrees C / 143 degrees F
FPC 19 LU 0 Chip              OK          63 degrees C / 145 degrees F
FPC 19 LU 1 TSen              OK          62 degrees C / 143 degrees F
FPC 19 LU 1 Chip              OK          69 degrees C / 156 degrees F
FPC 19 LU 2 TSen              OK          62 degrees C / 143 degrees F
FPC 19 LU 2 Chip              OK          61 degrees C / 141 degrees F
FPC 19 LU 3 TSen              OK          62 degrees C / 143 degrees F
FPC 19 LU 3 Chip              OK          62 degrees C / 143 degrees F
FPC 19 MQ 0 TSen              OK          58 degrees C / 136 degrees F
FPC 19 MQ 0 Chip              OK          62 degrees C / 143 degrees F
FPC 19 MQ 1 TSen              OK          58 degrees C / 136 degrees F
FPC 19 MQ 1 Chip              OK          64 degrees C / 147 degrees F
FPC 19 MQ 2 TSen              OK          58 degrees C / 136 degrees F
```

```
FPC 19 MQ 2 Chip              OK          59 degrees C / 138 degrees F
FPC 19 MQ 3 TSen              OK          58 degrees C / 136 degrees F
FPC 19 MQ 3 Chip              OK          60 degrees C / 140 degrees F
ADC 0 Intake                  OK          40 degrees C / 104 degrees F
ADC 0 Exhaust                 OK          50 degrees C / 122 degrees F
ADC 0 ADC-XF1                 OK          58 degrees C / 136 degrees F
ADC 0 ADC-XF0                 OK          63 degrees C / 145 degrees F
ADC 1 Intake                  OK          38 degrees C / 100 degrees F
ADC 1 Exhaust                 OK          48 degrees C / 118 degrees F
ADC 1 ADC-XF1                 OK          59 degrees C / 138 degrees F
ADC 1 ADC-XF0                 OK          61 degrees C / 141 degrees F
ADC 2 Intake                  OK          36 degrees C / 96 degrees F
ADC 2 Exhaust                 OK          50 degrees C / 122 degrees F
ADC 2 ADC-XF1                 OK          53 degrees C / 127 degrees F
ADC 2 ADC-XF0                 OK          59 degrees C / 138 degrees F
ADC 3 Intake                  OK          39 degrees C / 102 degrees F
ADC 3 Exhaust                 OK          49 degrees C / 120 degrees F
ADC 3 ADC-XF1                 OK          61 degrees C / 141 degrees F
ADC 3 ADC-XF0                 OK          62 degrees C / 143 degrees F
ADC 4 Intake                  OK          39 degrees C / 102 degrees F
ADC 4 Exhaust                 OK          49 degrees C / 120 degrees F
ADC 4 ADC-XF1                 OK          60 degrees C / 140 degrees F
ADC 4 ADC-XF0                 OK          61 degrees C / 141 degrees F
ADC 5 Intake                  OK          38 degrees C / 100 degrees F
ADC 5 Exhaust                 OK          52 degrees C / 125 degrees F
ADC 5 ADC-XF1                 OK          55 degrees C / 131 degrees F
ADC 5 ADC-XF0                 OK          65 degrees C / 149 degrees F
ADC 6 Intake                  OK          39 degrees C / 102 degrees F
ADC 6 Exhaust                 OK          51 degrees C / 123 degrees F
ADC 6 ADC-XF1                 OK          58 degrees C / 136 degrees F
ADC 6 ADC-XF0                 OK          63 degrees C / 145 degrees F
ADC 7 Intake                  OK          39 degrees C / 102 degrees F
ADC 7 Exhaust                 OK          52 degrees C / 125 degrees F
ADC 7 ADC-XF1                 OK          61 degrees C / 141 degrees F
ADC 7 ADC-XF0                 OK          68 degrees C / 154 degrees F
ADC 8 Intake                  OK          39 degrees C / 102 degrees F
ADC 8 Exhaust                 OK          50 degrees C / 122 degrees F
ADC 8 ADC-XF1                 OK          64 degrees C / 147 degrees F
ADC 8 ADC-XF0                 OK          63 degrees C / 145 degrees F
ADC 9 Intake                  OK          41 degrees C / 105 degrees F
ADC 9 Exhaust                 OK          50 degrees C / 122 degrees F
ADC 9 ADC-XF1                 OK          60 degrees C / 140 degrees F
ADC 9 ADC-XF0                 OK          62 degrees C / 143 degrees F
ADC 10 Intake                 OK          46 degrees C / 114 degrees F
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```
ADC 10 Exhaust                  OK          53 degrees C / 127 degrees F
ADC 10 ADC-XF1                  OK          66 degrees C / 150 degrees F
ADC 10 ADC-XF0                  OK          65 degrees C / 149 degrees F
ADC 11 Intake                   OK          46 degrees C / 114 degrees F
ADC 11 Exhaust                  OK          53 degrees C / 127 degrees F
ADC 11 ADC-XF1                  OK          63 degrees C / 145 degrees F
ADC 11 ADC-XF0                  OK          64 degrees C / 147 degrees F
ADC 12 Intake                   OK          47 degrees C / 116 degrees F
ADC 12 Exhaust                  OK          53 degrees C / 127 degrees F
ADC 12 ADC-XF1                  OK          65 degrees C / 149 degrees F
ADC 12 ADC-XF0                  OK          65 degrees C / 149 degrees F
ADC 13 Intake                   OK          48 degrees C / 118 degrees F
ADC 13 Exhaust                  OK          55 degrees C / 131 degrees F
ADC 13 ADC-XF1                  OK          65 degrees C / 149 degrees F
ADC 13 ADC-XF0                  OK          67 degrees C / 152 degrees F
ADC 14 Intake                   OK          49 degrees C / 120 degrees F
ADC 14 Exhaust                  OK          57 degrees C / 134 degrees F
ADC 14 ADC-XF1                  OK          68 degrees C / 154 degrees F
ADC 14 ADC-XF0                  OK          72 degrees C / 161 degrees F
ADC 15 Intake                   OK          50 degrees C / 122 degrees F
ADC 15 Exhaust                  OK          56 degrees C / 132 degrees F
ADC 15 ADC-XF1                  OK          68 degrees C / 154 degrees F
ADC 15 ADC-XF0                  OK          68 degrees C / 154 degrees F
ADC 16 Intake                   OK          51 degrees C / 123 degrees F
ADC 16 Exhaust                  OK          57 degrees C / 134 degrees F
ADC 16 ADC-XF1                  OK          67 degrees C / 152 degrees F
ADC 16 ADC-XF0                  OK          68 degrees C / 154 degrees F
ADC 17 Intake                   OK          51 degrees C / 123 degrees F
ADC 17 Exhaust                  OK          57 degrees C / 134 degrees F
ADC 17 ADC-XF1                  OK          69 degrees C / 156 degrees F
ADC 17 ADC-XF0                  OK          69 degrees C / 156 degrees F
ADC 18 Intake                   OK          52 degrees C / 125 degrees F
ADC 18 Exhaust                  OK          58 degrees C / 136 degrees F
ADC 18 ADC-XF1                  OK          67 degrees C / 152 degrees F
ADC 18 ADC-XF0                  OK          72 degrees C / 161 degrees F
ADC 19 Intake                   OK          50 degrees C / 122 degrees F
ADC 19 Exhaust                  OK          58 degrees C / 136 degrees F
ADC 19 ADC-XF1                  OK          68 degrees C / 154 degrees F
ADC 19 ADC-XF0                  OK          71 degrees C / 159 degrees F
```

show chassis environment monitored (MX2008 Router)

`user@host>` **show chassis environment monitored**

```
Class Item                          Status     Measurement
Temp  CB 0 Inlet1                   OK         37 degrees C / 98 degrees F
      CB 0 Inlet2                   OK         46 degrees C / 114 degrees F
      CB 0 Inlet3                   OK         44 degrees C / 111 degrees F
      CB 0 Inlet4                   OK         42 degrees C / 107 degrees F
      CB 0 Exhaust1                 OK         30 degrees C / 86 degrees F
      CB 0 Exhaust2                 OK         40 degrees C / 104 degrees F
      CB 0 Exhaust3                 OK         48 degrees C / 118 degrees F
      CB 0 Exhaust4                 OK         46 degrees C / 114 degrees F
      CB 1 Inlet1                   OK         30 degrees C / 86 degrees F
      CB 1 Inlet2                   OK         31 degrees C / 87 degrees F
      CB 1 Inlet3                   OK         29 degrees C / 84 degrees F
      CB 1 Inlet4                   OK         32 degrees C / 89 degrees F
      CB 1 Exhaust1                 OK         30 degrees C / 86 degrees F
      CB 1 Exhaust2                 OK         33 degrees C / 91 degrees F
      CB 1 Exhaust3                 OK         34 degrees C / 93 degrees F
      CB 1 Exhaust4                 OK         35 degrees C / 95 degrees F
      Routing Engine 0 CPU          OK         76 degrees C / 168 degrees F
      Routing Engine 1 CPU          OK         47 degrees C / 116 degrees F
      SFB 0 Inlet2                  OK         44 degrees C / 111 degrees F
      SFB 0 Exhaust1                OK         39 degrees C / 102 degrees F
      SFB 0 Inlet1                  OK         41 degrees C / 105 degrees F
      SFB 0 Exhaust2                OK         45 degrees C / 113 degrees F
      SFB 0 SFB2-PF-local           OK         45 degrees C / 113 degrees F
      SFB 0 SFB2-PF-die             OK         51 degrees C / 123 degrees F
      SFB 1 Inlet2                  OK         30 degrees C / 86 degrees F
      SFB 1 Exhaust1                OK         27 degrees C / 80 degrees F
      SFB 1 Inlet1                  OK         28 degrees C / 82 degrees F
      SFB 1 Exhaust2                OK         31 degrees C / 87 degrees F
      SFB 1 SFB2-PF-local           OK         30 degrees C / 86 degrees F
      SFB 1 SFB2-PF-die             OK         37 degrees C / 98 degrees F
      SFB 2 Inlet2                  OK         28 degrees C / 82 degrees F
      SFB 2 Exhaust1                OK         26 degrees C / 78 degrees F
      SFB 2 Inlet1                  OK         27 degrees C / 80 degrees F
      SFB 2 Exhaust2                OK         28 degrees C / 82 degrees F
      SFB 2 SFB2-PF-local           OK         27 degrees C / 80 degrees F
      SFB 2 SFB2-PF-die             OK         33 degrees C / 91 degrees F
      SFB 3 Inlet2                  OK         28 degrees C / 82 degrees F
      SFB 3 Exhaust1                OK         26 degrees C / 78 degrees F
      SFB 3 Inlet1                  OK         26 degrees C / 78 degrees F
      SFB 3 Exhaust2                OK         28 degrees C / 82 degrees F
      SFB 3 SFB2-PF-local           OK         27 degrees C / 80 degrees F
      SFB 3 SFB2-PF-die             OK         33 degrees C / 91 degrees F
      SFB 4 Inlet2                  OK         28 degrees C / 82 degrees F
```

```
SFB 4 Exhaust1                OK          26 degrees C / 78 degrees F
SFB 4 Inlet1                  OK          26 degrees C / 78 degrees F
SFB 4 Exhaust2                OK          28 degrees C / 82 degrees F
SFB 4 SFB2-PF-local           OK          27 degrees C / 80 degrees F
SFB 4 SFB2-PF-die             OK          32 degrees C / 89 degrees F
SFB 5 Inlet2                  OK          29 degrees C / 84 degrees F
SFB 5 Exhaust1                OK          27 degrees C / 80 degrees F
SFB 5 Inlet1                  OK          27 degrees C / 80 degrees F
SFB 5 Exhaust2                OK          29 degrees C / 84 degrees F
SFB 5 SFB2-PF-local           OK          28 degrees C / 82 degrees F
SFB 5 SFB2-PF-die             OK          34 degrees C / 93 degrees F
SFB 6 Inlet2                  OK          34 degrees C / 93 degrees F
SFB 6 Exhaust1                OK          32 degrees C / 89 degrees F
SFB 6 Inlet1                  OK          31 degrees C / 87 degrees F
SFB 6 Exhaust2                OK          34 degrees C / 93 degrees F
SFB 6 SFB2-PF-local           OK          34 degrees C / 93 degrees F
SFB 6 SFB2-PF-die             OK          40 degrees C / 104 degrees F
SFB 7 Inlet2                  OK          29 degrees C / 84 degrees F
SFB 7 Exhaust1                OK          28 degrees C / 82 degrees F
SFB 7 Inlet1                  OK          29 degrees C / 84 degrees F
SFB 7 Exhaust2                OK          29 degrees C / 84 degrees F
SFB 7 SFB2-PF-local           OK          28 degrees C / 82 degrees F
SFB 7 SFB2-PF-die             OK          33 degrees C / 91 degrees F
FPC 0 Intake                  OK          29 degrees C / 84 degrees F
FPC 0 Exhaust A               OK          43 degrees C / 109 degrees F
FPC 0 Exhaust B               OK          42 degrees C / 107 degrees F
FPC 0 XL 0 TSen               OK          39 degrees C / 102 degrees F
FPC 0 XL 0 Chip               OK          53 degrees C / 127 degrees F
FPC 0 XL 0 XR2 0 TSen         OK          39 degrees C / 102 degrees F
FPC 0 XL 0 XR2 0 Chip         OK          60 degrees C / 140 degrees F
FPC 0 XL 0 XR2 1 TSen         OK          39 degrees C / 102 degrees F
FPC 0 XL 0 XR2 1 Chip         OK          60 degrees C / 140 degrees F
FPC 0 XL 1 TSen               OK          30 degrees C / 86 degrees F
FPC 0 XL 1 Chip               OK          43 degrees C / 109 degrees F
FPC 0 XL 1 XR2 0 TSen         OK          30 degrees C / 86 degrees F
FPC 0 XL 1 XR2 0 Chip         OK          50 degrees C / 122 degrees F
FPC 0 XL 1 XR2 1 TSen         OK          30 degrees C / 86 degrees F
FPC 0 XL 1 XR2 1 Chip         OK          51 degrees C / 123 degrees F
FPC 0 XM 0 TSen               OK          42 degrees C / 107 degrees F
FPC 0 XM 0 Chip               OK          50 degrees C / 122 degrees F
FPC 0 XM 1 TSen               OK          42 degrees C / 107 degrees F
FPC 0 XM 1 Chip               OK          42 degrees C / 107 degrees F
FPC 0 XM 2 TSen               OK          42 degrees C / 107 degrees F
FPC 0 XM 2 Chip               OK          42 degrees C / 107 degrees F
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```
FPC 0 XM 3 TSen                 OK          42 degrees C / 107 degrees F
FPC 0 XM 3 Chip                 OK          40 degrees C / 104 degrees F
FPC 0 PCIe Switch TSen          OK          42 degrees C / 107 degrees F
FPC 0 PCIe Switch Chip          OK          22 degrees C / 71 degrees F
FPC 1 Intake                    OK          29 degrees C / 84 degrees F
FPC 1 Exhaust A                 OK          52 degrees C / 125 degrees F
FPC 1 Exhaust B                 OK          44 degrees C / 111 degrees F
FPC 1 EA0 TSen                  OK          55 degrees C / 131 degrees F
FPC 1 EA0 Chip                  OK          48 degrees C / 118 degrees F
FPC 1 EA0_XR0 TSen              OK          55 degrees C / 131 degrees F
FPC 1 EA0_XR0 Chip              OK          57 degrees C / 134 degrees F
FPC 1 EA0_XR1 TSen              OK          55 degrees C / 131 degrees F
FPC 1 EA0_XR1 Chip              OK          54 degrees C / 129 degrees F
FPC 1 EA1 TSen                  OK          55 degrees C / 131 degrees F
FPC 1 EA1 Chip                  OK          51 degrees C / 123 degrees F
FPC 1 EA1_XR0 TSen              OK          55 degrees C / 131 degrees F
FPC 1 EA1_XR0 Chip              OK          58 degrees C / 136 degrees F
FPC 1 EA1_XR1 TSen              OK          55 degrees C / 131 degrees F
FPC 1 EA1_XR1 Chip              OK          59 degrees C / 138 degrees F
FPC 1 PEX TSen                  OK          55 degrees C / 131 degrees F
FPC 1 PEX Chip                  OK          39 degrees C / 102 degrees F
FPC 1 EA2 TSen                  OK          43 degrees C / 109 degrees F
FPC 1 EA2 Chip                  OK          39 degrees C / 102 degrees F
FPC 1 EA2_XR0 TSen              OK          43 degrees C / 109 degrees F
FPC 1 EA2_XR0 Chip              OK          46 degrees C / 114 degrees F
FPC 1 EA2_XR1 TSen              OK          43 degrees C / 109 degrees F
FPC 1 EA2_XR1 Chip              OK          43 degrees C / 109 degrees F
FPC 1 EA3 TSen                  OK          43 degrees C / 109 degrees F
FPC 1 EA3 Chip                  OK          40 degrees C / 104 degrees F
FPC 1 EA3_XR0 TSen              OK          43 degrees C / 109 degrees F
FPC 1 EA3_XR0 Chip              OK          51 degrees C / 123 degrees F
FPC 1 EA3_XR1 TSen              OK          43 degrees C / 109 degrees F
FPC 1 EA3_XR1 Chip              OK          47 degrees C / 116 degrees F
FPC 1 EA0_HMC0 Logic die        OK          61 degrees C / 141 degrees F
FPC 1 EA0_HMC0 DRAM botm        OK          58 degrees C / 136 degrees F
FPC 1 EA0_HMC1 Logic die        OK          62 degrees C / 143 degrees F
FPC 1 EA0_HMC1 DRAM botm        OK          59 degrees C / 138 degrees F
FPC 1 EA0_HMC2 Logic die        OK          59 degrees C / 138 degrees F
FPC 1 EA0_HMC2 DRAM botm        OK          56 degrees C / 132 degrees F
FPC 1 EA1_HMC0 Logic die        OK          66 degrees C / 150 degrees F
FPC 1 EA1_HMC0 DRAM botm        OK          63 degrees C / 145 degrees F
FPC 1 EA1_HMC1 Logic die        OK          65 degrees C / 149 degrees F
FPC 1 EA1_HMC1 DRAM botm        OK          62 degrees C / 143 degrees F
FPC 1 EA1_HMC2 Logic die        OK          63 degrees C / 145 degrees F
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```
      FPC 1 EA1_HMC2 DRAM botm       OK          60 degrees C / 140 degrees F
      FPC 1 EA2_HMC0 Logic die       OK          51 degrees C / 123 degrees F
      FPC 1 EA2_HMC0 DRAM botm       OK          48 degrees C / 118 degrees F
      FPC 1 EA2_HMC1 Logic die       OK          55 degrees C / 131 degrees F
      FPC 1 EA2_HMC1 DRAM botm       OK          52 degrees C / 125 degrees F
      FPC 1 EA2_HMC2 Logic die       OK          52 degrees C / 125 degrees F
      FPC 1 EA2_HMC2 DRAM botm       OK          49 degrees C / 120 degrees F
      FPC 1 EA3_HMC0 Logic die       OK          51 degrees C / 123 degrees F
      FPC 1 EA3_HMC0 DRAM botm       OK          48 degrees C / 118 degrees F
      FPC 1 EA3_HMC1 Logic die       OK          51 degrees C / 123 degrees F
      FPC 1 EA3_HMC1 DRAM botm       OK          48 degrees C / 118 degrees F
      FPC 1 EA3_HMC2 Logic die       OK          52 degrees C / 125 degrees F
      FPC 1 EA3_HMC2 DRAM botm       OK          49 degrees C / 120 degrees F
      FPC 7 Intake                   OK          31 degrees C / 87 degrees F
      FPC 7 Exhaust A                OK          46 degrees C / 114 degrees F
      FPC 7 Exhaust B                OK          38 degrees C / 100 degrees F
      FPC 7 QX 0 TSen                OK          49 degrees C / 120 degrees F
      FPC 7 QX 0 Chip                OK          52 degrees C / 125 degrees F
      FPC 7 LU 0 TCAM TSen           OK          49 degrees C / 120 degrees F
      FPC 7 LU 0 TCAM Chip           OK          52 degrees C / 125 degrees F
      FPC 7 LU 0 TSen                OK          49 degrees C / 120 degrees F
      FPC 7 LU 0 Chip                OK          51 degrees C / 123 degrees F
      FPC 7 MQ 0 TSen                OK          49 degrees C / 120 degrees F
      FPC 7 MQ 0 Chip                OK          55 degrees C / 131 degrees F
      FPC 7 QX 1 TSen                OK          41 degrees C / 105 degrees F
      FPC 7 QX 1 Chip                OK          42 degrees C / 107 degrees F
      FPC 7 LU 1 TCAM TSen           OK          41 degrees C / 105 degrees F
      FPC 7 LU 1 TCAM Chip           OK          43 degrees C / 109 degrees F
      FPC 7 LU 1 TSen                OK          41 degrees C / 105 degrees F
      FPC 7 LU 1 Chip                OK          46 degrees C / 114 degrees F
      FPC 7 MQ 1 TSen                OK          41 degrees C / 105 degrees F
      FPC 7 MQ 1 Chip                OK          47 degrees C / 116 degrees F
      ADC 7 Intake                   OK          32 degrees C / 89 degrees F
      ADC 7 Exhaust                  OK          39 degrees C / 102 degrees F
      ADC 7 ADC-XF1                  OK          46 degrees C / 114 degrees F
      ADC 7 ADC-XF0                  OK          54 degrees C / 129 degrees F
```

show chassis environment monitored (MX10008 Router)

`user@host>` **show chassis environment monitored**

```
Class Item                           Status     Measurement
      Routing Engine 0 CPU
      Routing Engine 1 CPU
```

```
Temp  CB 0 Intake A Temp Sensor      OK         24 degrees C / 75 degrees F
      CB 0 Intake B Temp Sensor      OK         24 degrees C / 75 degrees F
      CB 0 Exhaust A Temp Sensor     OK         28 degrees C / 82 degrees F
      CB 0 Exhaust B Temp Sensor     OK         30 degrees C / 86 degrees F
      CB 0 Middle Temp Sensor        OK         28 degrees C / 82 degrees F
      CB 1 Intake A Temp Sensor      OK         24 degrees C / 75 degrees F
      CB 1 Intake B Temp Sensor      OK         23 degrees C / 73 degrees F
      CB 1 Exhaust A Temp Sensor     OK         27 degrees C / 80 degrees F
      CB 1 Exhaust B Temp Sensor     OK         30 degrees C / 86 degrees F
      CB 1 Middle Temp Sensor        OK         28 degrees C / 82 degrees F
      FPC 0 Intake-A Temp Sensor     OK         32 degrees C / 89 degrees F
      FPC 0 Exhaust-A Temp Sensor    OK         44 degrees C / 111 degrees F
      FPC 0 Exhaust-B Temp Sensor    OK         49 degrees C / 120 degrees F
      FPC 0 EA0 Temp Sensor          OK         67 degrees C / 152 degrees F
      FPC 0 EA0_XR0 Temp Sensor      OK         69 degrees C / 156 degrees F
      FPC 0 EA0_XR1 Temp Sensor      OK         73 degrees C / 163 degrees F
      FPC 0 EA1 Temp Sensor          OK         61 degrees C / 141 degrees F
      FPC 0 EA1_XR0 Temp Sensor      OK         65 degrees C / 149 degrees F
      FPC 0 EA1_XR1 Temp Sensor      OK         63 degrees C / 145 degrees F
      FPC 0 EA2 Temp Sensor          OK         69 degrees C / 156 degrees F
      FPC 0 EA2_XR0 Temp Sensor      OK         73 degrees C / 163 degrees F
      FPC 0 EA2_XR1 Temp Sensor      OK         72 degrees C / 161 degrees F
      FPC 0 EA3 Temp Sensor          OK         64 degrees C / 147 degrees F
      FPC 0 EA3_XR0 Temp Sensor      OK         66 degrees C / 150 degrees F
      FPC 0 EA3_XR1 Temp Sensor      OK         65 degrees C / 149 degrees F
      FPC 0 EA4 Temp Sensor          OK         71 degrees C / 159 degrees F
      FPC 0 EA4_XR0 Temp Sensor      OK         72 degrees C / 161 degrees F
      FPC 0 EA4_XR1 Temp Sensor      OK         71 degrees C / 159 degrees F
      FPC 0 EA5 Temp Sensor          OK         58 degrees C / 136 degrees F
      FPC 0 EA5_XR0 Temp Sensor      OK         62 degrees C / 143 degrees F
      FPC 0 EA5_XR1 Temp Sensor      OK         63 degrees C / 145 degrees F
      FPC 0 EA0_HMC0 Logic die       OK         75 degrees C / 167 degrees F
      FPC 0 EA0_HMC0 DRAM botm       OK         72 degrees C / 161 degrees F
      FPC 0 EA0_HMC1 Logic die       OK         76 degrees C / 168 degrees F
      FPC 0 EA0_HMC1 DRAM botm       OK         73 degrees C / 163 degrees F
      FPC 0 EA0_HMC2 Logic die       OK         77 degrees C / 170 degrees F
      FPC 0 EA0_HMC2 DRAM botm       OK         74 degrees C / 165 degrees F
      FPC 0 EA1_HMC0 Logic die       OK         73 degrees C / 163 degrees F
      FPC 0 EA1_HMC0 DRAM botm       OK         70 degrees C / 158 degrees F
      FPC 0 EA1_HMC1 Logic die       OK         73 degrees C / 163 degrees F
      FPC 0 EA1_HMC1 DRAM botm       OK         70 degrees C / 158 degrees F
      FPC 0 EA1_HMC2 Logic die       OK         72 degrees C / 161 degrees F
      FPC 0 EA1_HMC2 DRAM botm       OK         69 degrees C / 156 degrees F
      FPC 0 EA2_HMC0 Logic die       OK         80 degrees C / 176 degrees F
```

```
FPC 0 EA2_HMC0 DRAM botm       OK          77 degrees C / 170 degrees F
FPC 0 EA2_HMC1 Logic die       OK          81 degrees C / 177 degrees F
FPC 0 EA2_HMC1 DRAM botm       OK          78 degrees C / 172 degrees F
FPC 0 EA2_HMC2 Logic die       OK          80 degrees C / 176 degrees F
FPC 0 EA2_HMC2 DRAM botm       OK          77 degrees C / 170 degrees F
FPC 0 EA3_HMC0 Logic die       OK          77 degrees C / 170 degrees F
FPC 0 EA3_HMC0 DRAM botm       OK          74 degrees C / 165 degrees F
FPC 0 EA3_HMC1 Logic die       OK          78 degrees C / 172 degrees F
FPC 0 EA3_HMC1 DRAM botm       OK          75 degrees C / 167 degrees F
FPC 0 EA3_HMC2 Logic die       OK          77 degrees C / 170 degrees F
FPC 0 EA3_HMC2 DRAM botm       OK          74 degrees C / 165 degrees F
FPC 0 EA4_HMC0 Logic die       OK          80 degrees C / 176 degrees F
FPC 0 EA4_HMC0 DRAM botm       OK          77 degrees C / 170 degrees F
FPC 0 EA4_HMC1 Logic die       OK          81 degrees C / 177 degrees F
FPC 0 EA4_HMC1 DRAM botm       OK          78 degrees C / 172 degrees F
FPC 0 EA4_HMC2 Logic die       OK          80 degrees C / 176 degrees F
FPC 0 EA4_HMC2 DRAM botm       OK          77 degrees C / 170 degrees F
FPC 0 EA5_HMC0 Logic die       OK          69 degrees C / 156 degrees F
FPC 0 EA5_HMC0 DRAM botm       OK          66 degrees C / 150 degrees F
FPC 0 EA5_HMC1 Logic die       OK          68 degrees C / 154 degrees F
FPC 0 EA5_HMC1 DRAM botm       OK          65 degrees C / 149 degrees F
FPC 0 EA5_HMC2 Logic die       OK          68 degrees C / 154 degrees F
FPC 0 EA5_HMC2 DRAM botm       OK          65 degrees C / 149 degrees F
FPC 2 Intake-A Temp Sensor     OK          33 degrees C / 91 degrees F
FPC 2 Exhaust-A Temp Sensor    OK          52 degrees C / 125 degrees F
FPC 2 Exhaust-B Temp Sensor    OK          50 degrees C / 122 degrees F
FPC 2 EA0 Temp Sensor          OK          71 degrees C / 159 degrees F
FPC 2 EA0_XR0 Temp Sensor      OK          75 degrees C / 167 degrees F
FPC 2 EA0_XR1 Temp Sensor      OK          79 degrees C / 174 degrees F
FPC 2 EA1 Temp Sensor          OK          64 degrees C / 147 degrees F
FPC 2 EA1_XR0 Temp Sensor      OK          68 degrees C / 154 degrees F
FPC 2 EA1_XR1 Temp Sensor      OK          66 degrees C / 150 degrees F
FPC 2 EA2 Temp Sensor          OK          75 degrees C / 167 degrees F
FPC 2 EA2_XR0 Temp Sensor      OK          81 degrees C / 177 degrees F
FPC 2 EA2_XR1 Temp Sensor      OK          81 degrees C / 177 degrees F
FPC 2 EA3 Temp Sensor          OK          67 degrees C / 152 degrees F
FPC 2 EA3_XR0 Temp Sensor      OK          69 degrees C / 156 degrees F
FPC 2 EA3_XR1 Temp Sensor      OK          69 degrees C / 156 degrees F
FPC 2 EA4 Temp Sensor          OK          75 degrees C / 167 degrees F
FPC 2 EA4_XR0 Temp Sensor      OK          76 degrees C / 168 degrees F
FPC 2 EA4_XR1 Temp Sensor      OK          75 degrees C / 167 degrees F
FPC 2 EA5 Temp Sensor          OK          60 degrees C / 140 degrees F
FPC 2 EA5_XR0 Temp Sensor      OK          64 degrees C / 147 degrees F
FPC 2 EA5_XR1 Temp Sensor      OK          65 degrees C / 149 degrees F
```

```
FPC 2 EA0_HMC0 Logic die       OK         84 degrees C / 183 degrees F
FPC 2 EA0_HMC0 DRAM botm       OK         81 degrees C / 177 degrees F
FPC 2 EA0_HMC1 Logic die       OK         85 degrees C / 185 degrees F
FPC 2 EA0_HMC1 DRAM botm       OK         82 degrees C / 179 degrees F
FPC 2 EA0_HMC2 Logic die       OK         83 degrees C / 181 degrees F
FPC 2 EA0_HMC2 DRAM botm       OK         80 degrees C / 176 degrees F
FPC 2 EA1_HMC0 Logic die       OK         76 degrees C / 168 degrees F
FPC 2 EA1_HMC0 DRAM botm       OK         73 degrees C / 163 degrees F
FPC 2 EA1_HMC1 Logic die       OK         77 degrees C / 170 degrees F
FPC 2 EA1_HMC1 DRAM botm       OK         74 degrees C / 165 degrees F
FPC 2 EA1_HMC2 Logic die       OK         76 degrees C / 168 degrees F
FPC 2 EA1_HMC2 DRAM botm       OK         73 degrees C / 163 degrees F
FPC 2 EA2_HMC0 Logic die       OK         87 degrees C / 188 degrees F
FPC 2 EA2_HMC0 DRAM botm       OK         84 degrees C / 183 degrees F
FPC 2 EA2_HMC1 Logic die       OK         88 degrees C / 190 degrees F
FPC 2 EA2_HMC1 DRAM botm       OK         85 degrees C / 185 degrees F
FPC 2 EA2_HMC2 Logic die       OK         88 degrees C / 190 degrees F
FPC 2 EA2_HMC2 DRAM botm       OK         85 degrees C / 185 degrees F
FPC 2 EA3_HMC0 Logic die       OK         81 degrees C / 177 degrees F
FPC 2 EA3_HMC0 DRAM botm       OK         78 degrees C / 172 degrees F
FPC 2 EA3_HMC1 Logic die       OK         81 degrees C / 177 degrees F
FPC 2 EA3_HMC1 DRAM botm       OK         78 degrees C / 172 degrees F
FPC 2 EA3_HMC2 Logic die       OK         81 degrees C / 177 degrees F
FPC 2 EA3_HMC2 DRAM botm       OK         78 degrees C / 172 degrees F
FPC 2 EA4_HMC0 Logic die       OK         88 degrees C / 190 degrees F
FPC 2 EA4_HMC0 DRAM botm       OK         85 degrees C / 185 degrees F
FPC 2 EA4_HMC1 Logic die       OK         90 degrees C / 194 degrees F
FPC 2 EA4_HMC1 DRAM botm       OK         87 degrees C / 188 degrees F
FPC 2 EA4_HMC2 Logic die       OK         81 degrees C / 177 degrees F
FPC 2 EA4_HMC2 DRAM botm       OK         78 degrees C / 172 degrees F
FPC 2 EA5_HMC0 Logic die       OK         72 degrees C / 161 degrees F
FPC 2 EA5_HMC0 DRAM botm       OK         69 degrees C / 156 degrees F
FPC 2 EA5_HMC1 Logic die       OK         69 degrees C / 156 degrees F
FPC 2 EA5_HMC1 DRAM botm       OK         66 degrees C / 150 degrees F
FPC 2 EA5_HMC2 Logic die       OK         73 degrees C / 163 degrees F
FPC 2 EA5_HMC2 DRAM botm       OK         70 degrees C / 158 degrees F
FPC 3 Intake-A Temp Sensor     OK         30 degrees C / 86 degrees F
FPC 3 Exhaust-A Temp Sensor    OK         48 degrees C / 118 degrees F
FPC 3 Exhaust-B Temp Sensor    OK         45 degrees C / 113 degrees F
FPC 3 EA0 Temp Sensor          OK         60 degrees C / 140 degrees F
FPC 3 EA0_XR0 Temp Sensor      OK         65 degrees C / 149 degrees F
FPC 3 EA0_XR1 Temp Sensor      OK         67 degrees C / 152 degrees F
FPC 3 EA1 Temp Sensor          OK         54 degrees C / 129 degrees F
FPC 3 EA1_XR0 Temp Sensor      OK         60 degrees C / 140 degrees F
```

```
FPC 3 EA1_XR1 Temp Sensor      OK         59 degrees C / 138 degrees F
FPC 3 EA2 Temp Sensor          OK         62 degrees C / 143 degrees F
FPC 3 EA2_XR0 Temp Sensor      OK         67 degrees C / 152 degrees F
FPC 3 EA2_XR1 Temp Sensor      OK         67 degrees C / 152 degrees F
FPC 3 EA3 Temp Sensor          OK         55 degrees C / 131 degrees F
FPC 3 EA3_XR0 Temp Sensor      OK         57 degrees C / 134 degrees F
FPC 3 EA3_XR1 Temp Sensor      OK         57 degrees C / 134 degrees F
FPC 3 EA4 Temp Sensor          OK         68 degrees C / 154 degrees F
FPC 3 EA4_XR0 Temp Sensor      OK         71 degrees C / 159 degrees F
FPC 3 EA4_XR1 Temp Sensor      OK         70 degrees C / 158 degrees F
FPC 3 EA5 Temp Sensor          OK         55 degrees C / 131 degrees F
FPC 3 EA5_XR0 Temp Sensor      OK         58 degrees C / 136 degrees F
FPC 3 EA5_XR1 Temp Sensor      OK         59 degrees C / 138 degrees F
FPC 3 EA0_HMC0 Logic die       OK         69 degrees C / 156 degrees F
FPC 3 EA0_HMC0 DRAM botm       OK         66 degrees C / 150 degrees F
FPC 3 EA0_HMC1 Logic die       OK         70 degrees C / 158 degrees F
FPC 3 EA0_HMC1 DRAM botm       OK         67 degrees C / 152 degrees F
FPC 3 EA0_HMC2 Logic die       OK         70 degrees C / 158 degrees F
FPC 3 EA0_HMC2 DRAM botm       OK         67 degrees C / 152 degrees F
FPC 3 EA1_HMC0 Logic die       OK         68 degrees C / 154 degrees F
FPC 3 EA1_HMC0 DRAM botm       OK         65 degrees C / 149 degrees F
FPC 3 EA1_HMC1 Logic die       OK         65 degrees C / 149 degrees F
FPC 3 EA1_HMC1 DRAM botm       OK         62 degrees C / 143 degrees F
FPC 3 EA1_HMC2 Logic die       OK         64 degrees C / 147 degrees F
FPC 3 EA1_HMC2 DRAM botm       OK         61 degrees C / 141 degrees F
FPC 3 EA2_HMC0 Logic die       OK         74 degrees C / 165 degrees F
FPC 3 EA2_HMC0 DRAM botm       OK         71 degrees C / 159 degrees F
FPC 3 EA2_HMC1 Logic die       OK         76 degrees C / 168 degrees F
FPC 3 EA2_HMC1 DRAM botm       OK         73 degrees C / 163 degrees F
FPC 3 EA2_HMC2 Logic die       OK         74 degrees C / 165 degrees F
FPC 3 EA2_HMC2 DRAM botm       OK         71 degrees C / 159 degrees F
FPC 3 EA3_HMC0 Logic die       OK         70 degrees C / 158 degrees F
FPC 3 EA3_HMC0 DRAM botm       OK         67 degrees C / 152 degrees F
FPC 3 EA3_HMC1 Logic die       OK         68 degrees C / 154 degrees F
FPC 3 EA3_HMC1 DRAM botm       OK         65 degrees C / 149 degrees F
FPC 3 EA3_HMC2 Logic die       OK         68 degrees C / 154 degrees F
FPC 3 EA3_HMC2 DRAM botm       OK         65 degrees C / 149 degrees F
FPC 3 EA4_HMC0 Logic die       OK         82 degrees C / 179 degrees F
FPC 3 EA4_HMC0 DRAM botm       OK         79 degrees C / 174 degrees F
FPC 3 EA4_HMC1 Logic die       OK         80 degrees C / 176 degrees F
FPC 3 EA4_HMC1 DRAM botm       OK         77 degrees C / 170 degrees F
FPC 3 EA4_HMC2 Logic die       OK         81 degrees C / 177 degrees F
FPC 3 EA4_HMC2 DRAM botm       OK         78 degrees C / 172 degrees F
FPC 3 EA5_HMC0 Logic die       OK         69 degrees C / 156 degrees F
```

```
      FPC 3 EA5_HMC0 DRAM botm      OK         66 degrees C / 150 degrees F
      FPC 3 EA5_HMC1 Logic die      OK         70 degrees C / 158 degrees F
      FPC 3 EA5_HMC1 DRAM botm      OK         67 degrees C / 152 degrees F
      FPC 3 EA5_HMC2 Logic die      OK         69 degrees C / 156 degrees F
      FPC 3 EA5_HMC2 DRAM botm      OK         66 degrees C / 150 degrees F
Power PEM 0                         OK         29 degrees C / 84 degrees F
      PEM 1                         OK         27 degrees C / 80 degrees F
      PEM 2                         OK         30 degrees C / 86 degrees F
      PEM 3                         Check
      PEM 4                         Check
      PEM 5                         Check
Fans  Fan Tray 0 Fan 0              OK         Spinning at normal speed
      Fan Tray 0 Fan 1              OK         Spinning at normal speed
      Fan Tray 0 Fan 2              OK         Spinning at normal speed
      Fan Tray 0 Fan 3              OK         Spinning at normal speed
      Fan Tray 0 Fan 4              Failed
      Fan Tray 0 Fan 5              Failed
      Fan Tray 0 Fan 6              OK         Spinning at normal speed
      Fan Tray 0 Fan 7              OK         Spinning at normal speed
      Fan Tray 0 Fan 8              OK         Spinning at normal speed
      Fan Tray 0 Fan 9              OK         Spinning at normal speed
      Fan Tray 0 Fan 10             OK         Spinning at normal speed
      Fan Tray 1 Fan 0              OK         Spinning at normal speed
      Fan Tray 1 Fan 1              OK         Spinning at normal speed
      Fan Tray 1 Fan 2              OK         Spinning at normal speed
      Fan Tray 1 Fan 3              OK         Spinning at normal speed
      Fan Tray 1 Fan 4              OK         Spinning at normal speed
      Fan Tray 1 Fan 5              OK         Spinning at normal speed
      Fan Tray 1 Fan 6              OK         Spinning at normal speed
      Fan Tray 1 Fan 7              OK         Spinning at normal speed
      Fan Tray 1 Fan 8              OK         Spinning at normal speed
      Fan Tray 1 Fan 9              OK         Spinning at normal speed
      Fan Tray 1 Fan 10             OK         Spinning at normal speed
      SFB 0 Intake-A                OK         33 degrees C / 91 degrees F
      SFB 0 Intake-B                OK         22 degrees C / 71 degrees F
      SFB 0 Exhaust-A               OK         27 degrees C / 80 degrees F
      SFB 0 Exhaust-B               OK         32 degrees C / 89 degrees F
      SFB 0 PF0                     OK         40 degrees C / 104 degrees F
      SFB 0 PF1                     OK         29 degrees C / 84 degrees F
      SFB 1 Intake-A                OK         43 degrees C / 109 degrees F
      SFB 1 Intake-B                OK         21 degrees C / 69 degrees F
      SFB 1 Exhaust-A               OK         25 degrees C / 77 degrees F
      SFB 1 Exhaust-B               OK         44 degrees C / 111 degrees F
      SFB 1 PF0                     OK         50 degrees C / 122 degrees F
```

```
SFB 1 PF1                      OK          29 degrees C / 84 degrees F
SFB 2 Intake-A                 OK          39 degrees C / 102 degrees F
SFB 2 Intake-B                 OK          21 degrees C / 69 degrees F
SFB 2 Exhaust-A                OK          25 degrees C / 77 degrees F
SFB 2 Exhaust-B                OK          38 degrees C / 100 degrees F
SFB 2 PF0                      OK          45 degrees C / 113 degrees F
SFB 2 PF1                      OK          30 degrees C / 86 degrees F
SFB 3 Intake-A                 OK          37 degrees C / 98 degrees F
SFB 3 Intake-B                 OK          21 degrees C / 69 degrees F
SFB 3 Exhaust-A                OK          26 degrees C / 78 degrees F
SFB 3 Exhaust-B                OK          35 degrees C / 95 degrees F
SFB 3 PF0                      OK          42 degrees C / 107 degrees F
SFB 3 PF1                      OK          30 degrees C / 86 degrees F
SFB 4 Intake-A                 OK          31 degrees C / 87 degrees F
SFB 4 Intake-B                 OK          20 degrees C / 68 degrees F
SFB 4 Exhaust-A                OK          25 degrees C / 77 degrees F
SFB 4 Exhaust-B                OK          32 degrees C / 89 degrees F
SFB 4 PF0                      OK          41 degrees C / 105 degrees F
SFB 4 PF1                      OK          30 degrees C / 86 degrees F
SFB 5 Intake-A                 OK          30 degrees C / 86 degrees F
SFB 5 Intake-B                 OK          21 degrees C / 69 degrees F
SFB 5 Exhaust-A                OK          26 degrees C / 78 degrees F
SFB 5 Exhaust-B                OK          30 degrees C / 86 degrees F
SFB 5 PF0                      OK          35 degrees C / 95 degrees F
SFB 5 PF1                      OK          34 degrees C / 93 degrees F
```

show chassis environment mcs

Syntax

```
show chassis environment mcs
<slot>
```

Release Information
Command introduced before Junos OS Release 7.4.

Description
(M40e and M160 routers only) Display environmental information about the Miscellaneous Control Subsystems (MCSs).

Options
none—Display environmental information about both MCSs.

slot —(Optional) Display environmental information about an individual MCS. Replace ***slot*** with **0** or **1**

Required Privilege Level
view

RELATED DOCUMENTATION

request chassis mcs | 635

List of Sample Output
show chassis environment mcs (M40e Router) on page 1051
show chassis environment mcs (M160 Router) on page 1052

Output Fields
Table 46 on page 1051 lists the output fields for the **show chassis environment mcs** command. Output fields are listed in the approximate order in which they appear.

Table 46: show chassis environment mcs Output Fields

Field Name	Field Description
State	Status of the MCS: • **Present**—MCS is detected by the chassis daemon but is either not supported by the current version of Junos or MCS is coming up but not yet online. • **Online**—MCS is online and running. • **Offline**—MCS is powered down. • **Empty**—No MCS is present. • **Master**—MCS is online, operating as master. • **Standby**—MCS is online, operating as standby.
Temperature	Temperature of the air flowing past the MCS.
Power	Information about the voltage supplied to the MCS. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
BUS Revision	Revision level of the generic bus device.
FPGA Revision	Revision level of the field-programmable gate array (FPGA) revision.

Sample Output

show chassis environment mcs (M40e Router)

`user@host>` **show chassis environment mcs**

```
MCS 0 status:
  State                          Online Master
  Temperature                 45 degrees C / 113 degrees F
  Power:
    3.3 V                    3283 mV
    5.0 V                    5013 mV
    12.0 V                  11721 mV
    5.0 V bias               5025 mV
    8.0 V bias               8229 mV
  BUS Revision                 12
  FPGA Revision                13
MCS 1 status:
  State                          Online Standby
```

```
  Temperature                 42 degrees C / 107 degrees F
  Power:
    3.3 V                   3296 mV
    5.0 V                   4971 mV
    12.0 V                 11814 mV
    5.0 V bias              4976 mV
    8.0 V bias              8241 mV
  BUS Revision                12
  FPGA Revision               13
```

show chassis environment mcs (M160 Router)

`user@host>` **show chassis environment mcs**

```
MCS 0 status:
  State                         Online Master
  Temperature                 50 degrees C / 122 degrees F
  Power:
    3.3 V                   3306 mV
    5.0 V                   4993 mV
    12.0 V                 11799 mV
    5.0 V bias              4993 mV
    8.0 V bias              8288 mV
  BUS Revision                12
  FPGA Revision               13
```

show chassis environment pcg

Syntax

```
show chassis environment pcg
<slot>
```

Release Information
Command introduced before Junos OS Release 7.4.

Description
(M40e and M160 routers only) Display environmental information about the Packet Forwarding Engine clock generators (PCGs).

Options
none—Display environmental information about both PCGs.

slot—(Optional) Display environmental information about an individual PCG. Replace ***slot*** with 0 or 1.

Required Privilege Level
view

RELATED DOCUMENTATION

request chassis pcg | 641

List of Sample Output
show chassis environment pcg (M40e Router) on page 1054
show chassis environment pcg (M160 Router) on page 1055

Output Fields
Table 47 on page 1053 lists the output fields for the **show chassis environment pcg** command. Output fields are listed in the approximate order in which they appear.

Table 47: show chassis environment pcg Output Fields

Field Name	Field Description
PCG slot status	Slot number: **0** or **1**.

Table 47: show chassis environment pcg Output Fields *(continued)*

Field Name	Field Description
State	Status of PCG: • **Present**—PCG is detected by the chassis process but is either not supported by the current version of Junos OS or PCG is coming up but is not yet online. • **Online**—PCG is powered down. If **Online**, it can be the **Master clock** or the **Standby clock**. • **Offline**—PCG is powered down. • **Empty**—No PCG is present.
Temperature	Temperature of the air flowing past the PCG.
Frequency	Frequency setting and measurement for the PCG.
Power	Information about the voltage supplied to the PCG. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
BUS Revision	Revision level of the generic bus device.

Sample Output

show chassis environment pcg (M40e Router)

`user@host>` **show chassis environment pcg**

```
PCG 0 status:
  State                          Online -  Master clock
  Temperature                 44 degrees C / 111 degrees F
  Frequency:
   Setting               125.00 MHz
   Measurement           124.95 MHz
  Power:
    3.3 V                   3266 mV
    5.0 V bias              4964 mV
    8.0 V bias              8112 mV
  BUS Revision                12
PCG 1 status:
  State                          Online - Standby
```

```
  Temperature                47 degrees C / 116 degrees F
  Frequency:
   Setting               125.00 MHz
   Measurement           124.96 MHz
  Power:
    3.3 V                   3271 mV
    5.0 V bias              4979 mV
    8.0 V bias              8117 mV
  BUS Revision                12
```

show chassis environment pcg (M160 Router)

`user@host>` **show chassis environment pcg**

```
PCG 0 status:
  State                         Online -  Master clock
  Temperature                41 degrees C / 105 degrees F
  Frequency:
   Setting               125.00 MHz
   Measurement           125.03 MHz
  Power:
    3.3 V                   3286 mV
    5.0 V bias              5010 mV
    8.0 V bias              8183 mV
  BUS Revision                12
PCG 1 status:
  State                         Online - Standby
  Temperature                43 degrees C / 109 degrees F
  Frequency:
   Setting               125.00 MHz
   Measurement           125.01 MHz
  Power:
    3.3 V                   3288 mV
    5.0 V bias              4993 mV
    8.0 V bias              8197 mV
  BUS Revision                12
```

show chassis environment pdu

Syntax

```
show chassis environment pdu
<none>
<slot>
```

Release Information

Command introduced in Junos OS Release 12.1X48 for PTX5000 Packet Transport Routers.

Description

Display the environmental status information of a power distribution unit (PDU).

Starting from Junos OS Release 14.1, the **show chassis environment pdu *slot*** operational mode command output displays environmental status information for the new DC power supply module (PSM) and PDU that are added to provide power to the high-density FPC—FPC2-PTX-P1A.

Starting from Junos OS Release 14.2, the power management software in Junos OS tracks the PSM power capacity to identify the power available for the PTX5000 router. Each PSM is assigned a power capability value that is equal to its maximum power rating. Therefore, the total input power—power that the chassis draws from a PDU—is the sum of all the online PSMs' maximum rating. Note that to limit the PDU's output power, the power management software adjusts the maximum rating of the PSMs according to the feed—that is, 60 A, 100 A, or 150 A—selected.

Options

none—Display environmental information about all PDUs.

slot —(Optional) Display environmental information about an individual PDU. For the PTX5000, replace ***slot*** with **0** or **1**.

Required Privilege Level

view

RELATED DOCUMENTATION

> *PTX5000 Packet Transport Router Hardware Guide*

List of Sample Output

show chassis environment pdu (PTX5000) on page 1058
show chassis environment pdu (PTX5000 Packet Transport Router with DC PSM and PDU) on page 1059
show chassis environment pdu (PTX5000 Packet Transport Router with AC PSM and PDU) on page 1060

show chassis environment pdu (PTX5000 Packet Transport Router after a heath check failure on a PSM) on page 1061

Output Fields

Table 48 on page 1057 lists the output fields for the **show chassis environment pdu** command. Output fields are listed in the approximate order in which they appear.

Table 48: show chassis environment pdu Output Fields

Field Name	Field Description
PDU *slot* **status**	Number of the PDU slot.
PDU - State	Status of the PDU. Status can be **Online**, **Present**, or **Absent**.
PDU - BoostConv	Status of the booster converter.
Feed Switch	Status of the connected input line cord in the AC PDU. Status can be , **60A**, **100A**, or **150A**.
PDU - Hours Used	Number of hours the PDU has been operational.
PDU - Firmware Version	Version level of the firmware running on the PDU.
PSM *number* **status**	PSM number. PSMs are numbered **0** through **3**.
PSM - State	Status of the PSM. Status can be **Online**, **Present**, or **Absent**.
PSM - Temperature	Temperature of the air flowing past the PSM.
PSM - Fans	Status of the cooling fans associated with the PSM.
PSM - AC Input	Status of the AC input for the specified component
PSM - AC Output	Status of the AC output for the specified component.
PSM - DC input	Status of the DC input for the specified component.
PSM - DC output	Status of the DC output for the specified component.
PSM-Health check status	Reason for the health check failure of the PSM.
PSM - Hours Used	Number of hours the PSM has been operational.

Table 48: show chassis environment pdu Output Fields *(continued)*

Field Name	Field Description
PSM - Firmware Version	Version level of the firmware running on the PSM.

Sample Output

show chassis environment pdu (PTX5000)

`user@host>` **show chassis environment pdu 0**

```
PDU 0 status:
  State                      Online
  Hours Used                 4281
  Firmware Version (MCU1)    00.02
  Firmware Version (MCU2)    00.02
  Firmware Version (MCU3)    00.02
  Firmware Version (MCU4)    00.02
PDU 0 PSM 0 status:
  State                      Online
  Temperature                OK   32 degrees C / 89 degrees F
  Fans                       OK
  DC Input                   OK
  DC Output                  OK
  Hours Used                 2864
  Firmware Version           00.04
PDU 0 PSM 1 status:
  State                      Online
  Temperature                OK   30 degrees C / 86 degrees F
  Fans                       OK
  DC Input                   OK
  DC Output                  OK
  Hours Used                 3540
  Firmware Version           00.04
PDU 0 PSM 2 status:
  State                      Online
  Temperature                OK   29 degrees C / 84 degrees F
  Fans                       OK
  DC Input                   OK
  DC Output                  OK
  Hours Used                 3711
```

```
  Firmware Version          00.04
PDU 0 PSM 3 status:
  State                     Online
  Temperature               OK   29 degrees C / 84 degrees F
  Fans                      OK
  DC Input                  OK
  DC Output                 OK
  Hours Used                4243
  Firmware Version          00.04
```

show chassis environment pdu (PTX5000 Packet Transport Router with DC PSM and PDU)

`user@host>` **show chassis environment pdu 1**

```
PDU 1 status:
  State                     Online
  BoostConv                 OK
  Hours Used                1054
  Firmware Version (MCU1)   03.05
PDU 1 PSM 0 status:
  State                     Empty
PDU 1 PSM 1 status:
  State                     Online
  Temperature               OK   45 degrees C / 113 degrees F
  Fans                      OK
  DC Input                  OK
  DC Output                 OK
  Hours Used                1027
  Firmware Version          03.07
PDU 1 PSM 2 status:
  State                     Empty
PDU 1 PSM 3 status:
  State                     Online
  Temperature               OK   43 degrees C / 109 degrees F
  Fans                      OK
  DC Input                  OK
  DC Output                 OK
  Hours Used                1029
  Firmware Version          03.07
PDU 1 PSM 4 status:
  State                     Empty
PDU 1 PSM 5 status:
  State                     Online
  Temperature               OK   46 degrees C / 114 degrees F
```

```
  Fans                      OK
  DC Input                  OK
  DC Output                 OK
  Hours Used                1028
  Firmware Version          03.07
PDU 1 PSM 6 status:
  State                     Empty
PDU 1 PSM 7 status:
  State                     Online
  Temperature               OK   46 degrees C / 114 degrees F
  Fans                      OK
  DC Input                  OK
  DC Output                 OK
  Hours Used                1030
  Firmware Version          03.07
```

show chassis environment pdu (PTX5000 Packet Transport Router with AC PSM and PDU)

`user@host>` **show chassis environment pdu 0**

```
PDU 0 status:
  State                     Online
  BoostConv                 OK
  Feed Switch               150 Amps
  Hours Used                177
  Firmware Version (MCU1)   03.04
  Firmware Version (MCU2)   03.02
  Firmware Version (MCU3)   03.02
  Firmware Version (MCU4)   03.02
  Firmware Version (MCU5)   03.02
  Firmware Version (MCU6)   03.02
  Firmware Version (MCU7)   03.02
  Firmware Version (MCU8)   03.02
PDU 0 PSM 0 status:
  State                     Online
  Temperature               OK   28 degrees C / 82 degrees F
  Fans                      OK
  AC Input                  OK
  DC Output                 OK
  Hours Used                652
  Firmware Version          01.01
```

show chassis environment pdu (PTX5000 Packet Transport Router after a heath check failure on a PSM)

`user@host>` **show chassis environment pdu 0**

```
PDU 0 status:
  State                      Online
  BoostConv                  OK
  Feed Switch                20 Amps
  Hours Used                 16706
  Firmware Version (MCU1)    91.02
  Firmware Version (MCU2)    03.02
  Firmware Version (MCU3)    03.02
  Firmware Version (MCU4)    03.02
  Firmware Version (MCU5)    03.02
  Firmware Version (MCU6)    03.02
  Firmware Version (MCU7)    03.02
  Firmware Version (MCU8)    03.02
PDU 0 PSM 0 status:
  State                      Online
  Temperature                OK   29 degrees C / 84 degrees F
  Fans                       OK
  AC Input                   OK
  DC Output                  OK
  Hours Used                 9847
  Firmware Version           01.01
PDU 0 PSM 1 status:
  State                      Online
  Temperature                OK   29 degrees C / 84 degrees F
  Fans                       OK
  AC Input                   OK
  DC Output                  OK
  Hours Used                 5586
  Firmware Version           01.01
PDU 0 PSM 2 status:
  State                      Online
  Temperature                OK   28 degrees C / 82 degrees F
  Fans                       OK
  AC Input                   OK
  DC Output                  OK
  Hours Used                 10425
  Firmware Version           01.01
PDU 0 PSM 3 status:
  State                      Online
  Temperature                OK   28 degrees C / 82 degrees F
  Fans                       OK
```

```
  AC Input                  OK
  DC Output                 OK
  Hours Used                9912
  Firmware Version          01.01
PDU 0 PSM 4 status:
  State                     Empty
PDU 0 PSM 5 status:
  State                     Empty
PDU 0 PSM 6 status:
  State                     Present
  Temperature               OK   32 degrees C / 89 degrees F
  Fans                      OK
  AC Input                  OK
  DC Output                 OK
  Health check status       Failed, PSM set to NOT OK
  Hours Used                5770
  Firmware Version          01.01
PDU 0 PSM 7 status:
  State                     Online
  Temperature               OK   33 degrees C / 91 degrees F
  Fans                      OK
  AC Input                  OK
  DC Output                 OK
  Hours Used                20167
  Firmware Version          01.01
```

show chassis environment pem

List of Syntax

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Syntax (ACX4000 Router) on page 1063
Syntax (TX Matrix Routers) on page 1063
Syntax (TX Matrix Plus Routers) on page 1063
Syntax (MX Series Router) on page 1063
Syntax (PTX Series Router) on page 1064
Syntax (MX104 Universal Routing Platforms) on page 1064
Syntax (MX10003 , MX204, MX10008, OCX Series, EX9251, and EX9253 devices) on page 1064
Syntax (QFX Series) on page 1064

Syntax

```
show chassis environment pem
<slot>
```

Syntax (ACX4000 Router)

```
show chassis environment pem
```

Syntax (TX Matrix Routers)

```
show chassis environment pem
<lcc number | scc>
<slot>
```

Syntax (TX Matrix Plus Routers)

```
show chassis environment pem
<lcc number | sfc number>
<slot>
```

Syntax (MX Series Router)

```
show chassis environment pem
<slot>
<all-members>
<local>
<member member-id>
```

Syntax (PTX Series Router)

```
show chassis environment pem
<slot>
<all-members>
<local>
<member member-id>
```

Syntax (MX104 Universal Routing Platforms)

```
show chassis environment pem
<slot>
<satellite [fpc-slot slot-id |device-alias alias-name]
```

Syntax (MX10003 , MX204, MX10008, OCX Series, EX9251, and EX9253 devices)

```
show chassis environment pem
<slot>
```

Syntax (QFX Series)

```
show chassis environment pem
<slot (interconnect-device name slot ) | (node-device name)>
```

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 11.3 for the QFX Series.
Command introduced in Junos OS Release 12.3R2 for EX Series.
Command introduced in Junos OS Release 13.2 for MX104 Universal Routing Platforms.
Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.
satellite option introduced in Junos OS Release 14.2R3.
Command introduced in Junos OS Release 17.2 for PTX10008 Routers.
Command introduced in Junos OS Release 17.3 for MX10003 Universal Routing Platforms and MX150 Router Appliance.
Command introduced in Junos OS Release 17.4 for MX204 Universal Routing Platforms.
Command introduced in Junos OS Release 18.1R1 for EX9251 Switches.
Command introduced in Junos OS Release 18.2R1 for MX10008 Routers and EX9253 Switches.

Description

Display Power Entry Module (PEM) environmental status information.

NOTE: The new high-capacity (4100W) enhanced DC PEM on MX960 routers includes a new design that can condition the input voltage. This results in the output voltage differing from the input voltage. The earlier generation of DC PEMs coupled the input power directly to the output, thereby making it safe to assume that the output voltage was equal to the input voltage.

Options

none—Display environmental information about both PEMs. For the TX Matrix router, display environmental information about the PEMs, the TX Matrix router, and its attached T640 routers. For the TX Matrix Plus router, display environmental information about the PEMs, the TX Matrix Plus router, and its attached routers.

all-members—(MX Series routers only) (Optional) Display environmental information about the PEMs in all the member routers of the Virtual Chassis configuration.

interconnect-device *name*—(QFabric systems only) (Optional) Display chassis environmental information about the PEMs in the Interconnect device.

lcc *number*—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

local—(MX Series routers only) (Optional) Display environmental information about the PEM in the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display environmental information about the PEM in the specified member of the Virtual Chassis configuration. Replace *member-id* with a value of 0 or 1.

node-device *name*—(QFabric systems only) (Optional) Display chassis environmental information about the PEMs in the Node device.

satellite [fpc-slot *slot-id* | device-alias *alias-name*]—(Junos Fusion only)(Optional) Display environmental information about the PEM in the specified satellite device in a Junos Fusion, or for all satellite devices in the Junos Fusion if no satellite devices are specified.

scc—(TX Matrix routers only) (Optional) Display environmental information about the PEM in the TX Matrix router (or switch-card chassis).

sfc—(TX Matrix Plus routers only) (Optional) Display environmental information about the PEM in the TX Matrix Plus router (or switch-fabric chassis).

slot —(Optional) Display environmental information about an individual PEM. Replace *slot* with 0 or 1.

Required Privilege Level
view

RELATED DOCUMENTATION

show chassis hardware | **1571**

List of Sample Output

show chassis environment pem (M40e Router) on page 1068
show chassis environment pem (M120 Router) on page 1068
show chassis environment pem (M160 Router) on page 1068
show chassis environment pem (M320 Router) on page 1069
show chassis environment pem (MX150) on page 1069
show chassis environment pem (MX104 Router) on page 1070
show chassis environment pem (MX240 Router) on page 1070
show chassis environment pem (MX480 Router) on page 1070
show chassis environment pem (MX960 Router) on page 1071
show chassis environment pem (MX10003 Router) on page 1071
show chassis environment pem (MX204 Router) on page 1072
show chassis environment pem (MX10008 Router) on page 1072
show chassis environment pem (PTX10016 Router) on page 1073
show chassis environment pem (T320 Router) on page 1074
show chassis environment pem (T640 Router) on page 1075
show chassis environment pem (T4000 Router) on page 1075
show chassis environment pem (T640/T1600/T4000 Routers With Six-Input DC Power Supply) on page 1076
show chassis environment pem lcc (TX Matrix Routing Matrix) on page 1076
show chassis environment pem scc (TX Matrix Routing Matrix) on page 1077
show chassis environment pem sfc (TX Matrix Plus Routing Matrix) on page 1077
show chassis environment pem lcc (TX Matrix Plus Routing Matrix) on page 1078
show chassis environment pem node-device (QFabric System) on page 1079
show chassis environment pem (QFX Series and OCX Series) on page 1079
show chassis environment pem (QFX 10016) on page 1079
show chassis environment pem interconnect-device (QFabric System) on page 1080
show chassis environment pem (EX9251 Switches) on page 1080
show chassis environment pem (EX9253 Switches) on page 1080

show chassis environment pem (PTX1000 Packet Transport Routers) on page 1081

Output Fields

Table 49 on page 1067 lists the output fields for the **show chassis environment pem** command. Output fields are listed in the approximate order in which they appear.

Table 49: show chassis environment pem Output Fields

Field Name	Field Description
PEM*slot*status	Number of the PEM slot.
State	Status of the PEM.
Temperature	Temperature of the air flowing past the PEM.
AC Input	Status of the AC input for the specified component
AC Output	Status of the AC output for the specified component.
DC input	Status of the DC input for the specified component.
DC output	Status of the DC output for the specified component.
Load	(Not available on M40e or M160 routers) Information about the load on supply, in percentage of rated current being used.
Voltage	(M120, M160, M320, T640, T1600, TX Matrix, and TX Matrix Plus routers only) Information about voltage supplied to the PEM. (MX104 routers only) Information about voltage supplied by the PEM to the system.
Current	(T640, T1600, TX Matrix, and TX Matrix Plus routers only) Information about the PEM current.
Power	(T640, T1600, TX Matrix, and TX Matrix Plus routers only) Information about the PEM power.
SCG/CB/SIB	(T640, T1600, TX Matrix, and TX Matrix Plus routers only) SONET Clock Generator/Control Board/Switch Interface Board.
FAN	(T640, T1600, and T4000 routers with six-input DC power supply only) Information about the DC output to the fan.

Sample Output

show chassis environment pem (M40e Router)

```
user@host> show chassis environment pem
```

```
PEM 0 status:
  State                          Online
  Temperature                    OK
  AC input                       OK
  DC output                      OK
```

show chassis environment pem (M120 Router)

```
user@host> show chassis environment pem
```

```
PEM 0 status:
  State                       Online
  Temperature                 OK
  DC Input:                   OK
  DC Output:                  OK
  Load                        Less than 20 percent
  Voltage:
    48.0 V input              52864 mV
    48.0 V fan supply         41655 mV
    3.3 V                      3399 mV
PEM 1 status:
  State                       Online
  Temperature                 OK
  DC Input:                   OK
  DC Output:                  OK
  Load                        Less than 20 percent
  Voltage:
    48.0 V input              54537 mV
    48.0 V fan supply         42910 mV
    3.3 V                      3506 mV
```

show chassis environment pem (M160 Router)

```
user@host> show chassis environment pem
```

```
PEM 0 status:
  State                          Online
  Temperature                    OK
```

```
  DC input                        OK
  DC output                       OK
  Load                            Less than 20 percent
  Voltage:
    48.0 V input             54833 mV
    48.0 V fan supply        50549 mV
    8.0 V bias               8239 mV
    5.0 V bias               5006 mV
```

show chassis environment pem (M320 Router)

`user@host>` **show chassis environment pem**

```
PEM 2 status:
  State                           Online
  Temperature                     OK
  DC input                        OK
  Load                            Less than 40 percent
    48.0 V input            51853 mV
    48.0 V fan supply       48877 mV
    8.0 V bias               8449 mV
    5.0 V bias               4998 mV
PEM 3 status:
  State                           Online
  Temperature                     OK
  DC input                        OK
  Load                            Less than 40 percent
    48.0 V input            51717 mV
    48.0 V fan supply       49076 mV
    8.0 V bias               8442 mV
    5.0 V bias               4998 mV
```

show chassis environment pem (MX150)

`user@host>` **show chassis environment pem**

```
FPC 0 PEM 0 status:
  State                     Online
  Airflow                   Front to Back
  Temperature               OK
```

show chassis environment pem (MX104 Router)

`user@host>` **show chassis environment pem**

```
PEM 0 status:
  State                     Online
  Temperature               OK
  DC Output:                OK
  Voltage:
    12.0 V output           12281 mV
    3.3 V output             3353 mV
PEM 1 status:
  State                     Empty
```

show chassis environment pem (MX240 Router)

`user@host>` **show chassis environment pem**

```
PEM 0 status:
  State                     Online
  Temperature                OK
  DC Output:                 OK
PEM 1 status:
  State                     Online
  Temperature                OK
  DC Output:                 OK
```

show chassis environment pem (MX480 Router)

`user@host>` **show chassis environment pem**

```
PEM 0 status:
  State                     Online
  Temperature                OK
  DC Input:                  OK
  DC Output:                 OK
  Voltage:
PEM 1 status:
  State                     Online
  Temperature                OK
  DC Input:                  OK
  DC Output:                 OK
  Voltage:
```

show chassis environment pem (MX960 Router)

```
user@host> show chassis environment pem
```

```
PEM 2 status:
  State                     Present
PEM 3 status:
  State                     Online
  Temperature                OK
  DC Output:                 OK
```

show chassis environment pem (MX10003 Router)

```
user@host> show chassis environment pem
```

```
PEM 0 status:
  State                     Online
  Airflow                   Front to Back
  Temperature               OK   34 degrees C / 93 degrees F
  Temperature               OK   26 degrees C / 78 degrees F
  Temperature               OK   24 degrees C / 75 degrees F
  Firmware version          0x22
  Cooling Fan               8752 RPM
  DC Output          Voltage(V) Current(A)  Power(W)  Load(%)
                         12.00     26            312      10
PEM 1 status:
  State                     Online
  Airflow                   Front to Back
  Temperature               OK   35 degrees C / 95 degrees F
  Temperature               OK   26 degrees C / 78 degrees F
  Temperature               OK   25 degrees C / 77 degrees F
  Firmware version          0x22
  Cooling Fan               8480 RPM
  DC Output          Voltage(V) Current(A)  Power(W)  Load(%)
                         12.00     27            324      11
PEM 2 status:
  State                     Online
  Airflow                   Front to Back
  Temperature               OK   37 degrees C / 98 degrees F
  Temperature               OK   29 degrees C / 84 degrees F
  Temperature               OK   25 degrees C / 77 degrees F
  Firmware version          0x22
  Cooling Fan               8656 RPM
  DC Output          Voltage(V) Current(A)  Power(W)  Load(%)
```

```
                          12.00     25            300      10
PEM 3 status:
  State                      Online
  Airflow                    Front to Back
  Temperature                OK   35 degrees C / 95 degrees F
  Temperature                OK   26 degrees C / 78 degrees F
  Temperature                OK   25 degrees C / 77 degrees F
  Firmware version           0x22
  Cooling Fan                8448 RPM
  DC Output           Voltage(V) Current(A)  Power(W)  Load(%)
                          12.00     26            312      10
PEM 4 status:
  State                      Empty
PEM 5 status:
  State                      Empty
```

show chassis environment pem (MX204 Router)

`user@host>` **show chassis environment pem**

```
PEM 0 status:
  State                      Empty
PEM 1 status:
  State                      Online
  Airflow                    Front to Back
  Temperature                OK   48 degrees C / 118 degrees F
  Temperature                OK   51 degrees C / 123 degrees F
  Fan Sensor                 5400 RPM
  DC Output           Voltage(V) Current(A)  Power(W)  Load(%)
                          11.94     16            191      29
```

show chassis environment pem (MX10008 Router)

`user@host>` **show chassis environment pem**

```
PEM 0 status:
  State                      Online
  Airflow                    Front to Back
  Temperature                             OK   29 degrees C / 84 degrees F
  Firmware version           0x36
  Fan 0                      5880 RPM
  DC Output           Voltage(V) Current(A)  Power(W)  Load(%)
```

```
                        12.00       104           1248     46
PEM 1 status:
  State                      Online
  Airflow                    Front to Back
  Temperature                           OK   27 degrees C / 80 degrees F
  Firmware version           0x36
  Fan 0                      5940 RPM
  DC Output           Voltage(V) Current(A)  Power(W)  Load(%)
                        12.00       104           1248     46
PEM 2 status:
  State                      Online
  Airflow                    Front to Back
  Temperature                           OK   30 degrees C / 86 degrees F
  Firmware version           0x36
  Fan 0                      5940 RPM
  DC Output           Voltage(V) Current(A)  Power(W)  Load(%)
                        12.00       105           1260     46
PEM 3 status:
  State                      Present
PEM 4 status:
  State                      Present
PEM 5 status:
  State                      Present
```

show chassis environment pem (PTX10016 Router)

`user@host>` **show chassis environment pem**

```
PEM 0 status:
  State                      Online
  Airflow                    Front to Back
  Temperature                OK   21 degrees C / 69 degrees F
  Firmware version           0x36
  Fan 0                      5760 RPM
  DC Output           Voltage(V) Current(A)  Power(W)  Load(%)
                          12.00     51            612      22
PEM 1 status:
  State                      Online
  Airflow                    Front to Back
  Temperature                OK   23 degrees C / 73 degrees F
  Firmware version           0x36
  Fan 0                      5760 RPM
  DC Output           Voltage(V) Current(A)  Power(W)  Load(%)
                          12.00     52            624      23
```

```
PEM 2 status:
  State                     Online
  Airflow                   Front to Back
  Temperature               OK   23 degrees C / 73 degrees F
  Firmware version          0x36
  Fan 0                     5760 RPM
  DC Output          Voltage(V) Current(A)  Power(W)  Load(%)
                         12.00     51            612      22
PEM 3 status:
  State                     Online
  Airflow                   Front to Back
  Temperature               OK   21 degrees C / 69 degrees F
  Firmware version          0x36
  Fan 0                     5760 RPM
  DC Output          Voltage(V) Current(A)  Power(W)  Load(%)
                         12.00     51            612      22
PEM 4 status:
  State                     Online
  Airflow                   Front to Back
  Temperature               OK   22 degrees C / 71 degrees F
  Firmware version          0x36
  Fan 0                     5760 RPM
  DC Output          Voltage(V) Current(A)  Power(W)  Load(%)
                         12.00     52            624      23
PEM 5 status:
  State                     Online
  Airflow                   Front to Back
  Temperature               OK   24 degrees C / 75 degrees F
  Firmware version          0x36
  Fan 0                     5700 RPM
  DC Output          Voltage(V) Current(A)  Power(W)  Load(%)
                         12.00     51            612      22
PEM 6 status:
  State                     Online
  Airflow                   Front to Back
  Temperature               OK   21 degrees C / 69 degrees F
  Firmware version          0x36
  Fan 0                     5700 RPM
  DC Output          Voltage(V) Current(A)  Power(W)  Load(%)
                         12.00     50            600      22
```

show chassis environment pem (T320 Router)

`user@host>` **show chassis environment pem**

```
PEM 0 status:
  State                          Online
  Temperature                    OK
  DC input:                      OK
```

show chassis environment pem (T640 Router)

`user@host>` **show chassis environment pem**

```
PEM 0 status:
  State                          Online
  Temperature                 22 degrees C / 71 degrees F
  AC input: OK
  DC output:            Voltage   Current       Power    Load
       FPC 0              56875       606          34       4
       FPC 1              57016       525          29       3
       FPC 2                  0         0           0       0
       FPC 3                  0         0           0       0
       FPC 4                  0         0           0       0
       FPC 5                  0         0           0       0
       FPC 6              57158      1581          90      12
       FPC 7                  0         0           0       0
  SCG/CB/SIB              56750      1125          63       5
```

show chassis environment pem (T4000 Router)

`user@host>` **show chassis environment pem**

```
PEM 0 status:
  State                      Online
  Temperature                33 degrees C / 91 degrees F
  DC Input:                  OK
                     Voltage(V)  Current(A)  Power(W)  Load(%)
      INPUT 0          54.625       9.812      535       22
      INPUT 1          54.625      10.250      559       23
      INPUT 2          55.125       0.125        6        0
      INPUT 3          54.500      10.062      548       22
      INPUT 4          54.750       9.375      513       21
      INPUT 5          54.750      10.187      557       23
  DC Output          Voltage(V)  Current(A)  Power(W)  Load(%)
      FPC 0            55.750      10.125      564       37
      FPC 1            51.625       0.000        0        0
      FPC 2            52.000       0.000        0        0
```

```
      FPC 3             55.062      10.437      574       38
      FPC 4             52.125       0.000        0        0
      FPC 5             55.000       9.375      515       34
      FPC 6             55.187       9.687      534       35
      FPC 7             51.437       0.000        0        0
      SCG/CB/SIB        55.375      15.750      872       35
      FAN               54.562      14.750      804       42
```

show chassis environment pem (T640/T1600/T4000 Routers With Six-Input DC Power Supply)

`user@host>` **show chassis environment pem**

```
PEM 1 status:
  State                     Online
  Temperature               36 degrees C / 96 degrees F
  DC Input:                 OK
                     Voltage(V)  Current(A)  Power(W)  Load(%)
      INPUT 0           0.000       0.000        0        0
      INPUT 1          54.875       3.812      209       27
      INPUT 2          55.375       3.937      218       29
      INPUT 3          54.625       3.750      204       27
      INPUT 4          55.125       3.375      186       24
      INPUT 5          55.125       3.375      186       24
  DC Output          Voltage(V)  Current(A)  Power(W)  Load(%)
      FPC 0            52.312       0.000        0        0
      FPC 1            52.687       0.000        0        0
      FPC 2            52.812       0.000        0        0
      FPC 3            55.812       7.062      394       52
      FPC 4            52.625       0.000        0        0
      FPC 5            52.625       0.000        0        0
      FPC 6            52.750       0.000        0        0
      FPC 7            52.750       0.000        0        0
      SCG/CB/SIB       55.937      11.937      667       55
      FAN              55.812       4.937      275       36
```

show chassis environment pem lcc (TX Matrix Routing Matrix)

`user@host>` **show chassis environment pem 0 lcc 0**

```
lcc0-re0:
--------------------------------------------------------------------------
PEM 0 status:
  State                         Present
```

```
  Temperature                 27 degrees C / 80 degrees F
  DC input:                      Check
  DC output:           Voltage   Current       Power    Load
       FPC 0                 0         0           0       0
       FPC 1                 0         0           0       0
       FPC 2                 0         0           0       0
       FPC 3                 0         0           0       0
       FPC 4                 0         0           0       0
       FPC 5                 0         0           0       0
       FPC 6                 0         0           0       0
       FPC 7                 0         0           0       0
  SCG/CB/SIB                 0         0           0       0
```

show chassis environment pem scc (TX Matrix Routing Matrix)

`user@host>` **show chassis environment pem scc**

```
scc-re0:
--------------------------------------------------------------------------
PEM 1 status:
  State                          Online
  Temperature                 24 degrees C / 75 degrees F
  DC input:                      OK
  DC output:           Voltage   Current       Power    Load
       SIB 0                 0         0           0       0
       SIB 1                 0         0           0       0
       SIB 2                 0         0           0       0
       SIB 3             56550         0           0       0
       SIB 4             55958      6912         386      51
```

show chassis environment pem sfc (TX Matrix Plus Routing Matrix)

`user@host>` **show chassis environment pem sfc 0**

```
sfc0-re0:
--------------------------------------------------------------------------
PEM 0 status:
  State                      Online
  Temperature                35 degrees C / 95 degrees F
  DC Input:                   OK
  DC Output            Voltage   Current       Power    Load
      Channel 0          53820     14140         761      59
      Channel 1          53550     12720         681      53
```

```
      Channel 2           53840     12930         696      54
      Channel 3           53690     14990         804      63
      Channel 4           53620     15070         808      63
      Channel 5           53900     14820         798      62
      Channel 6           54120     5020          271      21
```

show chassis environment pem lcc (TX Matrix Plus Routing Matrix)

`user@host>` **show chassis environment lcc 0**

```
lcc0-re1:
--------------------------------------------------------------------------
PEM 0 status:
  State                      Online
  Temperature                38 degrees C / 100 degrees F
  DC Input:                  OK
  DC Output             Voltage   Current       Power    Load
      FPC 0               0         0             0        0
      FPC 1               0         0             0        0
      FPC 2               0         0             0        0
      FPC 3               0         0             0        0
      FPC 4               56408     7575          427      56
      FPC 5               0         0             0        0
      FPC 6               56266     7956          447      59
      FPC 7               56283     6100          343      45
      SCG/CB/SIB          55916     8950          500      41
PEM 1 status:
  State                      Present
  Temperature                35 degrees C / 95 degrees F
  DC Input:                  Check
  DC Output             Voltage   Current       Power    Load
      FPC 0               0         0             0        0
      FPC 1               0         0             0        0
      FPC 2               0         0             0        0
      FPC 3               0         0             0        0
      FPC 4               0         0             0        0
      FPC 5               0         0             0        0
      FPC 6               0         0             0        0
      FPC 7               0         0             0        0
      SCG/CB/SIB          0         0             0        0
```

show chassis environment pem node-device (QFabric System)

```
user@switch> show chassis environment pem node-device node1
```

```
FPC 0 PEM 0 status:
  State                       Check
  Airflow                     Front to Back
  Temperature                 OK
  AC Input:                   OK
  DC Output           Voltage(V) Current(A)  Power(W)  Load(%)
                          12        10            120      18
FPC 0 PEM 1 status:
  State                       Online
  Airflow                     Back to Front
  Temperature                 OK
  AC Input:                   OK
  DC Output           Voltage(V) Current(A)  Power(W)  Load(%)
                          11        10           110      17
```

show chassis environment pem (QFX Series and OCX Series)

```
user@switch> show chassis environment pem
```

```
FPC 0 PEM 1 status:
  State                       Online
  Airflow                     Front to Back
  Temperature                 OK
  AC Input:                   OK
  DC Output           Voltage(V) Current(A)  Power(W)  Load(%)
                          12        17            204      31
```

show chassis environment pem (QFX 10016)

```
user@router> show chassis environment pem 1
```

```
PEM 1 status:
  State                       Present
  Input                       Voltage(V)  Current(A) Power(W)
  INP 1                       229.9       0.4        96.6
  INP 2                       233.7       0.4        98.2
  Health check Information:
      Status:                     Scheduled
      Last Result:                Pass
```

```
      Last Execution:           2019-04-23 15:09:54
      Next Scheduled Run:       2019-04-23 15:32:59
```

show chassis environment pem interconnect-device (QFabric System)

`user@switch>` **show chassis environment pem interconnect-device IC1 1**

```
IC1 PEM 1 status:
  State                     Online
  Airflow                   Front to Back
  Temperature               OK
  AC Input:                 OK
  DC Output           Voltage(V) Current(A)  Power(W)  Load(%)
                          12        18            216      33
```

show chassis environment pem (EX9251 Switches)

`user@switch>` **show chassis environment pem**

```
PEM 0 status:
  State                     Present
PEM 1 status:
  State                     Online
  Airflow                   Front to Back
  Temperature               OK   36 degrees C / 96 degrees F
  Temperature               OK   35 degrees C / 95 degrees F
  Fan Sensor                5940 RPM
  DC Output           Voltage(V) Current(A)  Power(W)  Load(%)
                        11.85       17            201      30
```

show chassis environment pem (EX9253 Switches)

`user@switch>` **show chassis environment pem**

```
PEM 0 status:
  State                     Online
  Airflow                   Front to Back
  Temperature               OK   56 degrees C / 132 degrees F
  Temperature               OK   46 degrees C / 114 degrees F
  Temperature               OK   28 degrees C / 82 degrees F
  Firmware version          04.10
  Cooling Fan               9056 RPM
```

```
  DC Output           Voltage(V) Current(A)  Power(W)  Load(%)
                          12.00     47            564      19
PEM 1 status:
  State                     Present
PEM 2 status:
  State                     Empty
PEM 3 status:
  State                     Empty
PEM 4 status:
  State                     Present
PEM 5 status:
  State                     Online
  Airflow                   Front to Back
  Temperature               OK   61 degrees C / 141 degrees F
  Temperature               OK   49 degrees C / 120 degrees F
  Temperature               OK   28 degrees C / 82 degrees F
  Firmware version          04.10
  Cooling Fan               8656 RPM
  DC Output           Voltage(V) Current(A)  Power(W)  Load(%)
                          12.00     51            612      21
```

show chassis environment pem (PTX1000 Packet Transport Routers)

`user@router>` **show chassis environment pem**

```
PEM 0 status:
  State                     Online
  Airflow                   Front to Back
  Temp Sensor 0             OK   22 degrees C / 71 degrees F
  Temp Sensor 1             OK   23 degrees C / 73 degrees F
  Fan 0                     9184 RPM
  Fan 1                     7936 RPM
  DC Output           Voltage(V) Current(A)  Power(W)  Load(%)
                        12          24            288      18
PEM 2 status:
  State                     Online
  Airflow                   Front to Back
  Temp Sensor 0             OK   22 degrees C / 71 degrees F
  Temp Sensor 1             OK   26 degrees C / 78 degrees F
  Fan 0                     9056 RPM
  Fan 1                     7808 RPM
  DC Output           Voltage(V) Current(A)  Power(W)  Load(%)
                        12          24            288      18
```

On PTX1000 Packet Transport Routers, you cannot view the **show chassis environment pem** output at the PEM slot level, by using the command **show chassis environment pem *slot***.

show chassis environment psu

Syntax

```
show chassis environment psu
<slot-number>
```

Release Information

Command introduced in Junos OS Release 10.3 for EX Series switches.

Description

(On EX8200 switches only) Display the state of the power supply.

Options

none—Display the state of the power supply for all power supplies.

slot-number—(Optional) Display the state of the power supply for a specific power supply slot number (0–5).

Required Privilege Level

view

RELATED DOCUMENTATION

> *Verifying Power Configuration and Use*
>
> *show chassis power-budget-statistics*

List of Sample Output

show chassis environment psu on page 1084
show chassis environment psu (for PSU 1) on page 1084

Output Fields

Table 50 on page 1083 lists the output fields for the **show chassis environment psu** command. Output fields are listed in the approximate order in which they appear.

Table 50: show chassis environment psu Output Fields

Field Name	Field Description
State	State of the power supply: Online, Offline, or Empty.
Temperature	Temperature for the online power supply: OK or Out of Range.

Table 50: show chassis environment psu Output Fields *(continued)*

Field Name	Field Description
DC Output	DC output for the online power supply: OK or Out of Range.

Sample Output

show chassis environment psu

```
user@switch> show chassis environment psu
```

```
PSU 0 status:
  State                       Offline
PSU 1 status:
  State                       Online
  Temperature                  OK
  DC Output:                   OK
PSU 2 status:
  State                       Online
  Temperature                  OK
  DC Output:                   OK
PSU 3 status:
  State                       Offline
PSU 4 status:
  State                       Offline
PSU 5 status:
  State                       Offline
```

show chassis environment psu (for PSU 1)

```
user@switch> show chassis environment psu 1
```

```
PSU 1 status:
  State                       Online
  Temperature                  OK
  DC Output:                   OK
```

show chassis environment psm

Syntax

```
show chassis environment psm
<all-members>
<local>
<member member-id>
<psm-slot-number>
```

Release Information

Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 Universal Routing Platforms.
all-members, **local**, and **member** ***member-id*** options introduced in Junos OS Release 15.1 for MX2020 and MX2010 routers.
Command introduced in Junos OS Release 17.2 for MX2008 Universal Routing Platforms.

Description

Display chassis environmental information about the power supply module (PSM).

Options

none—Display environmental information about all power supply modules (PSMs).

all-members—(Optional) Display chassis environmental information about the PSM in all members of the Virtual Chassis configuration.

local—(Optional) Display chassis environmental information about the PSM in the local member of the Virtual Chassis.

member ***member-id***—(Optional) Display chassis environmental information about the PSM in the specified member of the Virtual Chassis. Replace ***member-id*** with the value 0 or 1.

psm-slot-number—(Optional) Display environmental information about the specified power supply module. For MX2020 routers, replace ***psm-slot-number*** with a value from 0 through 17. For MX2010 and MX2008 routers, replace ***psm-slot-number*** with a value from 0 through 8.

Required Privilege Level

view

RELATED DOCUMENTATION

show chassis environment | 759

List of Sample Output

show chassis environment psm (MX2020 Router) on page 1086
show chassis environment psm (MX2020 Router with 240-V high-voltage DC PSMs) on page 1089
show chassis environment psm (MX2010 Router) on page 1093
show chassis environment psm (MX2008 Router) on page 1095

Output Fields

Table 51 on page 1086 lists the output fields for the **show chassis environment psm** command. Output fields are listed in the approximate order in which they appear.

Table 51: show chassis environment psm Output Fields

Field Name	Field Description
State	Status of the PSM. • **Online**—The PSM is online and running. • **Offline**—PSM is powered down.
Temperature	The status of the temperature of the air flowing past the PSM. • **Out of range**—Displayed if the PSM detects over-temperature. • **OK**—Displayed if the temperature is within the acceptable limit.
DC Input	State of the DC input power feed for the specified zone at the specified amps and voltage, and load for the PSM.
DC Output	DC power output in watts (W) for the specified zone at the specified amps and voltage (A @ V), and load and percentage utilization of the maximum capacity for the PSM.
Hours Used	Number of hours the PSM has been operational.

Sample Output

show chassis environment psm (MX2020 Router)

```
user@host> show chassis environment psm
```

```
PSM 2 status:
  State                    Online
  Temperature              OK
  DC Input                 Feed       Voltage(V)  Current(A) Power(W)
                           INP0         50.00       18.90     945.00
                           INP1         0.00        0.00      0.00
```

```
  DC Output                 Voltage(V) Current(A)  Power(W)   Load(%)
                              51.75      16.50      853.88     40.66
  Hours Used                6140
PSM 3 status:
  State                     Online
  Temperature               OK
  DC Input                  Feed       Voltage(V)  Current(A) Power(W)
                            INP0         50.40       18.90     952.56
                            INP1         0.00        0.00      0.00
  DC Output                 Voltage(V) Current(A)  Power(W)   Load(%)
                              51.75      16.50      853.88     40.66
  Hours Used                6140
PSM 4 status:
  State                     Online
  Temperature               OK
  DC Input                  Feed       Voltage(V)  Current(A) Power(W)
                            INP0         50.40       18.90     952.56
                            INP1         0.00        0.00      0.00
  DC Output                 Voltage(V) Current(A)  Power(W)   Load(%)
                              52.00      16.75      871.00     41.48
  Hours Used                6140
PSM 5 status:
  State                     Online
  Temperature               OK
  DC Input                  Feed       Voltage(V)  Current(A) Power(W)
                            INP0         50.40       18.90     952.56
                            INP1         0.00        0.00      0.00
  DC Output                 Voltage(V) Current(A)  Power(W)   Load(%)
                              52.00      16.50      858.00     40.86
  Hours Used                6140
PSM 6 status:
  State                     Online
  Temperature               OK
  DC Input                  Feed       Voltage(V)  Current(A) Power(W)
                            INP0         50.40       18.90     952.56
                            INP1         0.00        0.00      0.00
  DC Output                 Voltage(V) Current(A)  Power(W)   Load(%)
                              52.00      16.75      871.00     41.48
  Hours Used                6140
PSM 7 status:
  State                     Online
  Temperature               OK
  DC Input                  Feed       Voltage(V)  Current(A) Power(W)
                            INP0         50.40       19.20     967.68
```

```
                          INP1         0.00        0.00      0.00
  DC Output               Voltage(V) Current(A)  Power(W)   Load(%)
                            52.00      16.75      871.00     41.48
  Hours Used              6140
PSM 8 status:
  State                   Online
  Temperature             OK
  DC Input                Feed       Voltage(V)  Current(A) Power(W)
                          INP0         50.00       20.40     1020.00
                          INP1         0.00        0.00      0.00
  DC Output               Voltage(V) Current(A)  Power(W)   Load(%)
                            51.75      17.00      879.75     41.89
  Hours Used              3380
PSM 11 status:
  State                   Online
  Temperature             OK
  DC Input                Feed       Voltage(V)  Current(A) Power(W)
                          INP0         0.00        0.00      0.00
                          INP1         50.40       18.30     922.32
  DC Output               Voltage(V) Current(A)  Power(W)   Load(%)
                            52.00      16.25      845.00     40.24
  Hours Used              5615
PSM 12 status:
  State                   Online
  Temperature             OK
  DC Input                Feed       Voltage(V)  Current(A) Power(W)
                          INP0         0.00        0.00      0.00
                          INP1         50.40       18.30     922.32
  DC Output               Voltage(V) Current(A)  Power(W)   Load(%)
                            52.00      16.00      832.00     39.62
  Hours Used              6143
PSM 13 status:
  State                   Online
  Temperature             OK
  DC Input                Feed       Voltage(V)  Current(A) Power(W)
                          INP0         0.00        0.00      0.00
                          INP1         50.40       18.00     907.20
  DC Output               Voltage(V) Current(A)  Power(W)   Load(%)
                            52.00      16.00      832.00     39.62
  Hours Used              6143
PSM 14 status:
  State                   Online
  Temperature             OK
  DC Input                Feed       Voltage(V)  Current(A) Power(W)
```

```
                          INP0         0.00        0.00      0.00
                          INP1         50.00       18.30     915.00
  DC Output               Voltage(V) Current(A)  Power(W)   Load(%)
                            52.00      16.00      832.00     39.62
  Hours Used              6143
PSM 15 status:
  State                   Online
  Temperature             OK
  DC Input                Feed       Voltage(V)  Current(A) Power(W)
                          INP0         0.00        0.00      0.00
                          INP1         48.80       18.90     922.32
  DC Output               Voltage(V) Current(A)  Power(W)   Load(%)
                            52.00      16.25      845.00     40.24
  Hours Used              6143
PSM 16 status:
  State                   Online
  Temperature             OK
  DC Input                Feed       Voltage(V)  Current(A) Power(W)
                          INP0         0.00        0.00      0.00
                          INP1         48.80       18.90     922.32
  DC Output               Voltage(V) Current(A)  Power(W)   Load(%)
                            52.00      16.25      845.00     40.24
  Hours Used              6143
PSM 17 status:
  State                   Online
  Temperature             OK
  DC Input                Feed       Voltage(V)  Current(A) Power(W)
                          INP0         0.00        0.00      0.00
                          INP1         48.80       18.90     922.32
  DC Output               Voltage(V) Current(A)  Power(W)   Load(%)
                            52.00      16.25      845.00     40.24
  Hours Used              5207
```

show chassis environment psm (MX2020 Router with 240-V high-voltage DC PSMs)

`user@host>` **show chassis environment psm**

```
PSM 0 status:
  State                   Online
  Temperature             OK
  DC Input                Feed       Voltage(V)  Current(A) Power(W)
                          INP0         0.00        0.00      0.00
                          INP1         240.00      1.00      240.00
```

```
  DC Output                 Voltage(V) Current(A)  Power(W)   Load(%)
                              52.75      3.75       197.81     7.91
  Hours Used                2026
PSM 1 status:
  State                     Online
  Temperature               OK
  DC Input                  Feed       Voltage(V)  Current(A) Power(W)
                            INP0         0.00        0.00      0.00
                            INP1         240.00      0.90      216.00
  DC Output                 Voltage(V) Current(A)  Power(W)   Load(%)
                              52.75      3.25       171.44     6.86
  Hours Used                2530
PSM 2 status:
  State                     Online
  Temperature               OK
  DC Input                  Feed       Voltage(V)  Current(A) Power(W)
                            INP0         0.00        0.00      0.00
                            INP1         240.00      0.90      216.00
  DC Output                 Voltage(V) Current(A)  Power(W)   Load(%)
                              52.75      3.50       184.62     7.38
  Hours Used                2530
PSM 3 status:
  State                     Online
  Temperature               OK
  DC Input                  Feed       Voltage(V)  Current(A) Power(W)
                            INP0         0.00        0.00      0.00
                            INP1         240.00      0.90      216.00
  DC Output                 Voltage(V) Current(A)  Power(W)   Load(%)
                              52.75      3.50       184.62     7.38
  Hours Used                2026
PSM 4 status:
  State                     Online
  Temperature               OK
  DC Input                  Feed       Voltage(V)  Current(A) Power(W)
                            INP0         0.00        0.00      0.00
                            INP1         240.00      0.90      216.00
  DC Output                 Voltage(V) Current(A)  Power(W)   Load(%)
                              52.50      3.50       183.75     7.35
  Hours Used                2530
PSM 5 status:
  State                     Online
  Temperature               OK
  DC Input                  Feed       Voltage(V)  Current(A) Power(W)
                            INP0         0.00        0.00      0.00
```

```
                          INP1         240.00      1.00      240.00
  DC Output               Voltage(V) Current(A)  Power(W)   Load(%)
                            52.50      3.75       196.88     7.88
  Hours Used              2530
PSM 6 status:
  State                   Online
  Temperature             OK
  DC Input                Feed       Voltage(V)  Current(A) Power(W)
                          INP0         0.00        0.00      0.00
                          INP1         240.00      1.00      240.00
  DC Output               Voltage(V) Current(A)  Power(W)   Load(%)
                            52.50      3.75       196.88     7.88
  Hours Used              2002
PSM 7 status:
  State                   Online
  Temperature             OK
  DC Input                Feed       Voltage(V)  Current(A) Power(W)
                          INP0         0.00        0.00      0.00
                          INP1         240.00      1.00      240.00
  DC Output               Voltage(V) Current(A)  Power(W)   Load(%)
                            52.50      3.75       196.88     7.88
  Hours Used              2146
PSM 8 status:
  State                   Online
  Temperature             OK
  DC Input                Feed       Voltage(V)  Current(A) Power(W)
                          INP0         0.00        0.00      0.00
                          INP1         240.00      1.00      240.00
  DC Output               Voltage(V) Current(A)  Power(W)   Load(%)
                            52.50      3.75       196.88     7.88
  Hours Used              2026
PSM 9 status:
  State                   Online
  Temperature             OK
  DC Input                Feed       Voltage(V)  Current(A) Power(W)
                          INP0         240.00      0.80      192.00
                          INP1         0.00        0.00      0.00
  DC Output               Voltage(V) Current(A)  Power(W)   Load(%)
                            52.50      2.75       144.38     5.78
  Hours Used              2530
PSM 10 status:
  State                   Online
  Temperature             OK
  DC Input                Feed       Voltage(V)  Current(A) Power(W)
```

```
                          INP0         240.00      0.80      192.00
                          INP1         0.00        0.00      0.00
  DC Output               Voltage(V) Current(A)  Power(W)   Load(%)
                            52.75      2.75       145.06     5.80
  Hours Used              682
PSM 11 status:
  State                   Online
  Temperature             OK
  DC Input                Feed       Voltage(V)  Current(A) Power(W)
                          INP0         240.00      0.70      168.00
                          INP1         0.00        0.00      0.00
  DC Output               Voltage(V) Current(A)  Power(W)   Load(%)
                            52.75      2.75       145.06     5.80
  Hours Used              2098
PSM 12 status:
  State                   Online
  Temperature             OK
  DC Input                Feed       Voltage(V)  Current(A) Power(W)
                          INP0         240.00      0.80      192.00
                          INP1         0.00        0.00      0.00
  DC Output               Voltage(V) Current(A)  Power(W)   Load(%)
                            52.25      3.00       156.75     6.27
  Hours Used              2458
PSM 13 status:
  State                   Online
  Temperature             OK
  DC Input                Feed       Voltage(V)  Current(A) Power(W)
                          INP0         240.00      0.80      192.00
                          INP1         0.00        0.00      0.00
  DC Output               Voltage(V) Current(A)  Power(W)   Load(%)
                            52.25      2.75       143.69     5.75
  Hours Used              2601
PSM 14 status:
  State                   Online
  Temperature             OK
  DC Input                Feed       Voltage(V)  Current(A) Power(W)
                          INP0         240.00      0.80      192.00
                          INP1         0.00        0.00      0.00
  DC Output               Voltage(V) Current(A)  Power(W)   Load(%)
                            52.75      2.75       145.06     5.80
  Hours Used              682
PSM 15 status:
  State                   Online
  Temperature             OK
```

```
  DC Input                  Feed       Voltage(V)  Current(A) Power(W)
                            INP0         240.00      0.80      192.00
                            INP1         0.00        0.00      0.00
  DC Output                 Voltage(V) Current(A)  Power(W)   Load(%)
                              52.25      2.75       143.69     5.75
  Hours Used                2122
PSM 16 status:
  State                     Online
  Temperature               OK
  DC Input                  Feed       Voltage(V)  Current(A) Power(W)
                            INP0         240.00      0.70      168.00
                            INP1         0.00        0.00      0.00
  DC Output                 Voltage(V) Current(A)  Power(W)   Load(%)
                              52.25      2.50       130.62     5.22
  Hours Used                2050
PSM 17 status:
  State                     Online
  Temperature               OK
  DC Input                  Feed       Voltage(V)  Current(A) Power(W)
                            INP0         240.00      0.80      192.00
                            INP1         0.00        0.00      0.00
  DC Output                 Voltage(V) Current(A)  Power(W)   Load(%)
                              52.50      3.00       157.50     6.30
  Hours Used                2122
```

show chassis environment psm (MX2010 Router)

`user@host>` **show chassis environment psm**

```
PSM 0 status:
  State                     Online
  Temperature               OK
  DC Input                  Feed       Voltage(V)  Current(A) Power(W)
                            INP0         51.20       14.70     752.64
                            INP1         0.00        0.00      0.00
  DC Output                 Voltage(V) Current(A)  Power(W)   Load(%)
                              51.25      13.00      666.25     26.65
  Hours Used                2056
PSM 1 status:
  State                     Online
  Temperature               OK
  DC Input                  Feed       Voltage(V)  Current(A) Power(W)
                            INP0         51.20       14.35     734.72
```

```
                          INP1         0.00        0.00      0.00
  DC Output               Voltage(V) Current(A)  Power(W)   Load(%)
                            51.25      12.75      653.44     26.14
  Hours Used              2008
PSM 2 status:
  State                   Online
  Temperature             OK
  DC Input                Feed       Voltage(V)  Current(A) Power(W)
                          INP0         51.20       14.35     734.72
                          INP1         0.00        0.00      0.00
  DC Output               Voltage(V) Current(A)  Power(W)   Load(%)
                            51.50      13.00      669.50     26.78
  Hours Used              2032
PSM 3 status:
  State                   Online
  Temperature             OK
  DC Input                Feed       Voltage(V)  Current(A) Power(W)
                          INP0         50.40       14.35     723.24
                          INP1         0.00        0.00      0.00
  DC Output               Voltage(V) Current(A)  Power(W)   Load(%)
                            51.00      12.75      650.25     26.01
  Hours Used              2008
PSM 4 status:
  State                   Online
  Temperature             OK
  DC Input                Feed       Voltage(V)  Current(A) Power(W)
                          INP0         51.20       14.00     716.80
                          INP1         0.00        0.00      0.00
  DC Output               Voltage(V) Current(A)  Power(W)   Load(%)
                            51.25      13.00      666.25     26.65
  Hours Used              2055
PSM 5 status:
  State                   Online
  Temperature             OK
  DC Input                Feed       Voltage(V)  Current(A) Power(W)
                          INP0         51.20       14.70     752.64
                          INP1         0.00        0.00      0.00
  DC Output               Voltage(V) Current(A)  Power(W)   Load(%)
                            51.25      13.00      666.25     26.65
  Hours Used              2056
PSM 6 status:
  State                   Online
Temperature               OK
  DC Input                Feed       Voltage(V)  Current(A) Power(W)
```

```
                          INP0         50.80       14.70     746.76
                          INP1         0.00        0.00      0.00
  DC Output               Voltage(V) Current(A)  Power(W)   Load(%)
                            51.25      13.00      666.25     26.65
  Hours Used              2056
PSM 7 status:
  State                   Online
  Temperature             OK
  DC Input                Feed       Voltage(V)  Current(A) Power(W)
                          INP0         50.40       14.70     740.88
                          INP1         0.00        0.00      0.00
  DC Output               Voltage(V) Current(A)  Power(W)   Load(%)
                            51.25      13.00      666.25     26.65
  Hours Used              2056
PSM 8 status:
  State                   Online
  Temperature             OK
  DC Input                Feed       Voltage(V)  Current(A) Power(W)
                          INP0         50.40       14.70     740.88
                          INP1         0.00        0.00      0.00
  DC Output               Voltage(V) Current(A)  Power(W)   Load(%)
                            51.25      13.00      666.25     26.65
  Hours Used              2056
```

show chassis environment psm (MX2008 Router)

`user@host>` **show chassis environment psm**

```
PSM 1 status:
  State                   Online
  Temperature             OK
  DC Input                Feed       Voltage(V)  Current(A) Power(W)
                          INP0         53.20       4.55      242.06
                          INP1         53.20       3.85      204.82
  DC Output               Voltage(V) Current(A)  Power(W)   Load(%)
                            51.50      7.75       399.12     15.96
  Hours Used              2811
PSM 2 status:
  State                   Online
  Temperature             OK
  DC Input                Feed       Voltage(V)  Current(A) Power(W)
                          INP0         53.20       4.55      242.06
                          INP1         53.20       3.85      204.82
  DC Output               Voltage(V) Current(A)  Power(W)   Load(%)
```

```
                              51.25      8.00       410.00     16.40
  Hours Used                  2882
PSM 3 status:
  State                       Online
  Temperature                 OK
  DC Input                    Feed       Voltage(V)  Current(A) Power(W)
                              INP0         52.40       1.75      91.70
                              INP1         52.80       8.40      443.52
  DC Output                   Voltage(V) Current(A)  Power(W)   Load(%)
                              51.50      7.75       399.12     15.96
  Hours Used                  2668
PSM 4 status:
  State                       Online
  Temperature                 OK
  DC Input                    Feed       Voltage(V)  Current(A) Power(W)
                              INP0         52.80       0.35      18.48
                              INP1         53.20       8.40      446.88
  DC Output                   Voltage(V) Current(A)  Power(W)   Load(%)
                              51.50      7.75       399.12     15.96
  Hours Used                  2740
PSM 5 status:
  State                       Online
  Temperature                 OK
  DC Input                    Feed       Voltage(V)  Current(A) Power(W)
                              INP0         52.40       0.00      0.00
                              INP1         53.20       8.40      446.88
  DC Output                   Voltage(V) Current(A)  Power(W)   Load(%)
                              51.50      7.75       399.12     15.96
  Hours Used                  2932
PSM 6 status:
  State                       Online
  Temperature                 OK
  DC Input                    Feed       Voltage(V)  Current(A) Power(W)
                              INP0         54.00       8.40      453.60
                              INP1         53.20       0.00      0.00
  DC Output                   Voltage(V) Current(A)  Power(W)   Load(%)
                              51.50      7.75       399.12     15.96
  Hours Used                  2932
PSM 7 status:
  State                       Online
  Temperature                 OK
  DC Input                    Feed       Voltage(V)  Current(A) Power(W)
                              INP0         54.00       8.40      453.60
                              INP1         53.20       0.00      0.00
```

```
DC Output                 Voltage(V) Current(A)  Power(W)   Load(%)
                            51.25      7.75       397.19     15.89
Hours Used                2931
```

show chassis environment routing-engine

List of Syntax

Syntax on page 1098
Syntax (TX Matrix Routers) on page 1098
Syntax (TX Matrix Plus Routers) on page 1098
Syntax (MX104, MX2010, MX2020, MX10003, MX204, and MX2008 Universal Routing Platforms) on page 1098
Syntax (MX Series and PTX Series Devices) on page 1098
Syntax (QFX Series and OCX Series) on page 1099
Syntax (EX9251 and EX9253 Switches; ACX500, ACX5048 and ACX5096 Routers) on page 1099

Syntax

```
show chassis environment routing-engine
<slot>
```

Syntax (TX Matrix Routers)

```
show chassis environment routing-engine
<lcc number | scc>
<slot>
```

Syntax (TX Matrix Plus Routers)

```
show chassis environment routing-engine
<lcc number | sfc number>
<slot>
```

Syntax (MX104, MX2010, MX2020, MX10003, MX204, and MX2008 Universal Routing Platforms)

```
show chassis environment routing-engine
<slot>
<satellite [fpc-slot slot-id |device-alias alias-name]
```

Syntax (MX Series and PTX Series Devices)

```
show chassis environment routing-engine
<slot>
<all-members>
<local>
```

```
<member member-id>
```

Syntax (QFX Series and OCX Series)

```
show chassis environment routing-engine
interconnect-device name
```

Syntax (EX9251 and EX9253 Switches; ACX500, ACX5048 and ACX5096 Routers)

```
show chassis environment routing-engine
```

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced in Junos OS Release 9.6 for the TX Matrix Plus router.
Command introduced in Junos OS Release 11.1 for the QFX Series.
Command introduced in Junos OS Release 12.1 for the PTX Series Packet Transport Routers and T4000 Core Routers.
Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 Universal Routing Platforms.
Command introduced in Junos OS Release 13.2 for MX104 Universal Routing Platforms.
Command introduced in Junos OS Release 15.1X54-D20 for ACX5048 and ACX5096 Routers.
Command introduced in Junos OS Release 17.2 for MX2008 and PTX10008 Routers.
Command introduced in Junos OS Release 17.3 for MX150 Router Appliance and MX10003 Universal Routing Platforms.
Command introduced in Junos OS Release 17.4 for MX204 Universal Routing Platforms.
Command introduced in Junos OS Release 18.1R1 for EX9251 Switches.
Command introduced in Junos OS Release 18.2 for EX9253 Switches and MX10008 Routers.

Description

Display Routing Engine environmental status information.

Options

none—Display environmental information about all Routing Engines. For a TX Matrix router, display environmental information about all Routing Engines on the TX Matrix router and its attached T640 routers. For a TX Matrix Plus router, display environmental information about all Routing Engines on the TX Matrix Plus router and its attached routers.

all-members—(MX Series routers only) (Optional) Display environmental information about the Routing Engines in all member routers in the Virtual Chassis configuration.

interconnect-device *name*—(QFabric systems only) (Optional) Display environmental information about the Routing Engines for the Interconnect device.

lcc *number*——(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

local—(MX Series routers only) (Optional) Display environmental information about the Routing Engines in the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display environmental information about the Routing Engines in the specified member in the Virtual Chassis configuration. Replace *member-id* with the value of 0 or 1.

satellite [fpc-slot *slot-id* | device-alias *alias-name*]—(Junos Fusion only)(Optional) Display environmental information for the specified satellite device in a Junos Fusion, or for all satellite devices in the Junos Fusion if no satellite devices are specified.

scc—(TX Matrix router only) (Optional) Display environmental information about the Routing Engine in the TX Matrix router (switch-card chassis).

sfc—(TX Matrix Plus router only) (Optional) Display environmental information about the Routing Engine in the TX Matrix Plus router (or switch-fabric chassis).

slot—(Optional) Display environmental information about an individual Routing Engine. On M10i, M20, M40e, M120, M160, M320, MX Series, MX104 routers, MX2010 routers, MX2020 routers, MX2008 routers, and T Series routers, replace *slot* with 0 or 1. On M5, M7i, M10, and M40 routers, replace *slot* with 0. On EX3200 and EX4200 standalone switches, replace *slot* with 0. On EX4200 switches in a Virtual Chassis configuration and on EX8208 and EX8216 switches, replace *slot* with 0 or 1. On the QFX3500 switch, there is only one Routing Engine, so you do not need to specify the slot number. On PTX Series Packet Transport Routers, replace *slot* with 0 or 1

Required Privilege Level
view

RELATED DOCUMENTATION

request chassis routing-engine master | **655**

show chassis routing-engine | **1691**

List of Sample Output

show chassis environment routing-engine (Nonredundant) on page 1102
show chassis environment routing-engine (Redundant) on page 1102
show chassis enviroenment routing-engine (MX150) on page 1102
show chassis environment routing-engine (MX104 Router) on page 1102
show chassis environment routing-engine (MX2010 Router) on page 1103
show chassis environment routing-engine (MX2020 Router) on page 1103
show chassis environment routing-engine (MX2008 Router) on page 1103
show chassis environment routing-engine (TX Matrix Plus Router) on page 1104
show chassis environment routing-engine (T4000 Core Router) on page 1104
show chassis environment routing-engine (QFX Series and OCX Series) on page 1104
show chassis environment routing-engine interconnect-device (QFabric System) on page 1105
show chassis environment routing-engine (PTX5000 Packet Transport Router) on page 1105
show chassis environment routing-engine (PTX10008 Router) on page 1105
show chassis environment routing-engine (PTX10016 Router) on page 1106
show chassis environment routing-engine (ACX5048 and ACX5096 Routers) on page 1106
show chassis environment routing-engine (ACX500 Routers) on page 1106
show chassis environment routing-engine (PTX5000 (RE-PTX-X8-64G), MX240 (RE-S-X6-64G), MX480 (RE-S-X6-64G), MX960 (RE-S-X6-64G), MX2010 (RE-MX2K-X8-64G), MX2020 (RE-MX2K-X8-64G) on page 1106
show chassis environment routing-engine (MX204 Routers) on page 1107
show chassis environment routing-engine (MX10008 Routers) on page 1107
show chassis environment routing-engine (EX9251 Switches) on page 1107
show chassis environment routing-engine (EX9253 Switches) on page 1107

Output Fields

Table 52 on page 1101 lists the output fields for the **show chassis environment routing-engine** command. Output fields are listed in the approximate order in which they appear.

Table 52: show chassis environment routing-engine Output Fields

Field Name	Field Description
Routing engine *slot* status	Number of the Routing Engine slot: 0 or 1.
State	Status of the Routing Engine: • Online Master—Routing Engine is online, operating as Master. • Online Standby—Routing Engine is online, operating as Standby. • Offline—Routing Engine is offline.

Table 52: show chassis environment routing-engine Output Fields *(continued)*

Field Name	Field Description
Temperature	Temperature of the air flowing past the Routing Engine.
CPU Temperature	(PTX Series and T4000 Core Routers only) Temperature of the air flowing past the Routing Engine CPU.

Sample Output

show chassis environment routing-engine (Nonredundant)

`user@host>` **show chassis environment routing-engine**

```
Routing Engine 0 status:
  State                          Online Master
  Temperature                 27 degrees C / 80 degrees
```

show chassis environment routing-engine (Redundant)

`user@host>` **show chassis environment routing-engine**

```
Route Engine 0 status:
  State:                       Online Master
  Temperature:               26 degrees C / 78 degrees F
Route Engine 1 status:
  State:                       Online Standby
  Temperature:               26 degrees C / 78 degrees F
```

show chassis enviroenment routing-engine (MX150)

`user@ host >`**show chassis environment routing-engine**

```
Routing Engine 0 status:
  State                       Online Master
  CPU Temperature             42 degrees C / 107 degrees F
```

show chassis environment routing-engine (MX104 Router)

`user@ host >`**show chassis environment routing-engine**

```
Routing Engine 0 status:
  State                       Online Master
  Temperature                 34 degrees C / 93 degrees F
  CPU Temperature             43 degrees C / 109 degrees F
Routing Engine 1 status:
  State                       Online Standby
  Temperature                 33 degrees C / 91 degrees F
  CPU Temperature             39 degrees C / 102 degrees F
```

show chassis environment routing-engine (MX2010 Router)

```
user@host> show chassis environment routing-engine
```

```
Routing Engine 0 status:
  State                       Online Master
  Temperature                 37 degrees C / 98 degrees F
  CPU Temperature             37 degrees C / 98 degrees F
Routing Engine 1 status:
  State                       Online Standby
  Temperature                 35 degrees C / 95 degrees F
  CPU Temperature             34 degrees C / 93 degrees F
```

show chassis environment routing-engine (MX2020 Router)

```
user@host> show chassis environment routing-engine
```

```
Routing Engine 0 status:
  State                       Online Master
  Temperature                 35 degrees C / 95 degrees F
  CPU Temperature             34 degrees C / 93 degrees F
Routing Engine 1 status:
  State                       Online Standby
  Temperature                 44 degrees C / 111 degrees F
  CPU Temperature             43 degrees C / 109 degrees F
```

show chassis environment routing-engine (MX2008 Router)

```
user@host> show chassis environment routing-engine
```

```
Routing Engine 0 status:
  State                       Online Master
  CPU Temperature             75 degrees C / 167 degrees F
```

```
Routing Engine 1 status:
  State                       Online Standby
  CPU Temperature             47 degrees C / 116 degrees F
```

show chassis environment routing-engine (TX Matrix Plus Router)

`user@host>` **show chassis environment routing-engine**

```
sfc0-re0:
--------------------------------------------------------------------------
Routing Engine 0 status:
  State                       Online Master
  Temperature                 26 degrees C / 78 degrees F
Routing Engine 1 status:
  State                       Online Standby
  Temperature                 28 degrees C / 82 degrees F

lcc0-re0:
--------------------------------------------------------------------------
Routing Engine 0 status:
  State                       Online Master
  Temperature                 30 degrees C / 86 degrees F
Routing Engine 1 status:
  State                       Online Standby
  Temperature                 29 degrees C / 84 degrees F
```

show chassis environment routing-engine (T4000 Core Router)

`user@host>` **show chassis environment routing-engine**

```
Routing Engine 0 status:
  State                       Online Master
  Temperature                 33 degrees C / 91 degrees F
  CPU Temperature             50 degrees C / 122 degrees F
Routing Engine 1 status:
  State                       Online Standby
  Temperature                 33 degrees C / 91 degrees F
  CPU Temperature             46 degrees C / 114 degrees F
```

show chassis environment routing-engine (QFX Series and OCX Series)

`user@switch>` **show chassis environment routing-engine**

```
Routing Engine 0 status:
  State                       Online Master
  Temperature                 42 degrees C / 107 degrees F
```

show chassis environment routing-engine interconnect-device (QFabric System)

`user@switch>` **show chassis environment routing-engine interconnect-device interconnect1**

```
routing-engine interconnect-device interconnect1
Routing Engine 0 status:
  State                       Online Standby
  Temperature                 52 degrees C / 125 degrees F
Routing Engine 1 status:
  State                       Online Master
  Temperature                 57 degrees C / 134 degrees F
```

show chassis environment routing-engine (PTX5000 Packet Transport Router)

`user@switch>` **show chassis environment routing-engine**

```
Routing Engine 0 status:
  State                       Online Master
  Temperature                 55 degrees C / 131 degrees F
  CPU Temperature             66 degrees C / 150 degrees F
Routing Engine 1 status:
  State                       Online Standby
  Temperature                 52 degrees C / 125 degrees F
  CPU Temperature             64 degrees C / 147 degrees F
```

show chassis environment routing-engine (PTX10008 Router)

`user@switch>` **show chassis environment routing-engine**

```
Routing Engine 0 status:
  State                       Online Master
  CPU Temperature             40 degrees C / 104 degrees F
Routing Engine 1 status:
  State                       Online Standby
  CPU Temperature             40 degrees C / 104 degrees F
```

show chassis environment routing-engine (PTX10016 Router)

```
user@switch> show chassis environment routing-engine
```

```
Routing Engine 0 status:
  State                    Online Master
  CPU Temperature          33 degrees C / 91 degrees F
Routing Engine 1 status:
  State                    Online Standby
  CPU Temperature          38 degrees C / 100 degrees F
```

show chassis environment routing-engine (ACX5048 and ACX5096 Routers)

```
user@host> show chassis environment routing-engine
```

```
Routing Engine 0 status:
  State                    Online Master
  Temperature              33 degrees C / 91 degrees F
```

show chassis environment routing-engine (ACX500 Routers)

```
user@host> show chassis environment routing-engine
```

```
Routing Engine 0 status:
  State                    Online Master
  Temperature              54 degrees C / 129 degrees F
```

Sample Output

show chassis environment routing-engine (PTX5000 (RE-PTX-X8-64G), MX240 (RE-S-X6-64G), MX480 (RE-S-X6-64G), MX960 (RE-S-X6-64G), MX2010 (RE-MX2K-X8-64G), MX2020 (RE-MX2K-X8-64G)

```
user@switch> show chassis environment routing-engine
```

```
Routing Engine 0 status:
  State                    Online Master
  Temperature              37 degrees C / 98 degrees F
  CPU Temperature          52 degrees C / 125 degrees F
Routing Engine 1 status:
  State                    Online Standby
  Temperature              37 degrees C / 98 degrees F
```

```
  CPU Temperature            51 degrees C / 123 degrees F
```

show chassis environment routing-engine (MX204 Routers)

`user@host>` **show chassis environment routing-engine**

```
Routing Engine 0 status:
  State                      Online Master
```

show chassis environment routing-engine (MX10008 Routers)

```
Routing Engine 0 status:
  State                      Online Master
  CPU Temperature                       41 degrees C / 105 degrees F
Routing Engine 1 status:
  State                      Online Standby
  CPU Temperature                       40 degrees C / 104 degrees F
```

show chassis environment routing-engine (EX9251 Switches)

`user@switch>` **show chassis environment routing-engine**

```
Routing Engine 0 status:
  State                      Online Master
```

show chassis environment routing-engine (EX9253 Switches)

`user@switch>` **show chassis environment routing-engine**

```
Routing Engine 0 status:
  State                      Online Master
Routing Engine 1 status:
  State                      Present
```

show chassis environment scg

List of Syntax

Syntax on page 1108
Syntax (TX Matrix and TX Matrix Plus Router) on page 1108

Syntax

```
show chassis environment scg
<slot>
```

Syntax (TX Matrix and TX Matrix Plus Router)

```
show chassis environment scg
<lcc number>
<slot>
```

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 12.1 for the T4000 Core Routers.

Description

Display SONET Clock Generator (SCG) environmental information.

Options

none—(TX Matrix and TX Matrix Plus routers only) Display environmental information about all SCGs. On a TX Matrix router, display environmental information about all SCGs on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about all SCGs on the TX Matrix Plus router and its attached routers.

lcc *number*—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

slot—(Optional) Display environmental information about the SCG. Replace ***slot*** with **0** or **1**.

Required Privilege Level
view

RELATED DOCUMENTATION

request chassis scg | **662**

Configuring the Clock Source

T320 SONET Clock Generator (SCG) Description

List of Sample Output
show chassis environment scg (T Series Routers) on page 1110
show chassis environment scg (T4000 Core Routers) on page 1110
show chassis environment scg lcc (TX Matrix Router) on page 1111
show chassis environment scg lcc (TX Matrix Plus Router) on page 1111
show chassis environment scg (TX Matrix Plus Router) on page 1112

Output Fields
Table 53 on page 1109 lists the output fields for the **show chassis environment scg** command. Output fields are listed in the approximate order in which they appear.

Table 53: show chassis environment scg Output Fields

Field Name	Field Description
SCG *slot* **status**	Number of the SCG slot: **0** or **1**.
State	Status of the SCG: • **Online**—SCG is online and running. • **Offline**—SCG is powered down. If two SCGs are installed and online, one is functioning as the master, and the other is the standby.
Temperature	Temperature of the air flowing past the SCG.
Power	Power on the SCG. The left column displays required power, in volts. The right column displays measured power, in millivolts.
BUS Revision	Revision level of the generic bus device.

Sample Output

show chassis environment scg (T Series Routers)

user@host> **show chassis environment scg**

```
SCG 0 status:
  State                          Online -  Master clock
  Temperature                 29 degrees C / 84 degrees F
  Power:
    GROUND                     0 mV
    3.3 V                   3297 mV
    5.0 V                   5050 mV
    5.6 V                   5682 mV
    1.8 V bias              1787 mV
    3.3 V bias              3277 mV
    5.0 V bias              4984 mV
    8.0 V bias              8400 mV
  BUS Revision                40
SCG 1 status:
  State                          Online - Standby
  Temperature                 28 degrees C / 82 degrees F
  Power:
    GROUND                     0 mV
    3.3 V                   3317 mV
    5.0 V                   5057 mV
    5.6 V                   5689 mV
    1.8 V bias              1794 mV
    3.3 V bias              3296 mV
    5.0 V bias              4991 mV
    8.0 V bias              8410 mV
    BUS Revision              40
```

show chassis environment scg (T4000 Core Routers)

user@host> **show chassis environment scg**

```
SCG 0 status:
  State                     Online -  Master clock
  Temperature               33 degrees C / 91 degrees F
  Power
    GROUND                     0 mV
    1.8 V bias              1794 mV
    3.3 V                   3310 mV
```

```
    3.3 V bias                3299 mV
    5.0 V                     5040 mV
    5.0 V bias                5003 mV
    5.6 V                     5780 mV
    8.0 V bias                7416 mV
  Bus Revision               40
SCG 1 status:
  State                      Online - Standby
  Temperature                33 degrees C / 91 degrees F
  Power
    GROUND                      0 mV
    1.8 V bias                1794 mV
    3.3 V                     3319 mV
    3.3 V bias                3286 mV
    5.0 V                     5047 mV
    5.0 V bias                5013 mV
    5.6 V                     5758 mV
    8.0 V bias                7347 mV
  Bus Revision               40
```

show chassis environment scg lcc (TX Matrix Router)

`user@host>` **show chassis environment scg lcc 0 0**

```
lcc0-re0:
--------------------------------------------------------------------------
SCG 0 status:
  State                          Online -  Master clock
  Temperature                  30 degrees C / 86 degrees F
  Power:
    GROUND                      0 mV
    3.3 V                     3321 mV
    5.0 V                     5062 mV
    5.6 V                     5682 mV
    1.8 V bias                1789 mV
    3.3 V bias                3289 mV
    5.0 V bias                4993 mV
    8.0 V bias                7807 mV
  BUS Revision                  40
```

show chassis environment scg lcc (TX Matrix Plus Router)

`user@host>` **show chassis environment scg lcc 0**

```
lcc0-re0:
--------------------------------------------------------------------------
SCG 0 status:
  State                       Online -  Master clock
  Temperature                 42 degrees C / 107 degrees F
  Power
    GROUND                       0 mV
    1.8 V bias                1800 mV
    3.3 V                     3290 mV
    3.3 V bias                3304 mV
    5.0 V                     5042 mV
    5.0 V bias                4979 mV
    5.6 V                     5765 mV
    8.0 V bias                7682 mV
  Bus Revision                40
```

show chassis environment scg (TX Matrix Plus Router)

`user@host>` **show chassis environment scg**

```
lcc0-re0:
--------------------------------------------------------------------------
SCG 0 status:
  State                       Online -  Master clock
  Temperature                 40 degrees C / 104 degrees F
  Power
    GROUND                       0 mV
    1.8 V bias                1800 mV
    3.3 V                     3291 mV
    3.3 V bias                3304 mV
    5.0 V                     5042 mV
    5.0 V bias                4979 mV
    5.6 V                     5765 mV
    8.0 V bias                7643 mV
  Bus Revision                40

lcc1-re0:
--------------------------------------------------------------------------
SCG 0 status:
  State                       Online -  Master clock
  Temperature                 37 degrees C / 98 degrees F
  Power
    GROUND                       0 mV
    1.8 V bias                1788 mV
```

```
    3.3 V                      3305 mV
    3.3 V bias                 3284 mV
    5.0 V                      5042 mV
    5.0 V bias                 5010 mV
    5.6 V                      5748 mV
    8.0 V bias                 7692 mV
  Bus Revision                40

lcc2-re0:
--------------------------------------------------------------------------
SCG 0 status:
  State                       Online -  Master clock
  Temperature                 39 degrees C / 102 degrees F
  Power
    GROUND                       0 mV
    1.8 V bias                1785 mV
    3.3 V                     3306 mV
    3.3 V bias                3301 mV
    5.0 V                     5045 mV
    5.0 V bias                4993 mV
    5.6 V                     5765 mV
    8.0 V bias                7838 mV
  Bus Revision                40

lcc3-re0:
--------------------------------------------------------------------------
SCG 0 status:
  State                       Online -  Master clock
  Temperature                 39 degrees C / 102 degrees F
  Power
    GROUND                       0 mV
    1.8 V bias                1800 mV
    3.3 V                     3290 mV
    3.3 V bias                3294 mV
    5.0 V                     5050 mV
    5.0 V bias                4984 mV
    5.6 V                     5780 mV
    8.0 V bias                7716 mV
  Bus Revision                40
```

show chassis environment sfb

Syntax

```
show chassis environment sfb
<all-members>
<local>
<member member-id>
<sfb-slot-number>
```

Release Information

Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 Universal Routing Platforms.
all-members, **local**, and **member *member-id*** options introduced in Junos OS Release 15.1 for MX2020 and MX2010 routers.
Command introduced in Junos OS Release 17.2 for MX2008 Universal Routing Platforms.
Command introduced in Junos OS Release 18.2 for MX10008 Universal Routing Platforms.

Description

Display chassis environmental information about the Switch Fabric Board (SFB).

Options

none—Display environmental information about all Switch Fabric Boards.

all-members—(Optional) Display chassis environmental information about the SFB in all members of the Virtual Chassis configuration.

local—(Optional) Display chassis environmental information about the SFB in the local member of the Virtual Chassis.

member *member-id*—(Optional) Display chassis environmental information about the SFB in the specified member of the Virtual Chassis. Replace ***member-id*** with the value 0 or 1.

sfb-slot-number—(Optional) Display environmental information about the specified Switch Fabric Board. For MX2020, MX2010, and MX2008 routers, replace ***sfb-slot-number*** with a value from 0 through 7.

Required Privilege Level

view

RELATED DOCUMENTATION

request chassis sfb | 664

show chassis sfb | 1722

List of Sample Output

show chassis environment sfb (MX2020 Router) on page 1115
show chassis environment sfb (MX2010 Router) on page 1121
show chassis environment sfb (MX2008 Router) on page 1127
show chassis environment sfb (MX10008 Router) on page 1128

Output Fields

Table 54 on page 1115 lists the output fields for the **show chassis environment sfb** command. Output fields are listed in the approximate order in which they appear.

Table 54: show chassis environment sfb Output Fields

Field Name	Field Description
State	Status of the SFB. • **Online**—The SFB is online and running. • **Offline**— SFB is powered down.
Temperature	Temperature in Celsius (C) and Fahrenheit (F) of the air flowing past the SFB. • **Intake**—Measures the temperature of the air intake. • **Exhaust**—Measures the temperature of the hot air exhaust. • **SFB-XF2**—Measures the temperature of the hot air exhaust for the XF2 fabric plane. • **SFB-XF1**—Measures the temperature of the hot air exhaust for the XF1 fabric plane. • **SFB-XF0**—Measures the temperature of the hot air exhaust for the XF0 fabric plane.
Power	Power required and measured on the SFB. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.

Sample Output

show chassis environment sfb (MX2020 Router)

```
user@host> show chassis environment sfb
```

```
SFB 0 status:
  State                      Online
  Intake-Zone0 Temperature   51 degrees C / 123 degrees F
  Exhaust-Zone1 Temperature  44 degrees C / 111 degrees F
  IntakeA-Zone0 Temperature  46 degrees C / 114 degrees F
  IntakeB-Zone1 Temperature  37 degrees C / 98 degrees F
  Exhaust-Zone0 Temperature  48 degrees C / 118 degrees F
```

```
  SFB-XF2-Zone1 Temperature  58 degrees C / 136 degrees F
  SFB-XF1-Zone0 Temperature  65 degrees C / 149 degrees F
  SFB-XF0-Zone0 Temperature  64 degrees C / 147 degrees F
  Power
    LTC3880-XF2-1.5v-RAIL     1500 mV
    LTC3880-XF2-1.5v-CH0      1500 mV
    LTC3880-XF2-1.5v-CH1      1500 mV
    LTC3880-XF2-1.0v-RAIL     1029 mV
    LTC3880-XF2-1.0v-CH0      1029 mV
    LTC3880-XF2-1.0v-CH1      1032 mV
    LTC3880-XF1-1.5v-RAIL     1499 mV
    LTC3880-XF1-1.5v-CH0      1499 mV
    LTC3880-XF1-1.5v-CH1      1501 mV
    LTC3880-XF1-1.0v-RAIL     1029 mV
    LTC3880-XF1-1.0v-CH0      1029 mV
    LTC3880-XF1-1.0v-CH1      1033 mV
    LTC3880-XF0-1.5v-RAIL     1500 mV
    LTC3880-XF0-1.5v-CH0      1500 mV
    LTC3880-XF0-1.5v-CH1      1501 mV
    LTC3880-XF0-1.0v-RAIL     1029 mV
    LTC3880-XF0-1.0v-CH0      1029 mV
    LTC3880-XF0-1.0v-CH1      1033 mV
    LTC3880-3.3v-RAIL         3300 mV
    LTC3880-3.3v-CH0          3300 mV
    LTC3880-3.3v-CH1          3299 mV
SFB 1 status:
  State                      Online
  Intake-Zone0 Temperature   52 degrees C / 125 degrees F
  Exhaust-Zone1 Temperature  44 degrees C / 111 degrees F
  IntakeA-Zone0 Temperature  47 degrees C / 116 degrees F
  IntakeB-Zone1 Temperature  37 degrees C / 98 degrees F
  Exhaust-Zone0 Temperature  47 degrees C / 116 degrees F
  SFB-XF2-Zone1 Temperature  59 degrees C / 138 degrees F
  SFB-XF1-Zone0 Temperature  63 degrees C / 145 degrees F
  SFB-XF0-Zone0 Temperature  65 degrees C / 149 degrees F
  Power
    LTC3880-XF2-1.5v-RAIL     1500 mV
    LTC3880-XF2-1.5v-CH0      1500 mV
    LTC3880-XF2-1.5v-CH1      1501 mV
    LTC3880-XF2-1.0v-RAIL     1030 mV
    LTC3880-XF2-1.0v-CH0      1030 mV
    LTC3880-XF2-1.0v-CH1      1033 mV
    LTC3880-XF1-1.5v-RAIL     1499 mV
    LTC3880-XF1-1.5v-CH0      1499 mV
```

```
    LTC3880-XF1-1.5v-CH1      1500 mV
    LTC3880-XF1-1.0v-RAIL     1029 mV
    LTC3880-XF1-1.0v-CH0      1029 mV
    LTC3880-XF1-1.0v-CH1      1033 mV
    LTC3880-XF0-1.5v-RAIL     1500 mV
    LTC3880-XF0-1.5v-CH0      1500 mV
    LTC3880-XF0-1.5v-CH1      1501 mV
    LTC3880-XF0-1.0v-RAIL     1030 mV
    LTC3880-XF0-1.0v-CH0      1030 mV
    LTC3880-XF0-1.0v-CH1      1033 mV
    LTC3880-3.3v-RAIL         3300 mV
    LTC3880-3.3v-CH0          3300 mV
    LTC3880-3.3v-CH1          3299 mV
SFB 2 status:
  State                       Online
  Intake-Zone0 Temperature    52 degrees C / 125 degrees F
  Exhaust-Zone1 Temperature   44 degrees C / 111 degrees F
  IntakeA-Zone0 Temperature   47 degrees C / 116 degrees F
  IntakeB-Zone1 Temperature   37 degrees C / 98 degrees F
  Exhaust-Zone0 Temperature   49 degrees C / 120 degrees F
  SFB-XF2-Zone1 Temperature   62 degrees C / 143 degrees F
  SFB-XF1-Zone0 Temperature   66 degrees C / 150 degrees F
  SFB-XF0-Zone0 Temperature   66 degrees C / 150 degrees F
  Power
    LTC3880-XF2-1.5v-RAIL     1499 mV
    LTC3880-XF2-1.5v-CH0      1499 mV
    LTC3880-XF2-1.5v-CH1      1500 mV
    LTC3880-XF2-1.0v-RAIL     1030 mV
    LTC3880-XF2-1.0v-CH0      1030 mV
    LTC3880-XF2-1.0v-CH1      1033 mV
    LTC3880-XF1-1.5v-RAIL     1500 mV
    LTC3880-XF1-1.5v-CH0      1500 mV
    LTC3880-XF1-1.5v-CH1      1501 mV
    LTC3880-XF1-1.0v-RAIL     1030 mV
    LTC3880-XF1-1.0v-CH0      1030 mV
    LTC3880-XF1-1.0v-CH1      1033 mV
    LTC3880-XF0-1.5v-RAIL     1499 mV
    LTC3880-XF0-1.5v-CH0      1499 mV
    LTC3880-XF0-1.5v-CH1      1501 mV
    LTC3880-XF0-1.0v-RAIL     1030 mV
    LTC3880-XF0-1.0v-CH0      1030 mV
    LTC3880-XF0-1.0v-CH1      1033 mV
    LTC3880-3.3v-RAIL         3300 mV
    LTC3880-3.3v-CH0          3300 mV
```

```
    LTC3880-3.3v-CH1          3299 mV
SFB 3 status:
  State                      Online
  Intake-Zone0 Temperature   53 degrees C / 127 degrees F
  Exhaust-Zone1 Temperature  44 degrees C / 111 degrees F
  IntakeA-Zone0 Temperature  48 degrees C / 118 degrees F
  IntakeB-Zone1 Temperature  38 degrees C / 100 degrees F
  Exhaust-Zone0 Temperature  49 degrees C / 120 degrees F
  SFB-XF2-Zone1 Temperature  62 degrees C / 143 degrees F
  SFB-XF1-Zone0 Temperature  65 degrees C / 149 degrees F
  SFB-XF0-Zone0 Temperature  68 degrees C / 154 degrees F
  Power
    LTC3880-XF2-1.5v-RAIL     1500 mV
    LTC3880-XF2-1.5v-CH0      1500 mV
    LTC3880-XF2-1.5v-CH1      1500 mV
    LTC3880-XF2-1.0v-RAIL     1029 mV
    LTC3880-XF2-1.0v-CH0      1029 mV
    LTC3880-XF2-1.0v-CH1      1033 mV
    LTC3880-XF1-1.5v-RAIL     1500 mV
    LTC3880-XF1-1.5v-CH0      1500 mV
    LTC3880-XF1-1.5v-CH1      1501 mV
    LTC3880-XF1-1.0v-RAIL     1030 mV
    LTC3880-XF1-1.0v-CH0      1030 mV
    LTC3880-XF1-1.0v-CH1      1033 mV
    LTC3880-XF0-1.5v-RAIL     1499 mV
    LTC3880-XF0-1.5v-CH0      1499 mV
    LTC3880-XF0-1.5v-CH1      1501 mV
    LTC3880-XF0-1.0v-RAIL     1030 mV
    LTC3880-XF0-1.0v-CH0      1030 mV
    LTC3880-XF0-1.0v-CH1      1034 mV
    LTC3880-3.3v-RAIL         3300 mV
    LTC3880-3.3v-CH0          3300 mV
    LTC3880-3.3v-CH1          3300 mV
SFB 4 status:
  State                      Online
  Intake-Zone0 Temperature   54 degrees C / 129 degrees F
  Exhaust-Zone1 Temperature  46 degrees C / 114 degrees F
  IntakeA-Zone0 Temperature  49 degrees C / 120 degrees F
  IntakeB-Zone1 Temperature  39 degrees C / 102 degrees F
  Exhaust-Zone0 Temperature  50 degrees C / 122 degrees F
  SFB-XF2-Zone1 Temperature  61 degrees C / 141 degrees F
  SFB-XF1-Zone0 Temperature  64 degrees C / 147 degrees F
  SFB-XF0-Zone0 Temperature  67 degrees C / 152 degrees F
  Power
```

```
    LTC3880-XF2-1.5v-RAIL     1500 mV
    LTC3880-XF2-1.5v-CH0      1500 mV
    LTC3880-XF2-1.5v-CH1      1500 mV
    LTC3880-XF2-1.0v-RAIL     1030 mV
    LTC3880-XF2-1.0v-CH0      1030 mV
    LTC3880-XF2-1.0v-CH1      1033 mV
    LTC3880-XF1-1.5v-RAIL     1499 mV
    LTC3880-XF1-1.5v-CH0      1499 mV
    LTC3880-XF1-1.5v-CH1      1501 mV
    LTC3880-XF1-1.0v-RAIL     1030 mV
    LTC3880-XF1-1.0v-CH0      1030 mV
    LTC3880-XF1-1.0v-CH1      1033 mV
    LTC3880-XF0-1.5v-RAIL     1500 mV
    LTC3880-XF0-1.5v-CH0      1500 mV
    LTC3880-XF0-1.5v-CH1      1501 mV
    LTC3880-XF0-1.0v-RAIL     1030 mV
    LTC3880-XF0-1.0v-CH0      1030 mV
    LTC3880-XF0-1.0v-CH1      1033 mV
    LTC3880-3.3v-RAIL         3299 mV
    LTC3880-3.3v-CH0          3299 mV
    LTC3880-3.3v-CH1          3299 mV
SFB 5 status:
  State                       Online
  Intake-Zone0 Temperature    54 degrees C / 129 degrees F
  Exhaust-Zone1 Temperature   46 degrees C / 114 degrees F
  IntakeA-Zone0 Temperature   49 degrees C / 120 degrees F
  IntakeB-Zone1 Temperature   40 degrees C / 104 degrees F
  Exhaust-Zone0 Temperature   50 degrees C / 122 degrees F
  SFB-XF2-Zone1 Temperature   63 degrees C / 145 degrees F
  SFB-XF1-Zone0 Temperature   65 degrees C / 149 degrees F
  SFB-XF0-Zone0 Temperature   70 degrees C / 158 degrees F
  Power
    LTC3880-XF2-1.5v-RAIL     1500 mV
    LTC3880-XF2-1.5v-CH0      1500 mV
    LTC3880-XF2-1.5v-CH1      1500 mV
    LTC3880-XF2-1.0v-RAIL     1029 mV
    LTC3880-XF2-1.0v-CH0      1029 mV
    LTC3880-XF2-1.0v-CH1      1033 mV
    LTC3880-XF1-1.5v-RAIL     1499 mV
    LTC3880-XF1-1.5v-CH0      1499 mV
    LTC3880-XF1-1.5v-CH1      1500 mV
    LTC3880-XF1-1.0v-RAIL     1030 mV
    LTC3880-XF1-1.0v-CH0      1030 mV
    LTC3880-XF1-1.0v-CH1      1033 mV
```

```
    LTC3880-XF0-1.5v-RAIL     1499 mV
    LTC3880-XF0-1.5v-CH0      1499 mV
    LTC3880-XF0-1.5v-CH1      1501 mV
    LTC3880-XF0-1.0v-RAIL     1029 mV
    LTC3880-XF0-1.0v-CH0      1029 mV
    LTC3880-XF0-1.0v-CH1      1033 mV
    LTC3880-3.3v-RAIL         3299 mV
    LTC3880-3.3v-CH0          3299 mV
    LTC3880-3.3v-CH1          3300 mV
SFB 6 status:
  State                      Online
  Intake-Zone0 Temperature   54 degrees C / 129 degrees F
  Exhaust-Zone1 Temperature  46 degrees C / 114 degrees F
  IntakeA-Zone0 Temperature  48 degrees C / 118 degrees F
  IntakeB-Zone1 Temperature  40 degrees C / 104 degrees F
  Exhaust-Zone0 Temperature  49 degrees C / 120 degrees F
  SFB-XF2-Zone1 Temperature  62 degrees C / 143 degrees F
  SFB-XF1-Zone0 Temperature  64 degrees C / 147 degrees F
  SFB-XF0-Zone0 Temperature  68 degrees C / 154 degrees F
  Power
    LTC3880-XF2-1.5v-RAIL     1499 mV
    LTC3880-XF2-1.5v-CH0      1499 mV
    LTC3880-XF2-1.5v-CH1      1501 mV
    LTC3880-XF2-1.0v-RAIL     1030 mV
    LTC3880-XF2-1.0v-CH0      1030 mV
    LTC3880-XF2-1.0v-CH1      1033 mV
    LTC3880-XF1-1.5v-RAIL     1499 mV
    LTC3880-XF1-1.5v-CH0      1499 mV
    LTC3880-XF1-1.5v-CH1      1500 mV
    LTC3880-XF1-1.0v-RAIL     1029 mV
    LTC3880-XF1-1.0v-CH0      1029 mV
    LTC3880-XF1-1.0v-CH1      1033 mV
    LTC3880-XF0-1.5v-RAIL     1499 mV
    LTC3880-XF0-1.5v-CH0      1499 mV
    LTC3880-XF0-1.5v-CH1      1501 mV
    LTC3880-XF0-1.0v-RAIL     1029 mV
    LTC3880-XF0-1.0v-CH0      1029 mV
    LTC3880-XF0-1.0v-CH1      1033 mV
    LTC3880-3.3v-RAIL         3300 mV
    LTC3880-3.3v-CH0          3300 mV
    LTC3880-3.3v-CH1          3300 mV
SFB 7 status:
  State                      Online
  Intake-Zone0 Temperature   53 degrees C / 127 degrees F
```

```
  Exhaust-Zone1 Temperature  46 degrees C / 114 degrees F
  IntakeA-Zone0 Temperature  49 degrees C / 120 degrees F
  IntakeB-Zone1 Temperature  40 degrees C / 104 degrees F
  Exhaust-Zone0 Temperature  50 degrees C / 122 degrees F
  SFB-XF2-Zone1 Temperature  64 degrees C / 147 degrees F
  SFB-XF1-Zone0 Temperature  66 degrees C / 150 degrees F
  SFB-XF0-Zone0 Temperature  69 degrees C / 156 degrees F
  Power
    LTC3880-XF2-1.5v-RAIL     1500 mV
    LTC3880-XF2-1.5v-CH0      1500 mV
    LTC3880-XF2-1.5v-CH1      1501 mV
    LTC3880-XF2-1.0v-RAIL     1029 mV
    LTC3880-XF2-1.0v-CH0      1029 mV
    LTC3880-XF2-1.0v-CH1      1033 mV
    LTC3880-XF1-1.5v-RAIL     1499 mV
    LTC3880-XF1-1.5v-CH0      1499 mV
    LTC3880-XF1-1.5v-CH1      1501 mV
    LTC3880-XF1-1.0v-RAIL     1030 mV
    LTC3880-XF1-1.0v-CH0      1030 mV
    LTC3880-XF1-1.0v-CH1      1033 mV
    LTC3880-XF0-1.5v-RAIL     1499 mV
    LTC3880-XF0-1.5v-CH0      1499 mV
    LTC3880-XF0-1.5v-CH1      1501 mV
    LTC3880-XF0-1.0v-RAIL     1030 mV
    LTC3880-XF0-1.0v-CH0      1030 mV
    LTC3880-XF0-1.0v-CH1      1033 mV
    LTC3880-3.3v-RAIL         3300 mV
    LTC3880-3.3v-CH0          3300 mV
    LTC3880-3.3v-CH1          3300 mV
```

show chassis environment sfb (MX2010 Router)

`user@host>` **show chassis environment sfb**

```
SFB 0 status:
  State                      Online
  Intake-Zone0 Temperature   31 degrees C / 87 degrees F
  Exhaust-Zone1 Temperature  22 degrees C / 71 degrees F
  IntakeA-Zone0 Temperature  21 degrees C / 69 degrees F
  IntakeB-Zone1 Temperature  16 degrees C / 60 degrees F
  Exhaust-Zone0 Temperature  23 degrees C / 73 degrees F
  SFB-XF2-Zone1 Temperature  30 degrees C / 86 degrees F
  SFB-XF1-Zone0 Temperature  28 degrees C / 82 degrees F
  SFB-XF0-Zone0 Temperature  38 degrees C / 100 degrees F
```

```
  Power
    LTC3880-XF2-1.5v-RAIL     1500 mV
    LTC3880-XF2-1.5v-CH0      1500 mV
    LTC3880-XF2-1.5v-CH1      1500 mV
    LTC3880-XF2-1.0v-RAIL      949 mV
    LTC3880-XF2-1.0v-CH0       949 mV
    LTC3880-XF2-1.0v-CH1       951 mV
    LTC3880-XF1-1.5v-RAIL     1499 mV
    LTC3880-XF1-1.5v-CH0      1499 mV
    LTC3880-XF1-1.5v-CH1      1500 mV
    LTC3880-XF1-1.0v-RAIL      949 mV
    LTC3880-XF1-1.0v-CH0       949 mV
    LTC3880-XF1-1.0v-CH1       951 mV
    LTC3880-XF0-1.5v-RAIL     1499 mV
    LTC3880-XF0-1.5v-CH0      1499 mV
    LTC3880-XF0-1.5v-CH1      1500 mV
    LTC3880-XF0-1.0v-RAIL     1029 mV
    LTC3880-XF0-1.0v-CH0      1029 mV
    LTC3880-XF0-1.0v-CH1      1032 mV
    LTC3880-3.3v-RAIL         3300 mV
    LTC3880-3.3v-CH0          3300 mV
    LTC3880-3.3v-CH1          3299 mV
SFB 1 status:
  State                      Online
  Intake-Zone0 Temperature   32 degrees C / 89 degrees F
  Exhaust-Zone1 Temperature  20 degrees C / 68 degrees F
  IntakeA-Zone0 Temperature  25 degrees C / 77 degrees F
  IntakeB-Zone1 Temperature  15 degrees C / 59 degrees F
  Exhaust-Zone0 Temperature  24 degrees C / 75 degrees F
  SFB-XF2-Zone1 Temperature  31 degrees C / 87 degrees F
  SFB-XF1-Zone0 Temperature  31 degrees C / 87 degrees F
  SFB-XF0-Zone0 Temperature  37 degrees C / 98 degrees F
  Power
    LTC3880-XF2-1.5v-RAIL     1499 mV
    LTC3880-XF2-1.5v-CH0      1499 mV
    LTC3880-XF2-1.5v-CH1      1500 mV
    LTC3880-XF2-1.0v-RAIL     1029 mV
    LTC3880-XF2-1.0v-CH0      1029 mV
    LTC3880-XF2-1.0v-CH1      1031 mV
    LTC3880-XF1-1.5v-RAIL     1499 mV
    LTC3880-XF1-1.5v-CH0      1499 mV
    LTC3880-XF1-1.5v-CH1      1500 mV
    LTC3880-XF1-1.0v-RAIL     1029 mV
    LTC3880-XF1-1.0v-CH0      1029 mV
```

```
    LTC3880-XF1-1.0v-CH1      1031 mV
    LTC3880-XF0-1.5v-RAIL     1500 mV
LTC3880-XF0-1.5v-CH0      1500 mV
    LTC3880-XF0-1.5v-CH1      1500 mV
    LTC3880-XF0-1.0v-RAIL     1029 mV
    LTC3880-XF0-1.0v-CH0      1029 mV
    LTC3880-XF0-1.0v-CH1      1032 mV
    LTC3880-3.3v-RAIL         3299 mV
    LTC3880-3.3v-CH0          3299 mV
    LTC3880-3.3v-CH1          3299 mV
SFB 2 status:
  State                       Online
  Intake-Zone0 Temperature    26 degrees C / 78 degrees F
  Exhaust-Zone1 Temperature   19 degrees C / 66 degrees F
  IntakeA-Zone0 Temperature   23 degrees C / 73 degrees F
  IntakeB-Zone1 Temperature   15 degrees C / 59 degrees F
  Exhaust-Zone0 Temperature   21 degrees C / 69 degrees F
  SFB-XF2-Zone1 Temperature   29 degrees C / 84 degrees F
  SFB-XF1-Zone0 Temperature   26 degrees C / 78 degrees F
  SFB-XF0-Zone0 Temperature   31 degrees C / 87 degrees F
  Power
    LTC3880-XF2-1.5v-RAIL     1500 mV
    LTC3880-XF2-1.5v-CH0      1500 mV
    LTC3880-XF2-1.5v-CH1      1500 mV
    LTC3880-XF2-1.0v-RAIL     1029 mV
    LTC3880-XF2-1.0v-CH0      1029 mV
    LTC3880-XF2-1.0v-CH1      1031 mV
    LTC3880-XF1-1.5v-RAIL     1499 mV
    LTC3880-XF1-1.5v-CH0      1499 mV
    LTC3880-XF1-1.5v-CH1      1500 mV
    LTC3880-XF1-1.0v-RAIL     1030 mV
    LTC3880-XF1-1.0v-CH0      1030 mV
    LTC3880-XF1-1.0v-CH1      1031 mV
    LTC3880-XF0-1.5v-RAIL     1499 mV
    LTC3880-XF0-1.5v-CH0      1499 mV
    LTC3880-XF0-1.5v-CH1      1500 mV
    LTC3880-XF0-1.0v-RAIL     1029 mV
    LTC3880-XF0-1.0v-CH0      1029 mV
    LTC3880-XF0-1.0v-CH1      1032 mV
    LTC3880-3.3v-RAIL         3300 mV
    LTC3880-3.3v-CH0          3300 mV
    LTC3880-3.3v-CH1          3300 mV
SFB 3 status:
  State                       Offline
```

```
  Reason                          No power
SFB 4 status:
  State                         Online
  Intake-Zone0 Temperature    33 degrees C / 91 degrees F
  Exhaust-Zone1 Temperature   21 degrees C / 69 degrees F
  IntakeA-Zone0 Temperature   24 degrees C / 75 degrees F
  IntakeB-Zone1 Temperature   17 degrees C / 62 degrees F
  Exhaust-Zone0 Temperature   24 degrees C / 75 degrees F
  SFB-XF2-Zone1 Temperature   32 degrees C / 89 degrees F
  SFB-XF1-Zone0 Temperature   32 degrees C / 89 degrees F
  SFB-XF0-Zone0 Temperature   37 degrees C / 98 degrees F
  Power
    LTC3880-XF2-1.5v-RAIL     1499 mV
    LTC3880-XF2-1.5v-CH0      1499 mV
 LTC3880-XF2-1.5v-CH1      1500 mV
    LTC3880-XF2-1.0v-RAIL      949 mV
    LTC3880-XF2-1.0v-CH0       949 mV
    LTC3880-XF2-1.0v-CH1       952 mV
    LTC3880-XF1-1.5v-RAIL     1500 mV
    LTC3880-XF1-1.5v-CH0      1500 mV
    LTC3880-XF1-1.5v-CH1      1500 mV
    LTC3880-XF1-1.0v-RAIL     1029 mV
    LTC3880-XF1-1.0v-CH0      1029 mV
    LTC3880-XF1-1.0v-CH1      1031 mV
    LTC3880-XF0-1.5v-RAIL     1499 mV
    LTC3880-XF0-1.5v-CH0      1499 mV
    LTC3880-XF0-1.5v-CH1      1500 mV
    LTC3880-XF0-1.0v-RAIL      949 mV
    LTC3880-XF0-1.0v-CH0       949 mV
    LTC3880-XF0-1.0v-CH1       952 mV
    LTC3880-3.3v-RAIL         3299 mV
    LTC3880-3.3v-CH0          3299 mV
    LTC3880-3.3v-CH1          3299 mV
SFB 5 status:
  State                         Online
  Intake-Zone0 Temperature    27 degrees C / 80 degrees F
  Exhaust-Zone1 Temperature   20 degrees C / 68 degrees F
  IntakeA-Zone0 Temperature   23 degrees C / 73 degrees F
  IntakeB-Zone1 Temperature   15 degrees C / 59 degrees F
  Exhaust-Zone0 Temperature   22 degrees C / 71 degrees F
  SFB-XF2-Zone1 Temperature   27 degrees C / 80 degrees F
  SFB-XF1-Zone0 Temperature   34 degrees C / 93 degrees F
  SFB-XF0-Zone0 Temperature   32 degrees C / 89 degrees F
  Power
```

```
    LTC3880-XF2-1.5v-RAIL     1500 mV
    LTC3880-XF2-1.5v-CH0      1500 mV
    LTC3880-XF2-1.5v-CH1      1500 mV
    LTC3880-XF2-1.0v-RAIL      949 mV
    LTC3880-XF2-1.0v-CH0       949 mV
    LTC3880-XF2-1.0v-CH1       951 mV
    LTC3880-XF1-1.5v-RAIL     1499 mV
    LTC3880-XF1-1.5v-CH0      1499 mV
    LTC3880-XF1-1.5v-CH1      1500 mV
    LTC3880-XF1-1.0v-RAIL      949 mV
    LTC3880-XF1-1.0v-CH0       949 mV
    LTC3880-XF1-1.0v-CH1       951 mV
    LTC3880-XF0-1.5v-RAIL     1499 mV
    LTC3880-XF0-1.5v-CH0      1499 mV
    LTC3880-XF0-1.5v-CH1      1500 mV
    LTC3880-XF0-1.0v-RAIL     1029 mV
    LTC3880-XF0-1.0v-CH0      1029 mV
    LTC3880-XF0-1.0v-CH1      1032 mV
    LTC3880-3.3v-RAIL         3299 mV
    LTC3880-3.3v-CH0          3299 mV
    LTC3880-3.3v-CH1          3299 mV
SFB 6 status:
  State                      Online
  Intake-Zone0 Temperature   32 degrees C / 89 degrees F
  Exhaust-Zone1 Temperature  19 degrees C / 66 degrees F
  IntakeA-Zone0 Temperature  24 degrees C / 75 degrees F
 IntakeB-Zone1 Temperature  15 degrees C / 59 degrees F
  Exhaust-Zone0 Temperature  25 degrees C / 77 degrees F
  SFB-XF2-Zone1 Temperature  29 degrees C / 84 degrees F
  SFB-XF1-Zone0 Temperature  37 degrees C / 98 degrees F
  SFB-XF0-Zone0 Temperature  39 degrees C / 102 degrees F
  Power
    LTC3880-XF2-1.5v-RAIL     1500 mV
    LTC3880-XF2-1.5v-CH0      1500 mV
    LTC3880-XF2-1.5v-CH1      1500 mV
    LTC3880-XF2-1.0v-RAIL     1029 mV
    LTC3880-XF2-1.0v-CH0      1029 mV
    LTC3880-XF2-1.0v-CH1      1031 mV
    LTC3880-XF1-1.5v-RAIL     1499 mV
    LTC3880-XF1-1.5v-CH0      1499 mV
    LTC3880-XF1-1.5v-CH1      1500 mV
    LTC3880-XF1-1.0v-RAIL      949 mV
    LTC3880-XF1-1.0v-CH0       949 mV
    LTC3880-XF1-1.0v-CH1       951 mV
```

```
    LTC3880-XF0-1.5v-RAIL     1499 mV
    LTC3880-XF0-1.5v-CH0      1499 mV
    LTC3880-XF0-1.5v-CH1      1500 mV
    LTC3880-XF0-1.0v-RAIL     1029 mV
    LTC3880-XF0-1.0v-CH0      1029 mV
    LTC3880-XF0-1.0v-CH1      1032 mV
    LTC3880-3.3v-RAIL         3300 mV
    LTC3880-3.3v-CH0          3300 mV
    LTC3880-3.3v-CH1          3299 mV
SFB 7 status:
  State                      Online
  Intake-Zone0 Temperature   31 degrees C / 87 degrees F
  Exhaust-Zone1 Temperature  18 degrees C / 64 degrees F
  IntakeA-Zone0 Temperature  20 degrees C / 68 degrees F
  IntakeB-Zone1 Temperature  13 degrees C / 55 degrees F
  Exhaust-Zone0 Temperature  22 degrees C / 71 degrees F
  SFB-XF2-Zone1 Temperature  27 degrees C / 80 degrees F
  SFB-XF1-Zone0 Temperature  26 degrees C / 78 degrees F
  SFB-XF0-Zone0 Temperature  39 degrees C / 102 degrees F
  Power
    LTC3880-XF2-1.5v-RAIL     1499 mV
    LTC3880-XF2-1.5v-CH0      1499 mV
    LTC3880-XF2-1.5v-CH1      1500 mV
    LTC3880-XF2-1.0v-RAIL     1029 mV
    LTC3880-XF2-1.0v-CH0      1029 mV
    LTC3880-XF2-1.0v-CH1      1031 mV
    LTC3880-XF1-1.5v-RAIL     1499 mV
    LTC3880-XF1-1.5v-CH0      1499 mV
    LTC3880-XF1-1.5v-CH1      1500 mV
    LTC3880-XF1-1.0v-RAIL     1029 mV
    LTC3880-XF1-1.0v-CH0      1029 mV
    LTC3880-XF1-1.0v-CH1      1031 mV
    LTC3880-XF0-1.5v-RAIL     1500 mV
    LTC3880-XF0-1.5v-CH0      1500 mV
    LTC3880-XF0-1.5v-CH1      1500 mV
    LTC3880-XF0-1.0v-RAIL     1029 mV
    LTC3880-XF0-1.0v-CH0      1029 mV
    LTC3880-XF0-1.0v-CH1      1031 mV
    LTC3880-3.3v-RAIL         3300 mV
    LTC3880-3.3v-CH0          3300 mV
    LTC3880-3.3v-CH1          3299 mV
```

show chassis environment sfb (MX2008 Router)

user@host> **show chassis environment sfb**

```
SFB 0 status:
  State                      Online
  Inlet1 Temperature         26 degrees C / 78 degrees F
  Inlet2 Temperature         27 degrees C / 80 degrees F
  Exhaust1 Temperature       26 degrees C / 78 degrees F
  Exhaust2 Temperature       28 degrees C / 82 degrees F
  SFB2-PF-local Temperature  27 degrees C / 80 degrees F
  SFB2-PF-die Temperature    33 degrees C / 91 degrees F
  Power
    SFB2-PF0-1.0V-PLL           1008 mV
    SFB2-1.0V                    988 mV
    SFB2-10.8V                 10727 mV
    SFB2-1.5V                   1491 mV
    SFB2-PF0-1.8V               1782 mV
    SFB2-2.5V                   2475 mV
    SFB2-Bias-5V                5535 mV
    SFB2-3.3V-Main              3294 mV
    SFB2-1.8V                   1798 mV
    MAX20751-PF0-0.9v            974 mV
    MAX20751-PF0-1.0v           1020 mV
SFB 1 status:
  State                      Online
  Inlet1 Temperature         26 degrees C / 78 degrees F
  Inlet2 Temperature         29 degrees C / 84 degrees F
  Exhaust1 Temperature       26 degrees C / 78 degrees F
  Exhaust2 Temperature       29 degrees C / 84 degrees F
  SFB2-PF-local Temperature  29 degrees C / 84 degrees F
  SFB2-PF-die Temperature    41 degrees C / 105 degrees F
  Power
    SFB2-PF0-1.0V-PLL           1014 mV
    SFB2-1.0V                    994 mV
    SFB2-10.8V                 10746 mV
    SFB2-1.5V                   1495 mV
    SFB2-PF0-1.8V               1814 mV
    SFB2-2.5V                   2478 mV
    SFB2-Bias-5V                5594 mV
    SFB2-3.3V-Main              3306 mV
    SFB2-1.8V                   1774 mV
    MAX20751-PF0-0.9v            974 mV
    MAX20751-PF0-1.0v           1020 mV
```

```
SFB 2 status:
  State                       Online
  Inlet1 Temperature          29 degrees C / 84 degrees F
  Inlet2 Temperature          36 degrees C / 96 degrees F
  Exhaust1 Temperature        27 degrees C / 80 degrees F
  Exhaust2 Temperature        34 degrees C / 93 degrees F
  SFB2-PF-local Temperature   38 degrees C / 100 degrees F
  SFB2-PF-die Temperature     40 degrees C / 104 degrees F
  Power
    SFB2-PF0-1.0V-PLL           1010 mV
    SFB2-1.0V                    994 mV
    SFB2-10.8V                 10805 mV
    SFB2-1.5V                   1495 mV
    SFB2-PF0-1.8V               1804 mV
    SFB2-2.5V                   2475 mV
    SFB2-Bias-5V                5562 mV

    SFB2-3.3V-Main              3302 mV
    SFB2-1.8V                   1788 mV
    MAX20751-PF0-0.9v            974 mV
    MAX20751-PF0-1.0v           1020
```

show chassis environment sfb (MX10008 Router)

`user@host>` **show chassis environment sfb**

```
SFB 0 status:
  State                       Online
  Intake-A Temperature                  33 degrees C / 91 degrees F
  Intake-B Temperature                  22 degrees C / 71 degrees F
  Exhaust-A Temperature                 27 degrees C / 80 degrees F
  Exhaust-B Temperature                 32 degrees C / 89 degrees F
  PF0 Temperature                       38 degrees C / 100 degrees F
  PF1 Temperature                       29 degrees C / 84 degrees F
  Power
    PF0 Core 0.9V               925 mV
    PF0 AVDD 1V                 999 mV
    PF1 Core 0.9V               922 mV
    PF1 AVDD 1V                1000 mV
    12V                       12311 mV
SFB 1 status:
  State                       Online
  Intake-A Temperature                  43 degrees C / 109 degrees F
  Intake-B Temperature                  21 degrees C / 69 degrees F
```

```
  Exhaust-A Temperature                 25 degrees C / 77 degrees F
  Exhaust-B Temperature                 43 degrees C / 109 degrees F
  PF0 Temperature                       49 degrees C / 120 degrees F
  PF1 Temperature                       29 degrees C / 84 degrees F
  Power
    PF0 Core 0.9V               951 mV
    PF0 AVDD 1V                1000 mV
    PF1 Core 0.9V               924 mV
    PF1 AVDD 1V                1000 mV
    12V                       12311 mV
SFB 2 status:
  State                     Online
  Intake-A Temperature                  39 degrees C / 102 degrees F
  Intake-B Temperature                  21 degrees C / 69 degrees F
  Exhaust-A Temperature                 25 degrees C / 77 degrees F
  Exhaust-B Temperature                 38 degrees C / 100 degrees F
  PF0 Temperature                       44 degrees C / 111 degrees F
  PF1 Temperature                       30 degrees C / 86 degrees F
  Power
    PF0 Core 0.9V               923 mV
    PF0 AVDD 1V                1000 mV
    PF1 Core 0.9V               925 mV
    PF1 AVDD 1V                 999 mV
    12V                       12364 mV
SFB 3 status:
  State                     Online
  Intake-A Temperature                  37 degrees C / 98 degrees F
  Intake-B Temperature                  21 degrees C / 69 degrees F
  Exhaust-A Temperature                 26 degrees C / 78 degrees F
  Exhaust-B Temperature                 34 degrees C / 93 degrees F
  PF0 Temperature                       41 degrees C / 105 degrees F
  PF1 Temperature                       29 degrees C / 84 degrees F
  Power
    PF0 Core 0.9V               925 mV
    PF0 AVDD 1V                1000 mV
    PF1 Core 0.9V               923 mV
    PF1 AVDD 1V                1000 mV
    12V                       12285 mV
SFB 4 status:
  State                     Online
  Intake-A Temperature                  30 degrees C / 86 degrees F
  Intake-B Temperature                  20 degrees C / 68 degrees F
  Exhaust-A Temperature                 25 degrees C / 77 degrees F
  Exhaust-B Temperature                 31 degrees C / 87 degrees F
```

```
  PF0 Temperature                         40 degrees C / 104 degrees F
  PF1 Temperature                         29 degrees C / 84 degrees F
  Power
    PF0 Core 0.9V                 951 mV
    PF0 AVDD 1V                  1000 mV
    PF1 Core 0.9V                 948 mV
    PF1 AVDD 1V                   999 mV
    12V                         12193 mV
SFB 5 status:
  State                       Online
  Intake-A Temperature                  30 degrees C / 86 degrees F
  Intake-B Temperature                  21 degrees C / 69 degrees F
  Exhaust-A Temperature                 26 degrees C / 78 degrees F
  Exhaust-B Temperature                 30 degrees C / 86 degrees F
  PF0 Temperature                       34 degrees C / 93 degrees F
  PF1 Temperature                       33 degrees C / 91 degrees F
  Power
    PF0 Core 0.9V                 951 mV
    PF0 AVDD 1V                  1000 mV
    PF1 Core 0.9V                 948 mV
    PF1 AVDD 1V                   999 mV
    12V                         12166 mV
```

show chassis environment sfm

Syntax

```
show chassis environment sfm
<slot>
```

Release Information

Command introduced before Junos OS Release 7.4.

Description

(M40e and M160 routers only) Display Switching and Forwarding Module (SFM) environmental information.

Options

none—Display environmental information about all SFMs.

slot—(Optional) Display environmental information about an individual SFM. Replace ***slot*** with a value from **0** through **3**.

Required Privilege Level

view

RELATED DOCUMENTATION

request chassis sfm | **668**

request chassis sfm master switch | **666**

Configuring SFM Redundancy on M40e and M160 Routers

Switching the Global Master and Backup Roles in a Virtual Chassis Configuration

List of Sample Output

show chassis environment sfm (M40e Router) on page 1132

show chassis environment sfm (M160 Router) on page 1133

Output Fields

Table 55 on page 1132 lists the output fields for the **show chassis environment sfm** command. Output fields are listed in the approximate order in which they appear.

Table 55: show chassis environment sfm Output Fields

Field Name	Field Description
SFM *slot* status	SFM slot number: **0** or **1** on an M40e router, or **0**, **1**, **2**, or **3** on an M160 router.
State	Status of the SFM: • **Online**—SFM is online and running. • **Offline**—SFM is powered down. If two SFMs are installed and online, one is functioning as the master, and the other is marked as the **Standby**.
SPP Temperature	Temperature of the air flowing past the Switch Plane Processor card.
SPR Temperature	Temperature of the air flowing past the Switch Plane Router card.
SPP Power	Information about the voltage supplied to the Switch Plane Processor card. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
SPR Power	Information about the voltage supplied to the Switch Plane Router. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
CMB Revision	Revision level of the Chassis Management Bus (CMB) device.

Sample Output

show chassis environment sfm (M40e Router)

```
user@host> show chassis environment sfm
```

```
SFM 0 status:
  State                          Online
  SPP temperature              40 degrees C / 104 degrees F
  SPR temperature              44 degrees C / 111 degrees F
  SPP Power:
    1.5 V                    1501 mV
    2.5 V                    2472 mV
    3.3 V                    3293 mV
    5.0 V                    5028 mV
    5.0 V bias               4964 mV
```

```
  SPR Power:
    1.5 V                    1501 mV
    2.5 V                    2483 mV
    3.3 V                    3308 mV
    5.0 V                    5035 mV
    5.0 V bias               4981 mV
    8.0 V bias               8239 mV
  CMB Revision                 12
SFM 1 status:
  State                          Online - Standby
  SPP temperature              43 degrees C / 109 degrees F
  SPR temperature              45 degrees C / 113 degrees F
  SPP Power:
    1.5 V                    1503 mV
    2.5 V                    2483 mV
    3.3 V                    3284 mV
    5.0 V                    5045 mV
    5.0 V bias               4993 mV
  SPR Power:
    1.5 V                    1498 mV
    2.5 V                    2472 mV
    3.3 V                    3284 mV
    5.0 V                    5035 mV
    5.0 V bias               4991 mV
    8.0 V bias               8231 mV
  CMB Revision                 12
```

show chassis environment sfm (M160 Router)

`user@host>` **show chassis environment sfm**

```
SFM 0 status:
  State                          Online
  SPP temperature              43 degrees C / 109 degrees F
  SPR temperature              44 degrees C / 111 degrees F
  SPP Power:
    1.5 V                    1504 mV
    2.5 V                    2474 mV
    3.3 V                    3290 mV
    5.0 V                    5015 mV
    5.0 V bias               4962 mV
  SPR Power:
    1.5 V                    1498 mV
    2.5 V                    2482 mV
```

```
    3.3 V                    3299 mV
    5.0 V                    5020 mV
    5.0 V bias               4971 mV
    8.0 V bias               8229 mV
  CMB Revision                 12
SFM 1 status:
  State                          Online
  SPP temperature              47 degrees C / 116 degrees F
  SPR temperature              50 degrees C / 122 degrees F
  SPP Power:
    1.5 V                    1499 mV
    2.5 V                    2466 mV
    3.3 V                    3274 mV
    5.0 V                    5025 mV
    5.0 V bias               4984 mV
  SPR Power:
    1.5 V                    1496 mV
    2.5 V                    2470 mV
    3.3 V                    3279 mV
    5.0 V                    5020 mV
    5.0 V bias               4993 mV
    8.0 V bias               8222 mV
  CMB Revision                 12
SFM 2 status:
  State                          Online
  SPP temperature              50 degrees C / 122 degrees F
  SPR temperature              52 degrees C / 125 degrees F
  SPP Power:
    1.5 V                    1504 mV
    2.5 V                    2471 mV
    3.3 V                    3294 mV
    5.0 V                    5045 mV
    5.0 V bias               4981 mV
  SPR Power:
    1.5 V                    1496 mV
    2.5 V                    2470 mV
    3.3 V                    3293 mV
    5.0 V                    5028 mV
    5.0 V bias               4971 mV
    8.0 V bias               8214 mV
  CMB Revision                 12
SFM 3 status:
  State                          Online
  SPP temperature              49 degrees C / 120 degrees F
```

```
SPR temperature              48 degrees C / 118 degrees F
SPP Power:
  1.5 V                    1505 mV
  2.5 V                    2484 mV
  3.3 V                    3296 mV
  5.0 V                    5040 mV
  5.0 V bias               4984 mV
SPR Power:
  1.5 V                    1503 mV
  2.5 V                    2488 mV
  3.3 V                    3302 mV
  5.0 V                    5037 mV
  5.0 V bias               4993 mV
  8.0 V bias               8249 mV
CMB Revision                 12
```

show chassis environment sib

List of Syntax

Syntax on page 1136
Syntax (TX Matrix router) on page 1136
Syntax (TX Matrix Plus Router) on page 1136

Syntax

```
show chassis environment sib
<slot>
```

Syntax (TX Matrix router)

```
show chassis environment sib
<lcc number | scc | slot>
```

Syntax (TX Matrix Plus Router)

```
show chassis environment sib
<sib-slot | lcc number | sfc number | f13 sib-slot | f2s sib-slot/sib-f2s-slot-number>
```

Release Information

Command introduced before Junos OS Release 7.4.
sfc option introduced in Junos OS Release 9.6. for the TX Matrix Plus router.
Command introduced in Junos OS 12.1X48 for PTX Series Packet Transport Routers.
Command introduced in Junos OS 12.1 for T4000 Core Routers.
Command introduced in Junos OS Release 17.2 for PTX10008 Routers.

Description

Display Switch Interface Board (SIB) environmental information.

Options

none—Display environmental information about all SIBs. On a TX Matrix router, display environmental information about all SIBs on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about all SIBs on the TX Matrix Plus router and its attached routers .

f13 ***sib-slot***—(TX Matrix Plus routers only) (Optional) Display SIB F13 environmental information only. Replace ***sib-slot*** with one of the following values: **0**, **1**, **3**, **4**, **6**, **7**, **8**, **9**, **11**, or **12**. (Slots 2, 5, 10, 13, 14, and 15 are unused).

f2s *sib-slot/sib-f2s-slot-number*—(TX Matrix Plus routers only) (Optional) Display SIB F2s environmental information only. Replace ***sib-slot*** with a value from **0** through **4**, followed by a ***sib-f2s-slot-number*** value of **0**, **2**, **4** or **6**.

lcc *number*—(TX Matrix router, and TX Matrix Plus router only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

scc—(TX Matrix routers only) (Optional) Display environmental information about the SIB in the TX Matrix router (switch-card chassis).

sfc—(TX Matrix Plus routers only) (Optional) On a TX Matrix Plus router, display environmental information about the SIB in the TX Matrix Plus router (switch-fabric chassis).

sib-slot—(Optional) Display environmental information about the specified SIB. For the M320 router, replace ***sib-slot*** with a value from **0** through **3**. For the T640, T1600, T4000, and TX Matrix routers, replace ***sib-slot*** with a value from **0** through **4**. For the TX Matrix Plus router, see f13 *sib-slot* and f2s *sib-slot/sib-f2s-slot-number*. For the T320 router, replace ***sib-slot*** with a value from **0** through **2**. For the PTX5000 Packet Transport Router, replace ***sib-slot*** with a value from **0** through **8**.

Required Privilege Level
view

RELATED DOCUMENTATION

request chassis sib | **670**

show chassis sibs | **1733**

Configuring Junos OS to Upgrade and Downgrade Switch Interface Boards on a TX Matrix Router

M320 SIB Description

List of Sample Output
show chassis environment sib (M320 Router) on page 1139
show chassis environment sib 1 (T640 Router) on page 1140
show chassis environment sib 1 (T4000 Router) on page 1140

show chassis environment sib scc (TX Matrix Router) on page 1141
show chassis environment sib (TX Matrix Plus Router) on page 1142
show chassis environment sib sfc (TX Matrix Plus Router) on page 1156
show chassis environment sib f13 (TX Matrix Plus Router) on page 1163
show chassis environment sib f2s (TX Matrix Plus Router) on page 1164
show chassis environment sib (TX Matrix Plus router with 3D SIBs) on page 1164
show chassis environment sib (PTX5000 Packet Transport Router with SIB-I-8S) on page 1168
show chassis environment sib (PTX5000 Packet Transport Router with SIB-I-8SE) on page 1171
show chassis environment sib (PTX10008 Router) on page 1174
show chassis environment sib (PTX10016 Router) on page 1176

Output Fields

Table 56 on page 1138 lists the output fields for the **show chassis environment sib** command. Output fields are listed in the approximate order in which they appear.

Table 56: show chassis environment sib Output Fields

Field Name	Field Description
SIB slot status	SIB slot number: • **0** through **3** on an M320 router. • **0** or **2** on a T320 router. • **0** through **4** on a T640, T1600, T4000, or TX Matrix router. • **0**, **1**, **3**, **4**, **6**, **7**, **8**, **9**, **11**, or **12** for F13 SIBs on a TX Matrix Plus router. (Slots 2, 5, 10, 13, 14, and 15 are unused). • **0** through **4**, followed by **0**, **2**, **4**, or **6** for F2S SIBs on a TX Matrix Plus router. For example, **SIB F2S 0/4**. • **0** through **8** on a PTX5000 Packet Transport Router.
State	Status of the SIB: • **Online**—SIB is online and running. • **Offline**—SIB is powered down. • **Spare** (T640, T1600, T4000, and TX Matrix routers only)—SIB is redundant and will move to active state if one of the working SIBs fails. Only four of the SIBs are active at any time. The fifth one is marked **Spare**. It is activated if there is a fault on one of the active SIBs. Online standby (TX Matrix Plus router only).
Temperature	Temperature of the air flowing past the SIB. On PTX Series Packet Transport Routers, separate temperatures are displayed for **Intake**, **Exhaust**, and **Junction**.

Table 56: show chassis environment sib Output Fields *(continued)*

Field Name	Field Description
Power	Information about the voltage supplied to the SIB. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.

Sample Output

show chassis environment sib (M320 Router)

`user@host>` **show chassis environment sib**

```
SIB 0 status:
  State                          Online
  Temperature                 34 degrees C / 93 degrees F
  Power:
    GROUND                     0 mV
    1.8 V                   1805 mV
    2.5 V                   2498 mV
    3.3 V                   3306 mV
    1.8 V bias              1789 mV
    3.3 V bias              3299 mV
    5.0 V bias              5003 mV
    8.0 V bias              7374 mV
SIB 1 status:
  State                          Online
  Temperature                 35 degrees C / 95 degrees F
  Power:
    GROUND                     0 mV
    1.8 V                   1814 mV
    2.5 V                   2477 mV
    3.3 V                   3319 mV
    1.8 V bias              1792 mV
    3.3 V bias              3291 mV
    5.0 V bias              4981 mV
    8.0 V bias              7335 mV
SIB 2 status:
  State                          Online
  Temperature                 33 degrees C / 91 degrees F
  Power:
    GROUND                     0 mV
    1.8 V                   1811 mV
```

```
    2.5 V                    2489 mV
    3.3 V                    3330 mV
    1.8 V bias               1797 mV
    3.3 V bias               3304 mV
    5.0 V bias               5025 mV
    8.0 V bias               7330 mV
SIB 3 status:
  State                           Online
  Temperature                 37 degrees C / 98 degrees F
  Power:
    GROUND                     0 mV
    1.8 V                    1798 mV
    2.5 V                    2481 mV
    3.3 V                    3328 mV
    1.8 V bias               1792 mV
    3.3 V bias               3313 mV
    5.0 V bias               5013 mV
    8.0 V bias               7467 mV
```

show chassis environment sib 1 (T640 Router)

`user@host>` **show chassis environment sib 1**

```
SIB 1 status:
  State                           Online
  Temperature                 39 degrees C / 102 degrees F
  Power:
    GROUND                     0 mV
    1.8 V                    1809 mV
    2.5 V                    2478 mV
    3.3 V                    3308 mV
    1.8 V bias               1794 mV
    3.3 V bias               3274 mV
    5.0 V bias               4996 mV
    8.0 V bias               7247 mV
```

show chassis environment sib 1 (T4000 Router)

`user@host>` **show chassis environment sib 1**

```
SIB 1 status:
  State                     Online
  Temperature               42 degrees C / 107 degrees F
```

```
  Power
    8.0 V bias                8100 mV
    3.3 V bias                3284 mV
    0.9 V bias                 904 mV
    1.1 V bias                1090 mV
    1.5 V bias                1488 mV
    2.5 V bias                2504 mV
    9.0 V                     8940 mV
    3.3 V                     3288 mV
    XF0 1.0 V                  998 mV
    XF0 1.0 V LDO              994 mV
    PCIe SW 1.0 V              990 mV
    XF0 1.8 V                 1788 mV
    XF1 1.0 V                 1002 mV
    XF2 1.0 V                 1002 mV
    XF3 1.0 V                  998 mV
    1.2 V                     1194 mV
    XF1 1.0 V LDO             1000 mV
    XF2 1.0 V LDO              998 mV
    XF3 1.0 V LDO              998 mV
    XF1 1.8 V                 1798 mV
    XF2 1.8 V                 1800 mV
    XF3 1.8 V                 1794 mV
    1.5 V                     1488 mV
    SW 3.3 V                  3320 mV
```

show chassis environment sib scc (TX Matrix Router)

`user@host>` **show chassis environment sib scc**

```
scc-re0:
--------------------------------------------------------------------------
SIB 3 status:
  State                          Offline
  Reason                         Offlined by button press
  Temperature                  0 degrees C / 32 degrees F
  Power:
    GROUND                     0 mV
    1.8 V                      0 mV
    2.5 V                      0 mV
    3.3 V                      0 mV
    1.8 V bias                 0 mV
    3.3 V bias                 0 mV
    5.0 V bias                 0 mV
```

```
    8.0 V bias                   0 mV
SIB 4 status:
  State                            Online
  Temperature                   42 degrees C / 107 degrees F
  Temperature (B)               41 degrees C / 105 degrees F
  Power:
    GROUND                       0 mV
    1.8 V                     1787 mV
    2.5 V                     2488 mV
    3.3 V                     3294 mV
    1.8 V bias                1787 mV
    3.3 V bias                3306 mV
    5.0 V bias                5010 mV
    8.0 V bias                7418 mV
  Power (B):
    GROUND                       0 mV
    1.8 V                     1785 mV
    2.5 V                     2485 mV
    3.3 V                     3289 mV
    1.8 V bias                1799 mV
    3.3 V bias                3284 mV
    5.0 V bias                4979 mV
    8.0 V bias                7882 mV
```

show chassis environment sib (TX Matrix Plus Router)

`user@host>` **show chassis environment sib**

```
sfc0-re0:
--------------------------------------------------------------------------
SIB F13 0 status:
  State                      Online - Standby
  Temperature                54 degrees C / 129 degrees F
  Temperature (B)            50 degrees C / 122 degrees F
  Power
    1.2 V_0                   1205 mV
    1.2 V_1                   1202 mV
    1.2 V_2                   1205 mV
    1.2 V_3                   1208 mV
    1.5 V_0                   1501 mV
    1.5 V_1                   1508 mV
    1.8 V                     1798 mV
    2.5 V                     2510 mV
    3.3 V                     3312 mV
```

```
    9.0 V                     8991 mV
    9.0 V bias                   0 mV
  Power (B)
    2.5 V                     2510 mV
    3.3 V                     3318 mV
    9.0 V                     9024 mV
SIB F13 1 status:
  State                     Online - Standby
  Temperature               45 degrees C / 113 degrees F
  Temperature (B)           42 degrees C / 107 degrees F
  Power
    1.2 V_0                   1202 mV
    1.2 V_1                   1198 mV
    1.2 V_2                   1202 mV
    1.2 V_3                   1202 mV
    1.5 V_0                   1498 mV
    1.5 V_1                   1501 mV
    1.8 V                     1811 mV
    2.5 V                     2504 mV
    3.3 V                     3292 mV
    9.0 V                     8991 mV
    9.0 V bias                   0 mV
  Power (B)
    2.5 V                     2507 mV
    3.3 V                     3306 mV
    9.0 V                     8970 mV
SIB F13 3 status:
  State                     Online
  Temperature               48 degrees C / 118 degrees F
  Temperature (B)           44 degrees C / 111 degrees F
  Power
    1.2 V_0                   1205 mV
    1.2 V_1                   1202 mV
    1.2 V_2                   1202 mV
    1.2 V_3                   1202 mV
    1.5 V_0                   1508 mV
    1.5 V_1                   1504 mV
    1.8 V                     1798 mV
    2.5 V                     2520 mV
    3.3 V                     3300 mV
    9.0 V                     9009 mV
    9.0 V bias                   0 mV
  Power (B)
    2.5 V                     2504 mV
```

```
    3.3 V                     3312 mV
    9.0 V                     9006 mV
SIB F13 4 status:
  State                     Online
  Temperature               44 degrees C / 111 degrees F
  Temperature (B)           40 degrees C / 104 degrees F
Power
    1.2 V_0                   1205 mV
    1.2 V_1                   1205 mV
    1.2 V_2                   1202 mV
    1.2 V_3                   1205 mV
    1.5 V_0                   1508 mV
    1.5 V_1                   1508 mV
    1.8 V                     1811 mV
    2.5 V                     2510 mV
    3.3 V                     3312 mV
    9.0 V                     8970 mV
    9.0 V bias                   0 mV
  Power (B)
    2.5 V                     2513 mV
    3.3 V                     3318 mV
    9.0 V                     9048 mV
SIB F13 6 status:
  State                     Online
  Temperature               50 degrees C / 122 degrees F
  Temperature (B)           46 degrees C / 114 degrees F
  Power
    1.2 V_0                   1195 mV
    1.2 V_1                   1205 mV
    1.2 V_2                   1202 mV
    1.2 V_3                   1202 mV
    1.5 V_0                   1495 mV
    1.5 V_1                   1495 mV
    1.8 V                     1801 mV
    2.5 V                     2494 mV
    3.3 V                     3300 mV
    9.0 V                     8991 mV
    9.0 V bias                   0 mV
  Power (B)
    2.5 V                     2500 mV
    3.3 V                     3300 mV
    9.0 V                     9006 mV
SIB F13 7 status:
  State                     Online
```

```
  Temperature               52 degrees C / 125 degrees F
  Temperature (B)           49 degrees C / 120 degrees F
  Power
    1.2 V_0                  1202 mV
    1.2 V_1                  1202 mV
    1.2 V_2                  1198 mV
    1.2 V_3                  1185 mV
    1.5 V_0                  1501 mV
    1.5 V_1                  1492 mV
    1.8 V                    1795 mV
    2.5 V                    2491 mV
    3.3 V                    3286 mV
    9.0 V                    8892 mV
    9.0 V bias                  0 mV
  Power (B)
    2.5 V                    2507 mV
    3.3 V                    3306 mV
    9.0 V                    8952 mV
SIB F13 8 status:
  State                     Online
  Temperature               55 degrees C / 131 degrees F
  Temperature (B)           50 degrees C / 122 degrees F
  Power
    1.2 V_0                  1208 mV
    1.2 V_1                  1205 mV
    1.2 V_2                  1205 mV
    1.2 V_3                  1211 mV
    1.5 V_0                  1514 mV
    1.5 V_1                  1508 mV
    1.8 V                    1807 mV
    2.5 V                    2516 mV
    3.3 V                    3324 mV
    9.0 V                    9027 mV
    9.0 V bias                  0 mV
  Power (B)
    2.5 V                    2520 mV
    3.3 V                    3318 mV
    9.0 V                    9066 mV
SIB F13 9 status:
  State                     Online
  Temperature               46 degrees C / 114 degrees F
  Temperature (B)           41 degrees C / 105 degrees F
  Power
    1.2 V_0                  1208 mV
```

```
    1.2 V_1                  1202 mV
    1.2 V_2                  1208 mV
    1.2 V_3                  1202 mV
    1.5 V_0                  1504 mV
    1.5 V_1                  1504 mV
    1.8 V                    1817 mV
    2.5 V                    2516 mV
    3.3 V                    3312 mV
    9.0 V                    9009 mV
    9.0 V bias                  0 mV
  Power (B)
    2.5 V                    2510 mV
    3.3 V                    3312 mV
    9.0 V                    9024 mV
SIB F13 11 status:
  State                     Online
  Temperature               47 degrees C / 116 degrees F
  Temperature (B)           42 degrees C / 107 degrees F
  Power
    1.2 V_0                  1202 mV
    1.2 V_1                  1205 mV
    1.2 V_2                  1202 mV
    1.2 V_3                  1202 mV
    1.5 V_0                  1501 mV
    1.5 V_1                  1501 mV
    1.8 V                    1801 mV
    2.5 V                    2510 mV
    3.3 V                    3312 mV
    9.0 V                    8979 mV
    9.0 V bias                  0 mV
  Power (B)
    2.5 V                    2252 mV
    3.3 V                    5014 mV
    9.0 V                    9954 mV
SIB F13 12 status:
  State                     Online
  Temperature               45 degrees C / 113 degrees F
  Temperature (B)           40 degrees C / 104 degrees F
  Power
    1.2 V_0                  1211 mV
    1.2 V_1                  1208 mV
    1.2 V_2                  1205 mV
    1.2 V_3                  1205 mV
    1.5 V_0                  1511 mV
```

```
    1.5 V_1                    1501 mV
    1.8 V                      1817 mV
    2.5 V                      2504 mV
    3.3 V                      3318 mV
    9.0 V                      9027 mV
    9.0 V bias                    0 mV
 Power (B)
    2.5 V                      2520 mV
    3.3 V                      3338 mV
    9.0 V                      9006 mV
SIB F2S 0/0 status:
  State                      Online - Standby
  Temperature                40 degrees C / 104 degrees F
  Power
    1.2 V_1                       0 mV
    1.2 V_ASF                  1198 mV
    1.2 V_ASF_B                1198 mV
    1.2 V_ASF_D                1202 mV
    1.5 V                      1498 mV
    1.8 V                      1814 mV
    3.3 V                      3300 mV
    3.3 V bias                 3300 mV
    3.3 V ASF                  3286 mV
    9.0 V                      8250 mV
SIB F2S 0/2 status:
  State                      Online - Standby
  Temperature                40 degrees C / 104 degrees F
  Power
    1.2 V_1                       0 mV
    1.2 V_ASF                  1198 mV
    1.2 V_ASF_B                1195 mV
    1.2 V_ASF_D                1202 mV
    1.5 V                      1498 mV
    1.8 V                      1807 mV
    3.3 V                      3300 mV
    3.3 V bias                 3300 mV
    3.3 V ASF                  3286 mV
    9.0 V                      8250 mV
SIB F2S 0/4 status:
  State                      Online - Standby
  Temperature                40 degrees C / 104 degrees F
  Power
    1.2 V_1                       0 mV
    1.2 V_ASF                  1202 mV
```

```
    1.2 V_ASF_B               1198 mV
    1.2 V_ASF_D               1202 mV
    1.5 V                     1504 mV
    1.8 V                     1817 mV
    3.3 V                     3300 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3306 mV
    9.0 V                     8250 mV
SIB F2S 0/6 status:
  State                     Online - Standby
  Temperature               39 degrees C / 102 degrees F
  Power
    1.2 V_1                      0 mV
    1.2 V_ASF                 1202 mV
    1.2 V_ASF_B               1198 mV
    1.2 V_ASF_D               1202 mV
    1.5 V                     1495 mV
    1.8 V                     1814 mV
    3.3 V                     3300 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3280 mV
    9.0 V                     8250 mV
SIB F2S 1/0 status:
  State                     Online
  Temperature               39 degrees C / 102 degrees F
  Power
    1.2 V_1                      0 mV
    1.2 V_ASF                 1195 mV
    1.2 V_ASF_B               1192 mV
    1.2 V_ASF_D               1195 mV
    1.5 V                     1488 mV
    1.8 V                     1798 mV
    3.3 V                     3300 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3280 mV
    9.0 V                     8250 mV
SIB F2S 1/2 status:
  State                     Online
  Temperature               39 degrees C / 102 degrees F
  Power
    1.2 V_1                      0 mV
    1.2 V_ASF                 1205 mV
    1.2 V_ASF_B               1202 mV
    1.2 V_ASF_D               1205 mV
```

```
    1.5 V                      1501 mV
    1.8 V                      1820 mV
    3.3 V                      3300 mV
    3.3 V bias                 3300 mV
    3.3 V ASF                  3306 mV
    9.0 V                      8250 mV
SIB F2S 1/4 status:
  State                       Online
  Temperature                 39 degrees C / 102 degrees F
  Power
    1.2 V_1                      0 mV
    1.2 V_ASF                 1198 mV
    1.2 V_ASF_B               1195 mV
    1.2 V_ASF_D               1195 mV
    1.5 V                     1498 mV
    1.8 V                     1811 mV
    3.3 V                     3300 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3300 mV
    9.0 V                     8250 mV
SIB F2S 1/6 status:
  State                       Online
  Temperature                 39 degrees C / 102 degrees F
  Power
    1.2 V_1                      0 mV
    1.2 V_ASF                 1195 mV
    1.2 V_ASF_B               1195 mV
    1.2 V_ASF_D               1198 mV
    1.5 V                     1498 mV
    1.8 V                     1807 mV
    3.3 V                     3306 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3292 mV
    9.0 V                     8250 mV
SIB F2S 2/0 status:
  State                       Online
  Temperature                 39 degrees C / 102 degrees F
  Power
    1.2 V_1                      0 mV
    1.2 V_ASF                 1195 mV
    1.2 V_ASF_B               1195 mV
    1.2 V_ASF_D               1198 mV
    1.5 V                     1498 mV
    1.8 V                     1804 mV
```

```
    3.3 V                      3300 mV
    3.3 V bias                 3300 mV
    3.3 V ASF                  3286 mV
    9.0 V                      8250 mV
SIB F2S 2/2 status:
  State                      Online
Temperature                38 degrees C / 100 degrees F
  Power
    1.2 V_1                       0 mV
    1.2 V_ASF                  1195 mV
    1.2 V_ASF_B                1195 mV
    1.2 V_ASF_D                1198 mV
    1.5 V                      1495 mV
    1.8 V                      1807 mV
    3.3 V                      3300 mV
    3.3 V bias                 3300 mV
    3.3 V ASF                  3300 mV
    9.0 V                      8250 mV
SIB F2S 2/4 status:
  State                      Online
  Temperature                38 degrees C / 100 degrees F
  Power
    1.2 V_1                       0 mV
    1.2 V_ASF                  1198 mV
    1.2 V_ASF_B                1195 mV
    1.2 V_ASF_D                1198 mV
    1.5 V                      1501 mV
    1.8 V                      1804 mV
    3.3 V                      3286 mV
    3.3 V bias                 3292 mV
    3.3 V ASF                  3300 mV
    9.0 V                      8230 mV
SIB F2S 2/6 status:
  State                      Online
  Temperature                38 degrees C / 100 degrees F
  Power
    1.2 V_1                       0 mV
    1.2 V_ASF                  1202 mV
    1.2 V_ASF_B                1198 mV
    1.2 V_ASF_D                1202 mV
    1.5 V                      1501 mV
    1.8 V                      1817 mV
    3.3 V                      3300 mV
    3.3 V bias                 3300 mV
```

```
    3.3 V ASF                 3318 mV
    9.0 V                     8250 mV
SIB F2S 3/0 status:
  State                      Online
  Temperature                38 degrees C / 100 degrees F
  Power
    1.2 V_1                     0 mV
    1.2 V_ASF                1195 mV
    1.2 V_ASF_B              1195 mV
    1.2 V_ASF_D              1198 mV
    1.5 V                    1501 mV
    1.8 V                    1814 mV
    3.3 V                    3300 mV
    3.3 V bias               3300 mV
    3.3 V ASF                3274 mV
    9.0 V                    8250 mV
SIB F2S 3/2 status:
  State                      Online
  Temperature                37 degrees C / 98 degrees F
  Power
    1.2 V_1                     0 mV
    1.2 V_ASF                1202 mV
    1.2 V_ASF_B              1195 mV
    1.2 V_ASF_D              1195 mV
    1.5 V                    1495 mV
    1.8 V                    1804 mV
    3.3 V                    3300 mV
    3.3 V bias               3300 mV
    3.3 V ASF                3286 mV
    9.0 V                    8250 mV
SIB F2S 3/4 status:
  State                      Online
  Temperature                37 degrees C / 98 degrees F
  Power
    1.2 V_1                     0 mV
    1.2 V_ASF                1205 mV
    1.2 V_ASF_B              1198 mV
    1.2 V_ASF_D              1202 mV
    1.5 V                    1501 mV
    1.8 V                    1811 mV
    3.3 V                    3300 mV
    3.3 V bias               3300 mV
    3.3 V ASF                3318 mV
    9.0 V                    8250 mV
```

```
SIB F2S 3/6 status:
  State                       Online
  Temperature                 37 degrees C / 98 degrees F
  Power
    1.2 V_1                      0 mV
    1.2 V_ASF                 1205 mV
    1.2 V_ASF_B               1202 mV
    1.2 V_ASF_D               1202 mV
    1.5 V                     1511 mV
    1.8 V                     1820 mV
    3.3 V                     3306 mV
    3.3 V bias                3306 mV
    3.3 V ASF                 3318 mV
    9.0 V                     8265 mV
SIB F2S 4/0 status:
  State                       Online
  Temperature                 36 degrees C / 96 degrees F
  Power
    1.2 V_1                      0 mV
    1.2 V_ASF                 1198 mV
    1.2 V_ASF_B               1198 mV
    1.2 V_ASF_D               1198 mV
    1.5 V                     1501 mV
    1.8 V                     1814 mV
    3.3 V                     3292 mV
    3.3 V bias                3292 mV
    3.3 V ASF                 3312 mV
    9.0 V                     8230 mV
SIB F2S 4/2 status:
  State                       Online
  Temperature                 37 degrees C / 98 degrees F
  Power
    1.2 V_1                      0 mV
    1.2 V_ASF                 1198 mV
    1.2 V_ASF_B               1192 mV
    1.2 V_ASF_D               1195 mV
    1.5 V                     1495 mV
    1.8 V                     1807 mV
    3.3 V                     3300 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3300 mV
    9.0 V                     8250 mV
SIB F2S 4/4 status:
  State                       Online
```

```
  Temperature                36 degrees C / 96 degrees F
  Power
    1.2 V_1                     0 mV
    1.2 V_ASF                1202 mV
    1.2 V_ASF_B              1195 mV
    1.2 V_ASF_D              1202 mV
   1.5 V                     1501 mV
    1.8 V                    1814 mV
    3.3 V                    3300 mV
    3.3 V bias               3300 mV
    3.3 V ASF                3312 mV
    9.0 V                    8250 mV
SIB F2S 4/6 status:
  State                      Online
  Temperature                36 degrees C / 96 degrees F
  Power
    1.2 V_1                     0 mV
    1.2 V_ASF                1198 mV
    1.2 V_ASF_B              1195 mV
    1.2 V_ASF_D              1198 mV
    1.5 V                    1498 mV
    1.8 V                    1820 mV
    3.3 V                    3292 mV
    3.3 V bias               3292 mV
    3.3 V ASF                3286 mV
    9.0 V                    8230 mV

lcc0-re0:
--------------------------------------------------------------------------
SIB 0 status:
  State                      Online - Standby
  Temperature                49 degrees C / 120 degrees F
  Temperature (B)            42 degrees C / 107 degrees F
  Power
    1.2 V                    1204 mV
    1.5 V                    1484 mV
    2.5 V                    2500 mV
    3.3 V                    3312 mV
    3.3 V bias               3312 mV
    5.0 V bias               4956 mV
    8.0 V bias               7740 mV
    9.0 V                    8880 mV
  Power (B)
    1.2 V                    1206 mV
```

```
    2.5 V                     2500 mV
    3.3 V                     3316 mV
    9.0 V                     8988 mV
SIB 1 status:
  State                      Online
  Temperature                49 degrees C / 120 degrees F
  Temperature (B)            42 degrees C / 107 degrees F
  Power
    1.2 V                     1202 mV
    1.5 V                     1482 mV
    2.5 V                     2500 mV
    3.3 V                     3296 mV
    3.3 V bias                3288 mV
    5.0 V bias                4986 mV
    8.0 V bias                7800 mV
    9.0 V                     8868 mV
  Power (B)
    1.2 V                     1206 mV
    2.5 V                     2512 mV
    3.3 V                     3312 mV
    9.0 V                     8952 mV
SIB 2 status:
  State                      Online
  Temperature                49 degrees C / 120 degrees F
  Temperature (B)            42 degrees C / 107 degrees F
  Power
    1.2 V                     1202 mV
  1.5 V                      1480 mV
    2.5 V                     2476 mV
    3.3 V                     3292 mV
    3.3 V bias                3308 mV
    5.0 V bias                5010 mV
    8.0 V bias                7800 mV
    9.0 V                     8880 mV
  Power (B)
    1.2 V                     1204 mV
    2.5 V                     2516 mV
    3.3 V                     3308 mV
    9.0 V                     8988 mV
SIB 3 status:
  State                      Online
  Temperature                48 degrees C / 118 degrees F
  Temperature (B)            42 degrees C / 107 degrees F
  Power
```

```
    1.2 V                      1204 mV
    1.5 V                      1480 mV
    2.5 V                      2500 mV
    3.3 V                      3292 mV
    3.3 V bias                 3292 mV
    5.0 V bias                 4986 mV
    8.0 V bias                 7812 mV
    9.0 V                      8892 mV
  Power (B)
    1.2 V                      1198 mV
    2.5 V                      2512 mV
    3.3 V                      3308 mV
    9.0 V                      8892 mV
SIB 4 status:
  State                      Online
  Temperature                48 degrees C / 118 degrees F
  Temperature (B)            42 degrees C / 107 degrees F
  Power
    1.2 V                      1206 mV
    1.5 V                      1482 mV
    2.5 V                      2484 mV
    3.3 V                      3324 mV
    3.3 V bias                 3340 mV
    5.0 V bias                 4980 mV
    8.0 V bias                 7764 mV
    9.0 V                      8784 mV
  Power (B)
    1.2 V                      1202 mV
    2.5 V                      2504 mV
    3.3 V                      3308 mV
    9.0 V                      8820 mV
lcc1-re0:
--------------------------------------------------------------------------
SIB 0 status:
  State                      Online - Standby
  Temperature                49 degrees C / 120 degrees F
  Temperature (B)            43 degrees C / 109 degrees F
  Power
    1.2 V                      1206 mV
    1.5 V                      1506 mV
    2.5 V                      2496 mV
    3.3 V                      3308 mV
    3.3 V bias                 3296 mV
    5.0 V bias                 4974 mV
```

```
    8.0 V bias                7884 mV
    9.0 V                     8820 mV
  Power (B)
    1.2 V                     1200 mV
    2.5 V                     2508 mV
    3.3 V                     3292 mV
    9.0 V                     8892 mV
...
```

show chassis environment sib sfc (TX Matrix Plus Router)

`user@host>` **show chassis environment sib sfc**

```
sfc0-re0:
--------------------------------------------------------------------------
SIB F13 0 status:
  State                     Online - Standby
  Temperature               54 degrees C / 129 degrees F
  Temperature (B)           50 degrees C / 122 degrees F
  Power
    1.2 V_0                  1205 mV
    1.2 V_1                  1205 mV
    1.2 V_2                  1208 mV
    1.2 V_3                  1208 mV
    1.5 V_0                  1501 mV
    1.5 V_1                  1508 mV
    1.8 V                    1804 mV
    2.5 V                    2504 mV
    3.3 V                    3312 mV
    9.0 V                    8991 mV
    9.0 V bias                  0 mV
  Power (B)
    2.5 V                    2516 mV
    3.3 V                    3318 mV
    9.0 V                    9048 mV
SIB F13 1 status:
  State                     Online - Standby
  Temperature               45 degrees C / 113 degrees F
  Temperature (B)           42 degrees C / 107 degrees F
  Power
    1.2 V_0                  1202 mV
    1.2 V_1                  1205 mV
    1.2 V_2                  1198 mV
    1.2 V_3                  1205 mV
```

```
    1.5 V_0                  1498 mV
    1.5 V_1                  1495 mV
    1.8 V                    1801 mV
    2.5 V                    2507 mV
    3.3 V                    3306 mV
    9.0 V                    8970 mV
    9.0 V bias                  0 mV
  Power (B)
    2.5 V                    2507 mV
    3.3 V                    3306 mV
    9.0 V                    8970 mV
SIB F13 3 status:
  State                     Online
  Temperature               48 degrees C / 118 degrees F
  Temperature (B)           43 degrees C / 109 degrees F
  Power
    1.2 V_0                  1208 mV
    1.2 V_1                  1195 mV
    1.2 V_2                  1202 mV
    1.2 V_3                  1198 mV
    1.5 V_0                  1504 mV
    1.5 V_1                  1504 mV
    1.8 V                    1801 mV
    2.5 V                    2510 mV
    3.3 V                    3312 mV
    9.0 V                    8970 mV
    9.0 V bias                  0 mV
  Power (B)
    2.5 V                    2500 mV
    3.3 V                    3332 mV
    9.0 V                    8970 mV
SIB F13 4 status:
  State                     Online
  Temperature               44 degrees C / 111 degrees F
  Temperature (B)           40 degrees C / 104 degrees F
  Power
    1.2 V_0                  1205 mV
    1.2 V_1                  1202 mV
    1.2 V_2                  1205 mV
    1.2 V_3                  1202 mV
    1.5 V_0                  1508 mV
    1.5 V_1                  1511 mV
    1.8 V                    1811 mV
    2.5 V                    2510 mV
```

```
    3.3 V                     3312 mV
    9.0 V                     8952 mV
    9.0 V bias                   0 mV
  Power (B)
    2.5 V                     2510 mV
    3.3 V                     3306 mV
    9.0 V                     9024 mV
SIB F13 6 status:
  State                     Online
  Temperature               49 degrees C / 120 degrees F
  Temperature (B)           46 degrees C / 114 degrees F
  Power
    1.2 V_0                   1195 mV
    1.2 V_1                   1198 mV
    1.2 V_2                   1202 mV
    1.2 V_3                   1202 mV
    1.5 V_0                   1501 mV
    1.5 V_1                   1495 mV
    1.8 V                     1801 mV
    2.5 V                     2507 mV
    3.3 V                     3306 mV
    9.0 V                     8979 mV
    9.0 V bias                   0 mV
  Power (B)
    2.5 V                     2497 mV
    3.3 V                     3318 mV
    9.0 V                     9006 mV
SIB F13 7 status:
  State                     Online
  Temperature               52 degrees C / 125 degrees F
  Temperature (B)           48 degrees C / 118 degrees F
  Power
    1.2 V_0                   1198 mV
    1.2 V_1                   1198 mV
    1.2 V_2                   1202 mV
    1.2 V_3                   1189 mV
    1.5 V_0                   1498 mV
    1.5 V_1                   1498 mV
    1.8 V                     1804 mV
    2.5 V                     2491 mV
    3.3 V                     3292 mV
    9.0 V                     8904 mV
    9.0 V bias                   0 mV
  Power (B)
```

```
    2.5 V                     2500 mV
    3.3 V                     3306 mV
    9.0 V                     8952 mV
SIB F13 8 status:
  State                     Online
  Temperature               54 degrees C / 129 degrees F
  Temperature (B)           49 degrees C / 120 degrees F
  Power
    1.2 V_0                  1211 mV
    1.2 V_1                  1208 mV
    1.2 V_2                  1208 mV
    1.2 V_3                  1211 mV
    1.5 V_0                  1508 mV
    1.5 V_1                  1511 mV
    1.8 V                    1801 mV
    2.5 V                    2513 mV
    3.3 V                    3324 mV
    9.0 V                    9048 mV
    9.0 V bias                  0 mV
  Power (B)
    2.5 V                    2516 mV
    3.3 V                    3318 mV
    9.0 V                    9102 mV
SIB F13 9 status:
  State                     Online
  Temperature               46 degrees C / 114 degrees F
  Temperature (B)           41 degrees C / 105 degrees F
  Power
    1.2 V_0                  1205 mV
    1.2 V_1                  1202 mV
    1.2 V_2                  1205 mV
    1.2 V_3                  1198 mV
    1.5 V_0                  1504 mV
    1.5 V_1                  1504 mV
    1.8 V                    1817 mV
    2.5 V                    2507 mV
    3.3 V                    3306 mV
    9.0 V                    8991 mV
    9.0 V bias                  0 mV
  Power (B)
    2.5 V                    2510 mV
    3.3 V                    3332 mV
    9.0 V                    9006 mV
SIB F13 11 status:
```

```
  State                       Online
  Temperature                 47 degrees C / 116 degrees F
  Temperature (B)             42 degrees C / 107 degrees F
  Power
    1.2 V_0                    1202 mV
    1.2 V_1                    1205 mV
    1.2 V_2                    1202 mV
    1.2 V_3                    1198 mV
    1.5 V_0                    1501 mV
    1.5 V_1                    1504 mV
    1.8 V                      1807 mV
    2.5 V                      2510 mV
    3.3 V                      3306 mV
    9.0 V                      8991 mV
    9.0 V bias                    0 mV
  Power (B)
    2.5 V                      2249 mV
    3.3 V                      4994 mV
    9.0 V                      9936 mV
SIB F13 12 status:
  State                       Online
  Temperature                 44 degrees C / 111 degrees F
  Temperature (B)             40 degrees C / 104 degrees F
  Power
    1.2 V_0                    1208 mV
    1.2 V_1                    1202 mV
    1.2 V_2                    1208 mV
    1.2 V_3                    1205 mV
    1.5 V_0                    1511 mV
    1.5 V_1                    1508 mV
    1.8 V                      1814 mV
    2.5 V                      2507 mV
    3.3 V                      3318 mV
    9.0 V                      9039 mV
    9.0 V bias                    0 mV
  Power (B)
    2.5 V                      2516 mV
    3.3 V                      3344 mV
    9.0 V                      9006 mV
SIB F2S 0/0 status:
  State                       Online - Standby
  Temperature                 40 degrees C / 104 degrees F
  Power
    1.2 V_1                       0 mV
```

```
    1.2 V_ASF                 1198 mV
    1.2 V_ASF_B               1198 mV
    1.2 V_ASF_D               1202 mV
    1.5 V                     1498 mV
    1.8 V                     1814 mV
    3.3 V                     3300 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3286 mV
    9.0 V                     8250 mV
SIB F2S 0/2 status:
  State                     Online - Standby
  Temperature               40 degrees C / 104 degrees F
  Power
    1.2 V_1                    0 mV
    1.2 V_ASF                 1198 mV
    1.2 V_ASF_B               1195 mV
    1.2 V_ASF_D               1202 mV
    1.5 V                     1498 mV
    1.8 V                     1807 mV
    3.3 V                     3300 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3292 mV
    9.0 V                     8250 mV
SIB F2S 0/4 status:
  State                     Online - Standby
  Temperature               40 degrees C / 104 degrees F
  Power
    1.2 V_1                    0 mV
    1.2 V_ASF                 1198 mV
    1.2 V_ASF_B               1195 mV
    1.2 V_ASF_D               1202 mV
    1.5 V                     1501 mV
    1.8 V                     1817 mV
    3.3 V                     3300 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3306 mV
    9.0 V                     8250 mV
SIB F2S 0/6 status:
  State                     Online - Standby
  Temperature               39 degrees C / 102 degrees F
  Power
    1.2 V_1                    0 mV
    1.2 V_ASF                 1202 mV
    1.2 V_ASF_B               1198 mV
```

```
    1.2 V_ASF_D              1198 mV
    1.5 V                    1495 mV
    1.8 V                    1814 mV
    3.3 V                    3300 mV
    3.3 V bias               3300 mV
    3.3 V ASF                3280 mV
    9.0 V                    8250 mV
SIB F2S 1/0 status:
  State                     Online
  Temperature               39 degrees C / 102 degrees F
  Power
    1.2 V_1                     0 mV
    1.2 V_ASF                1195 mV
    1.2 V_ASF_B              1192 mV
    1.2 V_ASF_D              1195 mV
    1.5 V                    1492 mV
    1.8 V                    1798 mV
    3.3 V                    3300 mV
    3.3 V bias               3300 mV
    3.3 V ASF                3280 mV
    9.0 V                    8250 mV
SIB F2S 1/2 status:
  State                     Online
  Temperature               39 degrees C / 102 degrees F
  Power
    1.2 V_1                     0 mV
    1.2 V_ASF                1205 mV
    1.2 V_ASF_B              1202 mV
    1.2 V_ASF_D              1205 mV
    1.5 V                    1504 mV
    1.8 V                    1820 mV
    3.3 V                    3300 mV
    3.3 V bias               3300 mV
    3.3 V ASF                3306 mV
    9.0 V                    8250 mV
SIB F2S 1/4 status:
  State                     Online
  Temperature               39 degrees C / 102 degrees F
  Power
    1.2 V_1                     0 mV
    1.2 V_ASF                1202 mV
    1.2 V_ASF_B              1195 mV
    1.2 V_ASF_D              1198 mV
    1.5 V                    1498 mV
```

```
    1.8 V                      1811 mV
    3.3 V                      3300 mV
    3.3 V bias                 3300 mV
    3.3 V ASF                  3300 mV
    9.0 V                      8250 mV
SIB F2S 1/6 status:
  State                       Online
  Temperature                 39 degrees C / 102 degrees F
  Power
    1.2 V_1                      0 mV
    1.2 V_ASF                 1195 mV
    1.2 V_ASF_B               1192 mV
    1.2 V_ASF_D               1198 mV
    1.5 V                     1498 mV
    1.8 V                     1807 mV
    3.3 V                     3306 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3292 mV
    9.0 V                     8250 mV
SIB F2S 2/0 status:
  State                       Online
  Temperature                 38 degrees C / 100 degrees F
  Power
    1.2 V_1                      0 mV
    1.2 V_ASF                 1195 mV
    1.2 V_ASF_B               1195 mV
    1.2 V_ASF_D               1198 mV
    1.5 V                     1498 mV
    1.8 V                     1804 mV
    3.3 V                     3300 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3292 mV
    9.0 V                     8250 mV
...
```

show chassis environment sib f13 (TX Matrix Plus Router)

`user@host>` **show chassis environment sib f13** ***0***

```
SIB F13 0 status:
  State                       Online - Standby
  Temperature                 54 degrees C / 129 degrees F
  Temperature (B)             50 degrees C / 122 degrees F
  Power
```

```
    1.2 V_0                    1202 mV
    1.2 V_1                    1202 mV
    1.2 V_2                    1208 mV
    1.2 V_3                    1208 mV
    1.5 V_0                    1501 mV
    1.5 V_1                    1504 mV
    1.8 V                      1801 mV
    2.5 V                      2504 mV
    3.3 V                      3318 mV
    9.0 V                      8991 mV
    9.0 V bias                    0 mV
  Power (B)
    2.5 V                      2510 mV
    3.3 V                      3318 mV
    9.0 V                      9024 mV
```

show chassis environment sib f2s (TX Matrix Plus Router)

user@host> **show chassis environment sib f2s *0/2***

```
SIB F2S 0/2 status:
  State                      Online - Standby
  Temperature                40 degrees C / 104 degrees F
  Power
    1.2 V_1                     0 mV
    1.2 V_ASF                1198 mV
    1.2 V_ASF_B              1195 mV
    1.2 V_ASF_D              1202 mV
    1.5 V                    1501 mV
    1.8 V                    1807 mV
    3.3 V                    3300 mV
    3.3 V bias               3300 mV
    3.3 V ASF                3286 mV
    9.0 V                    8250 mV
```

show chassis environment sib (TX Matrix Plus router with 3D SIBs)

user@host> **show chassis environment sib**

```
sfc0-re0:
--------------------------------------------------------------------------
SIB F13 0 status:
  State                      Online
```

```
  Board Temperature          44 degrees C / 111 degrees F
  XF Junction Temperature    62 degrees C / 143 degrees F
  Power
    XF F1 LCC0 1.0 V          999 mV
    PCIe Switch 1.0 V        1000 mV
    XF F3 LCC0 1.0 V         1000 mV
    XF F1/F3 LCC0 1.2 V      1199 mV
    XF F1 LCC1 1.0 V         1000 mV
    XF F1/F3 LCC1 1.2 V      1199 mV
    XF F3 LCC1 1.0 V         1000 mV
    XF F1/F3 1.5 V           1499 mV
    XF RC LCC0 Base 1.0      1000 mV
    XF RC Base 1.2 V         1200 mV
    XF RC LCC1 Base 1.0      1000 mV
    XF RC Base 1.5 V         1499 mV
    3.3 V Base               3300 mV
    VSC8248 Base 1.8V        1796 mV
    FPGA Core 0.9 V           899 mV
    2.5 V Base               2500 mV
    ltc3880-3.3v-bias        3343 mV
    CXP Base 4.0 V           3999 mV
    XF RC LCC0 Mezz 1.0      1000 mV
    XF RC Mezz 1.2 V         1199 mV
    XF RC LCC1 Mezz 1.0       999 mV
    XF RC Mezz 1.5 V         1499 mV
    3.3 V Mezz               3299 mV
    VSC8248 Mezz 1.8V        1800 mV
    CXP Mezz 4.0 V           3999 mV
 [...Output Truncated...]
SIB F2S 0/0 status:
  State                      Online
  Board Temperature          32 degrees C / 89 degrees F
  XF Junction Temperature    41 degrees C / 105 degrees F
  Power
    XF F2S 1.8 V LD0         1775 mV
    XF F2S 1.0 V AN           992 mV
    XF F2S 1.0 V             1002 mV
    XF F2S 1.5 V             1488 mV
    1.5 V Base               2500 mV
    3.3 V bias               3306 mV
    3.3 V Base               3280 mV
    12.0 V Base             11928 mV
 [...Output Truncated...]
SIB F2S 2/6 status:
```

```
  State                       Online
  Board Temperature           28 degrees C / 82 degrees F
  XF Junction Temperature     40 degrees C / 104 degrees F
  Power
    XF F2S 1.8 V LD0           1782 mV
    XF F2S 1.0 V AN             999 mV
    XF F2S 1.0 V               1005 mV
    XF F2S 1.5 V               1498 mV
    1.5 V Base                 2510 mV
    3.3 V bias                 3292 mV
    3.3 V Base                 3292 mV
    12.0 V Base               12024 mV

lcc0-re0:
--------------------------------------------------------------------------
SIB 0 status:
  State                       Online
  Temperature                 41 degrees C / 105 degrees F
  Temperature (B)             Absent
  Max Jn Temperature          48 degrees C / 118 degrees F
  Power
    8.0 V bias                 8156 mV
    3.3 V bias                 3284 mV
    FPGA 0.9 V bias             908 mV
    FPGA 1.1 V bias            1086 mV
    FPGA 1.5 V bias            1487 mV
    FPGA 2.5 V bias            2525 mV
    3.3 V                      3282 mV
    1.5 V                      1487 mV
    XF HSS 1.5 V               1501 mV
    XF1 1.0 V                  1001 mV
    XF2 1.0 V                  1003 mV
    XF3 1.0 V                   998 mV
    XF1 1.8 V LD0              1782 mV
    XF2 1.8 V LDO              1792 mV
    XF3 1.8 V LDO              1782 mV
    CLK  BUF 2.5 V LDO         2493 mV
    XF1 1.0 V LDO               991 mV
    XF2 1.0 V LDO               991 mV
    XF3 1.0 V LDO               991 mV
    PCIe SW 3.3 V              3274 mV
    PCIe 1.0 V                  996 mV
    RETIMER 1.2 V              1174 mV
    RETIMER IO 1.8 V           1770 mV
```

```
                                0 mV
  Power (B)
    1.2 V                       0 mV
    2.5 V                       0 mV
    3.3 V                       0 mV
    9.0 V                       0 mV
 [...Output Truncated...]
lcc2-re0:
--------------------------------------------------------------------------
SIB 0 status:
  State                       Online
  Temperature                 42 degrees C / 107 degrees F
  Temperature (B)             Absent
  Max Jn Temperature          51 degrees C / 123 degrees F
  Power
    8.0 V bias                 8146 mV
    3.3 V bias                 3277 mV
    FPGA 0.9 V bias             903 mV
    FPGA 1.1 V bias            1089 mV
    FPGA 1.5 V bias            1479 mV
    FPGA 2.5 V bias            2515 mV
    3.3 V                      3277 mV
    1.5 V                      1482 mV
    XF HSS 1.5 V               1501 mV
    XF1 1.0 V                  1001 mV
    XF2 1.0 V                  1003 mV
    XF3 1.0 V                   998 mV
    XF1 1.8 V LD0              1787 mV
    XF2 1.8 V LDO              1792 mV
    XF3 1.8 V LDO              1792 mV
    CLK  BUF 2.5 V LDO         2481 mV
    XF1 1.0 V LDO               986 mV
    XF2 1.0 V LDO               993 mV
    XF3 1.0 V LDO               991 mV
    PCIe SW 3.3 V              3279 mV
    PCIe 1.0 V                  991 mV
    RETIMER 1.2 V              1179 mV
    RETIMER IO 1.8 V           1772 mV
                                  0 mV
  Power (B)
    1.2 V                         0 mV
    2.5 V                         0 mV
    3.3 V                         0 mV
```

```
    9.0 V                         0 mV
 [...Output Truncated...]
```

show chassis environment sib (PTX5000 Packet Transport Router with SIB-I-8S)

`user@host>` **show chassis environment sib**

```
SIB 0 status:
  State                      Online
  Exhaust Temperature        31 degrees C / 87 degrees F
  Junction Temperature       40 degrees C / 104 degrees F
  Power
    1.0 V                      1000 mV
    1.5 V                      1499 mV
    1.2 V                      1200 mV
    3.3 V                      3300 mV
    0.9 V                       900 mV
    2.5 V                      2499 mV
    3.3 V bias                 3313 mV
    12.0 V                    12296 mV
    12.0 V i                   2908 mA
SIB 1 status:
  State                      Online
  Exhaust Temperature        31 degrees C / 87 degrees F
  Junction Temperature       40 degrees C / 104 degrees F
  Power
    1.0 V                      1000 mV
    1.5 V                      1499 mV
    1.2 V                      1200 mV
    3.3 V                      3299 mV
    0.9 V                       900 mV
    2.5 V                      2500 mV
    3.3 V bias                 3313 mV
    12.0 V                    12312 mV
    12.0 V i                   2979 mA
SIB 2 status:
  State                      Online
  Exhaust Temperature        31 degrees C / 87 degrees F
  Junction Temperature       38 degrees C / 100 degrees F
  Power
    1.0 V                       999 mV
    1.5 V                      1499 mV
    1.2 V                      1200 mV
    3.3 V                      3300 mV
```

```
    0.9 V                        900 mV
    2.5 V                       2500 mV
    3.3 V bias                  3324 mV
    12.0 V                     12312 mV
    12.0 V i                    2990 mA
SIB 3 status:
  State                      Online
  Exhaust Temperature        31 degrees C / 87 degrees F
  Junction Temperature       39 degrees C / 102 degrees F
  Power
    1.0 V                       999 mV
    1.5 V                      1500 mV
    1.2 V                      1200 mV
    3.3 V                      3300 mV
    0.9 V                       900 mV
    2.5 V                      2499 mV
    3.3 V bias                 3307 mV
    12.0 V                     12296 mV
    12.0 V i                   3144 mA
SIB 4 status:
  State                      Online
  Exhaust Temperature        31 degrees C / 87 degrees F
  Junction Temperature       38 degrees C / 100 degrees F
  Power
    1.0 V                      1000 mV
    1.5 V                      1500 mV
    1.2 V                      1200 mV
    3.3 V                      3300 mV
    0.9 V                       899 mV
    2.5 V                      2499 mV
    3.3 V bias                 3341 mV
    12.0 V                     12328 mV
    12.0 V i                   2836 mA
SIB 5 status:
  State                      Online
  Exhaust Temperature        31 degrees C / 87 degrees F
  Junction Temperature       38 degrees C / 100 degrees F
  Power
    1.0 V                      1000 mV
    1.5 V                      1499 mV
    1.2 V                      1199 mV
    3.3 V                      3299 mV
    0.9 V                       900 mV
    2.5 V                      2499 mV
```

```
    3.3 V bias                 3327 mV
    12.0 V                    12296 mV
    12.0 V i                   2919 mA
SIB 6 status:
  State                      Online
  Exhaust Temperature        31 degrees C / 87 degrees F
  Junction Temperature       38 degrees C / 100 degrees F
  Power
    1.0 V                      1000 mV
    1.5 V                      1500 mV
    1.2 V                      1200 mV
    3.3 V                      3299 mV
    0.9 V                       899 mV
    2.5 V                      2500 mV
    3.3 V bias                 3294 mV
    12.0 V                    12296 mV
    12.0 V i                   2825 mA
SIB 7 status:
  State                      Online
  Exhaust Temperature        30 degrees C / 86 degrees F
  Junction Temperature       36 degrees C / 96 degrees F
  Power
    1.0 V                      1000 mV
    1.5 V                      1500 mV
    1.2 V                      1200 mV
    3.3 V                      3300 mV
    0.9 V                       899 mV
    2.5 V                      2499 mV
    3.3 V bias                 3316 mV
    12.0 V                    12312 mV
    12.0 V i                   2844 mA
SIB 8 status:
  State                      Online
  Exhaust Temperature        31 degrees C / 87 degrees F
  Junction Temperature       38 degrees C / 100 degrees F
  Power
    1.0 V                      1000 mV
    1.5 V                      1499 mV
    1.2 V                      1199 mV
    3.3 V                      3299 mV
    0.9 V                       900 mV
    2.5 V                      2500 mV
    3.3 V bias                 3333 mV
```

```
    12.0 V                     12328 mV
    12.0 V i                    2900 mA
```

show chassis environment sib (PTX5000 Packet Transport Router with SIB-I-8SE)

`user@host>` **show chassis environment sib**

```
SIB 0 status:
  State                      Online
  Exhaust Temperature        29 degrees C / 84 degrees F
  Junction Temperature       42 degrees C / 107 degrees F
  Power
    1.0 V                       999 mV
    1.5 V                      1500 mV
    1.2 V                      1200 mV
    3.3 V                      3300 mV
    0.9 V                       900 mV
    2.5 V                      2500 mV
    3.3 V bias                 3289 mV
    12.0 V                    12484 mV
    2.5 V LDO                  2502 mV
    12.0 V i                   3494 mA
SIB 1 status:
  State                      Online
  Exhaust Temperature        28 degrees C / 82 degrees F
  Junction Temperature       33 degrees C / 91 degrees F
  Power
    1.0 V                      1000 mV
    1.5 V                      1500 mV
    1.2 V                      1199 mV
    3.3 V                      3300 mV
    0.9 V                       899 mV
    2.5 V                      2500 mV
    3.3 V bias                 3313 mV
    12.0 V                    12484 mV
    2.5 V LDO                  2513 mV
    12.0 V i                   3099 mA
SIB 2 status:
  State                      Online
  Exhaust Temperature        29 degrees C / 84 degrees F
  Junction Temperature       39 degrees C / 102 degrees F
  Power
    1.0 V                      1000 mV
    1.5 V                      1500 mV
```

```
    1.2 V                        1199 mV
    3.3 V                        3300 mV
    0.9 V                         900 mV
    2.5 V                        2500 mV
    3.3 V bias                   3307 mV
    12.0 V                      12484 mV
    2.5 V LDO                    2512 mV
    12.0 V i                     3336 mA
SIB 3 status:
  State                      Online
  Exhaust Temperature        28 degrees C / 82 degrees F
  Junction Temperature       34 degrees C / 93 degrees F
  Power
    1.0 V                        999 mV
    1.5 V                       1500 mV
    1.2 V                       1200 mV
    3.3 V                       3300 mV
    0.9 V                        900 mV
    2.5 V                       2500 mV
    3.3 V bias                  3299 mV
    12.0 V                     12500 mV
    2.5 V LDO                   2494 mV
    12.0 V i                    3479 mA
SIB 4 status:
  State                      Online
  Exhaust Temperature        28 degrees C / 82 degrees F
  Junction Temperature       38 degrees C / 100 degrees F
  Power
    1.0 V                       1000 mV
    1.5 V                       1500 mV
    1.2 V                       1199 mV
    3.3 V                       3299 mV
    0.9 V                        900 mV
    2.5 V                       2499 mV
    3.3 V bias                  3309 mV
    12.0 V                     12484 mV
    2.5 V LDO                   2499 mV
    12.0 V i                    3159 mA
SIB 5 status:
  State                      Online
  Exhaust Temperature        27 degrees C / 80 degrees F
  Junction Temperature       33 degrees C / 91 degrees F
  Power
    1.0 V                       1000 mV
```

```
    1.5 V                        1500 mV
    1.2 V                        1200 mV
    3.3 V                        3299 mV
    0.9 V                         900 mV
    2.5 V                        2499 mV
    3.3 V bias                   3308 mV
    12.0 V                      12468 mV
    2.5 V LDO                    2495 mV
    12.0 V i                     3054 mA
SIB 6 status:
  State                       Online
  Exhaust Temperature         28 degrees C / 82 degrees F
  Junction Temperature        38 degrees C / 100 degrees F
  Power
    1.0 V                        999 mV
    1.5 V                       1500 mV
    1.2 V                       1199 mV
    3.3 V                       3299 mV
    0.9 V                        899 mV
    2.5 V                       2499 mV
    3.3 V bias                  3313 mV
    12.0 V                     12468 mV
    2.5 V LDO                   2510 mV
    12.0 V i                    3122 mA
SIB 7 status:
  State                       Online
  Exhaust Temperature         26 degrees C / 78 degrees F
  Junction Temperature        34 degrees C / 93 degrees F
  Power
    1.0 V                        999 mV
    1.5 V                       1499 mV
    1.2 V                       1199 mV
    3.3 V                       3300 mV
    0.9 V                        900 mV
    2.5 V                       2499 mV
    3.3 V bias                  3278 mV
    12.0 V                     12468 mV
    2.5 V LDO                   2504 mV
    12.0 V i                    3234 mA
SIB 8 status:
  State                       Online
  Exhaust Temperature         26 degrees C / 78 degrees F
  Junction Temperature        34 degrees C / 93 degrees F
  Power
```

```
    1.0 V                        999 mV
    1.5 V                       1499 mV
    1.2 V                       1199 mV
    3.3 V                       3300 mV
    0.9 V                        900 mV
    2.5 V                       2499 mV
    3.3 V bias                  3278 mV
    12.0 V                     12468 mV
    2.5 V LDO                   2504 mV
    12.0 V i                    3234 mA
```

show chassis environment sib (PTX10008 Router)

`user@host>` **show chassis environment sib**

```
SIB 0 status:
  State                      Online
  SIB 0 Intake-A Temp Sensor 37 degrees C / 98 degrees F
  SIB 0 Intake-B Temp Sensor 31 degrees C / 87 degrees F
  SIB 0 Exhaust-A Temp Sensor34 degrees C / 93 degrees F
  SIB 0 Exhaust-B Temp Sensor38 degrees C / 100 degrees F
  SIB 0 PF0 Temp Sensor      47 degrees C / 116 degrees F
  SIB 0 PF1 Temp Sensor      40 degrees C / 104 degrees F
  Power
         PF0 Core 0.9V               925 mV   28929 mA   26835 mW
         PF0 AVDD 1V                1000 mV   32656 mA   32718 mW
         PF1 Core 0.9V               922 mV   28351 mA   26210 mW
         PF1 AVDD 1V                1000 mV   30890 mA   30937 mW
         12V                       12311 mV   10880 mA  134744 mW
SIB 1 status:
  State                      Online
  SIB 1 Intake-A Temp Sensor 43 degrees C / 109 degrees F
  SIB 1 Intake-B Temp Sensor 35 degrees C / 95 degrees F
  SIB 1 Exhaust-A Temp Sensor37 degrees C / 98 degrees F
  SIB 1 Exhaust-B Temp Sensor45 degrees C / 113 degrees F
  SIB 1 PF0 Temp Sensor      54 degrees C / 129 degrees F
  SIB 1 PF1 Temp Sensor      42 degrees C / 107 degrees F
  Power
         PF0 Core 0.9V               951 mV   30468 mA   29007 mW
         PF0 AVDD 1V                 999 mV   32921 mA   32921 mW
         PF1 Core 0.9V               924 mV   29046 mA   26828 mW
         PF1 AVDD 1V                1000 mV   30796 mA   30796 mW
         12V                       12298 mV   11356 mA  140682 mW
SIB 2 status:
```

```
  State                      Online
  SIB 2 Intake-A Temp Sensor 45 degrees C / 113 degrees F
  SIB 2 Intake-B Temp Sensor 36 degrees C / 96 degrees F
  SIB 2 Exhaust-A Temp Sensor38 degrees C / 100 degrees F
  SIB 2 Exhaust-B Temp Sensor46 degrees C / 114 degrees F
  SIB 2 PF0 Temp Sensor      55 degrees C / 131 degrees F
  SIB 2 PF1 Temp Sensor      43 degrees C / 109 degrees F
  Power
         PF0 Core 0.9V               924 mV   28273 mA   26140 mW
         PF0 AVDD 1V                1000 mV   32562 mA   32625 mW
         PF1 Core 0.9V               925 mV   29351 mA   27265 mW
         PF1 AVDD 1V                 999 mV   31812 mA   31859 mW
         12V                       12351 mV   11010 mA  137481 mW
SIB 3 status:
  State                      Online
  SIB 3 Intake-A Temp Sensor 44 degrees C / 111 degrees F
  SIB 3 Intake-B Temp Sensor 36 degrees C / 96 degrees F
  SIB 3 Exhaust-A Temp Sensor37 degrees C / 98 degrees F
  SIB 3 Exhaust-B Temp Sensor45 degrees C / 113 degrees F
  SIB 3 PF0 Temp Sensor      54 degrees C / 129 degrees F
  SIB 3 PF1 Temp Sensor      43 degrees C / 109 degrees F
  Power
         PF0 Core 0.9V               924 mV   28820 mA   26695 mW
         PF0 AVDD 1V                 999 mV   32265 mA   32281 mW
         PF1 Core 0.9V               923 mV   28933 mA   26757 mW
         PF1 AVDD 1V                 999 mV   31281 mA   31265 mW
         12V                       12285 mV   11096 mA  137296 mW
SIB 4 status:
  State                      Online
  SIB 4 Intake-A Temp Sensor 45 degrees C / 113 degrees F
  SIB 4 Intake-B Temp Sensor 36 degrees C / 96 degrees F
  SIB 4 Exhaust-A Temp Sensor37 degrees C / 98 degrees F
  SIB 4 Exhaust-B Temp Sensor46 degrees C / 114 degrees F
  SIB 4 PF0 Temp Sensor      54 degrees C / 129 degrees F
  SIB 4 PF1 Temp Sensor      43 degrees C / 109 degrees F
  Power
         PF0 Core 0.9V               950 mV   29757 mA   28281 mW
         PF0 AVDD 1V                 999 mV   32109 mA   32093 mW
         PF1 Core 0.9V               948 mV   29460 mA   27921 mW
         PF1 AVDD 1V                 999 mV   30687 mA   30671 mW
         12V                       12193 mV   11183 mA  137352 mW
SIB 5 status:
  State                      Online
  SIB 5 Intake-A Temp Sensor 38 degrees C / 100 degrees F
```

```
  SIB 5 Intake-B Temp Sensor 32 degrees C / 89 degrees F
  SIB 5 Exhaust-A Temp Sensor35 degrees C / 95 degrees F
  SIB 5 Exhaust-B Temp Sensor39 degrees C / 102 degrees F
  SIB 5 PF0 Temp Sensor      45 degrees C / 113 degrees F
  SIB 5 PF1 Temp Sensor      43 degrees C / 109 degrees F
  Power
         PF0 Core 0.9V               951 mV   29546 mA   28156 mW
         PF0 AVDD 1V                 999 mV   31468 mA   31468 mW
         PF1 Core 0.9V               948 mV   30007 mA   28515 mW
         PF1 AVDD 1V                 999 mV   31812 mA   31859 mW
         12V                       12179 mV   11399 mA  139720 mW
```

show chassis environment sib (PTX10016 Router)

`user@host>` **show chassis environment sib**

```
SIB 0 status:
  State                      Online
  SIB 0 Intake-A Temp Sensor 22 degrees C / 71 degrees F
  SIB 0 Intake-B Temp Sensor 21 degrees C / 69 degrees F
  SIB 0 Intake-C Temp Sensor 17 degrees C / 62 degrees F
  SIB 0 Exhaust-A Temp Sensor29 degrees C / 84 degrees F
  SIB 0 Exhaust-B Temp Sensor30 degrees C / 86 degrees F
  SIB 0 Exhaust-C Temp Sensor25 degrees C / 77 degrees F
  SIB 0 PF0 Temp Sensor      31 degrees C / 87 degrees F
  SIB 0 PF1 Temp Sensor      31 degrees C / 87 degrees F
  SIB 0 PF2 Temp Sensor      32 degrees C / 89 degrees F
  SIB 0 PF3 Temp Sensor      33 degrees C / 91 degrees F
  SIB 0 PF4 Temp Sensor      29 degrees C / 84 degrees F
  SIB 0 PF5 Temp Sensor      27 degrees C / 80 degrees F
  Power
         PF0 Core 0.9V               924 mV   24429 mA   22664 mW
         PF0 AVDD 1V                 999 mV   19515 mA   19531 mW
         PF1 Core 0.9V               924 mV   24531 mA   22679 mW
         PF1 AVDD 1V                 999 mV   17796 mA   17812 mW
         PF2 Core 0.9V               924 mV   24308 mA   22503 mW
         PF2 AVDD 1V                 999 mV   16250 mA   16265 mW
         PF3 Core 0.9V               925 mV   24414 mA   22601 mW
         PF3 AVDD 1V                 999 mV   15023 mA   15023 mW
         PF4 Core 0.9V               924 mV   24089 mA   22285 mW
         PF4 AVDD 1V                1000 mV   15148 mA   15156 mW
         PF5 Core 0.9V               898 mV   23601 mA   21273 mW
         PF5 AVDD 1V                 999 mV   15453 mA   15453 mW
         12V                       12311 mV   11399 mA  141366 mW
```

```
        12V_1                     12325 mV   11053 mA  137204 mW
SIB 1 status:
  State                       Online
  SIB 1 Intake-A Temp Sensor 23 degrees C / 73 degrees F
  SIB 1 Intake-B Temp Sensor 23 degrees C / 73 degrees F
  SIB 1 Intake-C Temp Sensor 18 degrees C / 64 degrees F
  SIB 1 Exhaust-A Temp Sensor30 degrees C / 86 degrees F
  SIB 1 Exhaust-B Temp Sensor32 degrees C / 89 degrees F
  SIB 1 Exhaust-C Temp Sensor25 degrees C / 77 degrees F
  SIB 1 PF0 Temp Sensor      33 degrees C / 91 degrees F
  SIB 1 PF1 Temp Sensor      32 degrees C / 89 degrees F
  SIB 1 PF2 Temp Sensor      34 degrees C / 93 degrees F
  SIB 1 PF3 Temp Sensor      39 degrees C / 102 degrees F
  SIB 1 PF4 Temp Sensor      29 degrees C / 84 degrees F
  SIB 1 PF5 Temp Sensor      28 degrees C / 82 degrees F
  Power
        PF0 Core 0.9V               949 mV   24101 mA   22910 mW
        PF0 AVDD 1V                1000 mV   19046 mA   19062 mW
        PF1 Core 0.9V               924 mV   24375 mA   22546 mW
        PF1 AVDD 1V                 999 mV   17843 mA   17859 mW
        PF2 Core 0.9V               923 mV   24183 mA   22355 mW
        PF2 AVDD 1V                 999 mV   16109 mA   16117 mW
        PF3 Core 0.9V               949 mV   24246 mA   23097 mW
        PF3 AVDD 1V                1000 mV   14632 mA   14632 mW
        PF4 Core 0.9V               925 mV   23613 mA   21882 mW
        PF4 AVDD 1V                1000 mV   14742 mA   14710 mW
        PF5 Core 0.9V               924 mV   24328 mA   22515 mW
        PF5 AVDD 1V                1000 mV   14640 mA   14664 mW
        12V                       12351 mV   11096 mA  138036 mW
        12V_1                     12219 mV   11226 mA  137500 mW
SIB 2 status:
  State                       Online
  SIB 2 Intake-A Temp Sensor 25 degrees C / 77 degrees F
  SIB 2 Intake-B Temp Sensor 22 degrees C / 71 degrees F
  SIB 2 Intake-C Temp Sensor 18 degrees C / 64 degrees F
  SIB 2 Exhaust-A Temp Sensor29 degrees C / 84 degrees F
  SIB 2 Exhaust-B Temp Sensor33 degrees C / 91 degrees F
  SIB 2 Exhaust-C Temp Sensor24 degrees C / 75 degrees F
  SIB 2 PF0 Temp Sensor      33 degrees C / 91 degrees F
  SIB 2 PF1 Temp Sensor      31 degrees C / 87 degrees F
  SIB 2 PF2 Temp Sensor      34 degrees C / 93 degrees F
  SIB 2 PF3 Temp Sensor      42 degrees C / 107 degrees F
  SIB 2 PF4 Temp Sensor      28 degrees C / 82 degrees F
  SIB 2 PF5 Temp Sensor      27 degrees C / 80 degrees F
```

```
  Power
         PF0 Core 0.9V                899 mV   24046 mA   21656 mW
         PF0 AVDD 1V                  999 mV   19265 mA   19250 mW
         PF1 Core 0.9V                900 mV   24234 mA   21867 mW
         PF1 AVDD 1V                  999 mV   18000 mA   18015 mW
         PF2 Core 0.9V                900 mV   23250 mA   20953 mW
         PF2 AVDD 1V                  999 mV   16328 mA   16343 mW
         PF3 Core 0.9V                899 mV   23976 mA   21570 mW
         PF3 AVDD 1V                  999 mV   14976 mA   15007 mW
         PF4 Core 0.9V                924 mV   23718 mA   21976 mW
         PF4 AVDD 1V                 1000 mV   14781 mA   14765 mW
         PF5 Core 0.9V                899 mV   23265 mA   20937 mW
         PF5 AVDD 1V                  999 mV   15125 mA   15132 mW
         12V                        12298 mV   10750 mA  133523 mW
         12V_1                      12245 mV   10880 mA  134041 mW
SIB 3 status:
  State                       Online
  SIB 3 Intake-A Temp Sensor 23 degrees C / 73 degrees F
  SIB 3 Intake-B Temp Sensor 25 degrees C / 77 degrees F
  SIB 3 Intake-C Temp Sensor 17 degrees C / 62 degrees F
  SIB 3 Exhaust-A Temp Sensor30 degrees C / 86 degrees F
  SIB 3 Exhaust-B Temp Sensor32 degrees C / 89 degrees F
  SIB 3 Exhaust-C Temp Sensor25 degrees C / 77 degrees F
  SIB 3 PF0 Temp Sensor      33 degrees C / 91 degrees F
  SIB 3 PF1 Temp Sensor      31 degrees C / 87 degrees F
  SIB 3 PF2 Temp Sensor      32 degrees C / 89 degrees F
  SIB 3 PF3 Temp Sensor      40 degrees C / 104 degrees F
  SIB 3 PF4 Temp Sensor      28 degrees C / 82 degrees F
  SIB 3 PF5 Temp Sensor      27 degrees C / 80 degrees F
  Power
         PF0 Core 0.9V                924 mV   24558 mA   22734 mW
         PF0 AVDD 1V                  999 mV   19500 mA   19515 mW
         PF1 Core 0.9V                925 mV   24570 mA   22750 mW
         PF1 AVDD 1V                  999 mV   17609 mA   17625 mW
         PF2 Core 0.9V                899 mV   23144 mA   20832 mW
         PF2 AVDD 1V                 1000 mV   16375 mA   16390 mW
         PF3 Core 0.9V                925 mV   24203 mA   22414 mW
         PF3 AVDD 1V                 1000 mV   15039 mA   15023 mW
         PF4 Core 0.9V                899 mV   23523 mA   21183 mW
         PF4 AVDD 1V                  999 mV   15273 mA   15296 mW
         PF5 Core 0.9V                924 mV   24125 mA   22367 mW
         PF5 AVDD 1V                 1000 mV   14953 mA   14968 mW
         12V                        12245 mV   10880 mA  133652 mW
         12V_1                      12259 mV   11053 mA  136464 mW
```

```
SIB 4 status:
  State                      Online
  SIB 4 Intake-A Temp Sensor 23 degrees C / 73 degrees F
  SIB 4 Intake-B Temp Sensor 26 degrees C / 78 degrees F
  SIB 4 Intake-C Temp Sensor 18 degrees C / 64 degrees F
  SIB 4 Exhaust-A Temp Sensor30 degrees C / 86 degrees F
  SIB 4 Exhaust-B Temp Sensor33 degrees C / 91 degrees F
  SIB 4 Exhaust-C Temp Sensor24 degrees C / 75 degrees F
  SIB 4 PF0 Temp Sensor      34 degrees C / 93 degrees F
  SIB 4 PF1 Temp Sensor      32 degrees C / 89 degrees F
  SIB 4 PF2 Temp Sensor      33 degrees C / 91 degrees F
  SIB 4 PF3 Temp Sensor      41 degrees C / 105 degrees F
  SIB 4 PF4 Temp Sensor      28 degrees C / 82 degrees F
  SIB 4 PF5 Temp Sensor      27 degrees C / 80 degrees F
  Power
         PF0 Core 0.9V               925 mV   24644 mA   22824 mW
         PF0 AVDD 1V                 999 mV   19375 mA   19390 mW
         PF1 Core 0.9V               900 mV   24109 mA   21703 mW
         PF1 AVDD 1V                 999 mV   17687 mA   17695 mW
         PF2 Core 0.9V               899 mV   24085 mA   21710 mW
         PF2 AVDD 1V                 999 mV   16578 mA   16570 mW
         PF3 Core 0.9V               949 mV   24652 mA   23410 mW
         PF3 AVDD 1V                1000 mV   14445 mA   14453 mW
         PF4 Core 0.9V               924 mV   23902 mA   22097 mW
         PF4 AVDD 1V                 999 mV   14750 mA   14742 mW
         PF5 Core 0.9V               925 mV   24082 mA   22308 mW
         PF5 AVDD 1V                 999 mV   14671 mA   14671 mW
         12V                       12338 mV   11139 mA  138277 mW
         12V_1                     12325 mV   11356 mA  140978 mW
SIB 5 status:
  State                      Online
  SIB 5 Intake-A Temp Sensor 22 degrees C / 71 degrees F
  SIB 5 Intake-B Temp Sensor 22 degrees C / 71 degrees F
  SIB 5 Intake-C Temp Sensor 18 degrees C / 64 degrees F
  SIB 5 Exhaust-A Temp Sensor28 degrees C / 82 degrees F
  SIB 5 Exhaust-B Temp Sensor28 degrees C / 82 degrees F
  SIB 5 Exhaust-C Temp Sensor25 degrees C / 77 degrees F
  SIB 5 PF0 Temp Sensor      32 degrees C / 89 degrees F
  SIB 5 PF1 Temp Sensor      31 degrees C / 87 degrees F
  SIB 5 PF2 Temp Sensor      32 degrees C / 89 degrees F
  SIB 5 PF3 Temp Sensor      33 degrees C / 91 degrees F
  SIB 5 PF4 Temp Sensor      29 degrees C / 84 degrees F
  SIB 5 PF5 Temp Sensor      28 degrees C / 82 degrees F
  Power
```

```
PF0 Core 0.9V               924 mV   25093 mA   23210 mW
PF0 AVDD 1V                 999 mV   19781 mA   19796 mW
PF1 Core 0.9V               899 mV   24113 mA   21753 mW
PF1 AVDD 1V                1000 mV   17968 mA   17984 mW
PF2 Core 0.9V               925 mV   24218 mA   22437 mW
PF2 AVDD 1V                1000 mV   16539 mA   16531 mW
PF3 Core 0.9V               898 mV   23511 mA   21164 mW
PF3 AVDD 1V                 999 mV   15015 mA   15023 mW
PF4 Core 0.9V               975 mV   25328 mA   24718 mW
PF4 AVDD 1V                1000 mV   14578 mA   14601 mW
PF5 Core 0.9V               923 mV   24175 mA   22367 mW
PF5 AVDD 1V                1000 mV   14789 mA   14765 mW
12V                       12259 mV   11053 mA  136464 mW
12V_1                     12272 mV   11226 mA  138221 mW
```

show chassis ethernet-switch

List of Syntax

Syntax on page 1181
Syntax (EX8200 Switch) on page 1181
Syntax (T4000 Router) on page 1181
Syntax (TX Matrix Router) on page 1181
Syntax (TX Matrix Plus Router) on page 1181
Syntax (MX Series Router) on page 1182
Syntax (MX2010, MX2020, and MX2008 Universal Routing Platforms) on page 1182
Syntax (MX10008 Universal Routing Platforms) on page 1182
Syntax (PTX Series Packet Transport Routers) on page 1182

Syntax

```
show chassis ethernet-switch
<errors <port>>
```

Syntax (EX8200 Switch)

```
show chassis ethernet-switch
<statistics <port> | switch <number>
```

Syntax (T4000 Router)

```
show chassis ethernet-switch
<errors <port> | statistics <port>>
```

Syntax (TX Matrix Router)

```
show chassis ethernet-switch
<errors <port> | statistics <port>>
<lcc <number> | scc>
```

Syntax (TX Matrix Plus Router)

```
show chassis ethernet-switch
<errors <port> | switch <number>
<lcc number | sfc number>
<statistics <port> | switch <number>
```

Syntax (MX Series Router)

```
show chassis ethernet-switch
<all-members>
<errors <port>>
<local>
<member member-id>
```

Syntax (MX2010, MX2020, and MX2008 Universal Routing Platforms)

```
show chassis ethernet-switch
<errors <port> | statistics <port>>
<old-rom-packet-count>
```

Syntax (MX10008 Universal Routing Platforms)

```
statistics <port>>
```

Syntax (PTX Series Packet Transport Routers)

```
show chassis ethernet-switch
<errors <port>>
<statistics <port>>
<port-state <port>>
```

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.4 for EX Series switches.
sfc option introduced in Junos OS Release 9.6 for the TX Matrix Plus router.
Command introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers.
Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 Universal Routing Platforms.
Command introduced in Junos OS Release 17.2 for PTX10008 and MX2008 Universal Routing Platforms.
Command introduced in Junos OS Release 18.2 for MX10008 Universal Routing Platforms.

Description

(M10i, M40e, M120, M160, M320, MX Series, and T Series routers and EX8200 and PTX Series routers only) Display information about the ports on the Control Board (CB) Ethernet switch.

Options

none—Display information about each connected port on the Ethernet switch. On a TX Matrix router, display information about each connected port on the Ethernet switch on the TX Matrix router and

its attached T640 routers. On a TX Matrix Plus router, display information about each connected port on the Ethernet switch on the TX Matrix Plus router and its attached routers.

all-members—(MX Series routers only) (Optional) Display information about the ports on the CB Ethernet switch on all the members of the Virtual Chassis configuration.

errors—(Optional) Display the numbers and types of errors accumulated on all ports of the Ethernet switch.

errors *port*—(Optional) Display the numbers and types of errors accumulated on the specified port (0 through 15) of the Ethernet switch. On the TX Matrix router, replace ***port*** with a value from **0** through **15**. On the TX Matrix Plus router and EX8200 switch, replace ***port*** with a value from **0** through **27**. On the PTX Series Packet Transport Routers, replace ***port*** with a value from **0** through **25**. On the T4000 routers, MX2020 routers, MX2010 routers, and MX2008 routers, replace ***port*** with a value from **0** through **27**.

errors switch *number*—(TX Matrix Plus router only) (Optional) Display the numbers and types of errors accumulated on the specified switch. Replace ***number*** with a value from **0** through **2**.

lcc *number*—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

local—(MX Series routers only) (Optional) Display information about the ports on the CB Ethernet switch on the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display information about the ports on the CB Ethernet switch on the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value of 0 or 1.

old-rom-packet-count—(MX 2020 Routers only) (Optional) Display information about installed linecards. A non-zero number indicates that the bootrom on that linecard needs to be updated.

port-state—(PTX Series only) (Optional) Display information about current port operation (**Blocking**, **Listening**, or **Disabled**).

scc—(TX Matrix router only) (Optional) Display information about the ports on the CB's Ethernet switch on the TX Matrix router (switch-card chassis).

sfc *number*—(TX Matrix Plus router only) (Optional) Display information about the ports on the CB's Ethernet switch on the TX Matrix Plus router (or switch-fabric chassis). Replace ***number*** with **0**.

statistics—(Optional) Display traffic statistics for each connected port on the Ethernet switch.

statistics *port*—(Optional) Display traffic statistics for the specified port on the Ethernet switch. On the TX Matrix router, replace ***port*** with a value from **0** through **25**. On the TX Matrix Plus router or EX8200 switch, replace ***port*** with a value from **0** through **27**. On the PTX Series Packet Transport Routers, replace ***port*** with a value from **0** through **25**. On the T4000 routers, MX2020 routers, MX2010 routers, and MX2008 routers, replace ***port*** with a value from **0** through **27**.

statistics switch *number*—(TX Matrix Plus routers and EX8200 switch only) (Optional) Display traffic statistics for the specified Ethernet switch number. On the TX Matrix Plus router and EX8216 switch, replace ***number*** with a value from **0** through **2**. On the EX8208 switch, replace ***number*** with a value from **0** through **1**.

Required Privilege Level

view

List of Sample Output

show chassis ethernet-switch on page 1189
show chassis ethernet-switch (MX2020 Router) on page 1190
show chassis ethernet-switch statistics (MX2020 Router) on page 1194
show chassis ethernet-switch (MX2020 Router with MPC4E) on page 1204
show chassis ethernet-switch (MX2008 Router) on page 1207
show chassis ethernet-switch statistics (Mx10008 Router) on page 1209
show chassis ethernet-switch (TX Matrix Router) on page 1210
show chassis ethernet-switch errors on page 1212
show chassis ethernet-switch errors (TX Matrix Plus Router) on page 1213
show chassis ethernet-switch sfc errors (TX Matrix Plus Router) on page 1214
show chassis ethernet-switch statistics (TX Matrix Plus Router) on page 1215
show chassis ethernet-switch (T4000 Router) on page 1221
show chassis ethernet-switch errors (T4000 Router) on page 1222
show chassis ethernet-switch (PTX5000 Packet Transport Router) on page 1223
show chassis ethernet-switch statistics (PTX5000 Packet Transport Router) on page 1225
show chassis ethernet-switch port-state (PTX5000 Packet Transport Router) on page 1229

Output Fields

Table 57 on page 1185 lists the output fields for the **show chassis ethernet-switch** command. Output fields are listed in the approximate order in which they appear.

Table 57: show chassis ethernet-switch Output Fields

Field Name	Field Description
Link is good on port n connected to device or **Link is good on Fast Ethernet port n connected to device** or **Link is good on Gigabit Ethernet port n connected to device** or **Link is down on Gigabit Ethernet port connected to device**	Information about the link between each port on the CB's Ethernet switch and one of the following devices: • FPC0 (Flexible PIC Concentrator 0) through FPC7 • Local controller • Routing Engine • Other Routing Engine (on a system with two Routing Engines) • SPMB (Switch Processor Mezzanine Board) • (TX Matrix router only) LCC0 (line-card chassis 0) through LCC3
Speed is	Speed at which the Ethernet link is running: **10 Mb** or **100 Mb.** When the device is **RE** or **Other RE** on the TX Matrix router, the speed is **1000 Mb**. **NOTE:** Irrespective of the device, the speed is **1000** Mb on the MX2010, MX2020, and MX2008 routers.
Duplex is	Duplex type of the Ethernet link: **full** or **half**.
Autonegotiate is Enabled (or Disabled)	By default, built-in Fast Ethernet ports on a PIC autonegotiate whether to operate at 10 Mbps or 100 Mbps. All other interfaces automatically choose the correct speed based on the PIC type and whether the PIC is configured to operate in multiplexed mode (using the **no-concatenate** statement at the **[edit chassis]** hierarchy level, as described in the *Junos OS System Basics Configuration Guide*).
Flow Control TX is Enabled (or Disabled)	(MX2010 routers, MX2020 routers, MX2008 routers, and PTX Series) Flow control in the transmit direction is enabled (or disabled). Flow control regulates the flow of packets from the switch to the remote side of the connection.
Flow Control RX is Enabled (or Disabled)	(MX2010 routers, MX2020 routers, MX2008 routers, and PTX Series) Flow control in the receive direction is enabled (or disabled). Flow control regulates the flow of packets from the remote side of the connection to the switch.

Table 57: show chassis ethernet-switch Output Fields *(continued)*

Field Name	Field Description
MLT3	Number of multilevel threshold-3 (MLT-3) Fast Ethernet errors detected.
Accumulated error counts for port *n* connected to device FPC*n*: (error output only)	
Lock	Number of lock errors detected.
Xmit	Number of transmission errors detected.
ESD	Number of electrostatic discharge (ESD) errors detected.
False Carrier	Number of false carrier errors detected. This number is increased by one if a FRU is removed.
Disconnects	Number of disconnect errors detected.
FX mode	Number of errors detected on an Ethernet link over optical fiber.
Statistics for port *n* connected to device FPC*n* (statistics output only)	
TX Packets 64 Octets	(MX2010, MX2020, and MX2008 routers) Number of packets of size 64 octets transmitted.
TX Packets 65 - 127 Octets	(MX2010, MX2020, and MX2008 routers) Number of packets of size 65 through 127 octets transmitted.
TX Packets 128 - 255 Octets	(MX2010, MX2020, and MX2008 routers) Number of packets of size 128 through 255 octets transmitted.
TX Packets 256 - 511 Octets	(MX2010, MX2020, and MX2008 routers) Number of packets of size 256 through 511 octets transmitted.
TX Packets 512 - 1023 Octets	(MX2010, MX2020, and MX2008 routers) Number of packets of size 512 through 1023 octets transmitted.
TX Packets 1024 - 1518 Octets	(MX2010, MX2020, and MX2008 routers) Number of packets of size 1024 through 1518 octets transmitted.
TX Packets 1519 - 2047 Octets	(MX2010, MX2020, and MX2008 routers) Number of packets of size 1519 through 2047 octets transmitted.
TX Packets 2048 - 4095 Octets	(MX2010, MX2020, and MX2008 routers) Number of packets of size 2048 through 4095 octets transmitted.

Table 57: show chassis ethernet-switch Output Fields *(continued)*

Field Name	Field Description
TX Packets 4096 - 9216 Octets	(MX2010, MX2020, and MX2008 routers) Number of packets of size 4096 through 9216 octets transmitted.
TX 1519 - 1522 Good Vlan frms	(MX2010, MX2020, and MX2008 routers) Number of transmitted frames of size 1519 through 1522 octets that are good VLAN frames.
TX Octets	Number of octets sent.
TX Unicast packets	Number of unicast packets sent.
TX Multicast packets	Number of multicast packets sent.
TX Broadcast packets	Number of broadcast packets sent.
TX Single Collision frames	(MX2010, MX2020, and MX2008 routers) Number of packets sent after one collision.
TX Mult. Collision frames	(MX2010, MX2020, and MX2008 routers) Number of packets sent after multiple collisions.
TX Late collisions	Number of packets aborted during sending because of collisions after 64 bytes.
TX Excessive collisions	Number of packets not sent because of too many collisions.
TX Dropped packets	Number of transmitted packets that were dropped.
TX PAUSEMAC Ctrl Frames	Number of Media Access Control (MAC) frames containing PAUSE commands that were sent.
TX Oversize Packets	Number of oversize packets that were sent.
TX FCS Error Counter	Number of packets discarded because of frame check sequence errors.
TX Fragment Counter	Number of fragmented packets sent.
TX Byte Counter	Number of bytes sent.

Table 57: show chassis ethernet-switch Output Fields *(continued)*

Field Name	Field Description
TX Packet OK Counter	Number of viable packets sent.
TX Pause Packet Counter	Number of PAUSE packets sent.
RX Packets 64 Octets	(MX2010, MX2020, and MX2008 routers) Number of packets of size 64 octets received.
RX Packets 65 - 127 Octets	(MX2010, MX2020, and MX2008 routers) Number of packets of size 65 through 127 octets received.
RX Packets 128 - 255 Octets	(MX2010, MX2020, and MX2008 routers) Number of packets of size 128 through 255 octets received.
RX Packets 256 - 511 Octets	(MX2010, MX2020, and MX2008 routers) Number of packets of size 256 through 511 octets received.
RX Packets 512 - 1023 Octets	(MX2010, MX2020, and MX2008 routers) Number of packets of size 512 through 1023 octets received.
RX Packets 1024 - 1518 Octets	(MX2010, MX2020, and MX2008 routers) Number of packets of size 1024 through 1518 octets received.
RX Packets 1519 - 2047 Octets	(MX2010, MX2020, and MX2008 routers) Number of packets of size 1519 through 2047 octets received.
RX Packets 2048 - 4095 Octets	(MX2010, MX2020, and MX2008 routers) Number of packets of size 2048 through 4095 octets received.
RX Packets 4096 - 9216 Octets	(MX2010, MX2020, and MX2008 routers) Number of packets of size 4096 through 9216 octets received.
RX Octets	Number of octets received.
RX Unicast packets	Number of unicast packets received.
RX Multicast packets	Number of multicast packets received.
RX Broadcast packets	Number of broadcast packets received.

Table 57: show chassis ethernet-switch Output Fields *(continued)*

Field Name	Field Description
RX FCS Errors	Number of packets discarded because of frame check sequence errors.
RX Alignment Errors	Number of incomplete octets received.
RX Dropped Packets	Number of incoming packets that were dropped.
RX Fragments	Number of fragmented packets received.
RX Symbol Errors	Number of symbols received that the router did not correctly decode.
RX MAC Control	Number of Media Access Control (MAC) packets received.
RX Oversize Packets	Number of oversize packets received.
RX Undersize Packets	Number of undersize packets received.
RX Jabbers	Total number of frames received that exceed the maximum byte count and contain CRC errors .
RX Control Frame Counter	Number of control frames received.
RX Pause Frame Counter	Number of pause frames received.
RX FCS Errors	Number of packets discarded because of frame check sequence errors.
RX Fragments	Number of fragmented packets received.
RX Byte Counter	Number of bytes received.
RX Packet OK Counter	Number of viable packets received.

Sample Output

show chassis ethernet-switch

```
user@host> show chassis ethernet-switch
```

```
Link is good on port 0 connected to device: FPC0
  Speed is 100 MB
  Duplex is full

Link is good on port 1 connected to device: FPC1
  Speed is 100 MB
  Duplex is full

Link is good on port 2 connected to device: FPC2
  Speed is 100 MB
  Duplex is full

Link is good on port 3 connected to device: FPC3
  Speed is 100 MBb
  Duplex is full

Link is good on port 7 connected to device: Local controller
  Speed is 100 MB
  Duplex is full

Link is good on port 9 connected to device: SPMB
  Speed is 100 MB
  Duplex is full

Link is good on port 13 connected to device: FPC5
  Speed is 100 MB
  Duplex is full
```

show chassis ethernet-switch (MX2020 Router)

`user@host >` **show chassis ethernet-switch**

```
Displaying summary for switch 0
Link is good on GE port 0 connected to device: FPC0
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 1 connected to device: FPC1
  Speed is 1000Mb
  Duplex is full
```

```
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 2 connected to device: FPC3
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 3 connected to device: FPC2
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 4 connected to device: FPC5
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 5 connected to device: FPC4
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 6 connected to device: FPC6
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 7 connected to device: FPC7
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
```

```
  Flow Control RX is Disabled

Link is good on GE port 8 connected to device: FPC8
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 9 connected to device: FPC9
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 10 connected to device: FPC10
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 11 connected to device: FPC11
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 12 connected to device: FPC13
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 13 connected to device: FPC12
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled
```

```
Link is good on GE port 14 connected to device: FPC14
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 15 connected to device: FPC15
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 16 connected to device: FPC17
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 17 connected to device: FPC16
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 18 connected to device: FPC18
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 19 connected to device: FPC19
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 20 connected to device: Other RE-GigE
  Speed is 1000Mb
```

```
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 21 connected to device: RE-GigE
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is down on GE port 22 connected to device: Debug-GigE

Link is good on GE port 23 connected to device: SPMB
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is down on XE port 24 connected to device: SFP+ 0

Link is down on XE port 25 connected to device: SFP+ 1

Link is down on XE port 26 connected to device: RE-10GigE

Link is down on XE port 27 connected to device: Other RE-10GigE
```

show chassis ethernet-switch statistics (MX2020 Router)

`user@host >` **show chassis ethernet-switch statistics**

```
Displaying port statistics for switch 0
Statistics for port 0 connected to device FPC0:
  TX Packets 64 Octets        1468564
  TX Packets 65-127 Octets    153896
  TX Packets 128-255 Octets   237
  TX Packets 256-511 Octets   286
  TX Packets 512-1023 Octets  599
  TX Packets 1024-1518 Octets  22803
  TX Packets 1519-2047 Octets  0
  TX Packets 2048-4095 Octets  0
  TX Packets 4096-9216 Octets  0
```

```
TX 1519-1522 Good Vlan frms  0
TX Octets                    1646385
TX Multicast Packets         6
TX Broadcast Packets         970939
TX Single Collision frames   0
TX Mult. Collision frames    0
TX Late Collisions           0
TX Excessive Collisions      0
TX Collision frames          0
TX PAUSEMAC Ctrl Frames      0
TX MAC ctrl frames           0
TX Frame deferred Xmns       0
TX Frame excessive deferl    0
TX Oversize Packets          0
TX Jabbers                   0
TX FCS Error Counter         0
TX Fragment Counter          0
TX Byte Counter              130470290
RX Packets 64 Octets         180266
RX Packets 65-127 Octets     519030
RX Packets 128-255 Octets    1390
RX Packets 256-511 Octets    42857
RX Packets 512-1023 Octets   3482
RX Packets 1024-1518 Octets  8147
RX Packets 1519-2047 Octets  0
RX Packets 2048-4095 Octets  0
RX Packets 4096-9216 Octets  0
RX Octets                    755172
RX Multicast Packets         0
RX Broadcast Packets         42822
RX FCS Errors                0
RX Align Errors              0
RX Fragments                 0
RX Symbol errors             0
RX Unsupported opcodes       0
RX Out of Range Length       0
RX False Carrier Errors      0
RX Undersize Packets         0
RX Oversize Packets          0
RX Jabbers                   0
RX 1519-1522 Good Vlan frms 0
RX MTU Exceed Counter        0
RX Control Frame Counter     0
RX Pause Frame Counter       0
```

```
  RX Byte Counter             75374021
Statistics for port 1 connected to device FPC1:
  TX Packets 64 Octets        1493739
  TX Packets 65-127 Octets    126996
  TX Packets 128-255 Octets   241
  TX Packets 256-511 Octets   283
  TX Packets 512-1023 Octets  604
  TX Packets 1024-1518 Octets  33687
  TX Packets 1519-2047 Octets  0
  TX Packets 2048-4095 Octets  0
  TX Packets 4096-9216 Octets  0
  TX 1519-1522 Good Vlan frms  0
  TX Octets                   1655550
  TX Multicast Packets        6
  TX Broadcast Packets        969032
  TX Single Collision frames  0
  TX Mult. Collision frames   0
  TX Late Collisions          0
  TX Excessive Collisions     0
  TX Collision frames         0
  TX PAUSEMAC Ctrl Frames     0
  TX MAC ctrl frames          0
  TX Frame deferred Xmns      0
  TX Frame excessive deferl   0
  TX Oversize Packets         0
  TX Jabbers                  0
  TX FCS Error Counter        0
  TX Fragment Counter         0
  TX Byte Counter             141832690
  RX Packets 64 Octets        155655
  RX Packets 65-127 Octets    545561
  RX Packets 128-255 Octets   1394
  RX Packets 256-511 Octets   42811
  RX Packets 512-1023 Octets  3514
  RX Packets 1024-1518 Octets  8171
  RX Packets 1519-2047 Octets  0
  RX Packets 2048-4095 Octets  0
  RX Packets 4096-9216 Octets  0
  RX Octets                   757106
  RX Multicast Packets        0
  RX Broadcast Packets        44509
  RX FCS Errors               0
  RX Align Errors             0
  RX Fragments                0
```

```
  RX Symbol errors            0
  RX Unsupported opcodes      0
  RX Out of Range Length      0
  RX False Carrier Errors     0
  RX Undersize Packets        0
  RX Oversize Packets         0
  RX Jabbers                  0
  RX 1519-1522 Good Vlan frms 0
  RX MTU Exceed Counter       0
  RX Control Frame Counter    0
  RX Pause Frame Counter      0
  RX Byte Counter             75691392
Statistics for port 2 connected to device FPC3:
  TX Packets 64 Octets        1465749
  TX Packets 65-127 Octets    152849
  TX Packets 128-255 Octets   238
  TX Packets 256-511 Octets   289
  TX Packets 512-1023 Octets  602
  TX Packets 1024-1518 Octets  38903
  TX Packets 1519-2047 Octets  0
  TX Packets 2048-4095 Octets  0
  TX Packets 4096-9216 Octets  0
  TX 1519-1522 Good Vlan frms  0
  TX Octets                   1658630
  TX Multicast Packets        6
  TX Broadcast Packets        968873
  TX Single Collision frames  0
  TX Mult. Collision frames   0
  TX Late Collisions          0
  TX Excessive Collisions     0
  TX Collision frames         0
  TX PAUSEMAC Ctrl Frames     0
  TX MAC ctrl frames          0
  TX Frame deferred Xmns      0
  TX Frame excessive deferl   0
  TX Oversize Packets         0
  TX Jabbers                  0
  TX FCS Error Counter        0
  TX Fragment Counter         0
  TX Byte Counter             147427010
  RX Packets 64 Octets        181636
  RX Packets 65-127 Octets    517526
  RX Packets 128-255 Octets   1405
  RX Packets 256-511 Octets   42806
```

```
  RX Packets 512-1023 Octets  3515
  RX Packets 1024-1518 Octets  8168
  RX Packets 1519-2047 Octets  0
  RX Packets 2048-4095 Octets  0
  RX Packets 4096-9216 Octets  0
  RX Octets                   755056
  RX Multicast Packets        0
  RX Broadcast Packets        44490
  RX FCS Errors               0
  RX Align Errors             0
  RX Fragments                0
  RX Symbol errors            0
  RX Unsupported opcodes      0
  RX Out of Range Length      0
  RX False Carrier Errors     0
  RX Undersize Packets        0
  RX Oversize Packets         0
  RX Jabbers                  0
  RX 1519-1522 Good Vlan frms 0
  RX MTU Exceed Counter       0
  RX Control Frame Counter    0
  RX Pause Frame Counter      0
  RX Byte Counter             75381869
Statistics for port 3 connected to device FPC2:
  TX Packets 64 Octets        1473828
  TX Packets 65-127 Octets    145643
  TX Packets 128-255 Octets   253
  TX Packets 256-511 Octets   285
  TX Packets 512-1023 Octets  612
  TX Packets 1024-1518 Octets  26603
  TX Packets 1519-2047 Octets  0
  TX Packets 2048-4095 Octets  0
  TX Packets 4096-9216 Octets  0
  TX 1519-1522 Good Vlan frms  0
  TX Octets                   1647224
  TX Multicast Packets        6
  TX Broadcast Packets        968925
  TX Single Collision frames  0
  TX Mult. Collision frames   0
  TX Late Collisions          0
  TX Excessive Collisions     0
  TX Collision frames         0
  TX PAUSEMAC Ctrl Frames     0
  TX MAC ctrl frames          0
```

```
  TX Frame deferred Xmns      0
  TX Frame excessive deferl   0
  TX Oversize Packets         0
  TX Jabbers                  0
  TX FCS Error Counter        0
  TX Fragment Counter         0
  TX Byte Counter             134293832
  RX Packets 64 Octets        174230
  RX Packets 65-127 Octets    525756
  RX Packets 128-255 Octets   1404
  RX Packets 256-511 Octets   42815
  RX Packets 512-1023 Octets  3530
  RX Packets 1024-1518 Octets  8176
  RX Packets 1519-2047 Octets  0
  RX Packets 2048-4095 Octets  0
  RX Packets 4096-9216 Octets  0
  RX Octets                   755911
  RX Multicast Packets        0
  RX Broadcast Packets        44499
  RX FCS Errors               0
  RX Align Errors             0
  RX Fragments                0
  RX Symbol errors            0
  RX Unsupported opcodes      0
  RX Out of Range Length      0
  RX False Carrier Errors     0
  RX Undersize Packets        0
  RX Oversize Packets         0
  RX Jabbers                  0
  RX 1519-1522 Good Vlan frms 0
  RX MTU Exceed Counter       0
  RX Control Frame Counter    0
  RX Pause Frame Counter      0
  RX Byte Counter             75517355
Statistics for port 4 connected to device FPC5:
  TX Packets 64 Octets        1466664
  TX Packets 65-127 Octets    151155
  TX Packets 128-255 Octets   238
  TX Packets 256-511 Octets   277
  TX Packets 512-1023 Octets  615
  TX Packets 1024-1518 Octets  54674
  TX Packets 1519-2047 Octets  0
  TX Packets 2048-4095 Octets  0
  TX Packets 4096-9216 Octets  0
```

```
TX 1519-1522 Good Vlan frms  0
TX Octets                    1673623
TX Multicast Packets         6
TX Broadcast Packets         968610
TX Single Collision frames   0
TX Mult. Collision frames    0
TX Late Collisions           0
TX Excessive Collisions      0
TX Collision frames          0
TX PAUSEMAC Ctrl Frames      0
TX MAC ctrl frames           0
TX Frame deferred Xmns       0
TX Frame excessive deferl    0
TX Oversize Packets          0
TX Jabbers                   0
TX FCS Error Counter         0
TX Fragment Counter          0
TX Byte Counter              164247790
RX Packets 64 Octets         180006
RX Packets 65-127 Octets     518217
RX Packets 128-255 Octets    1406
RX Packets 256-511 Octets    42787
RX Packets 512-1023 Octets   3515
RX Packets 1024-1518 Octets  8164
RX Packets 1519-2047 Octets  0
RX Packets 2048-4095 Octets  0
RX Packets 4096-9216 Octets  0
RX Octets                    754095
RX Multicast Packets         0
RX Broadcast Packets         44457
RX FCS Errors                0
RX Align Errors              0
RX Fragments                 0
RX Symbol errors             0
RX Unsupported opcodes       0
RX Out of Range Length       0
RX False Carrier Errors      0
RX Undersize Packets         0
RX Oversize Packets          0
RX Jabbers                   0
RX 1519-1522 Good Vlan frms 0
RX MTU Exceed Counter        0
RX Control Frame Counter     0
RX Pause Frame Counter       0
```

```
  RX Byte Counter             75311970
Statistics for port 5 connected to device FPC4:
  TX Packets 64 Octets        1464770
  TX Packets 65-127 Octets    154498
  TX Packets 128-255 Octets   225
  TX Packets 256-511 Octets   280
  TX Packets 512-1023 Octets  637
  TX Packets 1024-1518 Octets  26355
  TX Packets 1519-2047 Octets  0
  TX Packets 2048-4095 Octets  0
  TX Packets 4096-9216 Octets  0
  TX 1519-1522 Good Vlan frms  0
  TX Octets                   1646765
  TX Multicast Packets        6
  TX Broadcast Packets        968730
  TX Single Collision frames  0
  TX Mult. Collision frames   0
  TX Late Collisions          0
  TX Excessive Collisions     0
  TX Collision frames         0
  TX PAUSEMAC Ctrl Frames     0
  TX MAC ctrl frames          0
  TX Frame deferred Xmns      0
  TX Frame excessive deferl   0
  TX Oversize Packets         0
  TX Jabbers                  0
  TX FCS Error Counter        0
  TX Fragment Counter         0
  TX Byte Counter             134058606
  RX Packets 64 Octets        169269
  RX Packets 65-127 Octets    515285
  RX Packets 128-255 Octets   1527
  RX Packets 256-511 Octets   42804
  RX Packets 512-1023 Octets  3521
  RX Packets 1024-1518 Octets  9142
  RX Packets 1519-2047 Octets  0
  RX Packets 2048-4095 Octets  0
  RX Packets 4096-9216 Octets  0
  RX Octets                   741548
  RX Multicast Packets        0
  RX Broadcast Packets        44470
  RX FCS Errors               0
  RX Align Errors             0
  RX Fragments                0
```

```
  RX Symbol errors            0
  RX Unsupported opcodes      0
  RX Out of Range Length      0
  RX False Carrier Errors     0
  RX Undersize Packets        0
  RX Oversize Packets         0
  RX Jabbers                  0
  RX 1519-1522 Good Vlan frms 0
  RX MTU Exceed Counter       0
  RX Control Frame Counter    0
  RX Pause Frame Counter      0
  RX Byte Counter             75498393
Statistics for port 6 connected to device FPC6:
  TX Packets 64 Octets        1475260
  TX Packets 65-127 Octets    143324
  TX Packets 128-255 Octets   260
  TX Packets 256-511 Octets   274
  TX Packets 512-1023 Octets  603
  TX Packets 1024-1518 Octets  40631
  TX Packets 1519-2047 Octets  0
  TX Packets 2048-4095 Octets  0
  TX Packets 4096-9216 Octets  0
  TX 1519-1522 Good Vlan frms  0
  TX Octets                   1660352
  TX Multicast Packets        6
  TX Broadcast Packets        968466
  TX Single Collision frames  0
  TX Mult. Collision frames   0
  TX Late Collisions          0
  TX Excessive Collisions     0
  TX Collision frames         0
  TX PAUSEMAC Ctrl Frames     0
  TX MAC ctrl frames          0
  TX Frame deferred Xmns      0
  TX Frame excessive deferl   0
  TX Oversize Packets         0
  TX Jabbers                  0
  TX FCS Error Counter        0
  TX Fragment Counter         0
  TX Byte Counter             149212764
  RX Packets 64 Octets        172275
  RX Packets 65-127 Octets    526519
  RX Packets 128-255 Octets   1394
  RX Packets 256-511 Octets   42777
```

```
  RX Packets 512-1023 Octets  3514
  RX Packets 1024-1518 Octets  8161
  RX Packets 1519-2047 Octets  0
  RX Packets 2048-4095 Octets  0
  RX Packets 4096-9216 Octets  0
  RX Octets                   754640
  RX Multicast Packets        0
  RX Broadcast Packets        44443
  RX FCS Errors               0
  RX Align Errors             0
  RX Fragments                0
  RX Symbol errors            0
  RX Unsupported opcodes      0
  RX Out of Range Length      0
  RX False Carrier Errors     0
  RX Undersize Packets        0
  RX Oversize Packets         0
  RX Jabbers                  0
  RX 1519-1522 Good Vlan frms 0
  RX MTU Exceed Counter       0
  RX Control Frame Counter    0
  RX Pause Frame Counter      0
  RX Byte Counter             75386517
Statistics for port 7 connected to device FPC7:
  TX Packets 64 Octets        1472361
  TX Packets 65-127 Octets    145646
  TX Packets 128-255 Octets   251
  TX Packets 256-511 Octets   250
  TX Packets 512-1023 Octets  580
  TX Packets 1024-1518 Octets  49530
  TX Packets 1519-2047 Octets  0
  TX Packets 2048-4095 Octets  0
  TX Packets 4096-9216 Octets  0
  TX 1519-1522 Good Vlan frms  0
  TX Octets                   1668618
  TX Multicast Packets        6
  TX Broadcast Packets        968317
  TX Single Collision frames  0
  TX Mult. Collision frames   0
  TX Late Collisions          0
  TX Excessive Collisions     0
  TX Collision frames         0
  TX PAUSEMAC Ctrl Frames     0
  TX MAC ctrl frames          0
```

```
  TX Frame deferred Xmns      0
  TX Frame excessive deferl   0
  TX Oversize Packets         0
  TX Jabbers                  0
  TX FCS Error Counter        0
  TX Fragment Counter         0
  TX Byte Counter             158689814
  RX Packets 64 Octets        174618
  RX Packets 65-127 Octets    523421
  RX Packets 128-255 Octets   1393
  RX Packets 256-511 Octets   42764
  RX Packets 512-1023 Octets  3514
  RX Packets 1024-1518 Octets  8158
  RX Packets 1519-2047 Octets  0
  RX Packets 2048-4095 Octets  0
  RX Packets 4096-9216 Octets  0
  RX Octets                   753868
  RX Multicast Packets        0
  RX Broadcast Packets        44429
  RX FCS Errors               0
  RX Align Errors             0
  RX Fragments                0
  RX Symbol errors            0
  RX Unsupported opcodes      0
  RX Out of Range Length      0
  RX False Carrier Errors     0
  RX Undersize Packets        0
  RX Oversize Packets         0
  RX Jabbers                  0
  RX 1519-1522 Good Vlan frms 0
  RX MTU Exceed Counter       0
  RX Control Frame Counter    0
  RX Pause Frame Counter      0
  RX Byte Counter             75309863
Statistics for port 8 connected to device FPC8:
...
```

show chassis ethernet-switch (MX2020 Router with MPC4E)

`user@ host >` **show chassis ethernet-switch**

```
Displaying summary for switch 0
Link is good on GE port 0 connected to device: FPC0
  Speed is 1000Mb
```

```
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is down on GE port 1 connected to device: FPC1

Link is down on GE port 2 connected to device: FPC3

Link is down on GE port 3 connected to device: FPC2

Link is down on GE port 4 connected to device: FPC5

Link is down on GE port 5 connected to device: FPC4

Link is down on GE port 6 connected to device: FPC6

Link is down on GE port 7 connected to device: FPC7

Link is down on GE port 8 connected to device: FPC8

Link is good on GE port 9 connected to device: FPC9
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 10 connected to device: FPC10
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is down on GE port 11 connected to device: FPC11

Link is down on GE port 12 connected to device: FPC13

Link is down on GE port 13 connected to device: FPC12

Link is good on GE port 14 connected to device: FPC14
  Speed is 1000Mb
  Duplex is full
```

```
Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is down on GE port 15 connected to device: FPC15

Link is down on GE port 16 connected to device: FPC17

Link is down on GE port 17 connected to device: FPC16

Link is down on GE port 18 connected to device: FPC18

Link is good on GE port 19 connected to device: FPC19
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 20 connected to device: Other RE-GigE
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 21 connected to device: RE-GigE
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is down on GE port 22 connected to device: Debug-GigE

Link is good on GE port 23 connected to device: SPMB
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is down on XE port 24 connected to device: SFP+ 0
```

```
Link is down on XE port 25 connected to device: SFP+ 1

Link is down on XE port 26 connected to device: RE-10GigE

Link is down on XE port 27 connected to device: Other RE-10GigE
```

show chassis ethernet-switch (MX2008 Router)

user@host> **show chassis ethernet-switch**

```
Displaying summary for switch 0
Link is good on GE port 0 connected to device: FPC0
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is down on GE port 1 connected to device: FPC1

Link is good on GE port 2 connected to device: FPC3
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is down on GE port 3 connected to device: FPC2

Link is good on GE port 4 connected to device: FPC5
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is down on GE port 5 connected to device: FPC4

Link is down on GE port 6 connected to device: FPC6

Link is good on GE port 7 connected to device: FPC7
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
```

```
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is down on GE port 8 connected to device: FPC8

Link is good on GE port 9 connected to device: FPC9
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 20 connected to device: CB-to-CB-GigE 1
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 21 connected to device: CB-to-CB-GigE 2
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is down on GE port 22 connected to device: (null)

Link is down on GE port 23 connected to device: (null)

Link is good on XE port 24 connected to device: Other RE-10GigE
  Speed is 10000Mb
  Duplex is full
  Autonegotiate is Disabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on XE port 25 connected to device: RE-10GigE
  Speed is 10000Mb
  Duplex is full
  Autonegotiate is Disabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled
```

```
Link is down on XE port 26 connected to device: SFP+ 0

Link is down on XE port 27 connected to device: SFP+ 1
```

show chassis ethernet-switch statistics (Mx10008 Router)

user@host> **show chassis ethernet-switch statistics**

```
Switch Status: Online
Link is Disabled on port connected to QPHY_0
Link is Disabled on port connected to QPHY_1
Link is Down on port connected to PTP_FPGA
Link is Disabled on port connected to Unused
Link is Up on port connected to LC0
        Speed      : 10G
        Duplexity  : FD
        Autoneg    : No
        tx_packets : 2835539
        rx_packets : 2624197
        tx_errors  : 0
        rx_errors  : 0
Link is Down on port connected to LC1
Link is Up on port connected to LC2
        Speed      : 10G
        Duplexity  : FD
        Autoneg    : No
        tx_packets : 2889426
        rx_packets : 2441270
        tx_errors  : 0
        rx_errors  : 0
Link is Up on port connected to LC3
        Speed      : 10G
        Duplexity  : FD
        Autoneg    : No
        tx_packets : 2776323
        rx_packets : 2322320
        tx_errors  : 0
        rx_errors  : 0
Link is Disabled on port connected to LC8
Link is Down on port connected to LC4
Link is Disabled on port connected to LC12
Link is Disabled on port connected to LC9
Link is Down on port connected to LC5
Link is Disabled on port connected to LC13
```

```
Link is Disabled on port connected to LC10
Link is Down on port connected to LC6
Link is Disabled on port connected to LC14
Link is Disabled on port connected to LC11
Link is Down on port connected to LC7
Link is Disabled on port connected to LC15
Link is Disabled on port connected to OCB_SW
Link is Disabled on port connected to Unused
Link is Disabled on port connected to Fortville_1
Link is Up on port connected to Fortville_0
        Speed      : 10G
        Duplexity  : FD
        Autoneg    : Yes
        tx_packets : 7387765
        rx_packets : 8348292
        tx_errors  : 0
        rx_errors  : 0
```

show chassis ethernet-switch (TX Matrix Router)

`user@host>` **show chassis ethernet-switch**

```
scc-re0:
--------------------------------------------------------------------------
Link is good on FE port 4 connected to device: LCC0
  Speed is 100 MB
  Duplex is full
  Autonegotiate is Enabled

Link is good on FE port 6 connected to device: LCC2
  Speed is 100 MB
  Duplex is full
  Autonegotiate is Enabled

Link is good on FE port 8 connected to device: SPMB
  Speed is 100 MB
  Duplex is full
  Autonegotiate is Enabled

lcc0-re0:
--------------------------------------------------------------------------
Link is good on FE port 1 connected to device: FPC1
  Speed is 100 MB
  Duplex is full
```

```
  Autonegotiate is Enabled

Link is good on FE port 2 connected to device: FPC2
  Speed is 100 MB
  Duplex is full
  Autonegotiate is Enabled

Link is good on FE port 8 connected to device: SPMB
  Speed is 100 MB
  Duplex is full
  Autonegotiate is Enabled

Link is good on FE port 10 connected to device: SCC
  Speed is 100 MB
  Duplex is full
  Autonegotiate is Enabled

lcc2-re0:
--------------------------------------------------------------------------
Link is good on FE port 0 connected to device: FPC0
  Speed is 100 MB
  Duplex is full
  Autonegotiate is Enabled

Link is good on FE port 1 connected to device: FPC1
  Speed is 100 MB
  Duplex is full
  Autonegotiate is Enabled

Link is good on FE port 2 connected to device: FPC2
  Speed is 100 MB
  Duplex is full
  Autonegotiate is Enabled

Link is good on FE port 8 connected to device: SPMB
  Speed is 100 MB
  Duplex is full
  Autonegotiate is Enabled

Link is good on FE port 10 connected to device: SCC
  Speed is 100 MB
  Duplex is full
  Autonegotiate is Enabled
```

show chassis ethernet-switch errors

user@host> **show chassis ethernet-switch errors**

```
Accumulated error counts for port 0 connected to device FPC0:
  MLT3           2
  Lock           0
  Xmit           0
  ESD            0
  False carrier  2
  Disconnects    0
  FX mode        0
Accumulated error counts for port 1 connected to device FPC1:
  MLT3           2
  Lock           0
  Xmit           0
  ESD            0
  False carrier  2
  Disconnects    0
  FX mode        0
Accumulated error counts for port 2 connected to device FPC2:
  MLT3           2
  Lock           0
  Xmit           0
  ESD            0
  False carrier  3
  Disconnects    0
  FX mode        0
Accumulated error counts for port 3 connected to device FPC3:
  MLT3           0
  Lock           0
  Xmit           0
  ESD            0
  False carrier  0
  Disconnects    0
Accumulated error counts for port 4 connected to device Nothing:
   MLT3           0
   Lock           0
   Xmit           0
   ESD            0
   False carrier  0
   Disconnects    0
   FX mode        0
...
```

show chassis ethernet-switch errors (TX Matrix Plus Router)

`user@host>` **show chassis ethernet-switch errors**

```
sfc0-re0:
--------------------------------------------------------------------------
Displaying error for switch 0

Displaying error for switch 1
Accumulated error counts for port 0 connected to device LCC0:
  MLT3           0
  Lock           0
  Xmit           0
  ESD            0
  False carrier  0
  Disconnects    0
  FX mode        0

lcc0-re0:
--------------------------------------------------------------------------
Displaying error for switch 0
Accumulated error counts for port 6 connected to device FPC0:
  MLT3           0
  Lock           0
  Xmit           0
  ESD            0
  False carrier  5
  Disconnects    0
  FX mode        0
Accumulated error counts for port 7 connected to device FPC1:
  MLT3           0
  Lock           0
  Xmit           0
  ESD            0
  False carrier  7
  Disconnects    0
  FX mode        0
Accumulated error counts for port 19 connected to device Other RE:
  MLT3           0
  Lock           0
  Xmit           0
  ESD            0
  False carrier  0
  Disconnects    0
  FX mode        0
```

```
Accumulated error counts for port 20 connected to device SFC0:
  MLT3           0
  Lock           0
  Xmit           0
  ESD            0
  False carrier  0
  Disconnects    0
  FX mode        0
```

show chassis ethernet-switch sfc errors (TX Matrix Plus Router)

`user@host>` **show chassis ethernet-switch errors switch sfc**

```
sfc0-re0:
--------------------------------------------------------------------------
Displaying error for switch 1
Accumulated error counts for port 0 connected to device LCC0:
  MLT3           0
  Lock           0
  Xmit           0
  ESD            0
  False carrier  0
  Disconnects    0
  FX mode        0
Accumulated error counts for port 2 connected to device LCC1:
  MLT3           0
  Lock           0
  Xmit           0
  ESD            0
  False carrier  0
  Disconnects    0
  FX mode        0
Accumulated error counts for port 4 connected to device LCC2:
  MLT3           0
  Lock           0
  Xmit           0
  ESD            0
  False carrier  0
  Disconnects    0
  FX mode        0
Accumulated error counts for port 6 connected to device LCC3:
  MLT3           0
  Lock           0
  Xmit           0
```

```
  ESD            0
  False carrier  0
  Disconnects    0
  FX mode        0

lcc0-re0:
--------------------------------------------------------------------------
error: command is not valid on the t1600

lcc1-re0:
--------------------------------------------------------------------------
error: command is not valid on the t1600

lcc2-re0:
--------------------------------------------------------------------------
error: command is not valid on the t1600

lcc3-re0:
--------------------------------------------------------------------------
error: command is not valid on the t1600
```

show chassis ethernet-switch statistics (TX Matrix Plus Router)

`user@host>` **show chassis ethernet-switch statistics**

```
sfc0-re0:
--------------------------------------------------------------------------
Displaying port statistics for switch 0
Statistics for port 1 connected to device 1GSW:
  TX Packets 64 Octets        5183577
  TX Packets 65-127 Octets    67820
  TX Packets 128-255 Octets   772
  TX Packets 256-511 Octets   136
  TX Packets 512-1023 Octets  68
  TX Packets 1024-1518 Octets  10881
  TX Packets 1519-2047 Octets  0
  TX Packets 2048-4095 Octets  0
  TX Packets 4096-9216 Octets  0
  TX Packets 9217-16383 Octets  0
  TX Octets                   5263254
  TX Multicast Packets        16
  TX Broadcast Packets        723403
  TX PAUSEMAC Ctrl Frames     0
  TX Oversize Packets         0
```

```
  TX FCS Error Counter        0
  TX Fragment Counter         0
  TX Byte Counter             349922253
  TX Packet OK Counter        5263254
  TX Pause Packet Counter     0
  TX Unicast Counter          4539835
  RX Packets 64 Octets        6513629
  RX Packets 65-127 Octets    88761
  RX Packets 128-255 Octets   6382
  RX Packets 256-511 Octets   22027
  RX Packets 512-1023 Octets  4319
  RX Packets 1024-1518 Octets  49922
  RX Packets 1519-2047 Octets  0
  RX Packets 2048-4095 Octets  0
  RX Packets 4096-9216 Octets  0
  RX Packets 9217-16383 Octets  0
  RX Octets                   6685040
  RX Multicast Packets        4
  RX Broadcast Packets        2137376
  RX FCS Errors               0
  RX Fragments                0
  RX MAC Control Packets      0
  RX Out of Range Length      0
  RX Undersize Packets        0
  RX Oversize Packets         0
  RX Jabbers                  0
  RX Control Frame Counter    0
  RX Pause Frame Counter      0
  RX Byte Counter             509224602
  RX Unicast Frame Count      4547660
  RX Packet OK Count          6685040
Statistics for port 9 connected to device RE1:
  TX Packets 64 Octets        2500318
  TX Packets 65-127 Octets    443
  TX Packets 128-255 Octets   0
  TX Packets 256-511 Octets   0
  TX Packets 512-1023 Octets  0
  TX Packets 1024-1518 Octets  0
  TX Packets 1519-2047 Octets  0
  TX Packets 2048-4095 Octets  0
  TX Packets 4096-9216 Octets  0
  TX Packets 9217-16383 Octets  0
  TX Octets                   2500761
  TX Multicast Packets        4
```

```
  TX Broadcast Packets        2500757
  TX PAUSEMAC Ctrl Frames     0
  TX Oversize Packets         0
  TX FCS Error Counter        0
  TX Fragment Counter         0
  TX Byte Counter             160049670
  TX Packet OK Counter        0
  TX Pause Packet Counter     0
  TX Unicast Counter          0
  RX Packets 64 Octets        701191
  RX Packets 65-127 Octets    5882
  RX Packets 128-255 Octets   2
  RX Packets 256-511 Octets   0
  RX Packets 512-1023 Octets  17965
  RX Packets 1024-1518 Octets  7
  RX Packets 1519-2047 Octets  0
  RX Packets 2048-4095 Octets  0
  RX Packets 4096-9216 Octets  0
  RX Packets 9217-16383 Octets  0
  RX Octets                   725047
  RX Multicast Packets        8
  RX Broadcast Packets        2500757
  RX FCS Errors               0
  RX Fragments                0
  RX MAC Control Packets      0
  RX Out of Range Length      0
  RX Undersize Packets        0
  RX Oversize Packets         0
  RX Jabbers                  0
  RX Control Frame Counter    0
  RX Pause Frame Counter      0
  RX Byte Counter             62402656
  RX Unicast Frame Count      0
  RX Packet OK Count          0
Statistics for port 17 connected to device RE0:
  TX Packets 64 Octets        7214818
  TX Packets 65-127 Octets    94640
  TX Packets 128-255 Octets   6384
  TX Packets 256-511 Octets   22027
  TX Packets 512-1023 Octets  22284
  TX Packets 1024-1518 Octets  49929
  TX Packets 1519-2047 Octets  0
  TX Packets 2048-4095 Octets  0
  TX Packets 4096-9216 Octets  0
```

```
  TX Packets 9217-16383 Octets  0
  TX Octets                   7410082
  TX Multicast Packets        12
  TX Broadcast Packets        2497247
  TX PAUSEMAC Ctrl Frames     0
  TX Oversize Packets         0
  TX FCS Error Counter        0
  TX Fragment Counter         0
  TX Byte Counter             571626932
  TX Packet OK Counter        0
  TX Pause Packet Counter     0
  TX Unicast Counter          0
  RX Packets 64 Octets        4823701
  RX Packets 65-127 Octets    67812
  RX Packets 128-255 Octets   772
  RX Packets 256-511 Octets   136
  RX Packets 512-1023 Octets  68
  RX Packets 1024-1518 Octets  10881
  RX Packets 1519-2047 Octets  0
  RX Packets 2048-4095 Octets  0
  RX Packets 4096-9216 Octets  0
  RX Packets 9217-16383 Octets  0
  RX Octets                   4903370
  RX Multicast Packets        8
  RX Broadcast Packets        2497247
  RX FCS Errors               0
  RX Fragments                0
  RX MAC Control Packets      0
  RX Out of Range Length      0
  RX Undersize Packets        0
  RX Oversize Packets         0
  RX Jabbers                  0
  RX Control Frame Counter    0
  RX Pause Frame Counter      0
  RX Byte Counter             326889517
  RX Unicast Frame Count      0
  RX Packet OK Count          0

Displaying port statistics for switch 1
Statistics for port 0 connected to device LCC0:
  TX Packets 64 Octets        5053443
  TX Packets 65-127 Octets    59737
  TX Packets 128-255 Octets   768
  TX Packets 256-511 Octets   87
```

```
TX Packets 512-1023 Octets  68
TX Packets 1024-1518 Octets  85
TX Packets 1519-2047 Octets  0
TX Packets 2048-4095 Octets  0
TX Packets 4096-9216 Octets  0
TX 1519-1522 Good Vlan frms  0
TX Octets                   5114188
TX Multicast Packets        16
TX Broadcast Packets        1125742
TX Single Collision frames  0
TX Mult. Collision frames   0
TX Late Collisions          0
TX Excessive Collisions     0
TX Collision frames         0
TX PAUSEMAC Ctrl Frames     0
TX MAC ctrl frames          0
TX Frame deferred Xmns      0
TX Frame excessive deferl   0
TX Oversize Packets         0
TX Jabbers                  0
TX FCS Error Counter        0
TX Fragment Counter         0
TX Byte Counter             329291449
RX Packets 64 Octets        5640175
RX Packets 65-127 Octets    79875
RX Packets 128-255 Octets   6338
RX Packets 256-511 Octets   165
RX Packets 512-1023 Octets  4317
RX Packets 1024-1518 Octets  10
RX Packets 1519-2047 Octets  0
RX Packets 2048-4095 Octets  0
RX Packets 4096-9216 Octets  0
RX Octets                   5730880
RX Multicast Packets        4
RX Broadcast Packets        1735007
RX FCS Errors               0
RX Align Errors             0
RX Fragments                0
RX Symbol errors            0
RX Unsupported opcodes      0
RX Out of Range Length      0
RX False Carrier Errors     0
RX Undersize Packets        0
RX Oversize Packets         0
```

```
  RX Jabbers                  0
  RX 1519-1522 Good Vlan frms 0
  RX MTU Exceed Counter       0
  RX Control Frame Counter    0
RX Pause Frame Counter      0
  RX Byte Counter             371282850
Statistics for port 18 connected to device SPMB:
  TX Packets 64 Octets        2990326
  TX Packets 65-127 Octets    8572
  TX Packets 128-255 Octets   4
  TX Packets 256-511 Octets   49
  TX Packets 512-1023 Octets  0
  TX Packets 1024-1518 Octets  10793
  TX Packets 1519-2047 Octets  0
  TX Packets 2048-4095 Octets  0
  TX Packets 4096-9216 Octets  0
  TX 1519-1522 Good Vlan frms  0
  TX Octets                   3009744
  TX Multicast Packets        20
  TX Broadcast Packets        2458322
  TX Single Collision frames  0
  TX Mult. Collision frames   0
  TX Late Collisions          0
  TX Excessive Collisions     0
  TX Collision frames         0
  TX PAUSEMAC Ctrl Frames     0
  TX MAC ctrl frames          0
  TX Frame deferred Xmns      0
  TX Frame excessive deferl   0
  TX Oversize Packets         0
  TX Jabbers                  0
  TX FCS Error Counter        0
  TX Fragment Counter         0
  TX Byte Counter             203712524
  RX Packets 64 Octets        873454
  RX Packets 65-127 Octets    8886
  RX Packets 128-255 Octets   44
  RX Packets 256-511 Octets   21862
  RX Packets 512-1023 Octets  2
  RX Packets 1024-1518 Octets  49912
  RX Packets 1519-2047 Octets  0
  RX Packets 2048-4095 Octets  0
  RX Packets 4096-9216 Octets  0
  RX Octets                   954160
```

```
  RX Multicast Packets        0
  RX Broadcast Packets        402369
  RX FCS Errors               0
  RX Align Errors             0
  RX Fragments                0
  RX Symbol errors            0
  RX Unsupported opcodes      0
  RX Out of Range Length      0
  RX False Carrier Errors     0
  RX Undersize Packets        0
  RX Oversize Packets         0
  RX Jabbers                  0
  RX 1519-1522 Good Vlan frms 0
  RX MTU Exceed Counter       0
  RX Control Frame Counter    0
  RX Pause Frame Counter      0
  RX Byte Counter             137941752
...
```

show chassis ethernet-switch (T4000 Router)

`user@host>` **show chassis ethernet-switch**

```
Displaying summary for switch 0
Link is good on GE port 6 connected to device: FPC0
  Speed is 100Mb
  Duplex is full
  Autonegotiate is Enabled
  False carrier sense count = 04

Link is good on GE port 9 connected to device: FPC3
  Speed is 100Mb
  Duplex is full
  Autonegotiate is Enabled
  False carrier sense count = 03

Link is good on GE port 11 connected to device: FPC5
  Speed is 100Mb
  Duplex is full
  Autonegotiate is Enabled
  False carrier sense count = 03

Link is good on GE port 12 connected to device: FPC6
  Speed is 100Mb
```

```
  Duplex is full
  Autonegotiate is Enabled
  False carrier sense count = 03

Link is good on GE port 14 connected to device: SPMB
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled

Link is good on GE port 18 connected to device: RE
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Disabled

Link is good on GE port 19 connected to device: Other RE
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
```

show chassis ethernet-switch errors (T4000 Router)

`user@host>` **show chassis ethernet-switch errors**

```
Displaying error for switch 0
Accumulated error counts for port 6 connected to device FPC0:
  MLT3           0
  Lock           0
  Xmit           0
  ESD            0
  False carrier  4
  Disconnects    0
  FX mode        0
Accumulated error counts for port 9 connected to device FPC3:
  MLT3           0
  Lock           0
  Xmit           0
  ESD            0
  False carrier  3
  Disconnects    0
  FX mode        0
Accumulated error counts for port 11 connected to device FPC5:
  MLT3           0
  Lock           0
```

```
  Xmit           0
  ESD            0
  False carrier  3
  Disconnects    0
  FX mode        0
Accumulated error counts for port 12 connected to device FPC6:
  MLT3           0
  Lock           0
  Xmit           0
  ESD            0
  False carrier  3
  Disconnects    0
  FX mode        0
Accumulated error counts for port 19 connected to device Other RE:
  MLT3           0
  Lock           0
  Xmit           0
  ESD            0
  False carrier  0
  Disconnects    0
  FX mode        0
```

show chassis ethernet-switch (PTX5000 Packet Transport Router)

user@host> **show chassis ethernet-switch**

```
Displaying summary for switch 0
Link is good on XE port 2 connected to device: SPMB
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Disabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on XE port 11 connected to device: FPC7
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Disabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on XE port 12 connected to device: FPC6
  Speed is 1000Mb
  Duplex is full
```

```
  Autonegotiate is Disabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on XE port 13 connected to device: FPC5
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Disabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on XE port 15 connected to device: FPC3
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Disabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on XE port 16 connected to device: FPC2
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Disabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on XE port 18 connected to device: FPC0
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Disabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on XE port 19 connected to device: OTHER RE
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Disabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on XE port 20 connected to device: RE
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Disabled
```

```
  Flow Control TX is Disabled
  Flow Control RX is Disabled
```

show chassis ethernet-switch statistics (PTX5000 Packet Transport Router)

`user@host>` **show chassis ethernet-switch statistics**

```
Displaying port statistics for switch 0
Statistics for port 2 connected to device SPMB:
  TX Packets 64 Octets        10942
  TX Packets 65-127 Octets    843
  TX Packets 128-255 Octets   2
  TX Packets 256-511 Octets   2
  TX Packets 512-1023 Octets  0
  TX Packets 1024-1518 Octets  6862
  TX Packets 1519-2047 Octets  0
  TX Packets 2048-4095 Octets  0
  TX Packets 4096-9216 Octets  0
  TX Packets 9217-16383 Octets  0
  TX Octets                   18651
  TX Multicast Packets        6
  TX Broadcast Packets        10331
  TX PAUSEMAC Ctrl Frames     0
  TX Oversize Packets         0
  TX FCS Error Counter        0
  TX Fragment Counter         0
  TX Byte Counter             8105166
  TX Packet OK Counter        0
  TX Pause Packet Counter     0
  TX Unicast Counter          0
  RX Packets 64 Octets        8679
  RX Packets 65-127 Octets    2364
  RX Packets 128-255 Octets   531
  RX Packets 256-511 Octets   112
  RX Packets 512-1023 Octets  26
  RX Packets 1024-1518 Octets  8
  RX Packets 1519-2047 Octets  0
  RX Packets 2048-4095 Octets  0
  RX Packets 4096-9216 Octets  0
  RX Packets 9217-16383 Octets  0
  RX Octets                   11720
  RX Multicast Packets        0
  RX Broadcast Packets        10331
  RX FCS Errors               0
```

```
  RX Fragments                0
  RX MAC Control Packets      0
  RX Out of Range Length      0
  RX Undersize Packets        0
  RX Oversize Packets         0
  RX Jabbers                  0
  RX Control Frame Counter    0
  RX Pause Frame Counter      0
  RX Byte Counter             938105
  RX Unicast Frame Count      0
  RX Packet OK Count          0
Statistics for port 11 connected to device FPC7:
  TX Packets 64 Octets        14492
  TX Packets 65-127 Octets    3542
  TX Packets 128-255 Octets   6
  TX Packets 256-511 Octets   45
  TX Packets 512-1023 Octets  60

Continued...

Statistics for port 18 connected to device FPC0:
  TX Packets 64 Octets        15212
  TX Packets 65-127 Octets    3810
  TX Packets 128-255 Octets   6
  TX Packets 256-511 Octets   43
  TX Packets 512-1023 Octets  66
  TX Packets 1024-1518 Octets  169
  TX Packets 1519-2047 Octets  0
  TX Packets 2048-4095 Octets  0
  TX Packets 4096-9216 Octets  0
  TX Packets 9217-16383 Octets  0
  TX Octets                   19306
  TX Multicast Packets        0
  TX Broadcast Packets        10886
  TX PAUSEMAC Ctrl Frames     0
  TX Oversize Packets         0
  TX FCS Error Counter        0
  TX Fragment Counter         0
  TX Byte Counter             1569412
  TX Packet OK Counter        0
  TX Pause Packet Counter     0
  TX Unicast Counter          0
  RX Packets 64 Octets        17994
  RX Packets 65-127 Octets    8006
```

```
  RX Packets 128-255 Octets   230
  RX Packets 256-511 Octets   19
  RX Packets 512-1023 Octets  53
  RX Packets 1024-1518 Octets  11
  RX Packets 1519-2047 Octets  0
  RX Packets 2048-4095 Octets  0
  RX Packets 4096-9216 Octets  0
  RX Packets 9217-16383 Octets  0
  RX Octets                   26313
  RX Multicast Packets        0
  RX Broadcast Packets        10886
  RX FCS Errors               0
  RX Fragments                0
  RX MAC Control Packets      0
  RX Out of Range Length      0
  RX Undersize Packets        0
  RX Oversize Packets         0
  RX Jabbers                  0
  RX Control Frame Counter    2
  RX Pause Frame Counter      2
  RX Byte Counter             1836287
  RX Unicast Frame Count      0
  RX Packet OK Count          0
Statistics for port 19 connected to device OTHER RE:
  TX Packets 64 Octets        10234
  TX Packets 65-127 Octets    162
  TX Packets 128-255 Octets   0
  TX Packets 256-511 Octets   0
  TX Packets 512-1023 Octets  0
  TX Packets 1024-1518 Octets  0
  TX Packets 1519-2047 Octets  0
  TX Packets 2048-4095 Octets  0
  TX Packets 4096-9216 Octets  0
  TX Packets 9217-16383 Octets  0
  TX Octets                   10396
  TX Multicast Packets        8
  TX Broadcast Packets        10317
  TX PAUSEMAC Ctrl Frames     0
  TX Oversize Packets         0
  TX FCS Error Counter        0
  TX Fragment Counter         0
  TX Byte Counter             666260
  TX Packet OK Counter        0
  TX Pause Packet Counter     0
```

```
  TX Unicast Counter          0
  RX Packets 64 Octets        4073
  RX Packets 65-127 Octets    325
  RX Packets 128-255 Octets   1
  RX Packets 256-511 Octets   0
  RX Packets 512-1023 Octets  0
  RX Packets 1024-1518 Octets  72
  RX Packets 1519-2047 Octets  0
  RX Packets 2048-4095 Octets  0
  RX Packets 4096-9216 Octets  0
  RX Packets 9217-16383 Octets  0
  RX Octets                   4471
  RX Multicast Packets        0
  RX Broadcast Packets        10317
  RX FCS Errors               0
  RX Fragments                0
  RX MAC Control Packets      0
  RX Out of Range Length      0
  RX Undersize Packets        0
  RX Oversize Packets         0
  RX Jabbers                  0
  RX Control Frame Counter    0
  RX Pause Frame Counter      0
  RX Byte Counter             387333
  RX Unicast Frame Count      0
  RX Packet OK Count          0
Statistics for port 20 connected to device RE:
  TX Packets 64 Octets        658856
  TX Packets 65-127 Octets    45535
  TX Packets 128-255 Octets   1900
  TX Packets 256-511 Octets   532
  TX Packets 512-1023 Octets  372
  TX Packets 1024-1518 Octets  191
  TX Packets 1519-2047 Octets  0
  TX Packets 2048-4095 Octets  0
  TX Packets 4096-9216 Octets  0
  TX Packets 9217-16383 Octets  0
  TX Octets                   707386
  TX Multicast Packets        0
  TX Broadcast Packets        10421
  TX PAUSEMAC Ctrl Frames     0
  TX Oversize Packets         0
  TX FCS Error Counter        0
  TX Fragment Counter         0
```

```
  TX Byte Counter             46608676
  TX Packet OK Counter        0
  TX Pause Packet Counter     0
  TX Unicast Counter          0
  RX Packets 64 Octets        27394
  RX Packets 65-127 Octets    20271
  RX Packets 128-255 Octets   78
  RX Packets 256-511 Octets   215
  RX Packets 512-1023 Octets  269
  RX Packets 1024-1518 Octets  253370
  RX Packets 1519-2047 Octets  0
  RX Packets 2048-4095 Octets  0
  RX Packets 4096-9216 Octets  0
  RX Packets 9217-16383 Octets  0
  RX Octets                   301597
  RX Multicast Packets        8
  RX Broadcast Packets        10421
  RX FCS Errors               0
  RX Fragments                0
  RX MAC Control Packets      0
  RX Out of Range Length      0
  RX Undersize Packets        0
  RX Oversize Packets         0
  RX Jabbers                  0
  RX Control Frame Counter    0
  RX Pause Frame Counter      0
  RX Byte Counter             275043436
  RX Unicast Frame Count      0
  RX Packet OK Count          0

Continued ...
```

show chassis ethernet-switch port-state (PTX5000 Packet Transport Router)

`user@host>` **show chassis ethernet-switch port-state**

```
Displaying port state for switch 0
Port       : 02
Target     : SPMB

Error reading port 2 connected to device: SPMB
```

show chassis fabric degraded-fabric-reachability

Syntax

```
show chassis fabric degraded-fabric-reachability
```

Release Information

Command introduced in Junos OS Release 12.1X48R4 for PTX Series Packet Transport Routers.
Command introduced in Junos OS Release 17.2 for PTX10008 Routers.

Description

Display the current state of reachability between the Packet Forwarding Engines in the system.

Additional Information

Required Privilege Level

view

RELATED DOCUMENTATION

- show chassis fabric errors | 1264
- show chassis fabric reachability | 1387
- degraded | 343

List of Sample Output

show chassis fabric degraded-fabric-reachability on page 1231

Output Fields

Table 58 on page 1230 lists the output fields for the **show chassis fabric degraded-fabric-reachability** command. Output fields are listed in the approximate order in which they appear.

Table 58: show chassis fabric degraded-fabric-reachability Output Fields

Field Name	Field Description
FPC	Display fabric reachability for the displayed FPC slot.
PFE	Display fabric reachability for the displayed PFE slot on a per SIB and plane basis.
SIBx_Plane y	Display the SIB (x) and plane (y) where link errors occurred.

Table 58: show chassis fabric degraded-fabric-reachability Output Fields *(continued)*

Field Name	Field Description
Link errors FPC/PFEs	Display the list of FPC and PFE slots that are unreachable for the displayed SIB and plane due to link errors.

Sample Output

show chassis fabric degraded-fabric-reachability

`user@host>` **show chassis fabric degraded-fabric-reachability**

```
Degraded Fabric reachability Information:
FPC #0
    PFE #0
      SIB0_Plane 0
           Link errors  FPC/PFEs    2/0 5/0 5/1 5/2 5/3
      SIB0_Plane 1
           Link errors  FPC/PFEs    2/0 5/0
    PFE #1
      SIB0_Plane 0
           Link errors  FPC/PFEs    2/0 5/0 5/1 5/2 5/3
      SIB0_Plane 1
           Link errors  FPC/PFEs    2/0 5/0
```

show chassis fabric destinations

List of Syntax

Syntax on page 1232
Syntax (MX240, MX480, MX960 , MX2010, MX2020, MX10003, MX10008, and MX2008 Universal Routing Platforms) on page 1232

Syntax

```
show chassis fabric destinations
```

Syntax (MX240, MX480, MX960 , MX2010, MX2020, MX10003, MX10008, and MX2008 Universal Routing Platforms)

```
show chassis fabric destinations fpc <fpc-slot-number>
<extended>
```

Release Information

Command introduced in Junos OS Release 12.1 for MX240, MX480, and MX960 routers.
Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 Universal Routing Platforms.
extended option introduced in Junos OS Release 16.1 for MX2010 and MX2020 Routers.
Command introduced in Junos OS Release 17.2 for MX2008 Universal Routing Platforms.
Command introduced in Junos OS Release 17.3 for MX10003 Universal Routing Platforms.
Command introduced in Junos OS Release 18.2 for MX10008 Universal Routing Platforms and EX9253 Switches.

Description

Display the state of fabric destinations for all FPCs.

Options

none—Display information about the fabric destinations of all FPCs.

fpc-slot-number—(Optional) Display information about the specified FPC. For MX2020 routers, replace *fpc-slot-number* with a value from 0 through 19. For MX2010 and MX2008 routers, replace *fpc-slot-number* with a value from 0 through 9. For MX10003, replace *fpc-slot-number* with a value from 0 through 1.

extended—(Optional) (MX2020, MX2010, and MX2008 routers with SFB2 only) Display information about the fabric destination of all 24 planes for each FPC.

Required Privilege Level

view

RELATED DOCUMENTATION

- show chassis fabric redundancy-mode | 1385
- Configuring Fabric Redundancy Mode for Active Control Boards on MX Series Routers | 102
- MX Series Routers Fabric Resiliency | 116
- Fabric Plane Management on MPC4E | 95

List of Sample Output

show chassis fabric destinations fpc 1 (MX240 Router) on page 1234
show chassis fabric destinations (MX10008 Router) on page 1234
show chassis fabric destinations fpc 4 (MX480 Router with MPC4E) on page 1237
show chassis fabric destinations (MX960 Router) on page 1237
show chassis fabric destinations fpc 1 (MX2020 Router) on page 1239
show chassis fabric destinations extended (MX2020 Router with SFB2) on page 1241
show chassis fabric destinations (MX2010 Router) on page 1251
show chassis fabric destinations (MX10003 Router) on page 1256

Output Fields

Table 59 on page 1233 lists the output fields for the **show chassis fabric destinations** command. Output fields are listed in the approximate order in which they appear.

Table 59: show chassis fabric destinations Output Fields

Field Name	Field Description
Fabric destinations state	Indicates the state of the fabric destinations: • 0—Destination is non-existent. • 2—Destination is enabled. • 3—Destination is disabled. • 6—Destination is in erroneous state and is disabled.
Flexible PIC Concentrator (FPC) number	Source FPC number.
Packet Forwarding Engine number	Source Packet Forwarding Engine number.
Plane number	Source plane number.

Sample Output

show chassis fabric destinations fpc 1 (MX240 Router)

In the output, the values followed by the plane number denote multiple quadruples. The first quadruple specifies FPC1, the second quadrapule specifies FPC2 and so on. Each quadruple specifies the states of the fabric plane to the Packet Forwarding Engines.

`user@host>` **show chassis fabric destinations fpc 1**

```
Fabric destinations state:
   0: non-existent
   2: enabled
   3: disabled
   6: dest-err and disabled

FPC 1
 PFE 0
  Plane 0   0000 3300 3333
  Plane 1   0000 2200 2222
  Plane 2   0000 2200 2222
  Plane 3   0000 2200 2222
  Plane 4   0000 2200 2222
  Plane 5   0000 3300 3333
  Plane 6   0000 3300 3333
  Plane 7   0000 3300 3333
 PFE 1
  Plane 0   0000 3300 3333
  Plane 1   0000 2200 2222
  Plane 2   0000 2200 2222
  Plane 3   0000 2200 2222
  Plane 4   0000 2200 2222
  Plane 5   0000 3300 3333
  Plane 6   0000 3300 3333
  Plane 7   0000 3300 3333
```

show chassis fabric destinations (MX10008 Router)

`user@host>` **show chassis fabric destinations**

```
Fabric destinations state:
   0: non-existent
```

```
   2: enabled
   3: disabled
   6: dest-err and disabled

FPC 1
 PFE 0
  Plane 0   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 1   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 2   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 3   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 4   000000 333333 000000   000000 000000 333333   000000 000000
  Plane 5   000000 333333 000000   000000 000000 333333   000000 000000
 PFE 1
  Plane 0   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 1   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 2   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 3   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 4   000000 333333 000000   000000 000000 333333   000000 000000
  Plane 5   000000 333333 000000   000000 000000 333333   000000 000000
 PFE 2
  Plane 0   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 1   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 2   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 3   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 4   000000 333333 000000   000000 000000 333333   000000 000000
  Plane 5   000000 333333 000000   000000 000000 333333   000000 000000
 PFE 3
  Plane 0   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 1   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 2   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 3   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 4   000000 333333 000000   000000 000000 333333   000000 000000
  Plane 5   000000 333333 000000   000000 000000 333333   000000 000000
 PFE 4
  Plane 0   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 1   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 2   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 3   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 4   000000 333333 000000   000000 000000 333333   000000 000000
  Plane 5   000000 333333 000000   000000 000000 333333   000000 000000
 PFE 5
  Plane 0   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 1   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 2   000000 222222 000000   000000 000000 222222   000000 000000
```

```
  Plane 3   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 4   000000 333333 000000   000000 000000 333333   000000 000000
  Plane 5   000000 333333 000000   000000 000000 333333   000000 000000
FPC 5
 PFE 0
  Plane 0   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 1   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 2   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 3   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 4   000000 333333 000000   000000 000000 333333   000000 000000
  Plane 5   000000 333333 000000   000000 000000 333333   000000 000000
 PFE 1
  Plane 0   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 1   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 2   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 3   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 4   000000 333333 000000   000000 000000 333333   000000 000000
  Plane 5   000000 333333 000000   000000 000000 333333   000000 000000
 PFE 2
  Plane 0   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 1   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 2   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 3   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 4   000000 333333 000000   000000 000000 333333   000000 000000
  Plane 5   000000 333333 000000   000000 000000 333333   000000 000000
 PFE 3
  Plane 0   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 1   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 2   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 3   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 4   000000 333333 000000   000000 000000 333333   000000 000000
  Plane 5   000000 333333 000000   000000 000000 333333   000000 000000
 PFE 4
  Plane 0   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 1   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 2   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 3   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 4   000000 333333 000000   000000 000000 333333   000000 000000
  Plane 5   000000 333333 000000   000000 000000 333333   000000 000000
 PFE 5
  Plane 0   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 1   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 2   000000 222222 000000   000000 000000 222222   000000 000000
  Plane 3   000000 222222 000000   000000 000000 222222   000000 000000
```

```
  Plane 4   000000 333333 000000   000000 000000 333333   000000 000000
  Plane 5   000000 333333 000000   000000 000000 333333   000000 000000
```

show chassis fabric destinations fpc 4 (MX480 Router with MPC4E)

`user@host >` **show chassis fabric destinations fpc 4**

```
Fabric destinations state:
   0: non-existent
   2: enabled
   3: disabled
   6: dest-err and disabled

FPC 4
 PFE 0
  Plane 0   2200 2222 0000   2000 2200 0000
  Plane 1   2200 2222 0000   2000 2200 0000
  Plane 2   2200 2222 0000   2000 2200 0000
  Plane 3   2200 2222 0000   2000 2200 0000
  Plane 4   3300 3333 0000   3000 3300 0000
  Plane 5   3300 3333 0000   3000 3300 0000
  Plane 6   3300 3333 0000   3000 3300 0000
  Plane 7   3300 3333 0000   3000 3300 0000
 PFE 1
  Plane 0   2200 2222 0000   2000 2200 0000
  Plane 1   2200 2222 0000   2000 2200 0000
  Plane 2   2200 2222 0000   2000 2200 0000
  Plane 3   2200 2222 0000   2000 2200 0000
  Plane 4   3300 3333 0000   3000 3300 0000
  Plane 5   3300 3333 0000   3000 3300 0000
  Plane 6   3300 3333 0000   3000 3300 0000
  Plane 7   3300 3333 0000   3000 3300 0000
```

show chassis fabric destinations (MX960 Router)

`user@host>` **show chassis fabric destinations**

```
    Fabric destinations state:
       0: non-existent
       2: enabled
       3: disabled
       6: dest-err and disabled
```

```
FPC 1
 PFE 0
  Plane 0   0000 3300 3333
  Plane 1   0000 2200 2222
  Plane 2   0000 2200 2222
  Plane 3   0000 2200 2222
  Plane 4   0000 2200 2222
  Plane 5   0000 3300 3333
  Plane 6   0000 3300 3333
  Plane 7   0000 3300 3333
 PFE 1
  Plane 0   0000 3300 3333
  Plane 1   0000 2200 2222
  Plane 2   0000 2200 2222
  Plane 3   0000 2200 2222
  Plane 4   0000 2200 2222
  Plane 5   0000 3300 3333
  Plane 6   0000 3300 3333
  Plane 7   0000 3300 3333
FPC 2
 PFE 0
  Plane 0   0000 3300 3333
  Plane 1   0000 2200 2222
  Plane 2   0000 2200 2222
  Plane 3   0000 2200 2222
  Plane 4   0000 2200 2222
  Plane 5   0000 3300 3333
  Plane 6   0000 3300 3333
  Plane 7   0000 3300 3333
 PFE 1
  Plane 0   0000 3300 3333
  Plane 1   0000 2200 2222
  Plane 2   0000 2200 2222
  Plane 3   0000 2200 2222
  Plane 4   0000 2200 2222
  Plane 5   0000 3300 3333
  Plane 6   0000 3300 3333
  Plane 7   0000 3300 3333
 PFE 2
  Plane 0   0000 3300 3333
  Plane 1   0000 2200 2222
  Plane 2   0000 2200 2222
  Plane 3   0000 2200 2222
```

```
      Plane 4   0000 2200 2222
      Plane 5   0000 3300 3333
      Plane 6   0000 3300 3333
      Plane 7   0000 3300 3333
     PFE 3
      Plane 0   0000 3300 3333
      Plane 1   0000 2200 2222
      Plane 2   0000 2200 2222
      Plane 3   0000 2200 2222
      Plane 4   0000 2200 2222
      Plane 5   0000 3300 3333
      Plane 6   0000 3300 3333
      Plane 7   0000 3300 3333
```

show chassis fabric destinations fpc 1 (MX2020 Router)

`user@host>` **show chassis fabric destinations fpc 1**

```
Fabric destinations state:
   0: non-existent
   2: enabled
   3: disabled
   6: dest-err and disabled

FPC 1
 PFE 0
  Plane 0   3333 3333 3333   3333 3333 3333   3333 3333 3333   3333 3333 3333
3333 3333 3333   3333 3333 3333   3333 3333
  Plane 1   2222 2222 2222   2222 2222 2222   2222 2222 2222   2222 2222 2222
2222 2222 2222   2222 2222 2222   2222 2222
  Plane 2   2222 2222 2222   2222 2222 2222   2222 2222 2222   2222 2222 2222
2222 2222 2222   2222 2222 2222   2222 2222
  Plane 3   2222 2222 2222   2222 2222 2222   2222 2222 2222   2222 2222 2222
2222 2222 2222   2222 2222 2222   2222 2222
  Plane 4   2222 2222 2222   2222 2222 2222   2222 2222 2222   2222 2222 2222
2222 2222 2222   2222 2222 2222   2222 2222
  Plane 5   2222 2222 2222   2222 2222 2222   2222 2222 2222   2222 2222 2222
2222 2222 2222   2222 2222 2222   2222 2222
  Plane 6   2222 2222 2222   2222 2222 2222   2222 2222 2222   2222 2222 2222
2222 2222 2222   2222 2222 2222   2222 2222
  Plane 7   2222 2222 2222   2222 2222 2222   2222 2222 2222   2222 2222 2222
2222 2222 2222   2222 2222 2222   2222 2222
 PFE 1
```

```
  Plane 0   3333 3333 3333   3333 3333 3333   3333 3333 3333   3333 3333 3333
3333 3333 3333   3333 3333 3333   3333 3333
  Plane 1   2222 2222 2222   2222 2222 2222   2222 2222 2222   2222 2222 2222
2222 2222 2222   2222 2222 2222   2222 2222
  Plane 2   2222 2222 2222   2222 2222 2222   2222 2222 2222   2222 2222 2222
2222 2222 2222   2222 2222 2222   2222 2222
  Plane 3   2222 2222 2222   2222 2222 2222   2222 2222 2222   2222 2222 2222
2222 2222 2222   2222 2222 2222   2222 2222
  Plane 4   2222 2222 2222   2222 2222 2222   2222 2222 2222   2222 2222 2222
2222 2222 2222   2222 2222 2222   2222 2222
  Plane 5   2222 2222 2222   2222 2222 2222   2222 2222 2222   2222 2222 2222
2222 2222 2222   2222 2222 2222   2222 2222
  Plane 6   2222 2222 2222   2222 2222 2222   2222 2222 2222   2222 2222 2222
2222 2222 2222   2222 2222 2222   2222 2222
  Plane 7   2222 2222 2222   2222 2222 2222   2222 2222 2222   2222 2222 2222
2222 2222 2222   2222 2222 2222   2222 2222
 PFE 2
  Plane 0   3333 3333 3333   3333 3333 3333   3333 3333 3333   3333 3333 3333
3333 3333 3333   3333 3333 3333   3333 3333
  Plane 1   2222 2222 2222   2222 2222 2222   2222 2222 2222   2222 2222 2222
2222 2222 2222   2222 2222 2222   2222 2222
  Plane 2   2222 2222 2222   2222 2222 2222   2222 2222 2222   2222 2222 2222
2222 2222 2222   2222 2222 2222   2222 2222
  Plane 3   2222 2222 2222   2222 2222 2222   2222 2222 2222   2222 2222 2222
2222 2222 2222   2222 2222 2222   2222 2222
  Plane 4   2222 2222 2222   2222 2222 2222   2222 2222 2222   2222 2222 2222
2222 2222 2222   2222 2222 2222   2222 2222
  Plane 5   2222 2222 2222   2222 2222 2222   2222 2222 2222   2222 2222 2222
2222 2222 2222   2222 2222 2222   2222 2222
  Plane 6   2222 2222 2222   2222 2222 2222   2222 2222 2222   2222 2222 2222
2222 2222 2222   2222 2222 2222   2222 2222
  Plane 7   2222 2222 2222   2222 2222 2222   2222 2222 2222   2222 2222 2222
2222 2222 2222   2222 2222 2222   2222 2222
 PFE 3
  Plane 0   3333 3333 3333   3333 3333 3333   3333 3333 3333   3333 3333 3333
3333 3333 3333   3333 3333 3333   3333 3333
  Plane 1   2222 2222 2222   2222 2222 2222   2222 2222 2222   2222 2222 2222
2222 2222 2222   2222 2222 2222   2222 2222
  Plane 2   2222 2222 2222   2222 2222 2222   2222 2222 2222   2222 2222 2222
2222 2222 2222   2222 2222 2222   2222 2222
  Plane 3   2222 2222 2222   2222 2222 2222   2222 2222 2222   2222 2222 2222
2222 2222 2222   2222 2222 2222   2222 2222
  Plane 4   2222 2222 2222   2222 2222 2222   2222 2222 2222   2222 2222 2222
2222 2222 2222   2222 2222 2222   2222 2222
```

```
  Plane 5   2222 2222 2222   2222 2222 2222   2222 2222 2222   2222 2222 2222
2222 2222 2222   2222 2222 2222   2222 2222
  Plane 6   2222 2222 2222   2222 2222 2222   2222 2222 2222   2222 2222 2222
2222 2222 2222   2222 2222 2222   2222 2222
  Plane 7   2222 2222 2222   2222 2222 2222   2222 2222 2222   2222 2222 2222
2222 2222 2222   2222 2222 2222   2222 2222
```

show chassis fabric destinations extended (MX2020 Router with SFB2)

`user@host>` **show chassis fabric destinations extended**

```
Fabric destinations state:
   0: non-existent
   2: enabled
   3: disabled
   6: dest-err and disabled

FPC 0
 PFE 0
  Plane 0   2000 2222 2200 2200 0000 0000 2000 2000 0000   0000 0000 0000   3300
2200 0000   0000 2200 2200   0000 2222
  Plane 1   2000 2222 2200 2200 0000 0000 2000 2000 0000   0000 0000 0000   3300
2200 0000   0000 2200 2200   0000 2222
  Plane 2   2000 2222 2200 2200 0000 0000 2000 2000 0000   0000 0000 0000   3300
2200 0000   0000 2200 2200   0000 2222
  Plane 3   6000 3333 3300 3300 0000 0000 3000 3000 0000   0000 0000 0000   3300
3300 0000   0000 3300 3300   0000 3333
  Plane 4   2000 2222 2200 2200 0000 0000 2000 2000 0000   0000 0000 0000   3300
2200 0000   0000 2200 2200   0000 2222
  Plane 5   2000 2222 2200 2200 0000 0000 2000 2000 0000   0000 0000 0000   3300
2200 0000   0000 2200 2200   0000 2222
  Plane 6   2000 2222 2200 2200 0000 0000 2000 2000 0000   0000 0000 0000   3300
2200 0000   0000 2200 2200   0000 2222
  Plane 7   2000 2222 2200 2200 0000 0000 2000 2000 0000   0000 0000 0000   3300
2200 0000   0000 2200 2200   0000 2222
  Plane 8   6000 3333 3300 3300 0000 0000 3000 3000 0000   0000 0000 0000   3300
3300 0000   0000 3300 3300   0000 3333
  Plane 9   6000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 10  6000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 11  6000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 12  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
```

```
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  Plane 13  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 14  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 15  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 16  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 17  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 18  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 19  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 20  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 21  6000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 22  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 23  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
FPC 1
 PFE 0
  Plane 0   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 1   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 2   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 3   3000 3333 3300   2200 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 2200 2200   0000 2222
  Plane 4   3000 3333 3300   2200 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 2200 2200   0000 2222
  Plane 5   3000 3333 3300   2200 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 2200 2200   0000 2222
  Plane 6   3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 7   3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 8   3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333 Plane 9   3000 3333 3300   3300 0000
0000   3000 3000 0000   0000 0000 0000   3300 3300 0000   0000 3300 3300   0000
```

```
3333
  Plane 10  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 11  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 12  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 13  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 14  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 15  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 16  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 17  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 18  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 19  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 20  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 21  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 22  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 23  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
 PFE 1
  Plane 0   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 1   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 2   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 3   3000 3333 3300   2200 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 2200 2200   0000 2222
  Plane 4   3000 3333 3300   2200 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 2200 2200   0000 2222
  Plane 5   3000 3333 3300   2200 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 2200 2200   0000 2222
  Plane 6   3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
```

```
  Plane 7   3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 8   3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 9   3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 10  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 11  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 12  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 13  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 14  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 15  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 16  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 17  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 18  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 19  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 20  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 21  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 22  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 23  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
 PFE 2
  Plane 0   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 1   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 2   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 3   3000 3333 3300   2200 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 2200 2200   0000 2222 Plane 4   3000 3333 3300   2200 0000
0000   3000 3000 0000   0000 0000 0000   3300 3300 0000   0000 2200 2200   0000
```

```
2222
  Plane 5   3000 3333 3300   2200 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 2200 2200   0000 2222
  Plane 6   3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 7   3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 8   3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 9   3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 10  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 11  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 12  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 13  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 14  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 15  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 16  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 17  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 18  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 19  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 20  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 21  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 22  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 23  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
 PFE 3
  Plane 0   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 1   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
```

```
  Plane 2   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 3   3000 3333 3300   2200 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 2200 2200   0000 2222
  Plane 4   3000 3333 3300   2200 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 2200 2200   0000 2222
  Plane 5   3000 3333 3300   2200 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 2200 2200   0000 2222
  Plane 6   3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 7   3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 8   3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 9   3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 10  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 11  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 12  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 13  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000
2222
  Plane 14  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 15  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 16  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 17  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 18  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 19  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 20  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 21  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 22  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 23  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
```

```
3300 3300 0000   0000 3300 3300   0000 3333
....
FPC 19
 PFE 0
  Plane 0   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 1   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 2   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 3   3000 2222 2200   2200 0000 0000   3000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 4   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 5   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 6   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 7   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 8   3000 2222 2200   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3200 0000   0000 2200 2200   0000 2222
  Plane 9   3000 2222 2200   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3200 0000   0000 2200 2200   0000 2222
  Plane 10  3000 2222 2200   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3200 0000   0000 2200 2200   0000 2222
  Plane 11  3000 2222 2200   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3200 0000   0000 2200 2200   0000 2222
  Plane 12  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 13  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 14  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 15  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 16  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 17  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 18  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 19  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
```

```
  Plane 20  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 21  3000 2222 2200   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 22  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 23  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
 PFE 1
  Plane 0   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 1   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 2   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 3   3000 2222 2200   2200 0000 0000   3000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 4   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 5   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 6   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 7   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 8   3000 2222 2200   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3200 0000   0000 2200 2200   0000 2222
  Plane 9   3000 2222 2200   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3200 0000   0000 2200 2200   0000 2222
  Plane 10  3000 2222 2200   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3200 0000   0000 2200 2200   0000 2222
  Plane 11  3000 2222 2200   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3200 0000   0000 2200 2200   0000 2222
  Plane 12  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 13  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 14  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 15  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 16  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 17  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
```

```
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 18  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 19  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 20  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 21  3000 2222 2200   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 22  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 23  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
PFE 2
  Plane 0   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 1   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 2   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 3   3000 2222 2200   2200 0000 0000   3000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 4   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 5   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 6   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 7   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 8   3000 2222 2200   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3200 0000   0000 2200 2200   0000 2222
  Plane 9   3000 2222 2200   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3200 0000   0000 2200 2200   0000 2222
  Plane 10  3000 2222 2200   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3200 0000   0000 2200 2200   0000 2222
  Plane 11  3000 2222 2200   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3200 0000   0000 2200 2200   0000 2222
  Plane 12  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 13  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 14  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
```

```
  Plane 15  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 16  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 17  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 18  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 19  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 20  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 21  3000 2222 2200   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 22  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 23  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
 PFE 3
  Plane 0   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 1   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 2   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 3   3000 2222 2200   2200 0000 0000   3000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 4   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 5   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 6   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 7   2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 8   3000 2222 2200   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3200 0000   0000 2200 2200   0000 2222
  Plane 9   3000 2222 2200   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3200 0000   0000 2200 2200   0000 2222
  Plane 10  3000 2222 2200   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3200 0000   0000 2200 2200   0000 2222
  Plane 11  3000 2222 2200   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3200 0000   0000 2200 2200   0000 2222
  Plane 12  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
```

```
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 13  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 14  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 15  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 16  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 17  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 18  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
 Plane 19  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 20  3000 3333 3300   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 3300 0000   0000 3300 3300   0000 3333
  Plane 21  3000 2222 2200   3300 0000 0000   3000 3000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 22  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
  Plane 23  2000 2222 2200   2200 0000 0000   2000 2000 0000   0000 0000 0000
3300 2200 0000   0000 2200 2200   0000 2222
```

show chassis fabric destinations (MX2010 Router)

`user@host>` **show chassis fabric destinations**

```
Fabric destinations state:
   0: non-existent
   2: enabled
   3: disabled
   6: dest-err and disabled

FPC 0
 PFE 0
  Plane 0   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 1   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 2   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 3   3300 3000 3300   3333 3000 3300   3333 3300 3000   3300
  Plane 4   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 5   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 6   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 7   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
```

```
 PFE 1
  Plane 0   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 1   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 2   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 3   3300 3000 3300   3333 3000 3300   3333 3300 3000   3300
  Plane 4   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 5   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 6   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 7   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
FPC 1
 PFE 0
  Plane 0   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 1   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 2   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 3   3300 3000 3300   3333 3000 3300   3333 3300 3000   3300
  Plane 4   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 5   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 6   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 7   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
FPC 2
 PFE 0
  Plane 0   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 1   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 2   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 3   3300 3000 3300   3333 3000 3300   3333 3300 3000   3300
  Plane 4   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 5   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 6   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 7   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
 PFE 1
  Plane 0   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 1   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 2   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 3   3300 3000 3300   3333 3000 3300   3333 3300 3000   3300
  Plane 4   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 5   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 6   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 7   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200

FPC 3
 PFE 0
  Plane 0   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 1   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 2   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
```

```
  Plane 3   3300 3000 3300   3333 3000 3300   3333 3300 3000   3300
  Plane 4   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 5   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 6   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 7   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
 PFE 1
  Plane 0   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 1   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 2   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 3   3300 3000 3300   3333 3000 3300   3333 3300 3000   3300
  Plane 4   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 5   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 6   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 7   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
 PFE 2
  Plane 0   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 1   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 2   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 3   3300 3000 3300   3333 3000 3300   3333 3300 3000   3300
  Plane 4   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 5   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 6   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 7   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
 PFE 3
  Plane 0   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 1   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 2   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 3   3300 3000 3300   3333 3000 3300   3333 3300 3000   3300
  Plane 4   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 5   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 6   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 7   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
FPC 4
 PFE 0
  Plane 0   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 1   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 2   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 3   3300 3000 3300   3333 3000 3300   3333 3300 3000   3300
  Plane 4   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 5   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 6   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 7   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
FPC 5
 PFE 0
```

```
  Plane 0   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 1   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 2   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 3   3300 3000 3300   3333 3000 3300   3333 3300 3000   3300
  Plane 4   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 5   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 6   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
Plane 7   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
 PFE 1
  Plane 0   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 1   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 2   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 3   3300 3000 3300   3333 3000 3300   3333 3300 3000   3300
  Plane 4   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 5   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 6   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 7   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
FPC 6
 PFE 0
  Plane 0   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 1   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 2   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 3   3300 3000 3300   3333 3000 3300   3333 3300 3000   3300
  Plane 4   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 5   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 6   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 7   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
 PFE 1
  Plane 0   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 1   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 2   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 3   3300 3000 3300   3333 3000 3300   3333 3300 3000   3300
  Plane 4   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 5   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 6   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 7   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
 PFE 2
  Plane 0   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 1   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 2   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 3   3300 3000 3300   3333 3000 3300   3333 3300 3000   3300
  Plane 4   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 5   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 6   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
```

```
  Plane 7   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
 PFE 3
  Plane 0   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 1   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 2   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 3   3300 3000 3300   3333 3000 3300   3333 3300 3000   3300
  Plane 4   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 5   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 6   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 7   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
FPC 7
 PFE 0
  Plane 0   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 1   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 2   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 3   3300 3000 3300   3333 3000 3300   3333 3300 3000   3300
  Plane 4   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 5   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 6   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 7   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
 PFE 1
  Plane 0   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 1   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 2   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 3   3300 3000 3300   3333 3000 3300   3333 3300 3000   3300
  Plane 4   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 5   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 6   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 7   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
FPC 8
 PFE 0
  Plane 0   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 1   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 2   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 3   3300 3000 3300   3333 3000 3300   3333 3300 3000   3300
  Plane 4   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 5   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 6   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 7   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
FPC 9
 PFE 0
  Plane 0   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 1   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 2   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
```

```
  Plane 3   3300 3000 3300   3333 3000 3300   3333 3300 3000   3300
  Plane 4   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 5   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 6   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 7   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
 PFE 1
  Plane 0   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 1   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 2   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 3   3300 3000 3300   3333 3000 3300   3333 3300 3000   3300
  Plane 4   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 5   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 6   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
  Plane 7   2200 2000 2200   2222 2000 2200   2222 2200 2000   2200
```

show chassis fabric destinations (MX10003 Router)

`user@host>` **show chassis fabric destinations**

```
Fabric destinations state:
   0: non-existent
   2: enabled
   3: disabled
   6: dest-err and disabled

FPC 0
 PFE 0
  Plane 0   2220 2220
  Plane 1   2220 2220
  Plane 2   2220 2220
  Plane 3   2220 2220
  Plane 4   2220 2220
  Plane 5   2220 2220
  Plane 6   2220 2220
  Plane 7   2220 2220
  Plane 8   2220 2220
  Plane 9   2220 2220
  Plane 10  2220 2220
  Plane 11  2220 2220
  Plane 12  2220 2220
  Plane 13  2220 2220
  Plane 14  2220 2220
  Plane 15  2220 2220
```

```
  Plane 16  2220 2220
  Plane 17  2220 2220
  Plane 18  2220 2220
  Plane 19  2220 2220
  Plane 20  2220 2220
  Plane 21  2220 2220
PFE 1
  Plane 0   2220 2220
  Plane 1   2220 2220
  Plane 2   2220 2220
  Plane 3   2220 2220
  Plane 4   2220 2220
  Plane 5   2220 2220
  Plane 6   2220 2220
  Plane 7   2220 2220
  Plane 8   2220 2220
  Plane 9   2220 2220
  Plane 10  2220 2220
  Plane 11  2220 2220
  Plane 12  2220 2220
  Plane 13  2220 2220
  Plane 14  2220 2220
  Plane 15  2220 2220
  Plane 16  2220 2220
  Plane 17  2220 2220
  Plane 18  2220 2220
  Plane 19  2220 2220
  Plane 20  2220 2220
  Plane 21  2220 2220
PFE 2
  Plane 0   2220 2220
  Plane 1   2220 2220
  Plane 2   2220 2220
  Plane 3   2220 2220
  Plane 4   2220 2220
  Plane 5   2220 2220
  Plane 6   2220 2220
  Plane 7   2220 2220
  Plane 8   2220 2220
  Plane 9   2220 2220
  Plane 10  2220 2220
  Plane 11  2220 2220
  Plane 12  2220 2220
  Plane 13  2220 2220
```

```
  Plane 14  2220 2220
  Plane 15  2220 2220
  Plane 16  2220 2220
  Plane 17  2220 2220
  Plane 18  2220 2220
  Plane 19  2220 2220
  Plane 20  2220 2220
  Plane 21  2220 2220
FPC 1
 PFE 0
  Plane 0   2220 2220
  Plane 1   2220 2220
  Plane 2   2220 2220
  Plane 3   2220 2220
  Plane 4   2220 2220
  Plane 5   2220 2220
  Plane 6   2220 2220
  Plane 7   2220 2220
  Plane 8   2220 2220
  Plane 9   2220 2220
  Plane 10  2220 2220
  Plane 11  2220 2220
  Plane 12  2220 2220
  Plane 13  2220 2220
  Plane 14  2220 2220
  Plane 15  2220 2220
  Plane 16  2220 2220
  Plane 17  2220 2220
  Plane 18  2220 2220
  Plane 19  2220 2220
  Plane 20  2220 2220
  Plane 21  2220 2220
 PFE 1
  Plane 0   2220 2220
  Plane 1   2220 2220
  Plane 2   2220 2220
  Plane 3   2220 2220
  Plane 4   2220 2220
  Plane 5   2220 2220
  Plane 6   2220 2220
  Plane 7   2220 2220
  Plane 8   2220 2220
  Plane 9   2220 2220
  Plane 10  2220 2220
```

```
  Plane 11  2220 2220
  Plane 12  2220 2220
  Plane 13  2220 2220
  Plane 14  2220 2220
  Plane 15  2220 2220
  Plane 16  2220 2220
  Plane 17  2220 2220
  Plane 18  2220 2220
  Plane 19  2220 2220
  Plane 20  2220 2220
  Plane 21  2220 2220
PFE 2
  Plane 0   2220 2220
  Plane 1   2220 2220
  Plane 2   2220 2220
  Plane 3   2220 2220
  Plane 4   2220 2220
  Plane 5   2220 2220
  Plane 6   2220 2220
  Plane 7   2220 2220
  Plane 8   2220 2220
  Plane 9   2220 2220
  Plane 10  2220 2220
  Plane 11  2220 2220
  Plane 12  2220 2220
  Plane 13  2220 2220
  Plane 14  2220 2220
  Plane 15  2220 2220
  Plane 16  2220 2220
  Plane 17  2220 2220
  Plane 18  2220 2220
  Plane 19  2220 2220
  Plane 20  2220 2220
  Plane 21  2220 2220
```

show chassis fabric faults recovery-actions

Syntax

```
show chassis fabric faults recovery-actions
```

Release Information

Command introduced in Junos OS Release 14.2 for TX Matrix Plus routers with 3D SIBs.

Description

Display the last 64 recovery actions related to a fabric black-hole condition.

Required Privilege Level

view

RELATED DOCUMENTATION

auto-recovery-disable | 319

List of Sample Output

show chassis fabric faults recovery-actions on page 1261

Output Fields

Table 58 on page 1230 lists the output fields for the **show chassis fabric faults recovery-actions** command. Output fields are listed in the approximate order in which they appear.

Table 60: show chassis fabric faults recovery-actions Output Fields

Field Name	Field Description
Fault Name	The name of fault detected. The fault name appears in a message such as: **CLOS LINK ERROR** detected on **F2S or F13 slot *slot number* xf chip *chip number*** and **Link Number *link number***
Recovery Start Time	The time when recovery actions were initiated.

Table 60: show chassis fabric faults recovery-actions Output Fields *(continued)*

Field Name	Field Description
Recovery Action	The recovery action that was used to recover from the mentioned fault. Recovery options depend on the type of faults and can include: • **SFC SIB Reboot**: The SFC SIB was rebooted. • **LCC SIB Reboot**: The LCC SIB was rebooted. • **FPC Reboot**: The FPC was rebooted. • **Destination Reprogramming**: Reenabling the data flow between Packet Forwarding Engines. • **Interchassis Link Retraining**: Retraining of optical links between an LCC SIB and an SFC SIB.

Sample Output

show chassis fabric faults recovery-actions

`user@host>` **show chassis fabric faults recovery-actions**

```
Fault Name          :CLOS LINK ERROR on F2SSlot3Chip0LinkNum2
Recovery Start Time :2014-03-25 19:52:50 PDT
Recovery Action     :F2S slot 3 Reboot
```

show chassis fabric feb

Syntax

```
show chassis fabric feb
```

Release Information

Command introduced in Junos OS Release 8.0.

Description

(M120 router only) Display the state of the electrical and optical switching fabric links between the Forwarding Engine Boards (FEBs) and the fabric planes, as interpreted by the FEB.

Options

This command has no options.

Required Privilege Level

view

List of Sample Output

show chassis fabric feb on page 1262

Output Fields

Table 61 on page 1262 lists the output fields for the **show chassis fabric feb** command.

Table 61: show chassis fabric feb Output Fields

Field Name	Field Description
Fabric management FEB state	State of the switching fabric link between each FEB and fabric plane: **desalination error**, **disabled**, **enabled**, **link error**, **link ok**, or **unused**.

Sample Output

show chassis fabric feb

```
user@host> show chassis fabric feb
```

```
Fabric management       FEB state
FEB 0                   Plane 0: Plane enabled
                        Plane 1: Plane enabled
```

```
                        Plane 2: Plane enabled
                        Plane 3: Plane enabled
FEB 4
                        Plane 0: Plane enabled
                        Plane 1: Plane enabled
                        Plane 2: Plane enabled
                        Plane 3: Plane enabled
```

show chassis fabric errors

List of Syntax

Syntax on page 1264
Syntax (PTX Series Packet Transport Routers) on page 1264

Syntax

```
show chassis fabric errors
<autoheal>
<fpc slot-number lcc number>
<sib (slot | f13 sib-slot | f2s sib-slot/sib-f2s-slot-number | lcc number)>
```

Syntax (PTX Series Packet Transport Routers)

```
show chassis fabric errors
(autoheal | fpc slot-number | sib sib-slot)
```

Release Information

Command introduced in Junos OS Release 10.0.
Command introduced in Junos OS Release 12.1X48 for the PTX Series Packet Transport Routers.
Command introduced in Junos OS Release 17.2 for PTX10008 Routers.

Description

Display the first ten and last ten fabric errors for the FPC or Switch Interface Boards (SIBs).

NOTE: This command can only be issued on a master Routing Engine.

Options

autoheal—(TX Matrix Plus routers and PTX Series Packet Transport Routers only) Show an error log of the first 100 autoheal actions taken on the system.

fpc *slot-number*—Show error log of the first ten and last ten errors for the specified FPC.

(PTX3000 routers only)—Replace ***slot-number*** with an FPC slot number: **0**, **2**, **4**, **6**, **8**, **10**, **12**, or **14**.

(PTX5000 routers only)—Replace ***slot-number*** with a value from **0** through **7**.

(TX Matrix Plus routers only)—Replace **fpc *slot-number*** with the following values depending on the LCC configuration:

- On a TX Matrix Plus router with the TXP-T1600 configuration, if you specify the number of a T1600 LCC by using the **lcc** *number* option (the recommended method), replace **fpc** ***slot-number*** with a value from **0** through **7**. Otherwise, use a value from **0** through **31**.
- On a TX Matrix Plus router with the TXP-T1600-3D, TXP-T4000-3D, or TXP-Mixed-LCC-3D configuration, if you specify the number of a T1600 or T4000 LCC by using the **lcc** ***number*** option (the recommended method), replace **fpc** ***slot-number*** with a value from **0** through **7**. Otherwise, use a value from **0** through **63**.
- **lcc** *number*—Show error log of the first ten and last ten errors for the specified FPC on a specific network device (line-card chassis) that is part of the routing matrix.

  Replace **lcc** *number* with the following values depending on the LCC configuration:

  - 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
  - 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
  - 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
  - 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

  If you specify the number of the network device by using only the **lcc** *number* option (the recommended method), replace *slot-number* with a value from **0** through **7**. Otherwise, replace *slot-number* with a value from **0** through **31**. For example, the following commands have the same result:

  ```
  user@host> show chassis fabric errors fpc 1 lcc 1
  user@host> show chassis fabric errors fpc 9
  ```

sib—Show error log of the first ten and last ten errors for the specified SIB. This option has the following suboptions:

- (TX Matrix Plus routers only)*sib-slot*—Specify a value ranging from **0** through **4**.
- (PTX3000 and PTX5000 routers) *sib-slot*—Specify a value ranging from **0** through **8**.
- (TX Matrix Plus routers only) **f13** ***sib-slot***—(Optional) Show SIB F13 errors. Specify a valid SIB value number: **0**, **1**, **3**, **4**, **6**, **7**, **8**, **9**, **11**, or **12**.
- (TX Matrix Plus routers only) **f2s** ***sib-slot/sib-f2s-slot-number***—(Optional) Show SIB F2S errors. Replace ***sib-slot*** with a value from **0** through **4**, followed by a ***sib-f2s-slot-number*** value **0**, **2**, **4** or **6**.
- (TX Matrix Plus routers only) **lcc** ***number***—(Optional) Show error log of the first ten and last ten SIB errors for the specified network device (line-card chassis).

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

> **NOTE:** The **lcc *number*** suboption is mandatory when using the following format for the command: **show chassis fabric errors sib lcc *number* sib *slot-number***. For instance, issuing **show chassis fabric errors sib lcc *2 3*** displays errors detected on LCC 2, SIB 3.
>
> This suboption is not required when the **f13** or **f2s** suboptions are used with the **sib *slot-number*** option.

Required Privilege Level
view

List of Sample Output
show chassis fabric errors (F13 SIB Errors on a TX Matrix Plus Router) on page 1268
show chassis fabric errors (F2S SIB Errors on a TX Matrix Plus Router) on page 1268
show chassis fabric errors (SIB Errors Specific to an LCC Connected to a TX Matrix Plus Router) on page 1268
show chassis fabric errors (FPC Errors Specific to an LCC Connected to a TX Matrix Plus Router) on page 1268
show chassis fabric errors (SIB Errors Specific to an LCC Connected to a TX Matrix Plus Router with 3D SIBs) on page 1269
show chassis fabric errors fpc or sib (PTX Series Packet Transport Routers) on page 1269
show chassis fabric errors autoheal (PTX Series Packet Transport Routers) on page 1269
show chassis fabric errors autoheal (TX Matrix Plus Router with 3D SIBs) on page 1269

Output Fields

Table 62 on page 1267 lists the output fields for the **show chassis fabric errors** command. Output fields are listed in the approximate order in which they appear.

Table 62: show chassis fabric errors Output Fields

Field Name	Field Description
Time	Time the error was logged. (TX Matrix Plus routers and PTX Series Packet Transport Routers only) For the **autoheal** option, shows the timestamp when autoheal was attempted on a SIB that was in fault state.
Error log of first 10 errors	List of the first ten errors.
Error log of last 10 errors	List of the last ten errors.
Error log of first 100 errors	Indicates the autoheal action taken on the SIB. The following actions can occur: • Req—A SIB autoheal request was made on a faulty SIB. • Action—Autohealing (taking the SIB offline and then online) is initiated. • Denied—Autohealing (taking the SIB offline and then online) is denied because the SIB went to a fault state before the autoheal configuration period completed. • Set info—Setting information to force skipping autoheal on the SIB so that no further attempts to autoheal the faulty SIB are made. • Clear info— if a user takes a SIB offline and then online, then the autoheal information of the SIB is cleared. If the SIB goes to a fault state, autoheal is attempted on the SIB. • (PTX3000 and PTX5000 routers only) Completed—Autohealing is completed. This message is displayed whether autohealing is succesful or not.
fpc slot number	(PTX5000 Packet Transport Router only)—Range is 0 through 7.
sib slot number	(PTX Series Packet Transport Routers only)—Range is 0 through 8.
lcc number	Not supported on PTX Series Packet Transport Routers.

Sample Output

show chassis fabric errors (F13 SIB Errors on a TX Matrix Plus Router)

```
user@host> show chassis fabric errors sib f13 11
```

```
Time                          Error log of first 10 errors
2009-10-06 02:21:17 PDT       LOS on Cable-D(1,0)
```

show chassis fabric errors (F2S SIB Errors on a TX Matrix Plus Router)

```
user@host> show chassis fabric errors sib f2s 0/0
```

```
Time                          Error log of first 10 errors
2009-10-06 13:51:42 PDT       Cell drop errors on CLOS F2 SF 0 Port 0 link
```

show chassis fabric errors (SIB Errors Specific to an LCC Connected to a TX Matrix Plus Router)

```
user@host> show chassis fabric errors sib 1 lcc 0
```

```
lcc0-re0:

--------------------------------------------------------------------------

Time                          Error log of first 10 errors

2009-10-06 02:23:16 PDT       Cell drop errors on FPC7_T link

2009-10-06 02:23:16 PDT       Cell drop errors on FPC7_B link
```

show chassis fabric errors (FPC Errors Specific to an LCC Connected to a TX Matrix Plus Router)

```
user@host> show chassis fabric errors fpc 5 lcc 0
```

```
lcc0-re0:

--------------------------------------------------------------------------

Time                          Error log of first 10 errors
```

```
2009-10-06 13:56:59 PDT      PFE_T has link error on plane 1
```

show chassis fabric errors (SIB Errors Specific to an LCC Connected to a TX Matrix Plus Router with 3D SIBs)

```
user@host> show chassis fabric errors sib 1 lcc 0
```

```
lcc0-re0:
--------------------------------------------------------------------------
Time                          Error log of first 10 errors
2013-02-11 04:46:42 PST      CRC errors on XC link SIB01_XF3#11,0
```

show chassis fabric errors fpc or sib (PTX Series Packet Transport Routers)

```
user@host> show chassis fabric errors fpc 1
```

```
Time                          Error log of first 10 errors
2012-01-06 16:27:03 PST      Link errs on PFE 2, SIB 0, Plane 0
```

```
user@host> show chassis fabric errors sib 1
```

```
Time                          Error log of first 10 errors
2015-011-16 15:34:33 PST      Link errs on PFE 0, FPC 0, Plane 2
2015-011-16 15:44:33 PST      CM set ASIC 1 to FAULT (Fault due to PIO errors)
```

show chassis fabric errors autoheal (PTX Series Packet Transport Routers)

```
user@host> show chassis fabric errors autoheal
```

```
Mar 30 01:43:00
Time                      Error log of first 100 errors
2016-03-29 23:46:23 PDT   Req: sib 0
2016-03-29 23:46:23 PDT   Action: SIB 0 (autohealing)
2016-03-29 23:54:52 PDT   Completed: SIB 0  (autoheal)
```

show chassis fabric errors autoheal (TX Matrix Plus Router with 3D SIBs)

```
user@host> show chassis fabric errors autoheal
```

```
Time                      Error log of first 100 errors
2013-03-25 00:16:10 PDT   Req: Plane 3 F13 8 Cbl 4 (tx) LCC0-SIB3 Cbl 4 (rx)
2013-03-25 00:16:12 PDT   Action: Plane 3 F13 8 Cbl 4 (autohealing)
2013-03-25 00:17:24 PDT   Req: Plane 3 F13 8 Cbl 4 (tx) LCC0-SIB3 Cbl 4 (rx)
2013-03-25 00:17:24 PDT   Denied: Plane 3 F13 8 Cbl 4 (time < configured)
2013-03-25 00:17:24 PDT   Set info: Plane 3 F13 8 Cbl 4 (skip autoheal)
2013-03-25 01:20:17 PDT   Clear info: Plane 3
```

show chassis fabric fpcs

List of Syntax

Syntax on page 1271
Syntax (MX Series Routers) on page 1271
Syntax (T4000, MX2010, MX2020, MX10003, and MX2008 Routers) on page 1271
Syntax (PTX Series Packet Transport Routers) on page 1271
Syntax (TX Matrix Plus Router) on page 1271
Syntax (QFX Series Switches) on page 1271

Syntax

```
show chassis fabric fpcs
<lcc number>
```

Syntax (MX Series Routers)

```
show chassis fabric fpcs
<extended>
<all-members>
<local>
<member member-id>
```

Syntax (T4000, MX2010, MX2020, MX10003, and MX2008 Routers)

```
show chassis fabric fpcs
```

Syntax (PTX Series Packet Transport Routers)

```
show chassis fabric fpcs <slot fpc-slot>
```

Syntax (TX Matrix Plus Router)

```
show chassis fabric fpcs
<lcc number>
```

Syntax (QFX Series Switches)

```
show chassis fabric fpcs <slot fpc-slot>
```

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.4 for EX Series switches.
Command introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers.
Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 3D Universal Edge Routers.
Command introduced in Junos OS Release 15.1X53-D30 for QFX Series switches.
extended option introduced in JunosOS Release 16.1 for MX2020 and MX2010 Routers.
Command introduced in Junos OS Release 17.2 for MX2008 and PTX10008 Routers.
Command introduced in Junos OS Release 17.3 for MX10003 3D Universal Edge Routers.

Description

Display the state of the electrical switch fabric links between the Flexible PIC Concentrators (FPCs) and the Switch Interface Boards (SIBs).

Options

none—Display the switch fabric link state. On a TX Matrix router, display the switching fabric link states for the FPCs in all T640 routers connected to the TX Matrix router. On a TX Matrix Plus router, display the switching fabric link states for the FPCs in all routers connected to the TX Matrix Plus router.

extended—(MX2020 and MX2010 Routers with SFB2) (Optional) Display the fabric link state for all 24 fabric planes.

all-members—(MX Series routers only) (Optional) Display the switching fabric link states for the FPCs in all members of the Virtual Chassis configuration.

lcc *number*—(TX Matrix router and TX Matrix Plus router only) (Optional) On a TX Matrix router, display the switch fabric link state for the FPCs in the specified T640 router (line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display the switch fabric link state for the FPCs in the specified router (line-card chassis) that is connected to the TX Matrix Plus router. Replace ***number*** with a following value depending on the LCC configurations:

- From **0** through **3** on a T640 router on the routing matrix with TX Matirx routers.
- From **0** through **3** on a T1600 router on the routing matrix with TX Matirx Plus routers.
- From **0** through **7** on a T1600 router in a routing matrix with TX Matrix Plus router with 3D SIBs.
- **0**, **2**, **4**, **6** on a T4000 router in a routing matrix with TX Matrix Plus router with 3D SIBs.

local—(MX Series routers only) (Optional) Display the switching fabric link states for the FPCs in the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display the switching fabric link states for the FPCs in the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value of 0 or 1.

slot *fpc-slot*—(PTX Series Packet Transport Routers and QFX Series switches only) (Optional) Display the fabric state of the specified FPC slot. If no value is provided, display the status of all FPCs.

Required Privilege Level
view

RELATED DOCUMENTATION

> *request chassis fabric fpc*
>
> show chassis fpc | **1507**
>
> *Displaying Information About DPCs or FPCs in an MX Series Router*

List of Sample Output

show chassis fabric fpcs (M320 Router) on page 1276
show chassis fabric fpcs (MX960 Router) on page 1276
show chassis fabric fpcs (MX480 Router with MPC4E) on page 1278
show chassis fabric fpcs (MX960 with AS MLC Modular Carrier Card on page 1280
show chassis fabric fpcs (MX2020 Router with SFB2) on page 1282
show chassis fabric fpcs (T320 Router) on page 1288
show chassis fabric fpcs (TX Matrix Router) on page 1288
show chassis fabric fpcs lcc (TX Matrix Router with 3D SIBs) on page 1290
show chassis fabric fpcs (T1600 Router) on page 1291
show chassis fabric fpcs (T4000 Core Router) on page 1293
show chassis fabric fpcs (TX Matrix Plus Router) on page 1295
show chassis fabric fpcs (EX8200 Switch) on page 1305
show chassis fabric fpcs (Junos OS Evolved) on page 1307
show chassis fabric fpcs (PTX10008 Router) on page 1307
show chassis fabric fpcs (QFX10008 Switch) on page 1309

Output Fields

Table 63 on page 1274 lists the output fields for the **show chassis fabric fpcs** command. Output fields are listed in the approximate order in which they appear.

Table 63: show chassis fabric fpcs Output Fields

Field Name	Field Description
Fabric management FPC state	

Table 63: show chassis fabric fpcs Output Fields *(continued)*

Field Name	Field Description
	Switching fabric link (link from SIB to FPC) state for each FPC: • **Unused**—FPC is not present. (On MX240 and MX480 routers with AS- MLC modular carrier card or MPC4E only) the fabric plane from the pair that share physical links (1 and 5, and 3 and 7) is inactive. • **Destination error on PFEs *list of PFE numbers***—Destination errors to the listed Packet Forwarding Engines. Indicates that the link is not carrying traffic to the listed Packet Forwarding Engines. **NOTE:** In Junos OS Release 9.6 and later, the list of Packet Forwarding Engines with destination errors is displayed in the output. In Junos OS Releases before 9.6, the output only indicates that there are destination errors. However, the list of Packet Forwarding Engines with destination errors is not displayed. • **Links ok**—Link between the spare SIB and FPC is eligible to carry traffic. • **Link error**—Link between the SIB and FPC has CRC errors. However, the link is still eligible to carry traffic. • **Plane disabled**—Fabric plane has been disabled for the following reasons: ◦ Destination errors have exceeded the thresholds. ◦ Run-time link errors have exceeded the thresholds. ◦ Initialization time link errors detected, and link training was unsuccessful. ◦ **Plane Disabled, Links Error** (PTX Series Packet Transport Routers and QFX Series switches only)—The plane is disabled because of link errors detected at the FPC RX. • **Plane Disabled, Links Down** (PTX Series Packet Transport Routers and QFX Series switches only)—The plane is disabled because of link errors detected at the SIB RX. • **Plane enabled**—Link between the active SIB and FPC is eligible to carry traffic. **NOTE:** On the Enhanced MX SCB with MPC, a maximum of 4 planes are operational and running. On all the other SCBs with MPC, all the planes are operational and running.

Table 63: show chassis fabric fpcs Output Fields *(continued)*

Field Name	Field Description
	• **Plane Enabled, Links OK** (PTX Series Packet Transport Routers and QFX Series switches only)—The FPC CCL RX link is eligible to carry traffic. • **Plane Enabled, Links OK** (TX Matrix and TX Matrix Plus routers only)—The FPC HSL RX link is eligible to carry traffic.

Sample Output

show chassis fabric fpcs (M320 Router)

`user@host>` **show chassis fabric fpcs**

```
Fabric management FPC state:
FPC #2
  PFE #1
    SIB #0
              Plane enabled
    SIB #1
              Plane enabled
    SIB #2
              Plane enabled
    SIB #3
              Plane enabled
```

show chassis fabric fpcs (MX960 Router)

`user@host>` **show chassis fabric fpcs**

```
FPC 0
  PFE #0
       Plane 0: Plane enabled
       Plane 1: Plane enabled
       Plane 2: Plane enabled
       Plane 3: Plane enabled
       Plane 4: Links ok
       Plane 5: Links ok
  PFE #1
       Plane 0: Plane enabled
```

```
        Plane 1: Plane enabled
        Plane 2: Plane enabled
        Plane 3: Plane enabled
        Plane 4: Links ok
        Plane 5: Links ok
  PFE #2
        Plane 0: Plane enabled
        Plane 1: Plane enabled
        Plane 2: Plane enabled
        Plane 3: Plane enabled
        Plane 4: Links ok
        Plane 5: Links ok
  PFE #3
        Plane 0: Plane enabled
        Plane 1: Plane enabled
        Plane 2: Plane enabled
        Plane 3: Plane enabled
        Plane 4: Links ok
        Plane 5: Links ok
FPC 1
  PFE #0
        Plane 0: Plane enabled
        Plane 1: Plane enabled
        Plane 2: Plane enabled
        Plane 3: Plane enabled
        Plane 4: Plane enabled
        Plane 5: Plane enabled
  PFE #1
        Plane 0: Plane enabled
        Plane 1: Plane enabled
        Plane 2: Plane enabled
        Plane 3: Plane enabled
        Plane 4: Plane enabled
        Plane 5: Plane enabled
FPC 2
  PFE #0
        Plane 0: Plane enabled
        Plane 1: Plane enabled
        Plane 2: Plane enabled
        Plane 3: Plane enabled
        Plane 4: Links ok
        Plane 5: Links ok
  PFE #1
        Plane 0: Plane enabled
```

```
       Plane 1: Plane enabled
       Plane 2: Plane enabled
       Plane 3: Plane enabled
       Plane 4: Links ok
       Plane 5: Links ok
  PFE #2
       Plane 0: Plane enabled
       Plane 1: Plane enabled
       Plane 2: Plane enabled
       Plane 3: Plane enabled
       Plane 4: Links ok
...
```

show chassis fabric fpcs (MX480 Router with MPC4E)

In the following output, **FPC4** is the MPC4E (MPC4E-3D-32XGE-SFPP) card.

`user@host >` **show chassis fabric fpcs**

```
Fabric management FPC state:
FPC 0
  PFE #0
      Plane 0: Links ok
      Plane 1: Links ok
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Links ok
      Plane 6: Plane enabled
      Plane 7: Links ok
  PFE #1
      Plane 0: Links ok
      Plane 1: Links ok
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Links ok
      Plane 6: Plane enabled
      Plane 7: Links ok
FPC 1
  PFE #0
      Plane 0: Links ok
      Plane 1: Links ok
      Plane 2: Plane enabled
```

```
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Links ok
      Plane 6: Plane enabled
      Plane 7: Links ok
  PFE #1
      Plane 0: Links ok
      Plane 1: Links ok
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Links ok
      Plane 6: Plane enabled
      Plane 7: Links ok
  PFE #2
      Plane 0: Links ok
      Plane 1: Links ok
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Links ok
      Plane 6: Plane enabled
      Plane 7: Links ok
  PFE #3
      Plane 0: Links ok
      Plane 1: Links ok
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Links ok
      Plane 6: Plane enabled

FPC 3
  PFE #0
      Plane 0: Links ok
      Plane 1: Links ok
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Links ok
      Plane 6: Plane enabled
      Plane 7: Links ok
FPC 4
  PFE #0
```

```
      Plane 0: Links ok
      Plane 1: Links ok
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Unused
      Plane 6: Plane enabled
      Plane 7: Unused
  PFE #1
      Plane 0: Links ok
      Plane 1: Links ok
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Unused
      Plane 6: Plane enabled
      Plane 7: Unused
```

show chassis fabric fpcs (MX960 with AS MLC Modular Carrier Card

In the following output, FPC 5 is the AS MLC modular carrier card (AS MCC).

user@host>**show chassis fabric fpcs**

```
Fabric management FPC state:
FPC 0
  PFE #0
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Links ok
      Plane 5: Links ok
  PFE #1
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Links ok
      Plane 5: Links ok
FPC 1
  PFE #0
      Plane 0: Plane enabled
      Plane 1: Plane enabled
```

```
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Links ok
      Plane 5: Links ok
FPC 4
  PFE #0
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Links ok
      Plane 5: Links ok
  PFE #1
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Links ok
      Plane 5: Links ok
  PFE #2
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Links ok
      Plane 5: Links ok
  PFE #3
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Links ok
      Plane 5: Links ok
FPC 5
  PFE #0
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Links ok
      Plane 5: Links ok
FPC 8
  PFE #0
      Plane 0: Plane enabled
```

```
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Links ok
      Plane 5: Links ok
  PFE #1
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Links ok
      Plane 5: Links ok
  PFE #2
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Links ok
      Plane 5: Links ok
  PFE #3
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Links ok
      Plane 5: Links ok
```

show chassis fabric fpcs (MX2020 Router with SFB2)

`user@host>` **show chassis fabric fpcs extended**

```
Fabric management FPC state:
FPC 0
  PFE #0
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Destination error
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
      Plane 8: Destination error
      Plane 9: Destination error
```

```
      Plane 10: Destination error
      Plane 11: Destination error
      Plane 12: Plane enabled
      Plane 13: Plane enabled
      Plane 14: Plane enabled
      Plane 15: Plane enabled
      Plane 16: Plane enabled
      Plane 17: Plane enabled
      Plane 18: Plane disabled
      Plane 19: Plane disabled
      Plane 20: Plane disabled
      Plane 21: Destination error
      Plane 22: Plane enabled
      Plane 23: Plane enabled
FPC 1
  PFE #0
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
      Plane 8: Plane enabled
      Plane 9: Plane enabled
      Plane 10: Plane enabled
      Plane 11: Plane enabled
      Plane 12: Plane enabled
      Plane 13: Plane enabled
      Plane 14: Plane enabled
      Plane 15: Plane enabled
      Plane 16: Plane enabled
      Plane 17: Plane enabled
      Plane 18: Plane disabled
      Plane 19: Plane disabled
      Plane 20: Plane disabled
      Plane 21: Plane enabled
      Plane 22: Plane enabled
      Plane 23: Plane enabled
  PFE #1
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
```

```
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
    Plane 8: Plane enabled
    Plane 9: Plane enabled
    Plane 10: Plane enabled
    Plane 11: Plane enabled
    Plane 12: Plane enabled
    Plane 13: Plane enabled
    Plane 14: Plane enabled
    Plane 15: Plane enabled
    Plane 16: Plane enabled
    Plane 17: Plane enabled
    Plane 18: Plane disabled
    Plane 19: Plane disabled
    Plane 20: Plane disabled
    Plane 21: Plane enabled
    Plane 22: Plane enabled
    Plane 23: Plane enabled
PFE #2
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
    Plane 8: Plane enabled
    Plane 9: Plane enabled
    Plane 10: Plane enabled
    Plane 11: Plane enabled
    Plane 12: Plane enabled
    Plane 13: Plane enabled
    Plane 14: Plane enabled
    Plane 15: Plane enabled
    Plane 16: Plane enabled
    Plane 17: Plane enabled
    Plane 18: Plane disabled
    Plane 19: Plane disabled
    Plane 20: Plane disabled
    Plane 21: Plane enabled
```

```
      Plane 22: Plane enabled
      Plane 23: Plane enabled
  PFE #3
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
      Plane 8: Plane enabled
      Plane 9: Plane enabled
      Plane 10: Plane enabled
      Plane 11: Plane enabled
      Plane 12: Plane enabled
      Plane 13: Plane enabled
      Plane 14: Plane enabled
      Plane 15: Plane enabled
      Plane 16: Plane enabled
      Plane 17: Plane enabled
      Plane 18: Plane disabled
      Plane 19: Plane disabled
      Plane 20: Plane disabled
      Plane 21: Plane enabled
      Plane 22: Plane enabled
      Plane 23: Plane enabled
...

FPC 19
  PFE #0
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Plane enabled
      Plane 5: Plane enabled
      Plane 6: Plane enabled
      Plane 7: Plane enabled
      Plane 8: Plane enabled
      Plane 9: Plane enabled
      Plane 10: Plane enabled
      Plane 11: Plane enabled
      Plane 12: Plane enabled
```

```
    Plane 13: Plane enabled
    Plane 14: Plane enabled
    Plane 15: Plane enabled
    Plane 16: Plane enabled
    Plane 17: Plane enabled
    Plane 18: Unused
    Plane 19: Unused
    Plane 20: Unused
    Plane 21: Plane enabled
    Plane 22: Plane enabled
    Plane 23: Plane enabled
PFE #1
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
    Plane 8: Plane enabled
    Plane 9: Plane enabled
    Plane 10: Plane enabled
    Plane 11: Plane enabled
    Plane 12: Plane enabled
    Plane 13: Plane enabled
    Plane 14: Plane enabled
    Plane 15: Plane enabled
    Plane 16: Plane enabled
    Plane 17: Plane enabled
   Plane 18: Unused
    Plane 19: Unused
    Plane 20: Unused
    Plane 21: Plane enabled
    Plane 22: Plane enabled
    Plane 23: Plane enabled
PFE #2
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
```

```
    Plane 7: Plane enabled
    Plane 8: Plane enabled
    Plane 9: Plane enabled
    Plane 10: Plane enabled
    Plane 11: Plane enabled
    Plane 12: Plane enabled
    Plane 13: Plane enabled
    Plane 14: Plane enabled
    Plane 15: Plane enabled
    Plane 16: Plane enabled
    Plane 17: Plane enabled
    Plane 18: Unused
    Plane 19: Unused
    Plane 20: Unused
    Plane 21: Plane enabled
    Plane 22: Plane enabled
    Plane 23: Plane enabled
PFE #3
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
    Plane 8: Plane enabled
    Plane 9: Plane enabled
    Plane 10: Plane enabled
    Plane 11: Plane enabled
    Plane 12: Plane enabled
  Plane 13: Plane enabled
    Plane 14: Plane enabled
    Plane 15: Plane enabled
    Plane 16: Plane enabled
    Plane 17: Plane enabled
    Plane 18: Unused
    Plane 19: Unused
    Plane 20: Unused
    Plane 21: Plane enabled
    Plane 22: Plane enabled
    Plane 23: Plane enabled
```

show chassis fabric fpcs (T320 Router)

```
user@host> show chassis fabric fpcs
```

```
FPC #3
  PFE #1
    SIB #0
            Links ok
    SIB #1
            Plane enabled
    SIB #2
            Plane enabled
FPC #5
  PFE #1
    SIB #0
            Links ok
    SIB #1
            Plane enabled
    SIB #2
            Plane enabled
FPC #7
  PFE #1
    SIB #0
            Links ok
    SIB #1
            Plane enabled
    SIB #2
            Plane enabled
```

show chassis fabric fpcs (TX Matrix Router)

```
user@host> show chassis fabric fpcs
```

```
lcc0-re0:
--------------------------------------------------------------------------
Fabric management FPC state:
FPC #0
  PFE #1
    SIB #0
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
```

```
            Links ok
FPC #2
  PFE #1
    SIB #0
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok  FPC #3
  PFE #1
    SIB #2
           Plane enabled
    SIB #3
           Link error
           Destination error on PFEs       0    1    2    3    4    5    6    7
             8    9   10   11   12   13   14   15   16   17   18   19   20   21
    SIB #4
           Destination error on PFEs       0    1    2    3    4    5    6    7
             8    9   10   11   12   13   14   15   16   17   18   19   20   21
...
FPC #4
  PFE #0
    SIB #4 Links ok
  PFE #1
    SIB #4 Links ok
FPC #5
  PFE #1
    SIB #4 Links ok
FPC #6
  PFE #1
    SIB #4 Links ok

lcc2-re0:
--------------------------------------------------------------------------
Fabric management FPC state:
FPC #0
  PFE #1
    SIB #4 Links ok
FPC #1
  PFE #1
    SIB #4 Links ok
FPC #2
```

```
  PFE #0
    SIB #4 Links ok
  PFE #1
    SIB #4 Links ok
FPC #4
  PFE #0
    SIB #4 Links ok
  PFE #1
    SIB #4 Links ok
FPC #5
  PFE #1
    SIB #4 Links ok
```

show chassis fabric fpcs lcc (TX Matrix Router with 3D SIBs)

`user@host>` **show chassis fabric fpcs lcc 4**

```
lcc4-re0:
--------------------------------------------------------------------------
Fabric management FPC state:
FPC #2
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
  PFE #1
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
FPC #3
```

```
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
  PFE #1
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
```

show chassis fabric fpcs (T1600 Router)

`user@host>` **show chassis fabric fpcs**

```
Fabric management FPC state:
FPC #0
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Plane enabled
    SIB #2
            Plane enabled
    SIB #3
            Plane enabled
    SIB #4
            Plane enabled
  PFE #1
    SIB #0
            Links ok
    SIB #1
```

```
            Plane enabled
    SIB #2
            Plane enabled
    SIB #3
            Plane enabled
    SIB #4
            Plane enabled
FPC #1
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Plane enabled
    SIB #2
            Plane enabled
    SIB #3
            Plane enabled
    SIB #4
            Plane enabled
  PFE #1
    SIB #0
            Links ok
    SIB #1
            Plane enabled
    SIB #2
            Plane enabled
    SIB #3
            Plane enabled
    SIB #4
            Plane enabled
FPC #2
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Plane enabled
    SIB #2
            Plane enabled
    SIB #3
            Plane enabled
    SIB #4
            Plane enabled
FPC #4
  PFE #0
```

```
    SIB #0
            Links ok
    SIB #1
            Plane enabled
    SIB #2
            Plane enabled
    SIB #3
            Plane enabled
    SIB #4
            Plane enabled
  PFE #1
    SIB #0
            Links ok
    SIB #1
            Plane enabled
    SIB #2
            Plane enabled
    SIB #3
            Plane enabled
    SIB #4
            Plane enabled
FPC #3
  PFE #1
    SIB #2
           Plane enabled
    SIB #3
           Link error
           Destination error on PFEs       0    1    2    3    4    5    6    7
             8    9   10   11   12   13   14   15   16   17   18   19   20   21
    SIB #4
           Destination error on PFEs       0    1    2    3    4    5    6    7
             8    9   10   11   12   13   14   15   16   17   18   19   20   21
```

show chassis fabric fpcs (T4000 Core Router)

```
Fabric management FPC state:
FPC #2
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Plane enabled
    SIB #2
```

```
            Plane enabled
    SIB #3
            Plane enabled
    SIB #4
            Plane enabled
FPC #3
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Plane enabled
    SIB #2
            Plane enabled
    SIB #3
            Plane enabled
    SIB #4
            Plane enabled
FPC #5
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Plane enabled
    SIB #2
            Plane enabled
    SIB #3
            Plane enabled
    SIB #4
            Plane enabled
  PFE #1
    SIB #0
            Links ok
    SIB #1
            Plane enabled
    SIB #2
            Plane enabled
    SIB #3
            Plane enabled
    SIB #4
            Plane enabled
FPC #6
  PFE #0
    SIB #0
            Links ok
```

```
    SIB #1
            Plane enabled
    SIB #2
            Plane enabled
    SIB #3
            Plane enabled
    SIB #4
            Plane enabled
  PFE #1
    SIB #0
            Links ok
    SIB #1
            Plane enabled
    SIB #2
            Plane enabled
    SIB #3
            Plane enabled
    SIB #4
            Plane enabled
```

show chassis fabric fpcs (TX Matrix Plus Router)

`user@host>` **show chassis fabric fpcs**

```
lcc0-re0:
--------------------------------------------------------------------------
Fabric management FPC state:
FPC #0
  PFE #1
    SIB #0
            Unused
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
FPC #2
  PFE #0
    SIB #0
            Unused
    SIB #1
```

```
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
  PFE #1
    SIB #0
            Unused
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
FPC #3
  PFE #1
    SIB #2
           Plane enabled
    SIB #3
           Link error
           Destination error on PFEs       0    1    2    3    4    5    6    7
             8    9   10   11   12   13   14   15   16   17   18   19   20   21
    SIB #4
           Destination error on PFEs       0    1    2    3    4    5    6    7
             8    9   10   11   12   13   14   15   16   17   18   19   20   21
FPC #4
  PFE #0
    SIB #0
            Unused
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
  PFE #1
    SIB #0
            Unused
```

```
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
FPC #6
  PFE #0
    SIB #0
            Unused
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
  PFE #1
    SIB #0
            Unused
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
FPC #7
  PFE #0
    SIB #0
            Unused
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
```

```
lcc1-re0:
--------------------------------------------------------------------------
Fabric management FPC state:
FPC #2
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
  PFE #1
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
FPC #4
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
  PFE #1
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
```

```
            Links ok
    SIB #3
            Destination error on PFEs       1    8    9   29   40   65   72   73
             93  104
    SIB #4
            Links ok
FPC #6
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
  PFE #1
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
FPC #7
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok

lcc2-re0:
--------------------------------------------------------------------------
```

```
Fabric management FPC state:
FPC #0
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
  PFE #1
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
FPC #2
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
  PFE #1
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
```

```
            Links ok
    SIB #4
            Links ok
FPC #4
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
FPC #5
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
  PFE #1
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
FPC #6
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Links ok
```

```
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
  PFE #1
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
FPC #7
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok

lcc3-re0:
--------------------------------------------------------------------------
Fabric management FPC state:
FPC #0
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
```

```
            Links ok
  PFE #1
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
FPC #2
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
  PFE #1
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
FPC #4
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
```

```
            Links ok
    SIB #4
            Links ok
  PFE #1
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
FPC #5
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
  PFE #1
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
FPC #6
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
```

```
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
  PFE #1
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
FPC #7
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
```

show chassis fabric fpcs (EX8200 Switch)

`user@host>` **show chassis fabric fpcs**

```
Fabric management FPC state
FPC 6
  PFE #0
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Links ok
      Plane 5: Links ok
      Plane 6: Links ok
      Plane 7: Links ok
```

```
      Plane 8: Plane enabled
      Plane 9: Plane enabled
      Plane 10: Plane enabled
      Plane 11: Plane enabled
  PFE #1
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Links ok
      Plane 5: Links ok
      Plane 6: Links ok
      Plane 7: Links ok
      Plane 8: Plane enabled
      Plane 9: Plane enabled
      Plane 10: Plane enabled
      Plane 11: Plane enabled
FPC 7
  PFE #0
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Links ok
      Plane 5: Links ok
      Plane 6: Links ok
      Plane 7: Links ok
      Plane 8: Plane enabled
      Plane 9: Plane enabled
      Plane 10: Plane enabled
      Plane 11: Plane enabled
  PFE #1
      Plane 0: Plane enabled
      Plane 1: Plane enabled
      Plane 2: Plane enabled
      Plane 3: Plane enabled
      Plane 4: Links ok
      Plane 5: Links ok
      Plane 6: Links ok
      Plane 7: Links ok
      Plane 8: Plane enabled
      Plane 9: Plane enabled
      Plane 10: Plane enabled
      Plane 11: Plane enabled
```

show chassis fabric fpcs (Junos OS Evolved)

The output of the **show chassis fabric fpcs** command is modified to include ASIC information. In the earlier releases, this command displayed ASICs as FCOREs. With this modification, for every FPC and SIB, information about ASIC and FCORE is presented separately in the output.

`user@host>` **show chassis fabric fpcs slot 0**

```
Fabric management FPC state:
FPC #0
    PFE #0
        SIB0_Asic1_Fcore0 (plane 1)  Plane Enabled, Links ok
   SIB1_Asic0_Fcore0 (plane 2)  Plane Enabled, Links ok
   SIB1_Asic1_Fcore0 (plane 3)  Plane Enabled, Links ok
   SIB2_Asic0_Fcore0 (plane 4)  Plane Enabled, Links ok
   SIB2_Asic1_Fcore0 (plane 5)  Plane Enabled, Links ok
   SIB3_Asic0_Fcore0 (plane 6)  Plane Enabled, Links ok
   SIB3_Asic1_Fcore0 (plane 7)  Plane Enabled, Links ok
   SIB4_Asic0_Fcore0 (plane 8)  Plane Enabled, Links ok
   SIB4_Asic1_Fcore0 (plane 9)  Plane Enabled, Links ok
```

show chassis fabric fpcs (PTX10008 Router)

`user@host>` **show chassis fabric fpcs slot 8**

```
Fabric management FPC state:
FPC #0
    PFE #0
        SIB0_FASIC0 (plane  0)   Plane Enabled, Links OK
        SIB0_FASIC1 (plane  1)   Plane Enabled, Links OK
        SIB1_FASIC0 (plane  2)   Plane Enabled, Links OK
        SIB1_FASIC1 (plane  3)   Plane Enabled, Links OK
    PFE #1
        SIB0_FASIC0 (plane  0)   Plane Enabled, Links OK
        SIB0_FASIC1 (plane  1)   Plane Enabled, Links OK
        SIB1_FASIC0 (plane  2)   Plane Enabled, Links OK
        SIB1_FASIC1 (plane  3)   Plane Enabled, Links OK
    PFE #2
        SIB0_FASIC0 (plane  0)   Plane Enabled, Links OK
        SIB0_FASIC1 (plane  1)   Plane Enabled, Links OK
        SIB1_FASIC0 (plane  2)   Plane Enabled, Links OK
        SIB1_FASIC1 (plane  3)   Plane Enabled, Links OK
FPC #5
    PFE #0
        SIB0_FASIC0 (plane  0)   Plane Enabled, Links OK
```

```
        SIB0_FASIC1 (plane  1)   Plane Enabled, Links OK
        SIB1_FASIC0 (plane  2)   Plane Enabled, Links OK
        SIB1_FASIC1 (plane  3)   Plane Enabled, Links OK
    PFE #1
        SIB0_FASIC0 (plane  0)   Plane Enabled, Links OK
        SIB0_FASIC1 (plane  1)   Plane Enabled, Links OK
        SIB1_FASIC0 (plane  2)   Plane Enabled, Links OK
        SIB1_FASIC1 (plane  3)   Plane Enabled, Links OK
    PFE #2
        SIB0_FASIC0 (plane  0)   Plane Enabled, Links OK
        SIB0_FASIC1 (plane  1)   Plane Enabled, Links OK
        SIB1_FASIC0 (plane  2)   Plane Enabled, Links OK
        SIB1_FASIC1 (plane  3)   Plane Enabled, Links OK
    PFE #3
        SIB0_FASIC0 (plane  0)   Plane Enabled, Links OK
        SIB0_FASIC1 (plane  1)   Plane Enabled, Links OK
        SIB1_FASIC0 (plane  2)   Plane Enabled, Links OK
        SIB1_FASIC1 (plane  3)   Plane Enabled, Links OK
    PFE #4
        SIB0_FASIC0 (plane  0)   Plane Enabled, Links OK
        SIB0_FASIC1 (plane  1)   Plane Enabled, Links OK
        SIB1_FASIC0 (plane  2)   Plane Enabled, Links OK
        SIB1_FASIC1 (plane  3)   Plane Enabled, Links OK
    PFE #5
        SIB0_FASIC0 (plane  0)   Plane Enabled, Links OK
        SIB0_FASIC1 (plane  1)   Plane Enabled, Links OK
        SIB1_FASIC0 (plane  2)   Plane Enabled, Links OK
        SIB1_FASIC1 (plane  3)   Plane Enabled, Links OK
FPC #6
    PFE #0
        SIB0_FASIC0 (plane  0)   Plane Enabled, Links OK
        SIB0_FASIC1 (plane  1)   Plane Enabled, Links OK
        SIB1_FASIC0 (plane  2)   Plane Enabled, Links OK
        SIB1_FASIC1 (plane  3)   Plane Enabled, Links OK
    PFE #1
        SIB0_FASIC0 (plane  0)   Plane Enabled, Links OK
        SIB0_FASIC1 (plane  1)   Plane Enabled, Links OK
        SIB1_FASIC0 (plane  2)   Plane Enabled, Links OK
        SIB1_FASIC1 (plane  3)   Plane Enabled, Links OK
    PFE #2
        SIB0_FASIC0 (plane  0)   Plane Enabled, Links OK
        SIB0_FASIC1 (plane  1)   Plane Enabled, Links OK
        SIB1_FASIC0 (plane  2)   Plane Enabled, Links OK
        SIB1_FASIC1 (plane  3)   Plane Enabled, Links OK
```

```
    PFE #3
        SIB0_FASIC0 (plane  0)   Plane Enabled, Links OK
        SIB0_FASIC1 (plane  1)   Plane Enabled, Links OK
        SIB1_FASIC0 (plane  2)   Plane Enabled, Links OK
        SIB1_FASIC1 (plane  3)   Plane Enabled, Links OK
    PFE #4
        SIB0_FASIC0 (plane  0)   Plane Enabled, Links OK
        SIB0_FASIC1 (plane  1)   Plane Enabled, Links OK
        SIB1_FASIC0 (plane  2)   Plane Enabled, Links OK
        SIB1_FASIC1 (plane  3)   Plane Enabled, Links OK
    PFE #5
        SIB0_FASIC0 (plane  0)   Plane Enabled, Links OK
        SIB0_FASIC1 (plane  1)   Plane Enabled, Links OK
        SIB1_FASIC0 (plane  2)   Plane Enabled, Links OK
        SIB1_FASIC1 (plane  3)   Plane Enabled, Links OK
```

show chassis fabric fpcs (QFX10008 Switch)

user@host> **show chassis fabric fpcs slot 0**

```
Fabric management FPC state:
FPC #0
    PFE #0
        SIB0_PF0 (plane  0)   Plane Enabled, Links OK
        SIB0_PF1 (plane  1)   Plane Enabled, Links OK
        SIB1_PF0 (plane  2)   Plane Enabled, Links OK
        SIB1_PF1 (plane  3)   Plane Enabled, Links OK
        SIB2_PF0 (plane  4)   Plane Enabled, Links OK
        SIB2_PF1 (plane  5)   Plane Enabled, Links OK
        SIB3_PF0 (plane  6)   Plane Enabled, Links OK
        SIB3_PF1 (plane  7)   Plane Enabled, Links OK
        SIB4_PF0 (plane  8)   Plane Enabled, Links OK
        SIB4_PF1 (plane  9)   Plane Enabled, Links OK
        SIB5_PF0 (plane 10)   Plane Enabled, Links OK
        SIB5_PF1 (plane 11)   Plane Enabled, Links OK
    PFE #1
        SIB0_PF0 (plane  0)   Plane Enabled, Links OK
        SIB0_PF1 (plane  1)   Plane Enabled, Links OK
        SIB1_PF0 (plane  2)   Plane Enabled, Links OK
        SIB1_PF1 (plane  3)   Plane Enabled, Links OK
        SIB2_PF0 (plane  4)   Plane Enabled, Links OK
        SIB2_PF1 (plane  5)   Plane Enabled, Links OK
        SIB3_PF0 (plane  6)   Plane Enabled, Links OK
        SIB3_PF1 (plane  7)   Plane Enabled, Links OK
```

```
    SIB4_PF0 (plane  8)   Plane Enabled, Links OK
    SIB4_PF1 (plane  9)   Plane Enabled, Links OK
    SIB5_PF0 (plane 10)   Plane Enabled, Links OK
    SIB5_PF1 (plane 11)   Plane Enabled, Links OK
PFE #2
    SIB0_PF0 (plane  0)   Plane Enabled, Links OK
    SIB0_PF1 (plane  1)   Plane Enabled, Links OK
    SIB1_PF0 (plane  2)   Plane Enabled, Links OK
    SIB1_PF1 (plane  3)   Plane Enabled, Links OK
    SIB2_PF0 (plane  4)   Plane Enabled, Links OK
    SIB2_PF1 (plane  5)   Plane Enabled, Links OK
    SIB3_PF0 (plane  6)   Plane Enabled, Links OK
    SIB3_PF1 (plane  7)   Plane Enabled, Links OK
    SIB4_PF0 (plane  8)   Plane Enabled, Links OK
    SIB4_PF1 (plane  9)   Plane Enabled, Links OK
    SIB5_PF0 (plane 10)   Plane Enabled, Links OK
    SIB5_PF1 (plane 11)   Plane Enabled, Links OK
PFE #3
    SIB0_PF0 (plane  0)   Plane Enabled, Links OK
    SIB0_PF1 (plane  1)   Plane Enabled, Links OK
    SIB1_PF0 (plane  2)   Plane Enabled, Links OK
    SIB1_PF1 (plane  3)   Plane Enabled, Links OK
    SIB2_PF0 (plane  4)   Plane Enabled, Links OK
    SIB2_PF1 (plane  5)   Plane Enabled, Links OK
    SIB3_PF0 (plane  6)   Plane Enabled, Links OK
    SIB3_PF1 (plane  7)   Plane Enabled, Links OK
    SIB4_PF0 (plane  8)   Plane Enabled, Links OK
    SIB4_PF1 (plane  9)   Plane Enabled, Links OK
    SIB5_PF0 (plane 10)   Plane Enabled, Links OK
    SIB5_PF1 (plane 11)   Plane Enabled, Links OK
```

show chassis fabric map

List of Syntax

Syntax on page 1311
Syntax (MX Series Router) on page 1311

Syntax

```
show chassis fabric map
plane <plane-number>
```

Syntax (MX Series Router)

```
show chassis fabric map
<all-members>
<local>
<member member-id>
<plane plane-number>
```

Release Information

Command introduced in Junos OS Release 8.0.
Command introduced in Junos OS Release 9.4 for EX Series switches.

Description

(M120 and MX Series routers and EX8200 switches only) On the M120 router, display the state of the switching fabric map for connections from the Forwarding Engine Boards (FEBs) to the ports on the fabric planes, as interpreted by the fabric plane. On the MX Series router and the EX8200 switch, display the state of the switching fabric map for connections from each Packet Forwarding Engine on the Dense Port Concentrators (DPCs) to the ports on the fabric planes, as interpreted by the fabric plane. For information about the meaning of “fabric plane”, “DPCs”, and “SIBs” on the switches, see the hardware documentation for your switch.

Options

none—Display the switching fabric map state for the M120 or MX Series router or EX8200 switch.

all-members—(MX Series routers only) (Optional) Display the switching fabric map state for all the members of the Virtual Chassis configuration.

local—(MX Series routers only) (Optional) Display the switching fabric map state for the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display the switching fabric map state for the specified member of the Virtual Chassis configuration. Replace the ***member-id*** with a value of 0 or 1.

plane *plane-number*—(Optional) Display the state of the fabric link for the specified plane number.

- For the M120 router, replace ***plane-number*** with a value from 0 through 3.
- For the MX480 and MX240 routers, replace ***plane-number*** with a value from 0 through 7.
- For the MX960 router, replace ***plane-number*** with a value from 0 through 5.
- For the EX8208 switch, replace ***plane-number*** with a value from 0 through 11.
- For the EX8216 switch, replace ***plane-number*** with a value from 0 through 7.

Required Privilege Level
view

List of Sample Output
show chassis fabric map (MX480 Router) on page 1313
show chassis fabric map (M120 Router) on page 1313
show chassis fabric map (MX Series Routers) on page 1314
show chassis fabric map plane 1 (EX8200 Switch) on page 1318

Output Fields
Table 64 on page 1312 lists the output fields for the **show chassis fabric map** command. Output fields are listed in the approximate order in which they appear.

Table 64: show chassis fabric map Output Fields

Field Name	Field Description
in-links	Fabric map for receive side links.
out-links	Fabric map for transmit side links.

state	State of the fabric link:
	• **RESET**—Link between SIB and FPC/DPC is powered down on purpose. This is done in all non-dual PFE based boards.
	• **UP**—Link between SIB and FPC/DPC is up and running.
	• **DOWN**—Link between SIB and FPC/DPC is powered down.
	• **FAULT**—SIB is in alarmed state where the SIB's plane is not operational for the following reasons:
	  ◦ On-board F-chip is not operational.
	  ◦ Fiber optic connector faults.
	  ◦ FPC connector faults.
	  ◦ SIB midplane connector faults.

Sample Output

show chassis fabric map (MX480 Router)

This sample applies to Junos OS Releases 18.2R2, 18.3R2, and 18.4R1 and later, in which the output of the CLI command **show chassis fabric map**, on MX series routers carrying MPCs with SF and XF ASICs, uses the label FPC instead of DPC (for example, 'FPC5PFE0').

```
user@host> show chassis fabric map plane 0
```

```
FPC5PFE0->CB0F0_02_0    Up         CB0F0_02_0->FPC5PFE0    Up
FPC5PFE1->CB0F0_02_1    Up         CB0F0_02_1->FPC5PFE1    Up
FPC5PFE2->CB0F0_02_2    Down       CB0F0_02_2->FPC5PFE2    Down
FPC5PFE3->CB0F0_02_3    Down       CB0F0_02_3->FPC5PFE3    Down
FPC5PFE0->CB0F0_03_0    Up         CB0F0_03_0->FPC5PFE0    Up
FPC5PFE1->CB0F0_03_1    Up         CB0F0_03_1->FPC5PFE1    Up
FPC5PFE2->CB0F0_03_2    Down       CB0F0_03_2->FPC5PFE2    Down
FPC5PFE3->CB0F0_03_3    Down       CB0F0_03_3->FPC5PFE3    Down
FPC3PFE0->CB0F0_04_0    Up         CB0F0_04_0->FPC3PFE0    Up
FPC3PFE1->CB0F0_04_1    Up         CB0F0_04_1->FPC3PFE1    Up
FPC3PFE2->CB0F0_04_2    Down       CB0F0_04_2->FPC3PFE2    Down
FPC3PFE3->CB0F0_04_3    Down       CB0F0_04_3->FPC3PFE3    Down
FPC3PFE0->CB0F0_05_0    Up         CB0F0_05_0->FPC3PFE0    Up
FPC3PFE1->CB0F0_05_1    Up         CB0F0_05_1->FPC3PFE1    Up
FPC3PFE2->CB0F0_05_2    Down       CB0F0_05_2->FPC3PFE2    Down
FPC3PFE3->CB0F0_05_3    Down       CB0F0_05_3->FPC3PFE3    Down
FPC1PFE0->CB0F0_06_0    Down       CB0F0_06_0->FPC1PFE0    Down
FPC1PFE1->CB0F0_06_1    Down       CB0F0_06_1->FPC1PFE1    Down
FPC1PFE2->CB0F0_06_2    Down       CB0F0_06_2->FPC1PFE2    Down
FPC1PFE3->CB0F0_06_3    Down       CB0F0_06_3->FPC1PFE3    Down
[...Output truncated...]
```

show chassis fabric map (M120 Router)

```
user@host> show chassis fabric map
```

```
FEB0->CB0F0_00 up CB0F0_08->FEB7 Down

FEB1->CB0F0_01 Down CB0F0_09->FEB6 Down

FEB6->CB0F0_02 Down CB0F0_10->FEB1 Down

FEB2->CB0F0_03 Down CB0F0_11->FEB0 up
```

```
FEB3->CB0F0_04 Down CB0F0_12->FEB3 Down

FEB4->CB0F0_05 up CB0F0_13->FEB2 Down

FEB7->CB0F0_06 Down CB0F0_14->FEB5 Down

FEB5->CB0F0_07 Down CB0F0_15->FEB4 up:
```

show chassis fabric map (MX Series Routers)

`user@host>` **show chassis fabric map**

```
DPC4PFE0->CB0F0_00_0    up          CB0F0_00_0->DPC4PFE0    up
DPC4PFE1->CB0F0_00_1    up          CB0F0_00_1->DPC4PFE1    up
DPC4PFE2->CB0F0_00_2    up          CB0F0_00_2->DPC4PFE2    up
DPC4PFE3->CB0F0_00_3    up          CB0F0_00_3->DPC4PFE3    up
DPC7PFE0->CB0F0_01_0    Down        CB0F0_01_0->DPC7PFE0    Down
DPC7PFE1->CB0F0_01_1    Down        CB0F0_01_1->DPC7PFE1    Down
DPC7PFE2->CB0F0_01_2    Down        CB0F0_01_2->DPC7PFE2    Down
DPC7PFE3->CB0F0_01_3    Down        CB0F0_01_3->DPC7PFE3    Down
DPC3PFE0->CB0F0_03_0    Down        CB0F0_03_0->DPC3PFE0    Down
DPC3PFE1->CB0F0_03_1    Down        CB0F0_03_1->DPC3PFE1    Down
DPC3PFE2->CB0F0_03_2    Down        CB0F0_03_2->DPC3PFE2    Down
DPC3PFE3->CB0F0_03_3    Down        CB0F0_03_3->DPC3PFE3    Down
DPC8PFE0->CB0F0_05_0    Down        CB0F0_05_0->DPC8PFE0    Down
DPC8PFE1->CB0F0_05_1    Down        CB0F0_05_1->DPC8PFE1    Down
DPC8PFE2->CB0F0_05_2    Down        CB0F0_05_2->DPC8PFE2    Down
DPC8PFE3->CB0F0_05_3    Down        CB0F0_05_3->DPC8PFE3    Down
DPC1PFE0->CB0F0_06_0    Down        CB0F0_06_0->DPC1PFE0    Down
DPC1PFE1->CB0F0_06_1    Down        CB0F0_06_1->DPC1PFE1    Down
DPC1PFE2->CB0F0_06_2    Down        CB0F0_06_2->DPC1PFE2    Down
DPC1PFE3->CB0F0_06_3    Down        CB0F0_06_3->DPC1PFE3    Down
DPC10PFE0->CB0F0_07_0   Down        CB0F0_07_0->DPC10PFE0   Down
DPC10PFE1->CB0F0_07_1   Down        CB0F0_07_1->DPC10PFE1   Down
DPC10PFE2->CB0F0_07_2   Down        CB0F0_07_2->DPC10PFE2   Down
DPC10PFE3->CB0F0_07_3   Down        CB0F0_07_3->DPC10PFE3   Down
DPC11PFE0->CB0F0_08_0   Down        CB0F0_08_0->DPC11PFE0   Down
DPC11PFE1->CB0F0_08_1   Down        CB0F0_08_1->DPC11PFE1   Down
DPC11PFE2->CB0F0_08_2   Down        CB0F0_08_2->DPC11PFE2   Down
DPC11PFE3->CB0F0_08_3   Down        CB0F0_08_3->DPC11PFE3   Down
DPC0PFE0->CB0F0_09_0    Down        CB0F0_09_0->DPC0PFE0    Down
DPC0PFE1->CB0F0_09_1    Down        CB0F0_09_1->DPC0PFE1    Down
DPC0PFE2->CB0F0_09_2    Down        CB0F0_09_2->DPC0PFE2    Down
```

```
DPC0PFE3->CB0F0_09_3    Down      CB0F0_09_3->DPC0PFE3    Down
DPC9PFE0->CB0F0_11_0    Down      CB0F0_11_0->DPC9PFE0    Down
DPC9PFE1->CB0F0_11_1    Down      CB0F0_11_1->DPC9PFE1    Down
DPC9PFE2->CB0F0_11_2    Down      CB0F0_11_2->DPC9PFE2    Down
DPC9PFE3->CB0F0_11_3    Down      CB0F0_11_3->DPC9PFE3    Down
DPC2PFE0->CB0F0_13_0    up        CB0F0_13_0->DPC2PFE0    up
DPC2PFE1->CB0F0_13_1    up        CB0F0_13_1->DPC2PFE1    up
DPC2PFE2->CB0F0_13_2    up        CB0F0_13_2->DPC2PFE2    up
DPC2PFE3->CB0F0_13_3    up        CB0F0_13_3->DPC2PFE3    up
DPC6PFE0->CB0F0_14_0    Down      CB0F0_14_0->DPC6PFE0    Down
DPC6PFE1->CB0F0_14_1    Down      CB0F0_14_1->DPC6PFE1    Down
DPC6PFE2->CB0F0_14_2    Down      CB0F0_14_2->DPC6PFE2    Down
DPC6PFE3->CB0F0_14_3    Down      CB0F0_14_3->DPC6PFE3    Down
DPC5PFE0->CB0F0_15_0    Down      CB0F0_15_0->DPC5PFE0    Down
DPC5PFE1->CB0F0_15_1    Down      CB0F0_15_1->DPC5PFE1    Down
DPC5PFE2->CB0F0_15_2    Down      CB0F0_15_2->DPC5PFE2    Down
DPC5PFE3->CB0F0_15_3    Down      CB0F0_15_3->DPC5PFE3    Down
DPC4PFE0->CB0F1_00_0    up        CB0F1_00_0->DPC4PFE0    up
DPC4PFE1->CB0F1_00_1    up        CB0F1_00_1->DPC4PFE1    up
DPC4PFE2->CB0F1_00_2    up        CB0F1_00_2->DPC4PFE2    up
DPC4PFE3->CB0F1_00_3    up        CB0F1_00_3->DPC4PFE3    up
DPC7PFE0->CB0F1_01_0    Down      CB0F1_01_0->DPC7PFE0    Down
DPC7PFE1->CB0F1_01_1    Down      CB0F1_01_1->DPC7PFE1    Down
DPC7PFE2->CB0F1_01_2    Down      CB0F1_01_2->DPC7PFE2    Down
DPC7PFE3->CB0F1_01_3    Down      CB0F1_01_3->DPC7PFE3    Down
DPC3PFE0->CB0F1_03_0    Down      CB0F1_03_0->DPC3PFE0    Down
DPC3PFE1->CB0F1_03_1    Down      CB0F1_03_1->DPC3PFE1    Down
DPC3PFE2->CB0F1_03_2    Down      CB0F1_03_2->DPC3PFE2    Down
DPC3PFE3->CB0F1_03_3    Down      CB0F1_03_3->DPC3PFE3    Down
DPC8PFE0->CB0F1_05_0    Down      CB0F1_05_0->DPC8PFE0    Down
DPC8PFE1->CB0F1_05_1    Down      CB0F1_05_1->DPC8PFE1    Down
DPC8PFE2->CB0F1_05_2    Down      CB0F1_05_2->DPC8PFE2    Down
DPC8PFE3->CB0F1_05_3    Down      CB0F1_05_3->DPC8PFE3    Down
DPC1PFE0->CB0F1_06_0    Down      CB0F1_06_0->DPC1PFE0    Down
DPC1PFE1->CB0F1_06_1    Down      CB0F1_06_1->DPC1PFE1    Down
DPC1PFE2->CB0F1_06_2    Down      CB0F1_06_2->DPC1PFE2    Down
DPC1PFE3->CB0F1_06_3    Down      CB0F1_06_3->DPC1PFE3    Down
DPC10PFE0->CB0F1_07_0   Down      CB0F1_07_0->DPC10PFE0   Down
DPC10PFE1->CB0F1_07_1   Down      CB0F1_07_1->DPC10PFE1   Down
DPC10PFE2->CB0F1_07_2   Down      CB0F1_07_2->DPC10PFE2   Down
DPC10PFE3->CB0F1_07_3   Down      CB0F1_07_3->DPC10PFE3   Down
DPC11PFE0->CB0F1_08_0   Down      CB0F1_08_0->DPC11PFE0   Down
DPC11PFE1->CB0F1_08_1   Down      CB0F1_08_1->DPC11PFE1   Down
DPC11PFE2->CB0F1_08_2   Down      CB0F1_08_2->DPC11PFE2   Down
```

```
DPC11PFE3->CB0F1_08_3   Down      CB0F1_08_3->DPC11PFE3   Down
DPC0PFE0->CB0F1_09_0    Down      CB0F1_09_0->DPC0PFE0    Down
DPC0PFE1->CB0F1_09_1    Down      CB0F1_09_1->DPC0PFE1    Down
DPC0PFE2->CB0F1_09_2    Down      CB0F1_09_2->DPC0PFE2    Down
DPC0PFE3->CB0F1_09_3    Down      CB0F1_09_3->DPC0PFE3    Down
DPC9PFE0->CB0F1_11_0    Down      CB0F1_11_0->DPC9PFE0    Down
DPC9PFE1->CB0F1_11_1    Down      CB0F1_11_1->DPC9PFE1    Down
DPC9PFE2->CB0F1_11_2    Down      CB0F1_11_2->DPC9PFE2    Down
DPC9PFE3->CB0F1_11_3    Down      CB0F1_11_3->DPC9PFE3    Down
DPC2PFE0->CB0F1_13_0    up        CB0F1_13_0->DPC2PFE0    up
DPC2PFE1->CB0F1_13_1    up        CB0F1_13_1->DPC2PFE1    up
DPC2PFE2->CB0F1_13_2    up        CB0F1_13_2->DPC2PFE2    up
DPC2PFE3->CB0F1_13_3    up        CB0F1_13_3->DPC2PFE3    up
DPC6PFE0->CB0F1_14_0    Down      CB0F1_14_0->DPC6PFE0    Down
DPC6PFE1->CB0F1_14_1    Down      CB0F1_14_1->DPC6PFE1    Down
DPC6PFE2->CB0F1_14_2    Down      CB0F1_14_2->DPC6PFE2    Down
DPC6PFE3->CB0F1_14_3    Down      CB0F1_14_3->DPC6PFE3    Down
DPC5PFE0->CB0F1_15_0    Down      CB0F1_15_0->DPC5PFE0    Down
DPC5PFE1->CB0F1_15_1    Down      CB0F1_15_1->DPC5PFE1    Down
DPC5PFE2->CB0F1_15_2    Down      CB0F1_15_2->DPC5PFE2    Down
DPC5PFE3->CB0F1_15_3    Down      CB0F1_15_3->DPC5PFE3    Down
DPC4PFE0->CB1F0_00_0    up        CB1F0_00_0->DPC4PFE0    up
DPC4PFE1->CB1F0_00_1    up        CB1F0_00_1->DPC4PFE1    up
DPC4PFE2->CB1F0_00_2    up        CB1F0_00_2->DPC4PFE2    up
DPC4PFE3->CB1F0_00_3    up        CB1F0_00_3->DPC4PFE3    up
DPC7PFE0->CB1F0_01_0    Down      CB1F0_01_0->DPC7PFE0    Down
DPC7PFE1->CB1F0_01_1    Down      CB1F0_01_1->DPC7PFE1    Down
DPC7PFE2->CB1F0_01_2    Down      CB1F0_01_2->DPC7PFE2    Down
DPC7PFE3->CB1F0_01_3    Down      CB1F0_01_3->DPC7PFE3    Down
DPC3PFE0->CB1F0_03_0    Down      CB1F0_03_0->DPC3PFE0    Down
DPC3PFE1->CB1F0_03_1    Down      CB1F0_03_1->DPC3PFE1    Down
DPC3PFE2->CB1F0_03_2    Down      CB1F0_03_2->DPC3PFE2    Down
DPC3PFE3->CB1F0_03_3    Down      CB1F0_03_3->DPC3PFE3    Down
DPC8PFE0->CB1F0_05_0    Down      CB1F0_05_0->DPC8PFE0    Down
DPC8PFE1->CB1F0_05_1    Down      CB1F0_05_1->DPC8PFE1    Down
DPC8PFE2->CB1F0_05_2    Down      CB1F0_05_2->DPC8PFE2    Down
DPC8PFE3->CB1F0_05_3    Down      CB1F0_05_3->DPC8PFE3    Down
DPC1PFE0->CB1F0_06_0    Down      CB1F0_06_0->DPC1PFE0    Down
DPC1PFE1->CB1F0_06_1    Down      CB1F0_06_1->DPC1PFE1    Down
DPC1PFE2->CB1F0_06_2    Down      CB1F0_06_2->DPC1PFE2    Down
DPC1PFE3->CB1F0_06_3    Down      CB1F0_06_3->DPC1PFE3    Down
DPC10PFE0->CB1F0_07_0   Down      CB1F0_07_0->DPC10PFE0   Down
DPC10PFE1->CB1F0_07_1   Down      CB1F0_07_1->DPC10PFE1   Down
DPC10PFE2->CB1F0_07_2   Down      CB1F0_07_2->DPC10PFE2   Down
```

```
DPC10PFE3->CB1F0_07_3   Down      CB1F0_07_3->DPC10PFE3   Down
DPC11PFE0->CB1F0_08_0   Down      CB1F0_08_0->DPC11PFE0   Down
DPC11PFE1->CB1F0_08_1   Down      CB1F0_08_1->DPC11PFE1   Down
DPC11PFE2->CB1F0_08_2   Down      CB1F0_08_2->DPC11PFE2   Down
DPC11PFE3->CB1F0_08_3   Down      CB1F0_08_3->DPC11PFE3   Down
DPC0PFE0->CB1F0_09_0    Down      CB1F0_09_0->DPC0PFE0    Down
DPC0PFE1->CB1F0_09_1    Down      CB1F0_09_1->DPC0PFE1    Down
DPC0PFE2->CB1F0_09_2    Down      CB1F0_09_2->DPC0PFE2    Down
DPC0PFE3->CB1F0_09_3    Down      CB1F0_09_3->DPC0PFE3    Down
DPC9PFE0->CB1F0_11_0    Down      CB1F0_11_0->DPC9PFE0    Down
DPC9PFE1->CB1F0_11_1    Down      CB1F0_11_1->DPC9PFE1    Down
DPC9PFE2->CB1F0_11_2    Down      CB1F0_11_2->DPC9PFE2    Down
DPC9PFE3->CB1F0_11_3    Down      CB1F0_11_3->DPC9PFE3    Down
DPC2PFE0->CB1F0_13_0    up        CB1F0_13_0->DPC2PFE0    up
DPC2PFE1->CB1F0_13_1    up        CB1F0_13_1->DPC2PFE1    up
DPC2PFE2->CB1F0_13_2    up        CB1F0_13_2->DPC2PFE2    up
DPC2PFE3->CB1F0_13_3    up        CB1F0_13_3->DPC2PFE3    up
DPC6PFE0->CB1F0_14_0    Down      CB1F0_14_0->DPC6PFE0    Down
DPC6PFE1->CB1F0_14_1    Down      CB1F0_14_1->DPC6PFE1    Down
DPC6PFE2->CB1F0_14_2    Down      CB1F0_14_2->DPC6PFE2    Down
DPC6PFE3->CB1F0_14_3    Down      CB1F0_14_3->DPC6PFE3    Down
DPC5PFE0->CB1F0_15_0    Down      CB1F0_15_0->DPC5PFE0    Down
DPC5PFE1->CB1F0_15_1    Down      CB1F0_15_1->DPC5PFE1    Down
DPC5PFE2->CB1F0_15_2    Down      CB1F0_15_2->DPC5PFE2    Down
DPC5PFE3->CB1F0_15_3    Down      CB1F0_15_3->DPC5PFE3    Down
DPC4PFE0->CB1F1_00_0    up        CB1F1_00_0->DPC4PFE0    up
DPC4PFE1->CB1F1_00_1    up        CB1F1_00_1->DPC4PFE1    up
DPC4PFE2->CB1F1_00_2    up        CB1F1_00_2->DPC4PFE2    up
DPC4PFE3->CB1F1_00_3    up        CB1F1_00_3->DPC4PFE3    up
DPC7PFE0->CB1F1_01_0    Down      CB1F1_01_0->DPC7PFE0    Down
DPC7PFE1->CB1F1_01_1    Down      CB1F1_01_1->DPC7PFE1    Down
DPC7PFE2->CB1F1_01_2    Down      CB1F1_01_2->DPC7PFE2    Down
DPC7PFE3->CB1F1_01_3    Down      CB1F1_01_3->DPC7PFE3    Down
DPC3PFE0->CB1F1_03_0    Down      CB1F1_03_0->DPC3PFE0    Down
DPC3PFE1->CB1F1_03_1    Down      CB1F1_03_1->DPC3PFE1    Down
DPC3PFE2->CB1F1_03_2    Down      CB1F1_03_2->DPC3PFE2    Down
DPC3PFE3->CB1F1_03_3    Down      CB1F1_03_3->DPC3PFE3    Down
DPC8PFE0->CB1F1_05_0    Down      CB1F1_05_0->DPC8PFE0    Down
DPC8PFE1->CB1F1_05_1    Down      CB1F1_05_1->DPC8PFE1    Down
DPC8PFE2->CB1F1_05_2    Down      CB1F1_05_2->DPC8PFE2    Down
DPC8PFE3->CB1F1_05_3    Down      CB1F1_05_3->DPC8PFE3    Down
DPC1PFE0->CB1F1_06_0    Down      CB1F1_06_0->DPC1PFE0    Down
DPC1PFE1->CB1F1_06_1    Down      CB1F1_06_1->DPC1PFE1    Down
DPC1PFE2->CB1F1_06_2    Down      CB1F1_06_2->DPC1PFE2    Down
```

```
DPC1PFE3->CB1F1_06_3    Down       CB1F1_06_3->DPC1PFE3    Down
DPC10PFE0->CB1F1_07_0   Down       CB1F1_07_0->DPC10PFE0   Down
DPC10PFE1->CB1F1_07_1   Down       CB1F1_07_1->DPC10PFE1   Down
DPC10PFE2->CB1F1_07_2   Down       CB1F1_07_2->DPC10PFE2   Down
DPC10PFE3->CB1F1_07_3   Down       CB1F1_07_3->DPC10PFE3   Down
DPC11PFE0->CB1F1_08_0   Down       CB1F1_08_0->DPC11PFE0   Down
DPC11PFE1->CB1F1_08_1   Down       CB1F1_08_1->DPC11PFE1   Down
DPC11PFE2->CB1F1_08_2   Down       CB1F1_08_2->DPC11PFE2   Down
DPC11PFE3->CB1F1_08_3   Down       CB1F1_08_3->DPC11PFE3   Down
DPC0PFE0->CB1F1_09_0    Down       CB1F1_09_0->DPC0PFE0    Down
DPC0PFE1->CB1F1_09_1    Down       CB1F1_09_1->DPC0PFE1    Down
DPC0PFE2->CB1F1_09_2    Down       CB1F1_09_2->DPC0PFE2    Down
DPC0PFE3->CB1F1_09_3    Down       CB1F1_09_3->DPC0PFE3    Down
DPC9PFE0->CB1F1_11_0    Down       CB1F1_11_0->DPC9PFE0    Down
DPC9PFE1->CB1F1_11_1    Down       CB1F1_11_1->DPC9PFE1    Down
DPC9PFE2->CB1F1_11_2    Down       CB1F1_11_2->DPC9PFE2    Down
DPC9PFE3->CB1F1_11_3    Down       CB1F1_11_3->DPC9PFE3    Down
DPC2PFE0->CB1F1_13_0    up         CB1F1_13_0->DPC2PFE0    up
DPC2PFE1->CB1F1_13_1    up         CB1F1_13_1->DPC2PFE1    up
DPC2PFE2->CB1F1_13_2    up         CB1F1_13_2->DPC2PFE2    up
DPC2PFE3->CB1F1_13_3    up         CB1F1_13_3->DPC2PFE3    up
DPC6PFE0->CB1F1_14_0    Down       CB1F1_14_0->DPC6PFE0    Down
DPC6PFE1->CB1F1_14_1    Down       CB1F1_14_1->DPC6PFE1    Down
DPC6PFE2->CB1F1_14_2    Down       CB1F1_14_2->DPC6PFE2    Down
DPC6PFE3->CB1F1_14_3    Down       CB1F1_14_3->DPC6PFE3    Down
DPC5PFE0->CB1F1_15_0    Down       CB1F1_15_0->DPC5PFE0    Down
DPC5PFE1->CB1F1_15_1    Down       CB1F1_15_1->DPC5PFE1    Down
DPC5PFE2->CB1F1_15_2    Down       CB1F1_15_2->DPC5PFE2    Down
DPC5PFE3->CB1F1_15_3    Down       CB1F1_15_3->DPC5PFE3    Down
plane 4 is not up
plane 5 is not up
```

show chassis fabric map plane 1 (EX8200 Switch)

`user@host>` **show chassis fabric map plane 1**

```
user@host> show chassis fabric map plane 1
DPC6PFE0->CB0F0_00_0    Down       CB0F0_00_0->DPC6PFE0    Down
DPC6PFE1->CB0F0_00_1    Down       CB0F0_00_1->DPC6PFE1    Down
DPC6PFE2->CB0F0_00_2    Down       CB0F0_00_2->DPC6PFE2    Down
DPC6PFE3->CB0F0_00_3    Down       CB0F0_00_3->DPC6PFE3    Down
DPC0PFE0->CB0F0_01_0    Down       CB0F0_01_0->DPC0PFE0    Down
DPC0PFE1->CB0F0_01_1    Down       CB0F0_01_1->DPC0PFE1    Down
DPC0PFE2->CB0F0_01_2    Down       CB0F0_01_2->DPC0PFE2    Down
```

```
DPC0PFE3->CB0F0_01_3    Down      CB0F0_01_3->DPC0PFE3    Down
DPC5PFE0->CB0F0_02_0    Down      CB0F0_02_0->DPC5PFE0    Down
DPC5PFE1->CB0F0_02_1    Down      CB0F0_02_1->DPC5PFE1    Down
DPC5PFE2->CB0F0_02_2    Down      CB0F0_02_2->DPC5PFE2    Down
DPC5PFE3->CB0F0_02_3    Down      CB0F0_02_3->DPC5PFE3    Down
DPC3PFE0->CB0F0_03_0    Down      CB0F0_03_0->DPC3PFE0    Down
DPC3PFE1->CB0F0_03_1    Down      CB0F0_03_1->DPC3PFE1    Down
DPC3PFE2->CB0F0_03_2    Down      CB0F0_03_2->DPC3PFE2    Down
DPC3PFE3->CB0F0_03_3    Down      CB0F0_03_3->DPC3PFE3    Down
DPC4PFE0->CB0F0_04_0    Down      CB0F0_04_0->DPC4PFE0    Down
DPC4PFE1->CB0F0_04_1    Down      CB0F0_04_1->DPC4PFE1    Down
DPC4PFE2->CB0F0_04_2    Down      CB0F0_04_2->DPC4PFE2    Down
DPC4PFE3->CB0F0_04_3    Down      CB0F0_04_3->DPC4PFE3    Down
DPC2PFE0->CB0F0_05_0    Down      CB0F0_05_0->DPC2PFE0    Down
DPC2PFE1->CB0F0_05_1    Down      CB0F0_05_1->DPC2PFE1    Down
DPC2PFE2->CB0F0_05_2    Down      CB0F0_05_2->DPC2PFE2    Down
DPC2PFE3->CB0F0_05_3    Down      CB0F0_05_3->DPC2PFE3    Down
DPC7PFE0->CB0F0_06_0    Down      CB0F0_06_0->DPC7PFE0    Down
DPC7PFE1->CB0F0_06_1    Down      CB0F0_06_1->DPC7PFE1    Down
DPC7PFE2->CB0F0_06_2    Down      CB0F0_06_2->DPC7PFE2    Down
DPC7PFE3->CB0F0_06_3    Down      CB0F0_06_3->DPC7PFE3    Down
DPC1PFE0->CB0F0_07_0    Down      CB0F0_07_0->DPC1PFE0    Down
DPC1PFE1->CB0F0_07_1    Down      CB0F0_07_1->DPC1PFE1    Down
DPC1PFE2->CB0F0_07_2    Down      CB0F0_07_2->DPC1PFE2    Down
DPC1PFE3->CB0F0_07_3    Down      CB0F0_07_3->DPC1PFE3    Down
DPC0PFE0->CB0F0_08_0    Down      CB0F0_08_0->DPC0PFE0    Down
DPC0PFE1->CB0F0_08_1    Down      CB0F0_08_1->DPC0PFE1    Down
DPC0PFE2->CB0F0_08_2    Down      CB0F0_08_2->DPC0PFE2    Down
DPC0PFE3->CB0F0_08_3    Down      CB0F0_08_3->DPC0PFE3    Down
DPC7PFE0->CB0F0_09_0    Down      CB0F0_09_0->DPC7PFE0    Down
DPC7PFE1->CB0F0_09_1    Down      CB0F0_09_1->DPC7PFE1    Down
DPC7PFE2->CB0F0_09_2    Down      CB0F0_09_2->DPC7PFE2    Down
DPC7PFE3->CB0F0_09_3    Down      CB0F0_09_3->DPC7PFE3    Down
DPC1PFE0->CB0F0_10_0    Down      CB0F0_10_0->DPC1PFE0    Down
DPC1PFE1->CB0F0_10_1    Down      CB0F0_10_1->DPC1PFE1    Down
DPC1PFE2->CB0F0_10_2    Down      CB0F0_10_2->DPC1PFE2    Down
DPC1PFE3->CB0F0_10_3    Down      CB0F0_10_3->DPC1PFE3    Down
DPC4PFE0->CB0F0_11_0    Down      CB0F0_11_0->DPC4PFE0    Down
DPC4PFE1->CB0F0_11_1    Down      CB0F0_11_1->DPC4PFE1    Down
DPC4PFE2->CB0F0_11_2    Down      CB0F0_11_2->DPC4PFE2    Down
DPC4PFE3->CB0F0_11_3    Down      CB0F0_11_3->DPC4PFE3    Down
DPC2PFE0->CB0F0_12_0    Down      CB0F0_12_0->DPC2PFE0    Down
DPC2PFE1->CB0F0_12_1    Down      CB0F0_12_1->DPC2PFE1    Down
DPC2PFE2->CB0F0_12_2    Down      CB0F0_12_2->DPC2PFE2    Down
```

```
DPC2PFE3->CB0F0_12_3    Down       CB0F0_12_3->DPC2PFE3    Down
DPC5PFE0->CB0F0_13_0    Down       CB0F0_13_0->DPC5PFE0    Down
DPC5PFE1->CB0F0_13_1    Down       CB0F0_13_1->DPC5PFE1    Down
DPC5PFE2->CB0F0_13_2    Down       CB0F0_13_2->DPC5PFE2    Down
DPC5PFE3->CB0F0_13_3    Down       CB0F0_13_3->DPC5PFE3    Down
DPC3PFE0->CB0F0_14_0    Down       CB0F0_14_0->DPC3PFE0    Down
DPC3PFE1->CB0F0_14_1    Down       CB0F0_14_1->DPC3PFE1    Down
DPC3PFE2->CB0F0_14_2    Down       CB0F0_14_2->DPC3PFE2    Down
DPC3PFE3->CB0F0_14_3    Down       CB0F0_14_3->DPC3PFE3    Down
DPC6PFE0->CB0F0_15_0    Down       CB0F0_15_0->DPC6PFE0    Down
DPC6PFE1->CB0F0_15_1    Down       CB0F0_15_1->DPC6PFE1    Down
DPC6PFE2->CB0F0_15_2    Down       CB0F0_15_2->DPC6PFE2    Down
DPC6PFE3->CB0F0_15_3    Down       CB0F0_15_3->DPC6PFE3    Down
```

show chassis fabric optics

Syntax (TX Matrix Plus Router with 3D SIBs)

```
show chassis fabric optics
<sib-slot>
<lcc number | sfc number>
<brief | detail>
```

Release Information

Command introduced in Junos OS Release 13.1 for the TX Matrix Plus router with 3D SIBs.

Description

(TX Matrix Plus routers with 3D SIBs only) Display information about the optical ports on the TX Matrix Plus router (or the switch-fabric chassis (SFC)) and on the T1600 or T4000 line-card chassis (LCCs) connected to it in a routing matrix.

Options

none—Display brief information about the optical ports on the SFC and LCCs in the routing matrix.

sib-number—(Optional) Display information about the optical ports for the specified SIB number.

lcc *number*—(Optional) Display information about the optical ports for the specified T1600 or T4000 LCC that is connected to a TX Matrix Plus router with 3D SIBs. Replace ***number*** with the following values depending on the LCC configuration:

- From **0** through **7** on a T1600 router connected to a TX Matrix Plus router with 3D SIBs.
- **0**, **2**, **4**, or **6** on a T4000 router connected to a TX Matrix Plus router with 3D SIBs.

sfc *number*—(Optional) Display information about the optical ports for the specified SFC number. Replace ***number*** with **0**.

brief—(Optional) Display brief information about the optical ports.

detail—(Optional) Display detailed information about the optical ports.

Required Privilege Level

view

RELATED DOCUMENTATION

Overview of a Routing Matrix with a TX Matrix Plus Router

List of Sample Output

show chassis fabric optics (TX Matrix Plus Router with 3D SIBs) on page 1323
show chassis fabric optics (TX Matrix Plus Router with 3D SIBs) on page 1329
show chassis fabric optics sfc (TX Matrix Plus Router with 3D SIBs) on page 1330
show chassis fabric optics lcc (TX Matrix Plus Router with 3D SIBs) on page 1334

Output Fields

Table 65 on page 1322 lists the output fields for the **show chassis fabric optics** command. Output fields are listed in the approximate order in which they appear.

Table 65: show chassis fabric optics Output Fields

Field Name	Field Description
Port	Indicates port number.
Cable state	Indicates the cable state: • **CABLE_CONNECTED**—Cable is connected properly and is in an operable state. • **CABLE_LOOPBACK**—A loopback cable is connected to the port. • **CABLE_NOT_CONNECTED**—The optical port is not connected with any cable or all the channels are powered off on the remote side. • **CABLE_MIS_CONNECTED**—Cable is connected to an incorrect optical port. • **CABLE_CONNECTED_WITH_ERROR**—Cable is connected to the optical port, but indicates a cable issue. Refer to the optical cable fault alarms to identify the cable issue. • **CABLE_NOT_SUPPORTED**—The connected optics module is not supported. Only optics modules having Juniper Networks part numbers are supported. • **CABLE_MODULE_ABSENT**—No optics module is connected. • **CABLE_MODULE_FAULT**— The connected optics module has an irrecoverable fault. The optics module must be replaced for the device to recover from this error. This state can be caused by a device failure during initialization, a device crossing the high-temperature threshold, or a voltage failure on the optics module during normal operation. • **CABLE_ELEC_LOOPBACK**—An electrical loopback module is connected to the optics port. **NOTE:** Only electrical loopback modules from ELPEUS are supported. • **CABLE_ERROR**—Cable cannot be detected, probably because the SIB is not online yet.
Module Type	Indicates module type.

Sample Output

show chassis fabric optics (TX Matrix Plus Router with 3D SIBs)

```
user@host> show chassis fabric optics
```

```
sfc0-re0:
--------------------------------------------------------------------------
Port      Cable state             Module Type
sfc0-f13sib0:
0         MODULE_ABSENT           No Module
1         MODULE_ABSENT           No Module
2         CABLE_CONNECTED         CXP Module
3         CABLE_CONNECTED         CXP Module
4         MODULE_ABSENT           No Module
5         MODULE_ABSENT           No Module
6         MODULE_ABSENT           No Module
7         MODULE_ABSENT           No Module
8         CABLE_CONNECTED         CXP Module
9         MODULE_ABSENT           No Module
10        MODULE_ABSENT           No Module
11        MODULE_ABSENT           No Module
12        MODULE_ABSENT           No Module
13        MODULE_ABSENT           No Module
14        MODULE_ABSENT           No Module
15        MODULE_ABSENT           No Module
sfc0-f13sib1:
0         MODULE_ABSENT           No Module
1         MODULE_ABSENT           No Module
2         MODULE_ABSENT           No Module
3         MODULE_ABSENT           No Module
4         CABLE_CONNECTED         CXP Module
5         CABLE_CONNECTED         CXP Module
6         MODULE_ABSENT           No Module
7         MODULE_ABSENT           No Module
8         MODULE_ABSENT           No Module
9         CABLE_CONNECTED         CXP Module
10        MODULE_ABSENT           No Module
11        MODULE_ABSENT           No Module
12        MODULE_ABSENT           No Module
13        MODULE_ABSENT           No Module
14        MODULE_ABSENT           No Module
15        CABLE_CONNECTED         CXP Module
sfc0-f13sib2: SIB slot invalid
sfc0-f13sib3:
```

```
0         MODULE_ABSENT           No Module
1         MODULE_ABSENT           No Module
2         CABLE_CONNECTED         CXP Module
3         CABLE_CONNECTED         CXP Module
4         MODULE_ABSENT           No Module
5         MODULE_ABSENT           No Module
6         MODULE_ABSENT           No Module
7         MODULE_ABSENT           No Module
8         CABLE_CONNECTED         CXP Module
9         MODULE_ABSENT           No Module
10        MODULE_ABSENT           No Module
11        MODULE_ABSENT           No Module
12        MODULE_ABSENT           No Module
13        MODULE_ABSENT           No Module
14        MODULE_ABSENT           No Module
15        MODULE_ABSENT           No Module
sfc0-f13sib4:
0         MODULE_ABSENT           No Module
1         MODULE_ABSENT           No Module
2         MODULE_ABSENT           No Module
3         MODULE_ABSENT           No Module
4         CABLE_CONNECTED         CXP Module
5         CABLE_CONNECTED         CXP Module
6         MODULE_ABSENT           No Module
7         MODULE_ABSENT           No Module
8         MODULE_ABSENT           No Module
9         CABLE_CONNECTED         CXP Module
10        MODULE_ABSENT           No Module
11        MODULE_ABSENT           No Module
12        MODULE_ABSENT           No Module
13        MODULE_ABSENT           No Module
14        MODULE_ABSENT           No Module
15        CABLE_CONNECTED         CXP Module
sfc0-f13sib5: SIB slot invalid
sfc0-f13sib6:
0         MODULE_ABSENT           No Module
1         MODULE_ABSENT           No Module
2         CABLE_CONNECTED         CXP Module
3         CABLE_CONNECTED         CXP Module
4         MODULE_ABSENT           No Module
5         MODULE_ABSENT           No Module
6         MODULE_ABSENT           No Module
7         MODULE_ABSENT           No Module
8         CABLE_CONNECTED         CXP Module
```

```
9         MODULE_ABSENT           No Module
10        MODULE_ABSENT           No Module
11        MODULE_ABSENT           No Module
12        MODULE_ABSENT           No Module
13        MODULE_ABSENT           No Module
14        MODULE_ABSENT           No Module
15        MODULE_ABSENT           No Module
sfc0-f13sib7:
0         MODULE_ABSENT           No Module
1         MODULE_ABSENT           No Module
2         MODULE_ABSENT           No Module
3         MODULE_ABSENT           No Module
4         CABLE_CONNECTED         CXP Module
5         CABLE_CONNECTED         CXP Module
6         MODULE_ABSENT           No Module
7         MODULE_ABSENT           No Module
8         MODULE_ABSENT           No Module
9         CABLE_CONNECTED         CXP Module
10        MODULE_ABSENT           No Module
11        MODULE_ABSENT           No Module
12        MODULE_ABSENT           No Module
13        MODULE_ABSENT           No Module
14        MODULE_ABSENT           No Module
15        CABLE_CONNECTED         CXP Module
sfc0-f13sib8:
0         MODULE_ABSENT           No Module
1         MODULE_ABSENT           No Module
2         CABLE_CONNECTED         CXP Module
3         CABLE_CONNECTED         CXP Module
4         MODULE_ABSENT           No Module
5         MODULE_ABSENT           No Module
6         MODULE_ABSENT           No Module
7         MODULE_ABSENT           No Module
8         CABLE_CONNECTED         CXP Module
9         MODULE_ABSENT           No Module
10        MODULE_ABSENT           No Module
11        MODULE_ABSENT           No Module
12        MODULE_ABSENT           No Module
13        MODULE_ABSENT           No Module
14        MODULE_ABSENT           No Module
15        MODULE_ABSENT           No Module
sfc0-f13sib9:
0         MODULE_ABSENT           No Module
1         MODULE_ABSENT           No Module
```

```
2         MODULE_ABSENT           No Module
3         MODULE_ABSENT           No Module
4         CABLE_CONNECTED         CXP Module
5         CABLE_CONNECTED         CXP Module
6         MODULE_ABSENT           No Module
7         MODULE_ABSENT           No Module
8         MODULE_ABSENT           No Module
9         CABLE_CONNECTED         CXP Module
10        MODULE_ABSENT           No Module
11        MODULE_ABSENT           No Module
12        MODULE_ABSENT           No Module
13        MODULE_ABSENT           No Module
14        MODULE_ABSENT           No Module
15        CABLE_CONNECTED         CXP Module
sfc0-f13sib10: SIB slot invalid
sfc0-f13sib11: SIB slot empty
sfc0-f13sib12: SIB slot empty
sfc0-f13sib13: SIB slot invalid
sfc0-f13sib14: SIB slot invalid
sfc0-f13sib15: SIB slot invalid

lcc0-re0:
--------------------------------------------------------------------------------
Port      Cable state             Module Type
lcc0-sib0:
0         MODULE_ABSENT           No Module
1         MODULE_ABSENT           No Module
2         CABLE_CONNECTED         CXP Module
3         CABLE_CONNECTED         CXP Module
4         MODULE_ABSENT           No Module
5         MODULE_ABSENT           No Module
6         MODULE_ABSENT           No Module
7         MODULE_ABSENT           No Module
lcc0-sib1:
0         MODULE_ABSENT           No Module
1         MODULE_ABSENT           No Module
2         CABLE_CONNECTED         CXP Module
3         CABLE_CONNECTED         CXP Module
4         MODULE_ABSENT           No Module
5         MODULE_ABSENT           No Module
6         MODULE_ABSENT           No Module
7         MODULE_ABSENT           No Module
lcc0-sib2:
0         MODULE_ABSENT           No Module
```

```
1         MODULE_ABSENT           No Module
2         CABLE_CONNECTED         CXP Module
3         CABLE_CONNECTED         CXP Module
4         MODULE_ABSENT           No Module
5         MODULE_ABSENT           No Module
6         MODULE_ABSENT           No Module
7         MODULE_ABSENT           No Module
lcc0-sib3:
0         MODULE_ABSENT           No Module
1         MODULE_ABSENT           No Module
2         CABLE_CONNECTED         CXP Module
3         CABLE_CONNECTED         CXP Module
4         MODULE_ABSENT           No Module
5         MODULE_ABSENT           No Module
6         MODULE_ABSENT           No Module
7         MODULE_ABSENT           No Module
lcc0-sib4: SIB slot empty

lcc4-re0:
--------------------------------------------------------------------------------
Port      Cable state             Module Type
lcc4-sib0:
0         MODULE_ABSENT           No Module
1         MODULE_ABSENT           No Module
2         MODULE_ABSENT           No Module
3         MODULE_ABSENT           No Module
4         CABLE_CONNECTED         CXP Module
5         CABLE_CONNECTED         CXP Module
6         MODULE_ABSENT           No Module
7         MODULE_ABSENT           No Module
lcc4-sib1:
0         MODULE_ABSENT           No Module
1         MODULE_ABSENT           No Module
2         MODULE_ABSENT           No Module
3         MODULE_ABSENT           No Module
4         CABLE_CONNECTED         CXP Module
5         CABLE_CONNECTED         CXP Module
6         MODULE_ABSENT           No Module
7         MODULE_ABSENT           No Module
lcc4-sib2:
0         MODULE_ABSENT           No Module
1         MODULE_ABSENT           No Module
2         MODULE_ABSENT           No Module
3         MODULE_ABSENT           No Module
```

```
4         CABLE_CONNECTED         CXP Module
5         CABLE_CONNECTED         CXP Module
6         MODULE_ABSENT           No Module
7         MODULE_ABSENT           No Module
lcc4-sib3:
0         MODULE_ABSENT           No Module
1         MODULE_ABSENT           No Module
2         MODULE_ABSENT           No Module
3         MODULE_ABSENT           No Module
4         CABLE_CONNECTED         CXP Module
5         CABLE_CONNECTED         CXP Module
6         MODULE_ABSENT           No Module
7         MODULE_ABSENT           No Module
lcc4-sib4: SIB slot empty

lcc7-re0:
--------------------------------------------------------------------------------
Port      Cable state             Module Type
lcc7-sib0:
0         CABLE_CONNECTED         CXP Module
1         MODULE_ABSENT           No Module
2         MODULE_ABSENT           No Module
3         MODULE_ABSENT           No Module
4         MODULE_ABSENT           No Module
5         MODULE_ABSENT           No Module
6         CABLE_CONNECTED         CXP Module
7         MODULE_ABSENT           No Module
lcc7-sib1:
0         CABLE_CONNECTED         CXP Module
1         MODULE_ABSENT           No Module
2         MODULE_ABSENT           No Module
3         MODULE_ABSENT           No Module
4         MODULE_ABSENT           No Module
5         MODULE_ABSENT           No Module
6         CABLE_CONNECTED         CXP Module
7         MODULE_ABSENT           No Module
lcc7-sib2:
0         CABLE_CONNECTED         CXP Module
1         MODULE_ABSENT           No Module
2         MODULE_ABSENT           No Module
3         MODULE_ABSENT           No Module
4         MODULE_ABSENT           No Module
5         MODULE_ABSENT           No Module
6         CABLE_CONNECTED         CXP Module
```

```
7         MODULE_ABSENT           No Module
lcc7-sib3:
0         CABLE_CONNECTED         CXP Module
1         MODULE_ABSENT           No Module
2         MODULE_ABSENT           No Module
3         MODULE_ABSENT           No Module
4         MODULE_ABSENT           No Module
5         MODULE_ABSENT           No Module
6         CABLE_CONNECTED         CXP Module
7         MODULE_ABSENT           No Module
lcc7-sib4: SIB slot empty
```

show chassis fabric optics (TX Matrix Plus Router with 3D SIBs)

`user@host>` **show chassis fabric optics *0***

```
sfc0-re0:
--------------------------------------------------------------------------
Port      Cable state             Module Type
sfc0-f13sib0:
0         MODULE_ABSENT           No Module
1         MODULE_ABSENT           No Module
2         CABLE_CONNECTED         CXP Module
3         CABLE_CONNECTED         CXP Module
4         MODULE_ABSENT           No Module
5         MODULE_ABSENT           No Module
6         MODULE_ABSENT           No Module
7         MODULE_ABSENT           No Module
8         CABLE_CONNECTED         CXP Module
9         MODULE_ABSENT           No Module
10        MODULE_ABSENT           No Module
11        MODULE_ABSENT           No Module
12        MODULE_ABSENT           No Module
13        MODULE_ABSENT           No Module
14        MODULE_ABSENT           No Module
15        MODULE_ABSENT           No Module

lcc0-re0:
--------------------------------------------------------------------------
Port      Cable state             Module Type
lcc0-sib0:
0         MODULE_ABSENT           No Module
1         MODULE_ABSENT           No Module
2         CABLE_CONNECTED         CXP Module
```

```
3         CABLE_CONNECTED         CXP Module
4         MODULE_ABSENT           No Module
5         MODULE_ABSENT           No Module
6         MODULE_ABSENT           No Module
7         MODULE_ABSENT           No Module

lcc4-re0:
--------------------------------------------------------------------------
Port      Cable state             Module Type
lcc4-sib0:
0         MODULE_ABSENT           No Module
1         MODULE_ABSENT           No Module
2         MODULE_ABSENT           No Module
3         MODULE_ABSENT           No Module
4         CABLE_CONNECTED         CXP Module
5         CABLE_CONNECTED         CXP Module
6         MODULE_ABSENT           No Module
7         MODULE_ABSENT           No Module

lcc7-re0:
--------------------------------------------------------------------------
Port      Cable state             Module Type
lcc7-sib0:
0         CABLE_CONNECTED         CXP Module
1         MODULE_ABSENT           No Module
2         MODULE_ABSENT           No Module
3         MODULE_ABSENT           No Module
4         MODULE_ABSENT           No Module
5         MODULE_ABSENT           No Module
6         CABLE_CONNECTED         CXP Module
7         MODULE_ABSENT           No Module
```

show chassis fabric optics sfc (TX Matrix Plus Router with 3D SIBs)

`user@host>` **show chassis fabric optics sfc 0**

```
sfc0-re0:
--------------------------------------------------------------------------
Port      Cable state             Module Type
sfc0-f13sib0:
0         MODULE_ABSENT           No Module
1         MODULE_ABSENT           No Module
2         CABLE_CONNECTED         CXP Module
3         CABLE_CONNECTED         CXP Module
```

```
4         MODULE_ABSENT           No Module
5         MODULE_ABSENT           No Module
6         MODULE_ABSENT           No Module
7         MODULE_ABSENT           No Module
8         CABLE_CONNECTED         CXP Module
9         MODULE_ABSENT           No Module
10        MODULE_ABSENT           No Module
11        MODULE_ABSENT           No Module
12        MODULE_ABSENT           No Module
13        MODULE_ABSENT           No Module
14        MODULE_ABSENT           No Module
15        MODULE_ABSENT           No Module
sfc0-f13sib1:
0         MODULE_ABSENT           No Module
1         MODULE_ABSENT           No Module
2         MODULE_ABSENT           No Module
3         MODULE_ABSENT           No Module
4         CABLE_CONNECTED         CXP Module
5         CABLE_CONNECTED         CXP Module
6         MODULE_ABSENT           No Module
7         MODULE_ABSENT           No Module
8         MODULE_ABSENT           No Module
9         CABLE_CONNECTED         CXP Module
10        MODULE_ABSENT           No Module
11        MODULE_ABSENT           No Module
12        MODULE_ABSENT           No Module
13        MODULE_ABSENT           No Module
14        MODULE_ABSENT           No Module
15        CABLE_CONNECTED         CXP Module
sfc0-f13sib2: SIB slot invalid
sfc0-f13sib3:
0         MODULE_ABSENT           No Module
1         MODULE_ABSENT           No Module
2         CABLE_CONNECTED         CXP Module
3         CABLE_CONNECTED         CXP Module
4         MODULE_ABSENT           No Module
5         MODULE_ABSENT           No Module
6         MODULE_ABSENT           No Module
7         MODULE_ABSENT           No Module
8         CABLE_CONNECTED         CXP Module
9         MODULE_ABSENT           No Module
10        MODULE_ABSENT           No Module
11        MODULE_ABSENT           No Module
12        MODULE_ABSENT           No Module
```

```
13        MODULE_ABSENT           No Module
14        MODULE_ABSENT           No Module
15        MODULE_ABSENT           No Module
sfc0-f13sib4:
sfc0-f13sib4:
0         MODULE_ABSENT           No Module
1         MODULE_ABSENT           No Module
2         MODULE_ABSENT           No Module
3         MODULE_ABSENT           No Module
4         CABLE_CONNECTED         CXP Module
5         CABLE_CONNECTED         CXP Module
6         MODULE_ABSENT           No Module
7         MODULE_ABSENT           No Module
8         MODULE_ABSENT           No Module
9         CABLE_CONNECTED         CXP Module
10        MODULE_ABSENT           No Module
11        MODULE_ABSENT           No Module
12        MODULE_ABSENT           No Module
13        MODULE_ABSENT           No Module
14        MODULE_ABSENT           No Module
15        CABLE_CONNECTED         CXP Module
sfc0-f13sib5: SIB slot invalid
sfc0-f13sib6:
0         MODULE_ABSENT           No Module
1         MODULE_ABSENT           No Module
2         CABLE_CONNECTED         CXP Module
3         CABLE_CONNECTED         CXP Module
4         MODULE_ABSENT           No Module
5         MODULE_ABSENT           No Module
6         MODULE_ABSENT           No Module
7         MODULE_ABSENT           No Module
8         CABLE_CONNECTED         CXP Module
9         MODULE_ABSENT           No Module
10        MODULE_ABSENT           No Module
11        MODULE_ABSENT           No Module
12        MODULE_ABSENT           No Module
13        MODULE_ABSENT           No Module
14        MODULE_ABSENT           No Module
15        MODULE_ABSENT           No Module
sfc0-f13sib7:
0         MODULE_ABSENT           No Module
1         MODULE_ABSENT           No Module
2         MODULE_ABSENT           No Module
3         MODULE_ABSENT           No Module
```

```
4         CABLE_CONNECTED         CXP Module
5         CABLE_CONNECTED         CXP Module
6         MODULE_ABSENT           No Module
7         MODULE_ABSENT           No Module
8         MODULE_ABSENT           No Module
9         CABLE_CONNECTED         CXP Module
10        MODULE_ABSENT           No Module
11        MODULE_ABSENT           No Module
12        MODULE_ABSENT           No Module
13        MODULE_ABSENT           No Module
14        MODULE_ABSENT           No Module
15        CABLE_CONNECTED         CXP Module
sfc0-f13sib8:
0         MODULE_ABSENT           No Module
1         MODULE_ABSENT           No Module
2         CABLE_CONNECTED         CXP Module
3         CABLE_CONNECTED         CXP Module
4         MODULE_ABSENT           No Module
5         MODULE_ABSENT           No Module
6         MODULE_ABSENT           No Module
7         MODULE_ABSENT           No Module
8         CABLE_CONNECTED         CXP Module
9         MODULE_ABSENT           No Module
10        MODULE_ABSENT           No Module
11        MODULE_ABSENT           No Module
12        MODULE_ABSENT           No Module
13        MODULE_ABSENT           No Module
14        MODULE_ABSENT           No Module
15        MODULE_ABSENT           No Module
sfc0-f13sib9:
0         MODULE_ABSENT           No Module
1         MODULE_ABSENT           No Module
2         MODULE_ABSENT           No Module
3         MODULE_ABSENT           No Module
4         CABLE_CONNECTED         CXP Module
5         CABLE_CONNECTED         CXP Module
6         MODULE_ABSENT           No Module
7         MODULE_ABSENT           No Module
8         MODULE_ABSENT           No Module
9         CABLE_CONNECTED         CXP Module
10        MODULE_ABSENT           No Module
11        MODULE_ABSENT           No Module
12        MODULE_ABSENT           No Module
13        MODULE_ABSENT           No Module
```

```
14        MODULE_ABSENT           No Module
15        CABLE_CONNECTED         CXP Module
sfc0-f13sib10: SIB slot invalid
sfc0-f13sib11: SIB slot empty
sfc0-f13sib12: SIB slot empty
sfc0-f13sib13: SIB slot invalid
sfc0-f13sib14: SIB slot invalid
sfc0-f13sib15: SIB slot invalid
```

show chassis fabric optics lcc (TX Matrix Plus Router with 3D SIBs)

user@host> **show chassis fabric topology lcc *7***

```
lcc7-re0:
--------------------------------------------------------------------------
Port      Cable state             Module Type
lcc7-sib0:
0         CABLE_CONNECTED         CXP Module
1         MODULE_ABSENT           No Module
2         MODULE_ABSENT           No Module
3         MODULE_ABSENT           No Module
4         MODULE_ABSENT           No Module
5         MODULE_ABSENT           No Module
6         CABLE_CONNECTED         CXP Module
7         MODULE_ABSENT           No Module
lcc7-sib1:
0         CABLE_CONNECTED         CXP Module
1         MODULE_ABSENT           No Module
2         MODULE_ABSENT           No Module
3         MODULE_ABSENT           No Module
4         MODULE_ABSENT           No Module
5         MODULE_ABSENT           No Module
6         CABLE_CONNECTED         CXP Module
7         MODULE_ABSENT           No Module
lcc7-sib2:
0         CABLE_CONNECTED         CXP Module
1         MODULE_ABSENT           No Module
2         MODULE_ABSENT           No Module
3         MODULE_ABSENT           No Module
4         MODULE_ABSENT           No Module
5         MODULE_ABSENT           No Module
6         CABLE_CONNECTED         CXP Module
7         MODULE_ABSENT           No Module
lcc7-sib3:
```

```
0         CABLE_CONNECTED         CXP Module
1         MODULE_ABSENT           No Module
2         MODULE_ABSENT           No Module
3         MODULE_ABSENT           No Module
4         MODULE_ABSENT           No Module
5         MODULE_ABSENT           No Module
6         CABLE_CONNECTED         CXP Module
7         MODULE_ABSENT           No Module
lcc7-sib4: SIB slot empty
```

show chassis fabric plane

List of Syntax

Syntax on page 1336
Syntax (TX Matrix Plus Router) on page 1336
Syntax (MX Series Routers) on page 1336

Syntax

```
show chassis fabric plane
```

Syntax (TX Matrix Plus Router)

```
show chassis fabric plane
<detail | extensive | terse>
<lcc number | sfc number>
```

Syntax (MX Series Routers)

```
show chassis fabric plane
<extended>
<detail | extensive | terse>
<all-members>
<local>
<member member-id>
```

Release Information

Command introduced in Junos OS Release 8.0.
Command introduced in Junos OS Release 9.4 for EX Series switches.
detail, extensive, lcc, sfc, and terse options introduced for the TX Matrix Plus router in Junos OS Release 9.6.
Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 Universal Routing Platforms.
extended option introduced in Junos OS Release 16.1 for MX2020 and MX2010 Routers.
Command introduced in Junos OS Release 17.2 for MX2008 Universal Routing Platforms.
Command introduced in Junos OS Release 17.3 for MX10003 Universal Routing Platforms.
Command introduced in Junos OS Release 18.2 for MX10008 Universal Routing Platforms.
Command introduced in Junos OS Release 18.2 for EX9253 Switches.

Description

(TX Matrix Plus router, T4000, T1600, M120, and MX Series routers and EX8200 switches only) On the M120 router, display the state of all fabric plane connections to the Forwarding Engine Boards (FEBs). On MX Series routers, display the state of all fabric plane connections to the Dense Port Concentrators (DPCs)

and Packet Forwarding Engines (PFEs) on the Flexible PIC Concentrators (FPCs). On the TX Matrix Plus router, and on T1600 or T4000 routers in a routing matrix, display the state of the fabric management plane and the logical planes on the switch-fabric chassis (SFC) and line-card chassis (LCC). On EX8200 switches, display the state of all fabric planes. This command can be used on the master Routing Engine only.

Options

none—(MX2010, MX2020, and MX2008 Routers only) (Optional) Display the state of the fabric management plane.

extended—(MX2020, MX2010, and MX2008 Routers only) (Optional) Display the state of the fabric management planes (all 24 fabric planes).

detail—(TX Matrix Plus routers, T1600 or T4000 routers in a routing matrix, and MX Series routers only) (Optional) Display detailed output for the fabric management plane. Show Switch Interface Board (SIB) states for the TXP-F13 SIB and the TXP-F2S SIB.

extensive—(TX Matrix Plus routers, T1600 or T4000 routers in a routing matrix, and MX Series routers only) (Optional) Display extensive output for the fabric management plane.

terse—(TX Matrix Plus routers and MX Series routers only) (Optional) Display terse output for the fabric management plane.

all-members—(MX Series routers only) (Optional) Display the state of all fabric plane connections on all members of the Virtual Chassis configuration.

lcc *number*—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

local—(MX Series routers only) (Optional) Display the state of all fabric plane connections on the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display the state of all fabric plane connections on the specified member of the Virtual Chassis configuration. Replace *member-id* with a value of 0 or 1.

sfc *number*—(TX Matrix Plus router only) (Optional) Show information about the TX Matrix Plus router (SFC). Replace *number* with 0.

Required Privilege Level
view

RELATED DOCUMENTATION

request chassis fabric plane | **617**

show chassis fabric plane-location | **1374**

Routing Matrix with a TX Matrix Plus Router Solutions Page

List of Sample Output

show chassis fabric plane (M120 Router) on page 1347
show chassis fabric plane (MX10008 Router) on page 1348
show chassis fabric plane (MX240 with AS MLC Modular Carrier Card) on page 1350
show chassis fabric plane (TX Matrix Plus Router) on page 1351
show chassis fabric plane (TX Matrix Plus Router with 3D SIBs) on page 1352
show chassis fabric plane detail (TX Matrix Plus Router) on page 1353
show chassis fabric plane extensive (TX Matrix Plus Router) on page 1355
show chassis fabric plane extensive (TX Matrix Plus Router with 3D SIBs) on page 1357
show chassis fabric plane terse (TX Matrix Plus Router) on page 1360
show chassis fabric plane terse (TX Matrix Plus Router with 3D SIBs) on page 1361
show chassis fabric plane lcc (TX Matrix Plus Router) on page 1362
show chassis fabric plane lcc (TX Matrix Plus Router with 3D SIBs) on page 1362
show chassis fabric plane sfc (TX Matrix Plus Router) on page 1363
show chassis fabric plane sfc (TX Matrix Plus Router with 3D SIBs) on page 1363
show chassis fabric plane (T1600 Router) on page 1363
show chassis fabric plane extensive (T1600 Router) on page 1364
show chassis fabric plane detail (T1600 Router) on page 1367
show chassis fabric plane (EX8200 Switch) on page 1368
show chassis fabric plane (EX9253 Switch) on page 1368

Output Fields

Table 66 on page 1338 lists the output fields for the **show chassis fabric plane** command. Output fields are listed in the approximate order in which they appear.

Table 66: show chassis fabric plane Output Fields

Field Name	Field Description	Level of output
Plane	(TX Matrix Plus, MX Series routers, M120 routers, and EX8200 switches only) Number of the plane.	none

Table 66: show chassis fabric plane Output Fields *(continued)*

Field Name	Field Description	Level of output
Plane state	(MX Series and M120 routers and EX8200 switches only) State of each plane: • ACTIVE—SIB is operational and running. **NOTE:** On the Enhanced MX SCB with MPCs, a maximum of 4 planes are operational and running. On all the other SCBs with MPCs, all the planes are operational and running. • FAULTY— SIB is in alarmed state where the SIB's plane is not operational for the following reasons: ◦ On-board fabric ASIC is not operational. ◦ Fiber optic connector faults. ◦ FPC connector faults. ◦ SIB midplane connector faults. (MX2010, MX2020, MX10003, and MX2008 Routers only) State of each plane: • ACTIVE—SFB is operational and running. • OFFLINE— SFB is in offline.	none
FEB	(M120 routers only) FEB number and state of links to each FEB: • Link error—Link between SIB and FPC is not operational. • Links ok—Link between SIB and FPC is active. • Unused—No FPC is present.	none
FPC	(MX Series routers only) Slot number of each Dense Port Concentrator (DPC) or Flexible PIC Concentrator (FPC). An FPC occupies two DPC slots on an MX Series router. The interface corresponds to the lowest numbered DPC slot for which the FPC is installed.	none

Table 66: show chassis fabric plane Output Fields *(continued)*

Field Name	Field Description	Level of output
PFE	(MX Series and M120 routers only) Slot number of each Packet Forwarding Engine and the state of the links to the DCP: **Links ok**, **Link error**, or **Unused**. Each DPC includes four Packet Forwarding Engines. • **Links ok**: Link between SIB and FPC is active. • **Link error**: Link between SIB and FPC is not operational. • **Unused**: No FPC is present. (On MX240 and MX480 routers with AS MLC modular carrier card and MPC4E only) Indicates that the link between the fabric plane and the hardware link on the modular carrier card or MPC4E is not operational. (MX2010, MX2020, and MX2008 routers only) Slot number of each Packet Forwarding Engine and the state of the links to the DPC: **Links ok**, **Link error**, or **Unused**. Each DPC includes four Packet Forwarding Engines. • **Links ok**: Link between SFB and FPC is active. • **Link error**: Link between SFB and FPC is not operational. • **Unused**: No FPC is present.	none

Table 66: show chassis fabric plane Output Fields *(continued)*

Field Name	Field Description	Level of output

State	(TX Matrix Plus, and T1600 or T4000 routers in a routing matrix only)—State of the fabric plane:
	• **Online**: Fabric plane is operational and running and links on the SIB are operational.
	• **Offline**: Fabric plane state is **Offline** because the plane does not have four or more F2S and one F13 online.
	• Empty: Fabric plane state is **Empty** if all SIBs in the plane are absent.
	• **Spare**: Fabric plane is redundant and can be operational if the operational fabric plane encounters an error.
	• **Check**: Fabric plane is in alarmed state due to the following reason and the cause of the error must be resolved:
	  ◦ One or more SIBs (belonging to the fabric plane) in the **Online** or **Spare** states has transitioned to the **Check** state. **Check** state of the SIB can be caused by link errors or destination errors.
	• **Fault**: Fabric plane is in alarmed state if one or more SIBs belonging to the plane are in the **Fault** state. A SIB can be in the **Fault** state because of the following reasons:
	  ◦ On-board fabric ASIC is not operational.
	  ◦ Fiber optic connector faults.
	  ◦ FPC connector faults.
	  ◦ SIB midplane connector faults.
	  ◦ Link errors have exceeded the threshold.
		none

Link Errors	(TX Matrix Plus routers with 3D SIBs only) indicate the number of links which are marked faulty because the errors on them have crossed threshold.	none
Cable Errors	(TX Matrix Plus routers with 3D SIBs only) Indicate the number of mandatory cables that are not connected, or in up state for that plane	none
Destination Errors	(TX Matrix Plus routers with 3D SIBs only) Indicates the number of destinations that are not reachable on this plane.	none
Uptime	(TX Matrix Plus, and T1600 or T4000 routers in a routing matrix only)—Time the fabric plane has been up and running.	none

Table 66: show chassis fabric plane Output Fields *(continued)*

Field Name	Field Description	Level of output
Fabric Management Plane State Output Fields for the show chassis fabric plane extensive Command on a TX Matrix Plus Router		

PLANE *number*	State of the fabric plane:
	• **Online**: Fabric plane is operational and running and links on the SIB are operational.
	• **Offline**: Fabric plane state is **Offline** because the plane does not have 4 or more F2S and 1 F13 online.
	• Empty: Fabric plane state is **Empty** if all SIBs in the plane are absent.
	• **Spare**: Fabric plane is redundant and can be operational if the operational fabric plane encounters an error.
	• **Check**: Fabric plane is in alarmed state due to the following reasons and the cause of the error must be resolved:
	  ◦ One or more SIBs (belonging to the fabric plane) in the **Online** or **Spare** states has transitioned to the **Check** state. **Check** state of the SIB can be caused because of link errors or destination errors.
	• **Fault**: Fabric plane is in alarmed state if one or more SIBs belonging to the plane are in the **Fault** state. A SIB can be in the **Fault** state because of the following reasons:
	  ◦ On-board fabric ASIC is not operational.
	  ◦ Fiber optic connector faults.
	  ◦ FPC connector faults.
	  ◦ SIB midplane connector faults.
	  ◦ Link errors have exceeded the threshold.
		extensive

Table 66: show chassis fabric plane Output Fields *(continued)*

Field Name	Field Description	Level of output

SIB F13/F2S *slot-number*	State of the TXP-F13 SIB or TXP-F2S SIB:
	• **Activating**—Transitional state when the SIB is transitioning to the **Online** or **Spare** state.
	• **Deactivating**—Transitional state when the SIB is going offline.
	• **Online**—SIB is operational and running.
	• **Offline**—SIB is powered down.
	• **Spare**—SIB is redundant and will move to active state if one of the working SIBs fails to pass traffic.
	• **Empty**—No SIB is present.
	• **Fault**— SIB is in alarmed state because of the following reasons and the cause of the error must be resolved:
	  ◦ On-board fabric ASIC is not operational.
	  ◦ Fiber optic connector faults.
	  ◦ FPC connector faults.
	  ◦ SIB midplane connector faults.
	  ◦ Link errors have exceeded the threshold
	• **Check**—SIB is in alarmed state where the SIB is partially operational because of link or destination errors. Only a SIB that is **Online** or **Spare** can transition to the **Check** state.
	NOTE: If a SIB is not inserted properly, the SIB cannot transition to the **Online** or **Spare** state, and therefore cannot transition to the **Check** state.
		extensive

SIB F13 *slot-number* *Odd/Even*	State of the TXP-F13 SIB even and odd port connection optical links from the TX Matrix Plus router (SFC) to the router (LCC) in the routing matrix . The left four ports on the SFC are labeled **Even** and provide connections to one even-numbered LCC—LCC0 or LCC2. The right four ports on the SFC are labeled **Odd** and provide connections to one odd-numbered LCC—LCC1 or LCC3.	**extensive**

Table 66: show chassis fabric plane Output Fields *(continued)*

Field Name	Field Description	Level of output
LCC *number*, SIB *slot-number*	State of the SIB on the LCC that is connected to the **Even** or **Odd** port on the TXP-F13 SIB faceplate: • **Links ok**—Links between the TXP-F13 SIB on the SFC and the LCC are active. • **Links error**—One or more links between the TXP-F13 SIB on the SFC and the LCC, have experienced an error, but the affected links remain operational. • **Unused**—No SIB is present.	**extensive**
SG *number* Port *number*	State of the SG chip ports on the LCC: • **Links ok**—Link is active. • **Link error**—Link is operational with errors. • **Link error crc saturated**—CRC has exceeded the rate threshold and reached saturation without optical issues—that is, a cable has not been cut, removed, or otherwise experienced an error. • **Link error crc saturated with optical errors**—CRC has exceeded the rate threshold and reached saturation with optical issues—that is, a cable has been cut, removed, or otherwise experienced an error. • **Unused**—Port is not in use.	**extensive**
SIB F2S *slot-number*	State of the intra-chassis links between the TXP-F2S and TXP-F13 SIBs.	**extensive**
Fabric Management SIB State Output Fields for the show chassis fabric plane extensive Command on a TX Matrix Plus Router		

Table 66: show chassis fabric plane Output Fields *(continued)*

Field Name	Field Description	Level of output
SIB *slot-number*		**extensive**

Table 66: show chassis fabric plane Output Fields *(continued)*

Field Name	Field Description	Level of output
	State of the SIBs on the T1600/T4000 router (LCC) in the routing matrix: • **Activating**—Transitional state when the SIB is coming online. • **Deactivating**—Transitional state when the SIB is going offline. • **Connected**—SIBS on an LCC are connected and trained, but are either not online or are spare, because the plane on the the TX Matrix Plus router (SFC) is still offline. The LCC SIB transitions to the **Connected** state when the F13 SIB to which it connects is online but the SFC plane (to which the LCC SIB connects) is offline for some reason; for instance, when there are insufficient number of F2 SIBs in the plane. • **Disconnected**—If an F13 SIB on the TX Matrix Plus router (SFC) goes offline, then the SIBs on the LCCs connected to the F13 SIB get disconnected. On the TX Matrix Plus router with 3D SIBs, the LCC SIB is also disconnected if the F13 SIB is online, but none of the cables are connected or trained. The **Disconnected** state is valid only for SIBs on an LCC. An LCC SIB transitions to the **Disconnected** state when the F13 SIB to which it connects goes **Offline**, irrespective of the state of the SFC plane. **SFC Error**—If an F13 SIB on the TX Matrix Plus router (SFC) transitions to the **Fault** state (because of link errors, for instance), and if an LCC SIB connected to the F13 SIB comes online, the LCC SIB transitions to the **SFC Error** state. This state indicates that the F13 SIB to which the LCC SIB is connected has errors. **NOTE:** The **Connected**, **Disconnected**, and **SFC Error** states are applicable only to the SIBs on an LCC. • **Online**—SIB is operational and running. • **Offline**—SIB is powered down. • **Spare**—SIB is redundant and will move to active state if one of the working SIBs fails to pass traffic. • **Empty**—No SIB is present. • **Fault**— SIB is in alarmed state where the SIB's plane is not operational for the following reasons:	

Table 66: show chassis fabric plane Output Fields *(continued)*

Field Name	Field Description	Level of output
	• On-board fabric ASIC is not operational. • Fiber optic connector faults. • FPC connector faults. • SIB midplane connector faults. • Link errors have exceeded the threshold • **Check**—SIB is in alarmed state where the SIB is partially operational because of link or destination errors. Only a SIB that is **Online** or **Spare** can transition to the **Check** state. **NOTE:** If a SIB is not inserted properly, the SIB cannot transition to the **Online** or **Spare** state, and therefore cannot transition to the **Check** state.	
LCC SIB Link State	State of the LCC SIB link: • **Links ok**—Link is active. • **Links error**—A link error has occurred, but the link remains operational. • **Unused**—SIB is not in use.	**extensive**
SG *number* Port *number*	State of the SG chip ports on the LCC: • **Links ok**—Link is active. • **Link error**—Link is operational with errors. • **Link error crc saturated**—CRC has exceeded the rate threshold and reached saturation without optical issues—that is, a cable has not been cut, removed, or otherwise experienced an error. • **Link error crc saturated with optical errors**—CRC has exceeded the rate threshold and reached saturation with optical issues—that is, a cable has been cut, removed, or otherwise experienced an error. • **Unused**—Port is not in use.	**extensive**

Sample Output

show chassis fabric plane (M120 Router)

```
user@host> show chassis fabric plane
```

```
Fabric management PLANE state
Plane 0
Plane state: ACTIVE
FEB 0: Links ok
FEB 1: Links ok
FEB 2: Links ok
FEB 3: Links ok
FEB 4: Links ok
FEB 5: Links ok
Plane 1
Plane state: ACTIVE
FEB 0: Links ok
FEB 1: Links ok
FEB 2: Links ok
FEB 3: Links ok
FEB 4: Links ok
FEB 5: Links ok
Plane 2
Plane state: ACTIVE
FEB 0: Links ok
FEB 1: Links ok
FEB 2: Links ok
FEB 3: Links ok
FEB 4: Links ok
FEB 5: Links ok
Plane 3
Plane state: ACTIVE
FEB 0: Links ok
FEB 1: Links ok
FEB 2: Links ok
FEB 3: Links ok
FEB 4: Links ok
FEB 5: Links ok
```

show chassis fabric plane (MX10008 Router)

`user@host>` **show chassis fabric plane**

```
Fabric management PLANE state
Plane 0
  Plane state: ACTIVE
      FPC 1
          PFE 0 :Links ok
```

```
          PFE 1 :Links ok
          PFE 2 :Links ok
          PFE 3 :Links ok
          PFE 4 :Links ok
          PFE 5 :Links ok
      FPC 5
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
          PFE 3 :Links ok
          PFE 4 :Links ok
          PFE 5 :Links ok
Plane 1
  Plane state: ACTIVE
      FPC 1
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
          PFE 3 :Links ok
          PFE 4 :Links ok
          PFE 5 :Links ok
      FPC 5
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
          PFE 3 :Links ok
          PFE 4 :Links ok
          PFE 5 :Links ok
Plane 2
  Plane state: ACTIVE
      FPC 1
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
          PFE 3 :Links ok
          PFE 4 :Links ok
          PFE 5 :Links ok
      FPC 5
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
          PFE 3 :Links ok
          PFE 4 :Links ok
          PFE 5 :Links ok
```

```
Plane 3
  Plane state: ACTIVE
      FPC 1
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
          PFE 3 :Links ok
          PFE 4 :Links ok
          PFE 5 :Links ok
      FPC 5
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
          PFE 3 :Links ok
          PFE 4 :Links ok
          PFE 5 :Links ok
```

show chassis fabric plane (MX240 with AS MLC Modular Carrier Card)

In the following output, FPC 1 is the AS MLC modular carrier card (AS MCC).

user@host>**show chassis fabric plane**

```
Fabric management PLANE state
Plane 0
  Plane state: ACTIVE
      FPC 1
          PFE 0 :Links ok
      FPC 2
          PFE 0 :Links ok
Plane 1
  Plane state: ACTIVE
     Plane state: ACTIVE
      FPC 1
          PFE 0 :Links ok
      FPC 2
          PFE 0 :Links ok
Plane 2
  Plane state: ACTIVE
      FPC 2
          PFE 0 :Links ok
      FPC 4
          PFE 0 :Links ok
          PFE 2 :Links ok
```

```
      FPC 5
          PFE 0 :Links ok
Plane 3
  Plane state: ACTIVE
     Plane state: ACTIVE
      FPC 1
          PFE 0 :Links ok
      FPC 2
          PFE 0 :Links ok
Plane 4
  Plane state: ACTIVE
      Plane state: ACTIVE
      FPC 1
          PFE 0 :Links ok
      FPC 2
          PFE 0 :Links ok
Plane 5
  Plane state: ACTIVE
      FPC 1
          PFE 0 :Unused
      FPC 2
          PFE 0 :Links ok
Plane 6
  Plane state: ACTIVE
      FPC 1
          PFE 0 :Links ok
      FPC 2
          PFE 0 :Links ok
Plane 7
  Plane state: ACTIVE
      FPC 1
          PFE 0 :Unused
      FPC 2
          PFE 0 :Links ok
```

show chassis fabric plane (TX Matrix Plus Router)

`user@host>` **show chassis fabric plane**

```
sfc0-re0:
--------------------------------------------------------------------------
Plane  State              Link errors  Destination errors  Uptime
 0     Spare                 NONE             NONE
```

```
 1     Online               NONE             NONE         10 hours, 16 seconds
 2     Online               NONE             NONE         10 hours, 13 seconds
 3     Online               NONE             NONE         10 hours, 9 seconds
 4     Online               NONE             NONE         10 hours, 7 seconds

lcc0-re0:
--------------------------------------------------------------------------
SIB    State              Link errors  Destination errors  Uptime
 0     Spare                NONE             NONE
 1     Online               NONE             NONE         10 hours, 16 seconds
 2     Online               NONE             NONE         10 hours, 13 seconds
 3     Online               NONE             NONE         10 hours, 9 seconds
 4     Online               NONE             NONE         10 hours, 7 seconds
lcc2-re0:
--------------------------------------------------------------------------
SIB    State              Link errors  Destination errors  Uptime
 0     Spare                NONE             NONE
 1     Online               NONE             NONE         10 hours, 16 seconds
 2     Online               NONE             NONE         10 hours, 12 seconds
 3     Online               NONE             NONE         10 hours, 9 seconds
 4     Online               NONE             NONE         10 hours, 7 seconds
```

show chassis fabric plane (TX Matrix Plus Router with 3D SIBs)

user@host> **show chassis fabric plane**

```
sfc0-re0:
--------------------------------------------------------------------------
Plane  State        Cable errors   Link errors   Destination errors  Uptime
 0     Spare           NONE           NONE              NONE
 1     Online          NONE           NONE              NONE         5 hours, 11
minutes, 3 seconds
 2     Online          NONE           NONE              NONE         8 hours, 4
minutes, 24 seconds
 3     Online          NONE           NONE              NONE         8 hours, 3
minutes, 16 seconds
 4     Online          NONE           NONE              NONE         8 hours, 2
minutes, 12 seconds

lcc2-re0:
--------------------------------------------------------------------------
SIB    State        Cable errors   Link errors   Destination errors  Uptime
 0     Spare           NONE           NONE              NONE
 1     Online          NONE           NONE              NONE         5 hours, 11
```

```
minutes, 3 seconds
 2     Online          NONE           NONE              NONE         8 hours, 4
minutes, 57 seconds
 3     Online          NONE           NONE              NONE         8 hours, 3
minutes, 53 seconds
 4     Online          NONE           NONE              NONE         8 hours, 2
minutes, 45 seconds

lcc4-re0:
--------------------------------------------------------------------------
SIB    State        Cable errors   Link errors   Destination errors  Uptime
 0     Spare            NONE          NONE              NONE
 1     Online           NONE          NONE              NONE         5 hours, 11
minutes, 12 seconds
 2     Online           NONE          NONE              NONE         8 hours, 4
minutes, 24 seconds
 3     Online           NONE          NONE              NONE         8 hours, 3
minutes, 16 seconds
 4     Online           NONE          NONE              NONE         8 hours, 2
minutes, 12 seconds

lcc5-re0:
--------------------------------------------------------------------------
SIB    State        Cable errors   Link errors   Destination errors  Uptime
 0     Spare            NONE          NONE              NONE
 1     Online           NONE          NONE              NONE         5 hours, 11
minutes, 12 seconds
 2     Online           NONE          NONE              NONE         8 hours, 4
minutes, 24 seconds
 3     Online           NONE          NONE              NONE         8 hours, 3
minutes, 15 seconds
 4     Online           NONE          NONE              NONE         8 hours, 2
minutes, 11 seconds
```

show chassis fabric plane detail (TX Matrix Plus Router)

`user@host>` **show chassis fabric plane detail**

```
sfc0-re0:
--------------------------------------------------------------------------
Fabric Management PLANE State:
PLANE 0:    Spare
   SIB F13 0   :    Spare
   SIB F13 1   :    Empty
```

```
   SIB F2S 0/0 :    Spare
   SIB F2S 0/2 :    Spare
   SIB F2S 0/4 :    Spare
   SIB F2S 0/6 :    Spare
PLANE 1:    Online
   SIB F13 3   :    Online
   SIB F13 4   :    Empty
   SIB F2S 1/0 :    Online
   SIB F2S 1/2 :    Online
   SIB F2S 1/4 :    Online
   SIB F2S 1/6 :    Online
PLANE 2:    Online
   SIB F13 6   :    Online
   SIB F13 7   :    Empty
   SIB F2S 2/0 :    Online
   SIB F2S 2/2 :    Online
   SIB F2S 2/4 :    Online
   SIB F2S 2/6 :    Online
PLANE 3:    Online
   SIB F13 8   :    Online
   SIB F13 9   :    Online
   SIB F2S 3/0 :    Online
   SIB F2S 3/2 :    Online
   SIB F2S 3/4 :    Online
   SIB F2S 3/6 :    Online
PLANE 4:    Online
   SIB F13 11  :    Online
   SIB F13 12  :    Online
   SIB F2S 4/0 :    Online
   SIB F2S 4/2 :    Online
   SIB F2S 4/4 :    Online
   SIB F2S 4/6 :    Online

lcc0-re0:
--------------------------------------------------------------------------
Fabric Management SIB State:
   SIB     0   :    Spare
   SIB     1   :    Online
   SIB     2   :    Online
   SIB     3   :    Online
   SIB     4   :    Online

lcc1-re0:
--------------------------------------------------------------------------
```

```
Fabric Management SIB State:
   SIB     0   :    Spare
   SIB     1   :    Online
   SIB     2   :    Online
   SIB     3   :    Online
   SIB     4   :    Online
...
```

show chassis fabric plane extensive (TX Matrix Plus Router)

`user@host>` **show chassis fabric plane extensive**

```
sfc0-re0:
--------------------------------------------------------------------------
Fabric Management PLANE State:
PLANE 0:    Spare
   SIB F13 0   :    Spare
   SIB F13 1   :    Empty
   SIB F2S 0/0 :    Spare
   SIB F2S 0/2 :    Spare
   SIB F2S 0/4 :    Spare
   SIB F2S 0/6 :    Spare
   SIB F13 0 Even:
        LCC 0, SIB 0 : Links ok
            SG 0
                Port 0    : Links ok
                Port 1    : Links ok
                Port 2    : Links ok
                Port 3    : Links ok
            SG 1
                Port 0    : Links ok
                Port 1    : Links ok
                Port 2    : Links ok
                Port 3    : Links ok
            SG 2
                Port 0    : Links ok
                Port 1    : Links ok
                Port 2    : Links ok
                Port 3    : Links ok
            SG 3
                Port 0    : Links ok
                Port 1    : Links ok
                Port 2    : Links ok
                Port 3    : Links ok
```

```
SIB F13 0 Odd:
     LCC 1, SIB 0 : Links ok
         SG 0
             Port 0    : Links ok
             Port 1    : Links ok
             Port 2    : Links ok
             Port 3    : Links ok
         SG 1
             Port 0    : Links ok
             Port 1    : Links ok
             Port 2    : Links ok
             Port 3    : Links ok
         SG 2
             Port 0    : Links ok
             Port 1    : Links ok
             Port 2    : Links ok
             Port 3    : Links ok
         SG 3
             Port 0    : Links ok
             Port 1    : Links ok
             Port 2    : Links ok
             Port 3    : Links ok
     SIB F2S 0/0: Links ok
     SIB F2S 0/2: Links ok
     SIB F2S 0/4: Links ok
     SIB F2S 0/6: Links ok
SIB F13 1 Even:
     LCC 2, SIB 0 : Unused
         SG 0
             Port 0    : Unused
             Port 1    : Unused
             Port 2    : Unused
             Port 3    : Unused
         SG 1
             Port 0    : Unused
             Port 1    : Unused
             Port 2    : Unused
             Port 3    : Unused
         SG 2
             Port 0    : Unused
             Port 1    : Unused
             Port 2    : Unused
             Port 3    : Unused
         SG 3
```

```
                Port 0    : Unused
                Port 1    : Unused
                Port 2    : Unused
                Port 3    : Unused
   SIB F13 1 Odd:
        LCC 3, SIB 0 : Unused
            SG 0
                Port 0    : Unused
                Port 1    : Unused
                Port 2    : Unused
                Port 3    : Unused
            SG 1
                Port 0    : Unused
                Port 1    : Unused
                Port 2    : Unused
                Port 3    : Unused
            SG 2
                Port 0    : Unused
                Port 1    : Unused
                Port 2    : Unused
                Port 3    : Unused
            SG 3
                Port 0    : Unused
                Port 1    : Unused
                Port 2    : Unused
                Port 3    : Unused
        SIB F2S 0/0: Unused
        SIB F2S 0/2: Unused
        SIB F2S 0/4: Unused
        SIB F2S 0/6: Unused
PLANE 1:    Online
   SIB F13 3   :    Online
   SIB F13 4   :    Empty
   SIB F2S 1/0 :    Online
   SIB F2S 1/2 :    Online
   SIB F2S 1/4 :    Online
   SIB F2S 1/6 :    Online
   SIB F13 3 Even:
...
```

show chassis fabric plane extensive (TX Matrix Plus Router with 3D SIBs)

`user@host>` **show chassis fabric plane extensive**

```
sfc0-re0:
--------------------------------------------------------------------------
Fabric Management PLANE State:
PLANE 0:    Online
   SIB F13 0   :    Empty
   SIB F13 1   :    Online
   SIB F2S 0/0 :    Online
   SIB F2S 0/2 :    Online
   SIB F2S 0/4 :    Online
   SIB F2S 0/6 :    Online
   SIB F13 0
        LCC 0, SIB 0 : Unused
            PFE 0   : Unused
            PFE 1   : Unused
            PFE 2   : Unused
            PFE 3   : Unused
            PFE 4   : Unused
            PFE 5   : Unused
            PFE 6   : Unused
            PFE 7   : Unused
            PFE 8   : Unused
            PFE 9   : Unused
            PFE 10  : Unused
            PFE 11  : Unused
            PFE 12  : Unused
            PFE 13  : Unused
            PFE 14  : Unused
            PFE 15  : Unused
        LCC 1, SIB 0 : Unused
            PFE 0   : Unused
            PFE 1   : Unused
            PFE 2   : Unused
            PFE 3   : Unused
            PFE 4   : Unused
            PFE 5   : Unused
            PFE 6   : Unused
            PFE 7   : Unused
            PFE 8   : Unused
            PFE 9   : Unused
            PFE 10  : Unused
            PFE 11  : Unused
            PFE 12  : Unused
            PFE 13  : Unused
            PFE 14  : Unused
```

```
            PFE 15  : Unused
        LCC 2, SIB 0 : Unused
            PFE 0   : Unused
            PFE 1   : Unused
            PFE 2   : Unused
            PFE 3   : Unused
            PFE 4   : Unused
            PFE 5   : Unused
            PFE 6   : Unused
            PFE 7   : Unused
            PFE 8   : Unused
            PFE 9   : Unused
            PFE 10  : Unused
...
lcc5-re0:
--------------------------------------------------------------------------
Fabric Management SIB State:
   SIB     0   :    Online
         LCC SIB Link State : Links ok
            PFE 0   : Links ok
            PFE 1   : Links ok
            PFE 2   : Links ok
            PFE 3   : Links ok
            PFE 4   : Links ok
            PFE 5   : Links ok
            PFE 6   : Links ok
            PFE 7   : Links ok
            PFE 8   : Links ok
            PFE 9   : Links ok
            PFE 10  : Links ok
            PFE 11  : Links ok
            PFE 12  : Links ok
            PFE 13  : Links ok
            PFE 14  : Links ok
            PFE 15  : Links ok
            FPC 1
                PFE 0     : Links ok
            FPC 2
                PFE 0     : Links ok
            FPC 3
                PFE 0     : Links ok
                PFE 1     : Links ok
            FPC 4
                PFE 0     : Links ok
```

```
   SIB     1   :    Online
        LCC SIB Link State : Links ok
           PFE 0   : Links ok
           PFE 1   : Links ok
           PFE 2   : Links ok
           PFE 3   : Links ok
           PFE 4   : Links ok
           PFE 5   : Links ok
           PFE 6   : Links ok
           PFE 7   : Links ok
           PFE 8   : Links ok
           PFE 9   : Links ok
           PFE 10  : Links ok
           PFE 11  : Links ok
           PFE 12  : Links ok
           PFE 13  : Links ok
           PFE 14  : Links ok
           PFE 15  : Links ok
           FPC 1
               PFE 0     : Links ok
           FPC 2
               PFE 0     : Links ok
           FPC 3
               PFE 0     : Links ok
               PFE 1     : Links ok
           FPC 4
               PFE 0     : Links ok
```

show chassis fabric plane terse (TX Matrix Plus Router)

`user@host>` **show chassis fabric plane terse**

```
sfc0-re0:
--------------------------------------------------------------------------
Plane  State              Link errors  Destination errors  Uptime
 0     Spare                 NONE             NONE
 1     Online                NONE             NONE         18 minutes, 37 seconds

 2     Online                NONE             NONE         18 minutes, 36 seconds

 3     Online                NONE             NONE         18 minutes, 33 seconds

 4     Online                NONE             NONE         18 minutes, 31 seconds
```

```
lcc1-re0:
--------------------------------------------------------------------------
SIB    State              Link errors  Destination errors  Uptime
 0     Spare                 NONE             NONE
 1     Online                NONE             NONE         18 minutes, 37 seconds

 2     Online                NONE             NONE
 3     Online                NONE             NONE
 4     Empty                 NONE             NONE

lcc2-re0:
--------------------------------------------------------------------------
SIB    State              Link errors  Destination errors  Uptime
 0     Spare                 NONE             NONE
 1     Online                NONE             NONE         18 minutes, 37 seconds

 2     Online                NONE             NONE         18 minutes, 36 seconds

 3     Online                NONE             NONE         18 minutes, 32 seconds

 4     Online                NONE             NONE         18 minutes, 31 seconds
```

show chassis fabric plane terse (TX Matrix Plus Router with 3D SIBs)

`user@host>` **show chassis fabric plane terse**

```
sfc0-re0:
--------------------------------------------------------------------------
Plane  State        Cable errors   Link errors   Destination errors  Uptime
 0     Offline          NONE          NONE              NONE
 1     Online           NONE          NONE              NONE         1 day, 18
hours, 14 minutes, 26 seconds
 2     Offline          NONE          NONE              NONE
 3     Offline          NONE          NONE              NONE
 4     Offline          NONE          NONE              NONE

lcc2-re0:
--------------------------------------------------------------------------
SIB    State        Cable errors   Link errors   Destination errors  Uptime
 0     Offline          NONE          NONE              NONE
 1     Online           NONE          NONE              NONE         1 day, 18
hours, 17 minutes
 2     Offline          NONE          NONE              NONE
 3     Offline          NONE          NONE              NONE
```

```
 4     Offline          NONE          NONE              NONE

lcc4-re0:
--------------------------------------------------------------------------
SIB    State        Cable errors   Link errors   Destination errors  Uptime
 0     Offline          NONE          NONE              NONE
 1     Online           NONE          NONE              NONE         1 day, 18
hours, 14 minutes, 38 seconds
 2     Offline          NONE          NONE              NONE
 3     Offline          NONE          NONE              NONE
 4     Offline          NONE          NONE              NONE

lcc5-re0:
--------------------------------------------------------------------------
SIB    State        Cable errors   Link errors   Destination errors  Uptime
 0     Offline          NONE          NONE              NONE
 1     Online           NONE          NONE              NONE         1 day, 18
hours, 14 minutes, 34 seconds
 2     Offline          NONE          NONE              NONE
 3     Offline          NONE          NONE              NONE
 4     Offline          NONE          NONE              NONE
```

show chassis fabric plane lcc (TX Matrix Plus Router)

`user@host>` **show chassis fabric plane lcc *1***

```
lcc1-re0:
--------------------------------------------------------------------------
SIB    State              Link errors  Destination errors  Uptime
 0     Spare                 NONE             NONE
 1     Online                NONE             NONE         25 minutes, 17 seconds

 2     Disconnected          NONE             NONE
 3     Disconnected          NONE             NONE
 4     Empty                 NONE             NONE
```

show chassis fabric plane lcc (TX Matrix Plus Router with 3D SIBs)

`user@host>` **show chassis fabric plane lcc *2***

```
lcc2-re0:
--------------------------------------------------------------------------
SIB    State        Cable errors   Link errors   Destination errors  Uptime
```

```
 0     Offline          NONE          NONE              NONE
 1     Online           NONE          NONE              NONE         1 day, 18
hours, 16 minutes, 44 seconds
 2     Offline          NONE          NONE              NONE
 3     Offline          NONE          NONE              NONE
 4     Offline          NONE          NONE              NONE
```

show chassis fabric plane sfc (TX Matrix Plus Router)

`user@host>` **show chassis fabric plane sfc *0***

```
sfc0-re0:
--------------------------------------------------------------------------
Plane  State              Link errors  Destination errors  Uptime
 0     Spare                 NONE             NONE
 1     Online                NONE             NONE         27 minutes, 7 seconds
 2     Online                NONE             NONE         27 minutes, 6 seconds
 3     Online                NONE             NONE         27 minutes, 3 seconds
 4     Online                NONE             NONE         27 minutes, 1 second
```

show chassis fabric plane sfc (TX Matrix Plus Router with 3D SIBs)

`user@host>` **show chassis fabric plane sfc *0***

```
sfc0-re0:
--------------------------------------------------------------------------
Plane  State        Cable errors   Link errors   Destination errors  Uptime
 0     Offline          NONE          NONE              NONE
 1     Online           NONE          NONE              NONE         1 day, 18
hours, 14 minutes, 20 seconds
 2     Offline          NONE          NONE              NONE
 3     Offline          NONE          NONE              NONE
 4     Offline          NONE          NONE              NONE
```

show chassis fabric plane (T1600 Router)

`user@host>` **show chassis fabric plane**

```
Plane  State              Uptime
 0    Online              15 hours, 42 minutes, 9 seconds
 1    Online              15 hours, 42 minutes, 9 seconds
 2    Fault
```

```
 3    Online               15 hours, 42 minutes, 9 seconds
 4    Online               15 hours, 42 minutes, 9 seconds
```

show chassis fabric plane extensive (T1600 Router)

`user@host>` **show chassis fabric plane extensive**

```
Fabric Management PLANE State:
PLANE 0:    Online
   ST-SIB-L  0: Links ok
     SG 0
         Port 0    : Links ok
         Port 1    : Links ok
         Port 2    : Links ok
         Port 3    : Links ok
     SG 1
         Port 0    : Links ok
         Port 1    : Links ok
         Port 2    : Links ok
         Port 3    : Links ok
     SG 2
         Port 0    : Links ok
         Port 1    : Links ok
         Port 2    : Links ok
         Port 3    : Links ok
     SG 3
         Port 0    : Links ok
         Port 1    : Links ok
         Port 2    : Links ok
         Port 3    : Links ok
   ST-SIB-L 0
       FPC 4
           PFE 0: Links ok
           PFE 1: Links ok
       FPC 6
           PFE 0: Links ok
           PFE 1: Links ok
       FPC 7
           PFE 0: Links ok
PLANE 1:    Online
   ST-SIB-L  1: Links ok
     SG 0
         Port 0    : Links ok
         Port 1    : Links ok
```

```
          Port 2    : Links ok
          Port 3    : Links ok
      SG 1
          Port 0    : Links ok
          Port 1    : Links ok
          Port 2    : Links ok
          Port 3    : Links ok
      SG 2
          Port 0    : Links ok
          Port 1    : Links ok
          Port 2    : Links ok
          Port 3    : Links ok
      SG 3
          Port 0    : Links ok
          Port 1    : Links ok
          Port 2    : Links ok
          Port 3    : Links ok
    ST-SIB-L 1
        FPC 4
            PFE 0: Links ok
            PFE 1: Links ok
        FPC 6
            PFE 0: Links ok
            PFE 1: Links ok
        FPC 7
            PFE 0: Links ok
PLANE 2:    Online
    ST-SIB-L  2: Links ok
      SG 0
          Port 0    : Links ok
          Port 1    : Links ok
          Port 2    : Links ok
          Port 3    : Links ok
      SG 1
          Port 0    : Links ok
          Port 1    : Links ok
          Port 2    : Links ok
          Port 3    : Links ok
      SG 2
          Port 0    : Links ok
          Port 1    : Links ok
          Port 2    : Links ok
          Port 3    : Links ok
      SG 3
```

```
          Port 0    : Links ok
          Port 1    : Links ok
          Port 2    : Links ok
          Port 3    : Links ok
    ST-SIB-L 2
        FPC 4
            PFE 0: Links ok
            PFE 1: Links ok
        FPC 6
            PFE 0: Links ok
            PFE 1: Links ok
        FPC 7
            PFE 0: Links ok
PLANE 3:    Spare
    ST-SIB-L  3: Links ok
      SG 0
          Port 0    : Links ok
          Port 1    : Links ok
          Port 2    : Links ok
          Port 3    : Links ok
      SG 1
          Port 0    : Links ok
          Port 1    : Links ok
          Port 2    : Links ok
          Port 3    : Links ok
      SG 2
          Port 0    : Links ok
          Port 1    : Links ok
          Port 2    : Links ok
          Port 3    : Links ok
      SG 3
          Port 0    : Links ok
          Port 1    : Links ok
          Port 2    : Links ok
          Port 3    : Links ok
    ST-SIB-L 3
        FPC 4
            PFE 0: Links ok
            PFE 1: Links ok
        FPC 6
            PFE 0: Links ok
            PFE 1: Links ok
        FPC 7
            PFE 0: Links ok
```

```
PLANE 4:    Online
   ST-SIB-L  4: Links ok
     SG 0
         Port 0    : Links ok
         Port 1    : Links ok
         Port 2    : Links ok
         Port 3    : Links ok
     SG 1
         Port 0    : Links ok
         Port 1    : Links ok
         Port 2    : Links ok
         Port 3    : Links ok
     SG 2
         Port 0    : Links ok
         Port 1    : Links ok
         Port 2    : Links ok
         Port 3    : Links ok
     SG 3
         Port 0    : Links ok
         Port 1    : Links ok
         Port 2    : Links ok
         Port 3    : Links ok
   ST-SIB-L 4
       FPC 4
           PFE 0: Links ok
           PFE 1: Links ok
       FPC 6
           PFE 0: Links ok
           PFE 1: Links ok
       FPC 7
           PFE 0: Links ok
```

show chassis fabric plane detail (T1600 Router)

`user@host>` **show chassis fabric plane detail**

```
Fabric Management PLANE State:
PLANE 0:    Online
PLANE 1:    Online
PLANE 2:    Online
PLANE 3:    Spare
PLANE 4:    Online
```

show chassis fabric plane (EX8200 Switch)

`user@host>` **show chassis fabric plane**

```
Fabric management PLANE state
Plane 0
  Plane state: ACTIVE
Plane 1
  Plane state: ACTIVE
Plane 2
  Plane state: ACTIVE
Plane 3
  Plane state: ACTIVE
Plane 4
  Plane state: SPARE
Plane 5
  Plane state: SPARE
Plane 6
  Plane state: SPARE
Plane 7
  Plane state: SPARE
Plane 8
  Plane state: ACTIVE
Plane 9
  Plane state: ACTIVE
Plane 10
  Plane state: ACTIVE
Plane 11
  Plane state: ACTIVE
```

show chassis fabric plane (EX9253 Switch)

`user@switch>` **show chassis fabric plane**

```
Fabric management PLANE state
Plane 0
  Plane state: ACTIVE
      FPC 0
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
      FPC 1
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
```

```
Plane 1
  Plane state: ACTIVE
      FPC 0
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
      FPC 1
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
Plane 2
  Plane state: ACTIVE
      FPC 0
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
      FPC 1
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
Plane 3
  Plane state: ACTIVE
      FPC 0
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
      FPC 1
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
Plane 4
  Plane state: ACTIVE
      FPC 0
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
      FPC 1
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
Plane 5
  Plane state: ACTIVE
      FPC 0
          PFE 0 :Links ok
```

```
          PFE 1 :Links ok
          PFE 2 :Links ok
      FPC 1
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
Plane 6
  Plane state: ACTIVE
      FPC 0
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
      FPC 1
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
Plane 7
  Plane state: ACTIVE
      FPC 0
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
      FPC 1
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
Plane 8
  Plane state: ACTIVE
      FPC 0
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
      FPC 1
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
Plane 9
  Plane state: ACTIVE
      FPC 0
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
      FPC 1
          PFE 0 :Links ok
```

```
          PFE 1 :Links ok
          PFE 2 :Links ok
Plane 10
  Plane state: ACTIVE
      FPC 0
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
      FPC 1
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
Plane 11
  Plane state: ACTIVE
      FPC 0
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
      FPC 1
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
Plane 12
  Plane state: ACTIVE
      FPC 0
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
      FPC 1
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
Plane 13
  Plane state: ACTIVE
      FPC 0
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
      FPC 1
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
Plane 14
  Plane state: ACTIVE
```

```
      FPC 0
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
      FPC 1
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
Plane 15
  Plane state: ACTIVE
      FPC 0
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
      FPC 1
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
Plane 16
  Plane state: ACTIVE
      FPC 0
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
      FPC 1
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
Plane 17
  Plane state: ACTIVE
      FPC 0
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
      FPC 1
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
Plane 18
  Plane state: ACTIVE
      FPC 0
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
```

```
      FPC 1
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
Plane 19
  Plane state: ACTIVE
      FPC 0
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
      FPC 1
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
Plane 20
  Plane state: ACTIVE
      FPC 0
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
      FPC 1
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
Plane 21
  Plane state: ACTIVE
      FPC 0
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
      FPC 1
          PFE 0 :Links ok
          PFE 1 :Links ok
          PFE 2 :Links ok
```

show chassis fabric plane-location

List of Syntax

Syntax on page 1374
Syntax (MX Series Routers) on page 1374
Syntax (MX2010, MX2020, MX10003, and MX2008 Universal Routing Platforms) on page 1374

Syntax

```
show chassis fabric plane-location
```

Syntax (MX Series Routers)

```
show chassis fabric plane-location
<all-members>
<local>
<member member-id>
```

Syntax (MX2010, MX2020, MX10003, and MX2008 Universal Routing Platforms)

```
show chassis fabric plane-location
<extended>
```

Release Information

Command introduced in Junos OS Release 8.0.
Command introduced in Junos OS Release 9.4 for EX Series switches.
Command introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers.
Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 Universal Routing Platforms.
Command introduced in Junos OS Release 15.1X53-D30 for QFX Series switches.
extended option introduced in Junos OS Release 16.1R1 for MX2020 and MX2010 Universal Routing Platforms.
Command introduced in Junos OS Release 17.2 for MX2008 Universal Routing Platforms.
Command introduced in Junos OS Release 17.2 for PTX10008 Routers.
Command introduced in Junos OS Release 17.3 for MX10003 Universal Routing Platforms.
Command introduced in Junos OS Release 18.2 for MX10008 Universal Routing Platforms.
Command introduced in Junos OS Release 18.2 for EX9253 Switches.

Description

(M120, MX Series routers, and EX8200 switches only) Display the Control Board (CB) location of each plane. This command can be used on the master Routing Engine or the backup Routing Engine. For information about the meaning of “CBs” and “fabric plane” on the switches, see the hardware documentation for your switch.

(TX Matrix Plus routers only) Display the SIB location of each fabric plane.

(PTX Series Packet Transport Routers and QFX Series switches only) Display the fabric plane location of each SIB.

(MX2010, MX2020, and MX2008 Routers only) Display the fabric plane location of each Switch Fabric Board (SFB).

Options

all-members—(MX Series routers only) (Optional) Display the CB location of each fabric plane on the Routing Engines in all member routers in the Virtual Chassis configuration.

local—(MX Series routers only) (Optional) Display the CB location of each fabric plane on the Routing Engines in the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display the CB location of each fabric plane on the Routing Engines in the specified member in the Virtual Chassis configuration. Replace *member-id* with a value of 0 or 1.

extended—(MX2020, MX2010, and MX2008 routers only) (Optional) Display the fabric plane location of all 3 planes of each Switch Fabric Board (SFB) or enhanced Switch Fabric Board (SFB2).

Required Privilege Level

view

List of Sample Output

show chassis fabric plane-location (M120 Router) on page 1376
show chassis fabric plane-location (MX240 and MX480 Routers) on page 1377
show chassis fabric plane-location (MX960 Router) on page 1377
show chassis fabric plane-location (MX10008 Router) on page 1377
show chassis fabric plane-location (MX2020 Router) on page 1378
show chassis fabric plane-location (MX2020 Router with SFB2) on page 1378
show chassis fabric plane-location (MX10003 Router) on page 1379
show chassis fabric plane-location (TX Matrix Plus Router) on page 1381
show chassis fabric plane-location (TX Matrix Plus Router with 3D SIBs) on page 1381
show chassis fabric plane-location (EX8200 Switch) on page 1381
show chassis fabric plane-location (EX9253 Switch) on page 1382
show chassis fabric plane-location (PTX Series Packet Transport Routers) on page 1383
show chassis fabric plane-location (PTX10008 Routers) on page 1384
show chassis fabric plane-location (QFX 10008 Switch) on page 1384

Output Fields

Table 67 on page 1376 lists the output fields for the **show chassis fabric plane-location** command. Output fields are listed in the approximate order in which they appear.

Table 67: show chassis fabric plane-location Output Fields

Field Name	Field Description
Plane *n*	Plane number. (PTX Series Packet Transport Routers and QFX Series switches) Plane numbers associated with the SIB. (MX2010, MX2020, and MX2008 Routers only) Plane numbers associated with the SFB.
Control Board *n*	Control board number.
SFC ABS-SIB-F13	(TX Matrix Plus routers only) Switch Interface Board (SIB) slot number on the F13 SIB.
SFC ABS-SIB-F2S	(TX Matrix Plus routers only) SIB slot number on the F2S SIB.
LCC ST-SIB-L	(TX Matrix Plus routers only) Line-card chassis (LCC) SIB slot number.
SFC SIB F13	(TX Matrix Plus routers with 3D SIBs only) Switch Interface Board (SIB) slot number on the F13 SIB.
SFC SIB F2S	(TX Matrix Plus routers with 3D SIBs only) SIB slot number on the F2S SIB.
LCC SIB	(TX Matrix Plus routers with 3D SIBs only) Line-card chassis (LCC) SIB slot number.
SIB	(PTX Series Packet Transport Routers and QFX Series switches) SIB number.
Switch Fabric Board*n*	(MX2010, MX2020, and MX2008 Routers only) SFB number.

Sample Output

show chassis fabric plane-location (M120 Router)

```
user@host> show chassis fabric plane-location
```

```
------------Fabric Plane Locations-------------
Plane 0                         Control Board 0
Plane 1                         Control Board 0
Plane 2                         Control Board 1
Plane 3                         Control Board 1
```

show chassis fabric plane-location (MX240 and MX480 Routers)

```
user@host> show chassis fabric plane-location
```

```
------------Fabric Plane Locations-------------
Plane 0                         Control Board 0
Plane 1                         Control Board 0
Plane 2                         Control Board 0
Plane 3                         Control Board 0
Plane 4                         Control Board 1
Plane 5                         Control Board 1
Plane 6                         Control Board 1
Plane 7                         Control Board 1
```

show chassis fabric plane-location (MX960 Router)

```
user@host> show chassis fabric plane-location
```

```
------------Fabric Plane Locations-------------
Plane 0                         Control Board 0
Plane 1                         Control Board 0
Plane 2                         Control Board 1
Plane 3                         Control Board 1
Plane 4                         Control Board 2
Plane 5                         Control Board 2
```

show chassis fabric plane-location (MX10008 Router)

```
user@host> show chassis fabric plane-location
```

```
------------Fabric Plane Locations-------------
Plane 0              Switch Fabric Board 0
Plane 1              Switch Fabric Board 0
Plane 2              Switch Fabric Board 0
Plane 3              Switch Fabric Board 0
```

```
Plane 4              Switch Fabric Board 1
Plane 5              Switch Fabric Board 1
Plane 6              Switch Fabric Board 1
Plane 7              Switch Fabric Board 1
Plane 8              Switch Fabric Board 2
Plane 9              Switch Fabric Board 2
Plane 10             Switch Fabric Board 2
Plane 11             Switch Fabric Board 2
Plane 12             Switch Fabric Board 3
Plane 13             Switch Fabric Board 3
Plane 14             Switch Fabric Board 3
Plane 15             Switch Fabric Board 3
Plane 16             Switch Fabric Board 4
Plane 17             Switch Fabric Board 4
Plane 18             Switch Fabric Board 4
Plane 19             Switch Fabric Board 4
Plane 20             Switch Fabric Board 5
Plane 21             Switch Fabric Board 5
Plane 22             Switch Fabric Board 5
Plane 23             Switch Fabric Board 5
```

show chassis fabric plane-location (MX2020 Router)

```
user@host> show chassis fabric plane-location
```

```
------------Fabric Plane Locations-------------
Plane 0              Switch Fabric Board 0
Plane 1              Switch Fabric Board 1
Plane 2              Switch Fabric Board 2
Plane 3              Switch Fabric Board 3
Plane 4              Switch Fabric Board 4
Plane 5              Switch Fabric Board 5
Plane 6              Switch Fabric Board 6
Plane 7              Switch Fabric Board 7
```

show chassis fabric plane-location (MX2020 Router with SFB2)

```
user@host> show chassis fabric plane-location extended
```

```
------------Fabric Plane Locations-------------
Plane 0              Switch Fabric Board 0
Plane 1              Switch Fabric Board 0
Plane 2              Switch Fabric Board 0
```

```
Plane 3             Switch Fabric Board 1
Plane 4             Switch Fabric Board 1
Plane 5             Switch Fabric Board 1
Plane 6             Switch Fabric Board 2
Plane 7             Switch Fabric Board 2
Plane 8             Switch Fabric Board 2
Plane 9             Switch Fabric Board 3
Plane 10            Switch Fabric Board 3
Plane 11            Switch Fabric Board 3
Plane 12            Switch Fabric Board 4
Plane 13            Switch Fabric Board 4
Plane 14            Switch Fabric Board 4
Plane 15            Switch Fabric Board 5
Plane 16            Switch Fabric Board 5
Plane 17            Switch Fabric Board 5
Plane 18            Switch Fabric Board 6
Plane 19            Switch Fabric Board 6
Plane 20            Switch Fabric Board 6
Plane 21            Switch Fabric Board 7
Plane 22            Switch Fabric Board 7
Plane 23            Switch Fabric Board 7
```

show chassis fabric plane-location (MX10003 Router)

`user@host>` **show chassis fabric plane-location**

```
------------Fabric Plane Locations-------------
Plane 0
         FPC 0
         FPC 1
Plane 1
         FPC 0
         FPC 1
Plane 2
         FPC 0
         FPC 1
Plane 3
         FPC 0
         FPC 1
Plane 4
         FPC 0
         FPC 1
Plane 5
```

```
         FPC 0
         FPC 1
Plane 6
         FPC 0
         FPC 1
Plane 7
         FPC 0
         FPC 1
Plane 8
         FPC 0
         FPC 1
Plane 9
         FPC 0
         FPC 1
Plane 10
         FPC 0
         FPC 1
Plane 11
         FPC 0
         FPC 1
Plane 12
         FPC 0
         FPC 1
Plane 13
         FPC 0
         FPC 1
Plane 14
         FPC 0
         FPC 1
Plane 15
         FPC 0
         FPC 1
Plane 16
         FPC 0
         FPC 1
Plane 17
         FPC 0
         FPC 1
Plane 18
         FPC 0
         FPC 1
Plane 19
         FPC 0
         FPC 1
```

```
Plane 20
         FPC 0
         FPC 1
Plane 21
         FPC 0
         FPC 1
```

show chassis fabric plane-location (TX Matrix Plus Router)

`user@host>` **show chassis fabric plane-location**

```
Fabric Plane Locations :
Plane       SFC ABS-SIB-F13        SFC ABS-SIB-F2        LCC ST-SIB-L
 0             0, 1              0/0, 0/2, 0/4, 0/6           0
 1             3, 4              1/0, 1/2, 1/4, 1/6           1
 2             6, 7              2/0, 2/2, 2/4, 2/6           2
 3             8, 9              3/0, 3/2, 3/4, 3/6           3
 4             11, 12            4/0, 4/2, 4/4, 4/6           4
```

show chassis fabric plane-location (TX Matrix Plus Router with 3D SIBs)

`user@host>` **show chassis fabric plane-location**

```
sfc0-re0
--------------------------------------------------------------------------------
------------Fabric Plane Locations------------
Plane       SFC SIB F13            SFC SIB F2               LCC SIB
 0             0, 1              0/0, 0/2, 0/4, 0/6           0
 1             3, 4              1/0, 1/2, 1/4, 1/6           1
 2             6, 7              2/0, 2/2, 2/4, 2/6           2
 3             8, 9              3/0, 3/2, 3/4, 3/6           3
 4             11, 12            4/0, 4/2, 4/4, 4/6           4
```

show chassis fabric plane-location (EX8200 Switch)

`user@host>` **show chassis fabric plane-location**

```
------------Fabric Plane Locations-------------
Plane  0                        Control Board 0
Plane  1                        Control Board 0
Plane  2                        Control Board 0
Plane  3                        Control Board 0
```

```
Plane  4                        Control Board 1
Plane  5                        Control Board 1
Plane  6                        Control Board 1
Plane  7                        Control Board 1
Plane  8                        Control Board 2
Plane  9                        Control Board 2
Plane 10                        Control Board 2
Plane 11                        Control Board 2
```

show chassis fabric plane-location (EX9253 Switch)

```
user@switch> show chassis fabric plane-location
```

```
------------Fabric Plane Locations-------------
Plane 0
         FPC 0
         FPC 1
Plane 1
         FPC 0
         FPC 1
Plane 2
         FPC 0
         FPC 1
Plane 3
         FPC 0
         FPC 1
Plane 4
         FPC 0
         FPC 1
Plane 5
         FPC 0
         FPC 1
Plane 6
         FPC 0
         FPC 1
Plane 7
         FPC 0
         FPC 1
Plane 8
         FPC 0
         FPC 1
Plane 9
         FPC 0
         FPC 1
```

```
Plane 10
         FPC 0
         FPC 1
Plane 11
         FPC 0
         FPC 1
Plane 12
         FPC 0
         FPC 1
Plane 13
         FPC 0
         FPC 1
Plane 14
         FPC 0
         FPC 1
Plane 15
         FPC 0
         FPC 1
Plane 16
         FPC 0
         FPC 1
Plane 17
         FPC 0
         FPC 1
Plane 18
         FPC 0
         FPC 1
Plane 19
         FPC 0
         FPC 1
Plane 20
         FPC 0
         FPC 1
Plane 21
         FPC 0
         FPC 1
```

show chassis fabric plane-location (PTX Series Packet Transport Routers)

`user@host>` **show chassis fabric plane-location**

```
------------Fabric Plane Locations-------------
SIB            Planes
 0             0    1
```

```
 1             2    3
 2             4    5
 3             6    7
 4             8    9
 5            10   11
 6            12   13
 7            14   15
 8            16   17
```

show chassis fabric plane-location (PTX10008 Routers)

```
user@host> show chassis fabric plane-location
```

```
------------Fabric Plane Locations-------------
SIB            Planes
 0             0    1
 1             2    3
 2             4    5
 3             6    7
 4             8    9
 5            10   11
```

show chassis fabric plane-location (QFX 10008 Switch)

```
user@host> show chassis fabric plane-location
```

```
------------Fabric Plane Locations-------------
SIB            Planes
 0             0    1
 1             2    3
 2             4    5
 3             6    7
 4             8    9
 5            10   11
```

show chassis fabric redundancy-mode

Syntax

```
show chassis fabric redundancy-mode
```

Release Information

Command introduced in Junos OS Release 12.2.

Description

(MX240, MX480, and MX960 routers only) Display whether redundancy mode is configured for active control boards to enable increased fabric bandwidth usage.

Options

This command has no options.

Required Privilege Level

view

RELATED DOCUMENTATION

- Detection and Corrective Actions of Line Cards with Degraded Fabric on MX Series Routers | **121**
- Detection and Recovery of Fabric-Related Failures Caused by Loss of Connectivity on MX Series Routers | **118**
- MX Series Routers Fabric Resiliency | **116**
- redundancy-mode | **508**
- Configuring Fabric Redundancy Mode for Active Control Boards on MX Series Routers | **102**

List of Sample Output

show chassis fabric redundancy-mode on page 1386

Output Fields

Table 68 on page 1386 lists the output fields for the **show chassis fabric redundancy-mode** command. Output fields are listed in the approximate order in which they appear.

Table 68: show chassis fabric redundancy mode Output Fields

Field name	Field Description
Fabric redundancy mode	Currently configured mode of the fabric

Sample Output

show chassis fabric redundancy-mode

```
user@host> show chassis fabric redundancy-mode

Fabric redundancy mode: Redundant Fabric
```

show chassis fabric reachability

Syntax

```
show chassis fabric reachability
<detail>
<extended>
```

Release Information

Command introduced before Junos OS Release 11.4.
Command introduced in Junos OS Release 12.1 for MX240, MX480, and MX960 routers.
Command introduced in Junos OS Release 18.2 for MX10008 Universal Routing Platforms.
Command introduced in Junos OS Release 12.1X48R4 for PTX Series Packet Transport Switches.
Command introduced in Junos OS Release 13.1R3 for TX Matrix routers.
extended option introduced in Junos OS Release 16.1R1 for MX2010 and MX2020 Universal Routing Platforms.
Command introduced in Junos OS Release 17.2 for PTX10008 Routers.

Description

(M320, MX240, MX480, MX960, and T Series routers only) Display the current state of fabric destination reachability. Additionally, display the details of the automated actions taken by the system to stop blackholing and attempt healing, and the final resolution of the actions.

Options

none—Display the state of fabric destination reachability for M320, MX240, MX480, MX960, T640, T1600, and TX Matrix routers, based on periodic reachability checks. Display the system's action phase sequences to stop the black hole and attempt healing, and the final resolution.

detail—(Optional) Display the details of the actions carried out by the system in the different action phases and the final resolution.

extended—(MX2020 and MX2010 Routers only) (Optional) Display the state of fabric destination reachability for MX2010 and MX2020 routers.

Required Privilege Level

view

RELATED DOCUMENTATION

show chassis fabric unreachable-destinations | 1460

List of Sample Output

show chassis fabric reachability (T640 and T1600 routers) on page 1392
show chassis fabric reachability detail (T640 and T1600 routers) on page 1393
show chassis fabric reachability (PTX5000 system) on page 1394
show chassis fabric reachability (PTX10008 Router) on page 1394
show chassis fabric reachability (MX2020 Router with SFB2) on page 1395
show chassis fabric reachability detail (MX10003 Router) on page 1395
show chassis fabric reachability (TX Matrix router) on page 1395
show chassis fabric reachability detail (TX Matrix router) on page 1396
show chassis fabric reachability detail (MX960 router) on page 1396

Output Fields

The table lists the output fields for the **show chassis fabric reachability** command. Output fields are listed in the approximate order in which they appear.

Table 69: show chassis fabric reachability Output Fields

Field Name	Field Description	Level of Output
Fabric reachability status	Display the reachability status of the fabric. • **Enabled destinations transitioned to unreachable, Fabric down action in progress**—Some enabled destinations that were originally reachable have become unreachable. The system is trying to stop the fabric down condition and attempt healing. • **Enabled destinations reachable**—The enabled destinations are reachable. • **Unreachable destinations healed**—The unreachable destinations are healed and are reachable. • **Unreachable destinations removed**—The unreachable destinations are removed. • **Unreachable destinations present**—Unreachable destinations are present in the system. • **Unreachable destinations present due to FPC restart disable configuration**—Unreachable destinations are present as a result of user configuration set to disable FPC restart.	All levels
Unreachable destinations	Number of FPCs that have unreachable destinations.	All levels
Detected on	Date and time when unreachable destinations are detected.	All levels

Table 69: show chassis fabric reachability Output Fields *(continued)*

Field Name	Field Description	Level of Output
Reason	Reason for the destination turning unreachable. • **Single FPC error**—A single bad FPC is not reachable over the fabric. • **Fabric plane error**—Multiple FPCs are not able to forward traffic over the fabric planes.	All levels
Fabric reachability action	Action taken to handle the unreachable destination. • **Plane Action**—The healing is attempted only for the fabric planes. • **SIB Action**—(PTX Series system only) The healing is attempted only for the SIBs. • **Plane and FPC Action**—The healing is attempted both for the fabric planes and the FPCs. • **SIB and FPC Action**—(PTX Series system only) The healing is attempted both for the SIBs and the FPCs. • **FPC Action**—The healing is attempted only for the bad FPCs.	All levels
Acting on	Current action is being performed on: • **Single FPC error**—The current operation is for healing the single bad FPC. • **Fabric Plane error**—The current operation is for healing the fabric planes.	All levels
Initial phase	Starting phase for the healing action. • **Plane restart**—The fabric planes are restarted. • **SIB restart**—(PTX Series system only) The SIBs are restarted. • **Plane and FPC restart**—Both the fabric planes and affected FPCs are restarted. • **SIB and FPC restart**—(PTX Series system only) SIBs and affected FPCs are restarted.	All levels

Table 69: show chassis fabric reachability Output Fields *(continued)*

Field Name	Field Description	Level of Output
Current phase	Current phase for the healing action. • **Plane restart**—The fabric planes are restarted. • **SIB restart**—(PTX Series system only) The SIBs are restarted. • **Plane and FPC restart**—Both the fabric planes and affected FPCs are restarted. • **SIB and FPC restart**—(PTX Series system only) Both the SIBs and affected FPCs are restarted. • **FPC offline**—The FPCs are turned offline because the previously mentioned healing processes have failed.	All levels
Action started	Date and time when the system fabric down healing attempt is started.	All levels
Plane restart phase	The status of the plane restart phase. • **Completed**—The plane restart phase is completed. • **In progress**—The plane restart phase is in progress.	**detail**
Phase started	Date and time when the plane restart phase is started.	**detail**
Planes restarted	List of plane numbers restarted by the system.	**detail**
Planes timed out	List of plane numbers that have timed out waiting to be restarted by the system.	**detail**
Planes being offlined / onlined	Planes that are turned offline or turned online by the system, with date and time.	**detail**
Phase completed	Date and time when the plane restart phase is completed.	**detail**
Plane and FPC Restart Phase	Status of the plane and FPC restart phase. • **Completed**—The plane and FPC restart phase is completed. • **In progress**—The plane and FPC restart phase is in progress.	**detail**
Phase started	Date and time when the plane and FPC restart phase is started.	**detail**
FPC Offline Started	Date and time when the FPC offline action is started.	**detail**
Offlined FPCs	List of FPCs that are turned offline by the system.	**detail**

Table 69: show chassis fabric reachability Output Fields *(continued)*

Field Name	Field Description	Level of Output
FPCs timed out	List of FPCs that have timed out waiting to be turned offline by the system.	**detail**
FPC being offlined	FPC that is being turned offline by the system, with date and time.	**detail**
FPC Offline completed	Date and time when the FPC offline action is completed.	**detail**
Plane restarting started	Date and time when the plane restart action is started.	**detail**
Planes restarted	List of planes restarted by the system.	**detail**
Planes being offlined / onlined	Planes that are currently being turned offline or turned online by the system, with date and time.	**detail**
Plane restarting completed	Date and time when the plane restarting action is completed.	**detail**
FPC online started	Date and time when FPC online action is started.	**detail**
Onlined FPCs	List of FPCs that are turned online by the system.	**detail**
FPCs timed out	FPCs that have timed out waiting to be turned online by the system.	**detail**
FPC being onlined	FPC that is being turned online by the system, with date and time.	**detail**
FPC Online completed	Date and time when the action of turning the FPCs online is completed.	**detail**
Phase Completed	Date and time when the plane and FPC restart phase is completed.	**detail**
Phase started	Date and time when the plane and FPC restart phase is started.	**detail**
FPC restart time	Date and time when the FPC restart action is started.	**detail**
FPC restarted	FPC that is restarted by the system, with date and time.	**detail**
Phase Completed	Date and time when the plane and FPC restart phase is completed.	**detail**

Table 69: show chassis fabric reachability Output Fields *(continued)*

Field Name	Field Description	Level of Output
FPC Offline Phase	Status of the FPC offline phase. • **Completed**— The FPC offline phase is completed. • **In progress**—The FPC offline phase is currently in progress.	**detail**
Phase started	Date and time when the FPC offline phase is started.	**detail**
FPC Offline started	Date and time when the FPC offline action is started.	**detail**
Offlined FPCs	List of FPCs turned offline by the system.	**detail**
FPCs timed out	List of FPCs that have timed out waiting to be turned offline by the system.	**detail**
FPC being offlined	FPC that is being turned offline by the system, with date and time.	**detail**
FPC Offline completed	Date and time when the FPC offline action is completed.	**detail**
Phase Completed	Date and time when the FPC offline phase is completed.	**detail**
Action Completed	Date and time when the system fabric down healing attempt is completed.	All levels
Fabric reachability resolution	Status after the healing actions are performed. • **Unreachable destinations healed after *phase name***—The unreachable destinations are healed after the healing actions are performed. The phase name indicates the last healing phase. • **Unreachable destinations removed by FPCs *FPC number* offline**—The unreachable destinations are removed by turning the FPCs offline. • **Unreachable destinations present on FPC/PFE *FPC/PFE number***—The unreachable destinations are present on the FPCs or Packet Forwarding Engines and need to be acted upon.	All levels

Sample Output

show chassis fabric reachability (T640 and T1600 routers)

```
user@host> show chassis fabric reachability
```

```
Fabric reachability status: Unreachable destinations removed

Fabric reachability detection:
    Unreachable destinations                : Present on 3 FPCs
        Detected on                         : 2010-11-22 15:19:45 PST
        Reason                              : Fabric plane error

Fabric reachability action:
    Fabric reachability action              : FPC action
    Acting on                               : Fabric plane error
    Initial phase                           : Plane restart
    Current phase                           : FPC offline is completed
    Action started                          : 2010-11-22 15:08:05 PST
    Action completed                        : 2010-11-22 15:19:45 PST

Fabric reachability resolution: Unreachable destinations removed by FPCs 2, 3, 5
 offline
```

show chassis fabric reachability detail (T640 and T1600 routers)

`user@host>` **show chassis fabric reachability detail**

```
Fabric reachability status: Unreachable destinations removed
Fabric reachability detection:
    Unreachable destinations                : Present on 3 FPCs
        Detected on                         : 2010-11-15 15:50:32 PST
        Reason                              : Fabric plane error

Fabric reachability action:
    Fabric reachability action              : FPC action
    Acting on                               : Fabric plane error
    Initial phase                           : Plane restart
    Current phase                           : FPC offline is completed
    Action started                          : 2010-11-15 15:41:47 PST
        Plane restart phase                 : Completed
            Phase started                   : 2010-11-15 15:41:47 PST
                Planes restarted            : 0, 1, 2, 3, 4, 0
            Phase completed                 : 2010-11-15 15:42:14 PST
        Plane and FPC Restart Phase         : Completed
            Phase started                   : 2010-11-15 15:45:52 PST
                FPC Offline Started         : 2010-11-15 15:45:52 PST
                    Offlined FPCs           : 2, 3, 5, 7
                FPC Offline completed       : 2010-11-15 15:45:52 PST
                Plane restarting started    : 2010-11-15 15:45:52 PST
```

```
                    Planes restarted        : 0, 1, 2, 3, 4, 0
                Plane restarting completed  : 2010-11-15 15:46:11 PST
                FPC online started          : 2010-11-15 15:46:11 PST
                    Onlined FPCs            : 2, 3, 5, 7
                FPC online completed        : 2010-11-15 15:46:50 PST
            Phase completed                 : 2010-11-15 15:46:50 PST
        FPC offline phase                   : Completed
            Phase started                   : 2010-11-15 15:50:32 PST
                FPC offline started         : 2010-11-15 15:50:32 PST
                    Offlined FPCs           : 2, 3, 5
                FPC offline completed       : 2010-11-15 15:50:32 PST
            Phase completed                 : 2010-11-15 15:50:32 PST
    Action completed                        : 2010-11-15 15:50:32 PST

Fabric reachability resolution: Unreachable destinations removed by FPCs 2, 3, 5
 offline
```

show chassis fabric reachability (PTX5000 system)

`user@host>` **show chassis fabric reachability**

```
Fabric reachability status: Enabled destinations transitioned to unreachable,
Fabric down action in progress

Fabric reachability detection:
    Unreachable destinations                : Present on 5 FPCs
        Detected on                         : 2012-11-14 15:53:00 PST
        Reason                              : Fabric plane error

Fabric reachability action:
    Fabric reachability action              : SIB action
    Acting on                               : Fabric plane error
    Initial phase                           : SIB restart
    Current phase                           : SIB restart is in progress
    Action started                          : 2012-11-14 15:53:00 PST
```

show chassis fabric reachability (PTX10008 Router)

`user@host>` **show chassis fabric reachability**

```
Fabric reachability status: Enabled destinations reachable

Fabric reachability detection:
```

```
    Unreachable destinations                : Present on 0 FPCs
        Detected on                         : 2017-05-10 01:54:09 PDT
```

show chassis fabric reachability (MX2020 Router with SFB2)

`user@host >` **show chassis fabric reachability**

```
Fabric reachability status: No Fabric degradation detected now
```

show chassis fabric reachability detail (MX10003 Router)

`user@host > show chassis fabric reachability detail`

```
May 23 23:52:27

Fabric reachability status: Fabric degradation condition healed
        Detected on                         : 2017-05-23 23:49:54 PDT
        Reason                              : Fabric Degradation due to Plane
faults (fabric error)

Fabric reachability action:
    Fabric reachability action              : Plane action
    Current phase                           : Plane Restart Phase is completed
    Action started                          : 2017-05-23 23:50:04 PDT
    Action completed                        : 2017-05-23 23:52:22 PDT
        Plane restart phase                 : Completed
            Phase started                   : 2017-05-23 23:50:04 PDT
                Planes restarted            : 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10,
11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21
            Phase completed                 : 2017-05-23 23:52:22 PDT
```

show chassis fabric reachability (TX Matrix router)

`user@host>` **show chassis fabric reachability**

```
Fabric reachability status: Enabled destinations transitioned to unreachable,
Fabric down action in progress

Fabric reachability detection:
    Unreachable destinations                : Present on 14 FPCs
        Detected on                         : 2013-08-29 02:09:16 PDT
```

```
        Reason                              : Fabric plane error

Fabric reachability action:
    Fabric reachability action              : Plane action
    Acting on                               : Fabric plane error
    Initial phase                           : Plane restart
    Current phase                           : Plane restart is in progress
    Action started                          : 2013-08-29 02:09:16 PDT
```

show chassis fabric reachability detail (TX Matrix router)

`user@host>` **show chassis fabric reachability detail**

```
Fabric reachability status: Enabled destinations transitioned to unreachable,
Fabric down action in progress

Fabric reachability detection:
    Unreachable destinations                : Present on 14 FPCs
        Detected on                         : 2013-08-29 02:09:16 PDT
        Reason                              : Fabric plane error

Fabric reachability action:
    Fabric reachability action              : Plane action
    Acting on                               : Fabric plane error
    Initial phase                           : Plane restart
    Current phase                           : Plane restart is in progress
    Action started                          : 2013-08-29 02:09:16 PDT
        Plane restart phase                 : In progress
            Phase started                   : 2013-08-29 02:09:16 PDT
                Planes restarted            : 0, 2, 3
                Planes being offlined       : 4 : 2013-08-29 02:10:11 PDT
```

show chassis fabric reachability detail (MX960 router)

After triggering a phase action from an MPC, the **show chassis fabric reachability** command includes output from DPCs, MPCs, or FPCs.

`user@host>` **show chassis fabric reachability detail**

```
Fabric reachability status: Fabric degradation condition healed
        Detected on                         : 2018-03-14 22:28:03 PDT
        Reason                              : Fabric Degradation due to grant
timeouts seen by DPCs, MPCs, or FPCs
```

```
Fabric reachability action:
    Fabric reachability action              : Plane action
    Current phase                           : Plane Restart Phase is completed
    Action started                          : 2018-03-14 22:28:17 PDT
    Action completed                        : 2018-03-14 22:29:28 PDT
        Plane restart phase                 : Completed
            Phase started                   : 2018-03-14 22:28:17 PDT
                Planes restarted            : 0, 1, 2, 3
            Phase completed                 : 2018-03-14 22:29:28 PDT

Fabric reachability resolution: Fabric degradation healed after phase Plane restart
```

show chassis fabric sibs

Syntax

```
show chassis fabric sibs
<lcc number | scc>
<slot slot-number>
```

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced on QFX Series switches in Junos OS Release 15.1X53-D30
Command introduced in Junos OS Release 17.2 for PTX10008 Routers.

Description

(TX Matrix routers only) Display the state of the electrical and optical switch fabric link between the SIBs in the TX Matrix router (TX-SIBs) and the SIBs in the T640 routers (T640 LCC SIBs).

(M320, T640, T1600, T4000 and PTX Series routers and QFX Series switches) Display the state of the electrical switch fabric link between the SIBs and the FPCs.

Options

none—(TX Matrix routers only) Display the state of the electrical and optical switch fabric link between the SIBs in the TX Matrix router (TX-SIBs) and the SIBs in the T640 routers (T640 LCC SIBs).

(M320, T640, T1600, T4000 and PTX Series routers and QFX Series switches) Display the state of the electrical switch fabric link between the SIBs and the FPCs.

lcc *number*—(Optional) Display the switching fabric link state for the T640 SIBs on a specified T640 router (line-card chassis) connected to a TX Matrix router.

scc—(Optional) Display the switching fabric link state for the TX-SIBs on the TX Matrix router (switch-card chassis).

slot *slot-number*—(Optional) Display the state of the electrical switch fabric link between the specified SIB slot and the FPCs.

Required Privilege Level

view

RELATED DOCUMENTATION

request chassis sib | 670

show chassis sibs | 1733

Monitoring the SIBs

Redundant SIBs Overview

List of Sample Output

show chassis fabric sibs (M320 Router) on page 1402
show chassis fabric sibs (T640 Router) on page 1403
show chassis fabric sibs (T1600 Router) on page 1404
show chassis fabric sibs (T4000 Core Router) on page 1407
show chassis fabric sibs (TX Matrix Router) on page 1408
show chassis fabric sibs lcc (TX Matrix Router) on page 1411
show chassis fabric sibs scc (TX Matrix Router) on page 1412
show chassis fabric sibs slot (PTX3000 Router) on page 1413
show chassis fabric sibs slot (Junos OS Evolved) on page 1414
show chassis fabric sibs (PTX10008 Router) on page 1414
show chassis fabric sibs (QFX10008 Switch) on page 1416

Output Fields

Table 70 on page 1399 lists the output fields for the **show chassis fabric sibs** command. Output fields are listed in the approximate order in which they appear.

Table 70: show chassis fabric sibs Output Fields

Field Name	Field Description
Fabric management SIB state	Switching fabric link (link from FPC to SIB) state for each SIB: • **Unused**—SIB is not present. • **Links ok**—Link between the SIB and the FPC is active. • **Link error**—Link between the SIB and the FPC is not operational.

Table 70: show chassis fabric sibs Output Fields *(continued)*

Field Name	Field Description
Plane state	

Table 70: show chassis fabric sibs Output Fields *(continued)*

Field Name	Field Description
	Possible plane state of the M320 SIB, TX-SIB or T640 SIB: • **S_ACTIVE**—Links on the SIB are operational, and the fabric plane (SIB) is operational and running. • **S_SPARE**—Links on the SIB are operational and the fabric plane (SIB) is redundant and can be operational if any of the fabric planes in the **S_ACTIVE** state encounters an error. **NOTE:** If the plane is unusable by any of the Packet Forwarding Engines, the command output displays an additional string, **plane has link errors on # pfes**, where, **#** indicates the total number of links (both from SIB to FPC, and from FPC to SIB) having link errors (detected either during initialization time or runtime) in this particular plane. This does not count links having destination errors. • **S_EMPTY**—No links are present on the SIB, and the fabric plane (SIB) is powered down. • **S_ACTIVATING**—Links on the SIB are coming online; this is a transitional state. • **S_DEACTIVATING**—Links on the SIB are going offline; this is a transitional state. • **S_FAULTING**—Links on the SIB are being marked faulty, and the fabric plane (SIB) is not operational. • **S_FAULT**—Links on the SIB are in an alarmed state, and the fabric plane (SIB) is not operational for the following reasons: ◦ On-board F-chip is not operational. ◦ Fiber optic connector faults. ◦ FPC connector faults. Possible plane state of the QFX Series SIB: ◦ **Active**—Links on the SIB are operational, and the fabric plane (SIB) is operational and running. ◦ **Spare**—Links on the SIB are operational and the fabric plane (SIB) is redundant and can be operational if any of the fabric planes in the **S_ACTIVE** state encounters an error. ◦ **Empty**—No links are present on the SIB, and the fabric plane (SIB) is powered down. ◦ **Activating**—Links on the SIB are coming online; this is a transitional state.

Table 70: show chassis fabric sibs Output Fields *(continued)*

Field Name	Field Description

	• **Deactivating**—Links on the SIB are going offline; this is a transitional state.
	• **Faulting**—Links on the SIB are being marked faulty, and the fabric plane (SIB) is not operational.
	• **Fault**—Links on the SIB are in an alarmed state, and the fabric plane (SIB) is not operational for the following reasons:
	  • On-board F-chip is not operational.
	  • Fiber optic connector faults.
	  • FPC connector faults.

Sample Output

show chassis fabric sibs (M320 Router)

`user@host>` **show chassis fabric sibs**

```
Fabric management SIB state:
SIB #0
    plane state: S_ACTIVE
    FPC #0
        PFE #1  : Links ok
    FPC #1
        PFE #1  : Links ok
    FPC #2
        PFE #1  : Links ok
    FPC #3
        PFE #1  : Links ok
SIB #1
    plane state: S_ACTIVE
    FPC #0
        PFE #1  : Links ok
    FPC #1
        PFE #1  : Links ok
    FPC #2
        PFE #1  : Links ok
    FPC #3
        PFE #1  : Links ok
```

```
SIB #2
    plane state: S_ACTIVE
    FPC #0
        PFE #1  : Links ok
    FPC #1
        PFE #1  : Links ok
    FPC #2
        PFE #1  : Links ok
    FPC #3
        PFE #1  : Links ok
SIB #3
    plane state: S_ACTIVE
    FPC #0
        PFE #1  : Links ok
    FPC #1
        PFE #1  : Links ok
    FPC #2
        PFE #1  : Links ok
    FPC #3
        PFE #1  : Links ok
```

show chassis fabric sibs (T640 Router)

`user@host>` **show chassis fabric sibs**

```
Fabric management SIB state:
SIB #0
    plane state: S_SPARE
    FPC #0
        PFE #1  : Links ok
    FPC #2
        PFE #1  : Links ok
    FPC #3
        PFE #0  : Links ok
        PFE #1  : Links ok
SIB #1
    plane state: S_ACTIVE
    FPC #0
        PFE #1  : Links ok
    FPC #2
        PFE #1  : Links ok
    FPC #3
        PFE #0  : Links ok
        PFE #1  : Links ok
```

```
SIB #2
    plane state: S_ACTIVE
    FPC #0
        PFE #1  : Links ok
    FPC #2
        PFE #1  : Links ok
    FPC #3
        PFE #0  : Links ok
        PFE #1  : Links ok
SIB #3
    plane state: S_ACTIVE
    FPC #0
        PFE #1  : Links ok
    FPC #2
        PFE #1  : Links ok
    FPC #3
        PFE #0  : Links ok
        PFE #1  : Links ok
SIB #4
    plane state: S_ACTIVE
    FPC #0
        PFE #1  : Links ok
    FPC #2
        PFE #1  : Links ok
    FPC #3
        PFE #0  : Links ok
        PFE #1  : Links ok
```

show chassis fabric sibs (T1600 Router)

`user@host>` **show chassis fabric sibs**

```
SIB #0
    plane state: S_SPARE
    FPC #0
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #1
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #2
        PFE #0  : Links ok
    FPC #4
        PFE #0  : Links ok
```

```
        PFE #1  : Links ok
    FPC #5
        PFE #0  : Links ok
    FPC #6
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #7
        PFE #0  : Links ok
        PFE #1  : Links ok
SIB #1
    plane state: S_ACTIVE , plane has link errors on 2 pfes
    FPC #0
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #1
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #3
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #4
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #5
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #7
        PFE #0  : Links ok
        PFE #1  : Links okSIB #2
    plane state: S_ACTIVE
SIB #2
        plane state: S_ACTIVE
FPC #0
        PFE #0  : Links ok
        PFE #1  : Links ok
FPC #1
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #2
        PFE #0  : Links ok
    FPC #4
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #5
```

```
        PFE #0  : Links ok
    FPC #6
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #7
        PFE #0  : Links ok
        PFE #1  : Links ok
SIB #3
    plane state: S_ACTIVE
    FPC #0
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #1
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #2
        PFE #0  : Links ok
    FPC #4
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #5
        PFE #0  : Links ok
    FPC #6
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #7
        PFE #0  : Links ok
        PFE #1  : Links ok
SIB #4
    plane state: S_ACTIVE
    FPC #0
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #1
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #2
        PFE #0  : Links ok
    FPC #4
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #5
        PFE #0  : Links ok
    FPC #6
```

```
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #7
        PFE #0  : Links ok
        PFE #1  : Links ok
```

show chassis fabric sibs (T4000 Core Router)

`user@host>` **show chassis fabric sibs**

```
Fabric management SIB state:
SIB #0
    plane state: S_SPARE
    FPC #2
        PFE #0  : Links ok
    FPC #3
        PFE #0  : Links ok
    FPC #5
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #6
        PFE #0  : Links ok
        PFE #1  : Links ok
SIB #1
    plane state: S_ACTIVE
    FPC #2
        PFE #0  : Links ok
    FPC #3
        PFE #0  : Links ok
    FPC #5
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #6
        PFE #0  : Links ok
        PFE #1  : Links ok
SIB #2
    plane state: S_ACTIVE
    FPC #2
        PFE #0  : Links ok
    FPC #3
        PFE #0  : Links ok
    FPC #5
        PFE #0  : Links ok
        PFE #1  : Links ok
```

```
    FPC #6
        PFE #0  : Links ok
        PFE #1  : Links ok
SIB #3
    plane state: S_ACTIVE
    FPC #2
        PFE #0  : Links ok
    FPC #3
        PFE #0  : Links ok
    FPC #5
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #6
        PFE #0  : Links ok
        PFE #1  : Links ok
SIB #4
    plane state: S_ACTIVE
    FPC #2
        PFE #0  : Links ok
    FPC #3
        PFE #0  : Links ok
    FPC #5
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #6
        PFE #0  : Links ok
        PFE #1  : Links ok
```

show chassis fabric sibs (TX Matrix Router)

`user@host>` **show chassis fabric sibs**

```
scc-re0:
--------------------------------------------------------------------------
Fabric management SIB state:
SIB #1
    plane state: S_ACTIVE , plane has link errors on 2 pfes
    FPC #0
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #1
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #3
```

```
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #4
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #5
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #7
        PFE #0  : Links ok
        PFE #1  : Links ok
SIB #2
    plane state: S_ACTIVE
    LCC #0      : Links ok
    LCC #1      : Links ok
SIB #3
    plane state: S_ACTIVE
    LCC #0      : Links ok
    LCC #1      : Links ok
SIB #4
    plane state: S_ACTIVE
    LCC #0      : Links ok
    LCC #1      : Links ok

lcc0-re0:
--------------------------------------------------------------------------
Fabric management SIB state:
SIB #1
    plane state: S_ACTIVE
    FPC #0
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #1
        PFE #1  : Links ok
    FPC #2
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #3
        PFE #1  : Links ok
    FPC #4
        PFE #1  : Links ok
    FPC #5
        PFE #0  : Links ok
    FPC #6
```

```
        PFE #1  : Links ok
    FPC #7
        PFE #1  : Links ok
    SCC         : Links ok
SIB #2
    plane state: S_ACTIVE
    FPC #0
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #1
        PFE #1  : Links ok
    FPC #2
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #3
        PFE #1  : Links ok
    FPC #4
        PFE #1  : Links ok
    FPC #5
        PFE #0  : Links ok
    FPC #6
        PFE #1  : Links ok
    FPC #7
        PFE #1  : Links ok
    SCC         : Links ok
SIB #3
    plane state: S_ACTIVE
    FPC #0
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #1
        PFE #1  : Links ok
    FPC #2
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #3
        PFE #1  : Links ok
    FPC #4
        PFE #1  : Links ok
    FPC #5
        PFE #0  : Links ok
    FPC #6
        PFE #1  : Links ok
    FPC #7
```

```
        PFE #1  : Links ok
    SCC         : Links ok
SIB #4
    plane state: S_ACTIVE
    FPC #0
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #1
        PFE #1  : Links ok
    FPC #2
        PFE #0  : Links ok
        PFE #1  : Links ok
    FPC #3
        PFE #1  : Links ok
    FPC #4
        PFE #1  : Links ok
    FPC #5
        PFE #0  : Links ok
    FPC #6
        PFE #1  : Links ok
    FPC #7
        PFE #1  : Links ok
    SCC         : Links o
```

show chassis fabric sibs lcc (TX Matrix Router)

`user@host>` **show chassis fabric sibs lcc 0**

```
lcc1-re0:
--------------------------------------------------------------------------
Fabric management SIB state:
SIB #1
    plane state: S_ACTIVE
    FPC #0
        PFE #0  : Links ok
    FPC #2
        PFE #1  : Links ok
    FPC #4
        PFE #0  : Links ok
    FPC #5
        PFE #1  : Links ok
    FPC #7
        PFE #0  : Links ok
    SCC         : Links ok
```

```
SIB #2
    plane state: S_ACTIVE
    FPC #0
        PFE #0  : Links ok
    FPC #2
        PFE #1  : Links ok
    FPC #4
        PFE #0  : Links ok
    FPC #5
        PFE #1  : Links ok
    FPC #7
        PFE #0  : Links ok
    SCC         : Links ok
SIB #3
    plane state: S_ACTIVE
    FPC #0
        PFE #0  : Links ok
    FPC #2
        PFE #1  : Links ok
    FPC #4
        PFE #0  : Links ok
    FPC #5
        PFE #1  : Links ok
    FPC #7
        PFE #0  : Links ok
    SCC         : Links ok
SIB #4
    plane state: S_ACTIVE
    FPC #0
        PFE #0  : Links ok
    FPC #2
        PFE #1  : Links ok
    FPC #4
        PFE #0  : Links ok
    FPC #5
        PFE #1  : Links ok
    FPC #7
        PFE #0  : Links ok
    SCC         : Links ok
```

show chassis fabric sibs scc (TX Matrix Router)

`user@host>` **show chassis fabric sibs scc**

```
scc-re0:
--------------------------------------------------------------------------
Fabric management SIB state:
SIB #1
    plane state: S_ACTIVE
    LCC #0      : Links ok
    LCC #1      : Links ok
SIB #2
    plane state: S_ACTIVE
    LCC #0      : Links ok
    LCC #1      : Links ok
SIB #3
    plane state: S_ACTIVE
    LCC #0      : Links ok
    LCC #1      : Links ok
SIB #4
    plane state: S_ACTIVE
    LCC #0      : Links ok
    LCC #1      : Links ok
```

show chassis fabric sibs slot (PTX3000 Router)

`user@host>` **show chassis fabric sibs slot 0**

```
Fabric management SIB state:
SIB #0  Online
    Fcore #0 (plane 0) Active
        FPC #8
            PFE #0  : OK
            PFE #1  : OK
        FPC #12
            PFE #0  : OK
            PFE #1  : OK
    Fcore #1 (plane 1) Active
        FPC #8
            PFE #0  : OK
            PFE #1  : OK
        FPC #12
            PFE #0  : OK
            PFE #1  : OK
```

show chassis fabric sibs slot (Junos OS Evolved)

The output of the **show chassis fabric sibs** command is modified to include ASIC information. In the earlier releases, this command displayed ASICs as FCOREs. With this modification, for every FPC and SIB, information about ASIC and FCORE is presented separately in the output.

`user@host>` **show chassis fabric sibs slot 0**

```
Fabric management SIB state:
SIB #0  Online
    Asic #0 Fcore #0 (plane 0) Empty
   FPC #0
       PFE #0  : Links ok
       PFE #1  : Links ok
       PFE #2  : Links ok
       PFE #3  : Links ok
```

show chassis fabric sibs (PTX10008 Router)

`user@host>` **show chassis fabric sibs**

```
Fabric management SIB state:
SIB #0  Online
    FASIC #0 (plane 0) Active
        FPC #0
            PFE #0  : OK
            PFE #1  : OK
            PFE #2  : OK
        FPC #5
            PFE #0  : OK
            PFE #1  : OK
            PFE #2  : OK
            PFE #3  : OK
            PFE #4  : OK
            PFE #5  : OK
        FPC #6
            PFE #0  : OK
            PFE #1  : OK
            PFE #2  : OK
            PFE #3  : OK
            PFE #4  : OK
            PFE #5  : OK
    FASIC #1 (plane 1) Active
        FPC #0
            PFE #0  : OK
```

```
            PFE #1  : OK
            PFE #2  : OK
        FPC #5
            PFE #0  : OK
            PFE #1  : OK
            PFE #2  : OK
            PFE #3  : OK
            PFE #4  : OK
            PFE #5  : OK
        FPC #6
            PFE #0  : OK
            PFE #1  : OK
            PFE #2  : OK
            PFE #3  : OK
            PFE #4  : OK
            PFE #5  : OK
SIB #1  Online
    FASIC #0 (plane 2) Active
        FPC #0
            PFE #0  : OK
            PFE #1  : OK
            PFE #2  : OK
        FPC #5
            PFE #0  : OK
            PFE #1  : OK
            PFE #2  : OK
            PFE #3  : OK
            PFE #4  : OK
            PFE #5  : OK
        FPC #6
            PFE #0  : OK
            PFE #1  : OK
            PFE #2  : OK
            PFE #3  : OK
            PFE #4  : OK
            PFE #5  : OK
    FASIC #1 (plane 3) Active
        FPC #0
            PFE #0  : OK
            PFE #1  : OK
            PFE #2  : OK
        FPC #5
            PFE #0  : OK
            PFE #1  : OK
```

```
            PFE #2  : OK
            PFE #3  : OK
            PFE #4  : OK
            PFE #5  : OK
        FPC #6
            PFE #0  : OK
            PFE #1  : OK
            PFE #2  : OK
            PFE #3  : OK
            PFE #4  : OK
            PFE #5  : OK
SIB #2  Empty
SIB #3  Empty
SIB #4  Empty
SIB #5  Empty
```

show chassis fabric sibs (QFX10008 Switch)

`user@host>` **show chassis fabric sibs**

```
Fabric management SIB state:
SIB #0  Online
    FASIC #0 (plane 0) Active
        FPC #0
            PFE #0  : OK
            PFE #1  : OK
            PFE #2  : OK
            PFE #3  : OK
        FPC #1
            PFE #0  : OK
            PFE #1  : OK
    FASIC #1 (plane 1) Active
        FPC #0
            PFE #0  : OK
            PFE #1  : OK
        FPC #12
            PFE #0  : OK
            PFE #1  : OK
SIB #1  Empty
SIB #2  Empty
SIB #3  Empty
SIB #4  Empty
SIB #5  Empty
```

show chassis fabric summary

List of Syntax

Syntax on page 1417
Syntax (EX9253 Switches) on page 1417

Syntax

```
show chassis fabric summary <extended>
```

Syntax (EX9253 Switches)

```
show chassis fabric summary
```

Release Information

Command introduced in Junos OS Release 8.4.
Command introduced in Junos OS Release 9.4 for EX Series switches.
Command introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers.
Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 Universal Routing Platforms.
Command introduced in Junos OS Release 15.1X53-D30 for QFX Series switches.
extended option added in Junos OS Release 14.1R2.
Command introduced in Junos OS Release 17.2 for MX2008 Universal Routing Platforms and PTX10008 Routers.
Command introduced in Junos OS Release 17.3 for MX10003 Universal Routing Platforms.
Command introduced in Junos OS Release 18.2 for MX10008 Universal Routing Platforms and EX9253 Switches.

Description

(MX Series routers and EX8200 switches only) Display the state of all fabric planes and the elapsed uptime.

(QFX Series switches) Display the state of all fabric planes.

Options

extended —(Optional) Display the extended summary of fabric planes.

Required Privilege Level

view

List of Sample Output

show chassis fabric summary (MX480 Router) on page 1421
show chassis fabric summary (MX480 Router with MPC4E) on page 1422
show chassis fabric summary (MX960 Router) on page 1422
show chassis fabric summary (MX2010 Router) on page 1423

show chassis fabric summary (MX2020 Router with MPC4E) on page 1423
show chassis fabric summary (MX2008) on page 1423
show chassis fabric summary (EX9253 Switch) on page 1424
show chassis fabric summary (PTX Series Packet Transport Router) on page 1424
show chassis fabric summary (PTX10008 Router) on page 1425
show chassis fabric summary (QFX 10008 Switch) on page 1425
show chassis fabric summary extended (MX960 Router) on page 1426
show chassis fabric summary (MX10003 Router) on page 1426
show chassis fabric summary extended (MX10003 Router) on page 1427

Output Fields

Table 71 on page 1418 lists the output fields for the **show chassis fabric summary** command. Output fields are listed in the approximate order in which they appear.

Table 71: show chassis fabric summary Output Fields

Field Name	Field Description
Plane	(MX Series, MX2020, MX2010, and MX2008 Routers only) Plane number.

Table 71: show chassis fabric summary Output Fields *(continued)*

Field Name	Field Description
State	

Table 71: show chassis fabric summary Output Fields *(continued)*

Field Name	Field Description
	(MX Series and QFX Series) State of the SIB or FPC: • **Online**—Switch Interface Board (SIB) is operational and running. **NOTE:** On the Enhanced MX SCB with Trio MPC, a maximum of 4 planes are operational and running. On all the other SCBs with Trio MPC, all the planes are operational and running. • **Empty**—SIB is powered down. • **Check**—SIB is in the **Check** state because of the following reasons: ◦ SIB is not inserted properly. ◦ Some destination errors are detected on the SIB. In this case, the Packet Forwarding Engine stops using the SIB to send traffic to the affected destination Packet Forwarding Engine. ◦ Some link errors are detected on the channel between the SIB and a Packet Forwarding Engine. Link errors can be detected at initialization time or runtime: ◦ Link errors caused by a link training failure at initialization time—The Packet Forwarding Engine does not use the SIB to send traffic. The **show chassis fabric fpcs** command shows **Plane disabled** as status for this link. ◦ Link errors caused by CRC errors detected at runtime—The Packet Forwarding Engine continues to use the SIB to send traffic. The **show chassis fabric fpcs** command shows **Link error** as the status for this link. **NOTE:** The **Check** state does not apply to PTX Series Packet Transport Routers because there are no SIBs in the Check state. For information about link and destination errors, issue the **show chassis fabric fpcs** commands. • **Spare**—SIB is redundant and will move to active state if one of the working SIBs fails. **NOTE:** **Spare** does not apply to PTX Series Packet Transport Routers because there are no spare SIBs in the device.

Table 71: show chassis fabric summary Output Fields *(continued)*

Field Name	Field Description
	(MX2010, MX2020, and MX2008 Routers) State of the SFB. • **Online**—Switch Fabric Board (SFB) is operational and running. • **Offline**—Switch Fabric Board (SFB) is powered down. • **Check**—Switch Fabric Board (SFB) is in the check state.
Errors	(PTX Series and QFX Series) Indicates whether there is any error on the SIB. • **None**—No errors • **Link Errors**—Fabric link errors were found on the SIB RX link. • **Cell drops**—Fabric cell drops were found on the SIB ASIC. • **Link, Cell drops**—Both Link errors and cell drops were detected on at least one of the FPC's fabric links. • **Asic Errors**—A fault affecting one of the ASICs on the SIB is detected. It can be an IO error or an internal error signaled by the ASIC. **NOTE:** The **Errors** column is empty only when the FPC or SIB is offline.
Uptime	(MX Series, MX2010, MX2020, and MX2008 Routers) Elapsed time the plane has been online.
Link Error	Fabric link errors were found on the SIB RX link.
Link TF	Fabric link training failure has occurred.
Destination errors	• **Local**—Destination error detected on the FPC or PFE's own self-stream. • **Remote**—Destination error detected on the FPC or PFE's non-self-streams.

Sample Output

show chassis fabric summary (MX480 Router)

```
user@host> show chassis fabric summary
```

```
Plane   State    Uptime
 0      Online   8 hours, 45 minutes, 29 seconds
 1      Online   8 hours, 45 minutes, 28 seconds
 2      Online   8 hours, 45 minutes, 28 seconds
 3      Online   8 hours, 45 minutes, 28 seconds
 4      Spare    8 hours, 45 minutes, 28 seconds
 5      Spare    8 hours, 45 minutes, 28 seconds
 6      Spare    8 hours, 45 minutes, 28 seconds
 7      Check    6 hours, 10 minutes, 12 seconds
```

show chassis fabric summary (MX480 Router with MPC4E)

`user@host >` **show chassis fabric summary**

```
Plane   State    Uptime
 0      Online   6 hours, 57 minutes, 44 seconds
 1      Online   6 hours, 57 minutes, 40 seconds
 2      Online   6 hours, 57 minutes, 39 seconds
 3      Online   6 hours, 57 minutes, 34 seconds
 4      Spare    6 hours, 57 minutes, 34 seconds
 5      Spare    6 hours, 57 minutes, 29 seconds
 6      Spare    6 hours, 57 minutes, 29 seconds
 7      Spare    6 hours, 57 minutes, 24 seconds
 Note:
 For FPC slots with MPC Type 4 or MCC:
   Fabric planes 1 and 5, 3 and 7 use shared physical links.
   Those slots may run in a reduced bandwidth in case both
   plane 1 and 5, or both 3 and 7 are active.
```

show chassis fabric summary (MX960 Router)

`user@host>` **show chassis fabric summary**

```
Plane   State    Uptime
 0      Online   3 hours, 7 minutes, 9 seconds
 1      Online   3 hours, 7 minutes, 4 seconds
 2      Online   3 hours, 6 minutes, 59 seconds
 3      Online   3 hours, 6 minutes, 54 seconds
 4      Empty
 5      Empty
```

show chassis fabric summary (MX2010 Router)

`user@host>` **show chassis fabric summary**

```
Plane   State    Uptime
 0      Online   1 day, 13 hours, 20 minutes, 10 seconds
 1      Online   1 day, 13 hours, 19 minutes, 59 seconds
 2      Online   1 day, 13 hours, 19 minutes, 49 seconds
 3      Offline
 4      Online   1 day, 13 hours, 19 minutes, 28 seconds
 5      Check    1 day, 13 hours, 19 minutes, 17 seconds
 6      Online   1 day, 13 hours, 19 minutes, 6 seconds
 7      Online   1 hour, 43 minutes, 5 seconds
```

show chassis fabric summary (MX2020 Router with MPC4E)

`user@host >` **show chassis fabric summary**

```
Plane   State    Uptime
 0      Online   3 days, 6 hours, 58 minutes, 29 seconds
 1      Online   3 days, 6 hours, 58 minutes, 18 seconds
 2      Online   3 days, 6 hours, 58 minutes, 8 seconds
 3      Online   3 days, 6 hours, 57 minutes, 57 seconds
 4      Online   3 days, 6 hours, 57 minutes, 46 seconds
 5      Online   3 days, 6 hours, 57 minutes, 36 seconds
 6      Online   3 days, 6 hours, 57 minutes, 25 seconds
 7      Online   3 days, 6 hours, 57 minutes, 14 seconds
```

show chassis fabric summary (MX2008)

`user@host >` **show chassis fabric summary**

```
Plane   State    Uptime
 0      Offline
 1      Online   16 hours, 38 minutes, 34 seconds
 2      Online   16 hours, 38 minutes, 29 seconds
 3      Online   16 hours, 38 minutes, 24 seconds
 4      Offline
 5      Online   16 hours, 38 minutes, 13 seconds
 6      Online   16 hours, 38 minutes, 8 seconds
 7      Offline
```

show chassis fabric summary (EX9253 Switch)

`user@switch>` **show chassis fabric summary**

```
Plane   State    Uptime
 0      Online   21 days, 8 minutes, 41 seconds
 1      Online   21 days, 8 minutes, 41 seconds
 2      Online   21 days, 8 minutes, 41 seconds
 3      Online   21 days, 8 minutes, 41 seconds
 4      Online   21 days, 8 minutes, 41 seconds
 5      Online   21 days, 8 minutes, 41 seconds
 6      Online   21 days, 8 minutes, 41 seconds
 7      Online   21 days, 8 minutes, 41 seconds
 8      Online   21 days, 8 minutes, 41 seconds
 9      Online   21 days, 8 minutes, 41 seconds
 10     Online   21 days, 8 minutes, 41 seconds
 11     Online   21 days, 8 minutes, 41 seconds
 12     Online   21 days, 8 minutes, 41 seconds
 13     Online   21 days, 8 minutes, 41 seconds
 14     Online   21 days, 8 minutes, 41 seconds
 15     Online   21 days, 8 minutes, 41 seconds
 16     Online   21 days, 8 minutes, 41 seconds
 17     Online   21 days, 8 minutes, 41 seconds
 18     Online   21 days, 8 minutes, 41 seconds
 19     Online   21 days, 8 minutes, 41 seconds
 20     Online   21 days, 8 minutes, 41 seconds
 21     Online   21 days, 8 minutes, 41 seconds
```

show chassis fabric summary (PTX Series Packet Transport Router)

`user@host>` **show chassis fabric summary**

```
FRU         State          Errors

SIB0        Online         None
SIB1        Online         Link Errors
SIB2        Online         None
SIB3        Online         Cell drops
SIB4        Offline
SIB5        Online         None
SIB6        Online         Link, Cell drops
SIB7        Online         None
SIB8        Online         Link, Cell drops

FPC0        Online         None
```

```
FPC1        Online          Link Errors
FPC2        Online          None
FPC3        Offline
FPC4        Online          None
FPC5        Online          None
FPC6        Empty
FPC7        Empty
```

show chassis fabric summary (PTX10008 Router)

`user@host>` **show chassis fabric summary**

```
FRU         State           Errors

SIB0        Online          None
SIB1        Online          None
SIB2        Empty
SIB3        Empty
SIB4        Empty
SIB5        Empty

FPC0        Online          None
FPC1        Empty
FPC2        Empty
FPC3        Empty
FPC4        Empty
FPC5        Online          None
FPC6        Online          None
FPC7        Empty
```

show chassis fabric summary (QFX 10008 Switch)

`user@host>` **show chassis fabric summary**

```
FRU         State           Errors

FPC0        Online          None
FPC1        Online          Link Errors
FPC2        Online          None
FPC3        Offline
FPC4        Online          None
FPC5        Online          None
FPC6        Empty
```

```
FPC7        Empty

SIB0        Online         None
SIB1        Online         Link Errors
SIB2        Online         None
SIB3        Online         Cell drops
SIB4        Offline
SIB5        Online         None
```

Sample Output

show chassis fabric summary extended (MX960 Router)

`user@host>` **show chassis fabric summary extended**

```
Plane   State      Link   Link  Destination errors  Uptime
                   Error  TF    Local / Remote
 0      Online     NO     NO        NO/  NO         7 days, 5 hours, 25 minutes,
20 seconds
 1      Online     NO     NO        NO/  NO         7 days, 5 hours, 25 minutes,
11 seconds
 2      Online     NO     NO        NO/  NO         7 days, 5 hours, 25 minutes,
5 seconds
 3      Online     NO     NO        NO/  NO         7 days, 5 hours, 24 minutes,
59 seconds
 4      Spare      NO     NO        NO/  NO         7 days, 5 hours, 24 minutes,
52 seconds
 5      Spare      NO     NO        NO/  NO         7 days, 5 hours, 24 minutes,
45 seconds
```

show chassis fabric summary (MX10003 Router)

`user@host>` **show chassis fabric summary**

```
Plane   State    Uptime
 0      Online   1 day, 10 hours, 12 minutes, 52 seconds
 1      Online   1 day, 10 hours, 12 minutes, 52 seconds
 2      Online   1 day, 10 hours, 12 minutes, 52 seconds
 3      Online   1 day, 10 hours, 12 minutes, 52 seconds
```

```
4      Online   1 day, 10 hours, 12 minutes, 52 seconds
5      Online   1 day, 10 hours, 12 minutes, 52 seconds
6      Online   1 day, 10 hours, 12 minutes, 52 seconds
7      Online   1 day, 10 hours, 12 minutes, 52 seconds
8      Online   1 day, 10 hours, 12 minutes, 52 seconds
9      Online   1 day, 10 hours, 12 minutes, 52 seconds
10     Online   1 day, 10 hours, 12 minutes, 52 seconds
11     Online   1 day, 10 hours, 12 minutes, 52 seconds
12     Online   1 day, 10 hours, 12 minutes, 52 seconds
13     Online   1 day, 10 hours, 12 minutes, 52 seconds
14     Online   1 day, 10 hours, 12 minutes, 52 seconds
15     Online   1 day, 10 hours, 12 minutes, 52 seconds
16     Online   1 day, 10 hours, 12 minutes, 52 seconds
17     Online   1 day, 10 hours, 12 minutes, 52 seconds
18     Online   1 day, 10 hours, 12 minutes, 52 seconds
19     Online   1 day, 10 hours, 12 minutes, 52 seconds
20     Online   1 day, 10 hours, 12 minutes, 52 seconds
21     Online   1 day, 10 hours, 12 minutes, 52 seconds
```

show chassis fabric summary extended (MX10003 Router)

`user@host>` **show chassis fabric summary extended**

```
Plane   State      Link   Link  Destination errors  Uptime
                   Error  TF    Local / Remote
 0      Online     NO     NO        NO/  NO         1 day, 10 hours, 14 minutes,
       26 seconds
 1      Online     NO     NO        NO/  NO         1 day, 10 hours, 14 minutes,
       26 seconds
 2      Online     NO     NO        NO/  NO         1 day, 10 hours, 14 minutes,
       26 seconds
 3      Online     NO     NO        NO/  NO         1 day, 10 hours, 14 minutes,
       26 seconds
 4      Online     NO     NO        NO/  NO         1 day, 10 hours, 14 minutes,
       26 seconds
 5      Online     NO     NO        NO/  NO         1 day, 10 hours, 14 minutes,
       26 seconds
 6      Online     NO     NO        NO/  NO         1 day, 10 hours, 14 minutes,
       26 seconds
 7      Online     NO     NO        NO/  NO         1 day, 10 hours, 14 minutes,
       26 seconds
 8      Online     NO     NO        NO/  NO         1 day, 10 hours, 14 minutes,
       26 seconds
```

```
9      Online     NO     NO        NO/  NO        1 day, 10 hours, 14 minutes,
      26 seconds
10     Online     NO     NO        NO/  NO        1 day, 10 hours, 14 minutes,
      26 seconds
11     Online     NO     NO        NO/  NO        1 day, 10 hours, 14 minutes,
      26 seconds
12     Online     NO     NO        NO/  NO        1 day, 10 hours, 14 minutes,
      26 seconds
13     Online     NO     NO        NO/  NO        1 day, 10 hours, 14 minutes,
      26 seconds
14     Online     NO     NO        NO/  NO        1 day, 10 hours, 14 minutes,
      26 seconds
15     Online     NO     NO        NO/  NO        1 day, 10 hours, 14 minutes,
      26 seconds
16     Online     NO     NO        NO/  NO        1 day, 10 hours, 14 minutes,
      26 seconds
17     Online     NO     NO        NO/  NO        1 day, 10 hours, 14 minutes,
      26 seconds
18     Online     NO     NO        NO/  NO        1 day, 10 hours, 14 minutes,
      26 seconds
19     Online     NO     NO        NO/  NO        1 day, 10 hours, 14 minutes,
      26 seconds
20     Online     NO     NO        NO/  NO        1 day, 10 hours, 14 minutes,
      26 seconds
21     Online     NO     NO        NO/  NO        1 day, 10 hours, 14 minutes,
      26 seconds
```

show chassis fabric topology

List of Syntax

Syntax (TX Matrix Router) on page 1429
Syntax (TX Matrix Plus Router) on page 1429
Syntax (T4000 Core Router) on page 1429
Syntax (PTX Series Packet Transport Routers and QFX Series Switches) on page 1429

Syntax (TX Matrix Router)

```
show chassis fabric topology
<lcc number | scc>
<sib-slot>
```

Syntax (TX Matrix Plus Router)

```
show chassis fabric topology
<lcc number | sfc number>
<sib-slot>
```

Syntax (T4000 Core Router)

```
show chassis fabric topology
<sib-slot>
```

Syntax (PTX Series Packet Transport Routers and QFX Series Switches)

```
show chassis fabric topology
```

Release Information

Command introduced before Junos OS Release 7.4.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
Command introduced in Junos OS Release 12.1 for PTX Series Packet Transport Routers.
Command introduced in Junos OS Release 15.1X53-D30 for QFX Series switches.
Command introduced in Junos OS Release 17.2 for PTX10008 Routers.

Description

(TX Matrix routers only) Display the state of the switching fabric topology for the Switch Interface Board (SIB) connection between the TX Matrix router and the T640 routers.

(TX Matrix Plus routers only) Display the state of the switching fabric topology for the SIB connection between the TX Matrix Plus router and the connected routers.

(T320, T640, T1600, and T4000 routers only) Display the state of the switching fabric topology for the connection between the Switch Interface Board (SIB) and the FPCs.

(PTX Series Packet Transport Routers and QFX Series switches) Display the input-output link topology.

Options

none—(TX Matrix routers only) Display the state of the switching fabric topology for the Switch Interface Board (SIB) connection between the TX Matrix router and the T640 routers.

(TX Matrix Plus routers only) Display the state of the switching fabric topology for the SIB connection between the TX Matrix Plus router and the connected routers.

(T320, T640, T1600, and T4000 routers only) Display the state of the switching fabric topology for the connection between the Switch Interface Board (SIB) and the FPCs.

(QFX Series switches) Display the input-output link topology.

lcc *number*—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display the fabric topology state for a specified T640 router (line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display the fabric topology state for a specified router (line-card chassis) that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

scc—(TX Matrix routers only) (Optional) Display the fabric topology state for the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) Display the fabric topology for the switch-fabric chassis. Replace ***number*** with **0**.

sib-slot—(Optional) Display the fabric topology state for a specified SIB slot. Replace ***sib-slot*** with a value from **0** through **4**. On a TX Matrix Plus router, replace ***sib-slot*** with a value from **0** through **15**.

Required Privilege Level

view

RELATED DOCUMENTATION

Layer 2 Wholesale Network Topology Overview

List of Sample Output

show chassis fabric topology scc (TX Matrix Router) on page 1437
show chassis fabric topology lcc on page 1439
show chassis fabric topology (TX Matrix Plus Router) on page 1441
show chassis fabric topology sfc (TX Matrix Plus Router) on page 1443
show chassis fabric topology lcc (TX Matrix Plus Router) on page 1444
show chassis fabric topology (T4000 Core Router) on page 1446
show chassis fabric topology lcc (TX Matrix Plus Router with 3D SIBs) on page 1447
show chassis fabric topology (PTX5000 Router) on page 1449
show chassis fabric topology (PTX10008 Router) on page 1453
show chassis fabric topology (QFX10008 Switch) on page 1458

Output Fields

Table 72 on page 1431 lists the output fields for the **show chassis fabric topology** command. Output fields are listed in the approximate order in which they appear.

Table 72: show chassis fabric topology Output Fields

Field Name	Field Description
in-links	Fabric topology for receive side links.
out-links	Fabric topology for transmit side links.

Table 72: show chassis fabric topology Output Fields *(continued)*

Field Name	Field Description

state	State of the fabric link:
	• **RESET**—Link between the SIB and the FPC/DPC is powered down on purpose. This is done in all non-dual Packet Forwarding Engine–based boards.
	• **UP**—Link between the SIB and the FPC/DCP is up and running.
	• **DOWN**—Link between the SIB and the FPC/DCP is powered down.
	• **FAULT**—The SIB is in the alarmed state, in which the SIB's plane is not operational for one or more of the following reasons:
	  ◦ On-board F-chip is not operational.
	  ◦ Fiber-optic connector faults.
	  ◦ FPC connector faults.
	  ◦ SIB midplane connector faults.
	NOTE: The following state descriptions are applicable only to PTX Series Packet Transport Routers.
	• **OK**—The link between the SIB and the FPC is operational.
	• **Down**—The link between the SIB and the FPC is powered down.
	• **Error**—The CCL link between the SIB and FPC is not operational for one or more of the following reasons:
	  ◦ FPC midplane connector failure.
	  ◦ SIB midplane connector failure.
	  ◦ CCL link CRC error.

Table 72: show chassis fabric topology Output Fields *(continued)*

Out-Links: and **In-Links** (TX Matrix Plus router only)	State of the links from the F13 SIB to the LCC or vice-versa. Out-Links indicate Tx links. In-Links indicate an Rx link. The following additional fields are displayed for each SIB:
	• **VCSEL Status**—Optical (VCSEL channel) link status for the corresponding electrical (HSL2) link. The states include:
	  ◦ **OK**—Optical signal power is good.
	  ◦ **Error**—Internal error.
	  ◦ **LOS**—Loss of Signal detected.
	  ◦ **High Cur**—The Tx Bias-current is higher than threshold on this channel. This is applicable only to Tx Channels.
	  ◦ **Low Cur** —The Tx Bias-current is lower than threshold on this channel. This is applicable only to Tx Channels.
	• **HSL2 Channel**—HSL2 is the electrical link used to connect ASICs to the in-link and out-link. The channel number corresponds to the link and varies based on the ASIC or configuration.

Table 72: show chassis fabric topology Output Fields *(continued)*

- **HSL2 Status** —The status of the HSL2 Channel. Includes the following states:
- **Up**—Channel is up.
- **Down**—Channel is down.
- **Reset**—Channel has been reset.
- **Fault**—Channel has faults.

The following is a representation of display output for links originating from the SIBs (LCC or SFC)

```
SF_[1|3]_port#_FB_[A-D](VCSEL#, fiber)
```

- **SF_[1|3]**—Name of the ASIC, with Fabric F1 or F3 mode.
- **port#**—HSL2 port number on the SF ASIC in the LCC.
- **FB_[A-D]**—via fiber bundle A, B, C or D.
- **VCSEL#**—VCSEL module number on SIB.
- **fiber**—Fiber channel number.

The following is a representation of display output for links originating from the SIBs (LCC or SFC)

```
SF_[1|3]_port#_FB_[A-D](VCSEL#, fiber)
```

- **SF_[1|3]**—Name of the ASIC, with Fabric F1 or F3 mode.
- **port#**—HSL2 port number on the SF ASIC in the LCC.
- **FB_[A-D]**—via fiber bundle A, B, C or D.
- **VCSEL#**—VCSEL module number on SIB.
- **fiber**—Fiber channel number.

The following is a sample output with description of the fields displayed in the output for Out-Links:

```
Out-Links:
=========
SF_30_13_FB_A(21,09) -> FPC7_B_SG(3,3,6)_FB_A(18,09)      OK       203     Up
```

Table 72: show chassis fabric topology Output Fields *(continued)*

- **SF_30_13**—Name of the ASIC, with Fabric F1 or F3 mode. In this case, 3 is the F3 direction and is used in the Tx path and 0 identifies the serial link on the SF chip (in this case, link goes to sf-3 chip number 0). You can also have F1 mode and Rx path instead.
- **FB_A (21, 09)**—Fiber bundle A, with VCSEL unit number 21 within the SIB, and channel number 9 within the unit number.
- **FPC7_B_SG(3,3,6**—FPC 7.with bottom Packet Forwarding Engine (T for top PFE and B for bottom PFE), SG ASIC, with number 3 and port number 3, with HSL2 link number with the SIB as 6.
- **FB_A(18, 09)**—Fiber Bundle, with VCSEL unit number 18 within the SIB, and VCSEL channel number 9 within the unit number.

The following is a representation of display output for links originating from the FPCs (In-Links)

```
FPC#_[T|B]_SG(ASIC#, port#, HSL2_bit)_FB_[A-D](VCSEL#, fiber)
```

- **FPC#**—FPC number with PFE (0 or 1).
- **T**—Top Packet Forwarding Engine.
- **B**—Bottom Packet Forwarding Engine.
- **SG(ASIC#, port#, HSL2_bit)**—SG ASIC information (ASIC 0-3, port 0-3, HSL2_bit 0-7).
- **FB_[A-D]**—via fiber bundle A, B, C or D.
- **VCSEL#**—VCSEL module number on SIB.
- **fiber**—Fiber channel number.

The following is a representation of display output for links originating from the FPCs (In-Links)

```
FPC#_[T|B]_SG(ASIC#, port#, HSL2_bit)_FB_[A-D](VCSEL#, fiber)
```

- **FPC#**—FPC number with PFE (0 or 1).
- **T**—Top Packet Forwarding Engine.
- **B**—Bottom Packet Forwarding Engine.
- **SG(ASIC#, port#, HSL2_bit)**—SG ASIC information (ASIC 0-3, port 0-3, HSL2_bit 0-7).
- **FB_[A-D]**—via fiber bundle A, B, C or D.
- **VCSEL#**—VCSEL module number on SIB.
- **fiber**—Fiber channel number.

The following is a sample output with description of the fields displayed in the output for In-Links:

```
In-Links :
========
FPC0_T_SG(0,0,0)_FB_D(04,11)  -> SF_10_00_FB_D(01,11)     OK       0       Up
```

- **FPC0**—FPC 0.
- **T**—Top Packet Forwarding Engine.
- **SG (0, 0, 0)**—SG ASIC with port number 0 and link 0.

Table 72: show chassis fabric topology Output Fields *(continued)*

	• **FB_D (04,11)**—Fiber Bundle D with VCSEL 4, channel 11. • **SF_10**—Indicates F1 mode chip number 0 and Rx path. • **SF_10_00_FB_D(01,11)** —Indicates F1 mode chip number 0 and Rx path with port 0, fiber bundle D, with VCSEL 1, channel 11.

Out-links and **In-links** (TX Matrix Plus router with 3D SIBs only)	State of the links from the F13 SIB to the SFC/LCC or vice-versa. Out-Links indicate Tx links. In-Links indicate an Rx link. The following additional fields are displayed for each SIB:
	• Description of the fields displayed in the output for **In-links** and **Out-links** for SFC:
	`----------`
	`In-links State Out-links State`
	`----------`
	`CXP0_Evn->F13_SIB0_XF2,04_0 Up F13_SIB0_XF2,04_0->CXP0_Evn Up`
	• **CXP0_Evn**—CXP optics with type of port bits such as even or odd. In this case, it indicates CXP optics with even port bit number 0.
	• **F13_SIB0**—Name of the SFC data plane SIB with the SIB number. In this case, it indicates F13 SIB with number 0.
	• **XF2,04_0**—Name of the ASIC with port and subchannel number. In this case, it Indicates XF2 chip with port number 4 and subchannel number 0.
	• Description of the fields displayed in the output for **In-links** and **Out-links** for LCC:
	`----------`
	`In-links State Out-links State`
	`----------`
	`CXP0_Evn->LCC_SIB0_XF3,10_0 Up LCC_SIB0_XF3,10_0->CXP0_Evn Up`
	• **CXP0_Evn**—CXP optics with the type of port bits such as even or odd. In this case, it indicates CXP optics with even port bit number 0.
	• **LCC_SIB0**—LCC SIB number. In this case, it indicates LCC SIB with number 0.
	• **XF3,10_0**—Name of the ASIC with port and subchannel number. In this case, it Indicates XF3 with port number 10 and subchannel number 0.

Sample Output

show chassis fabric topology scc (TX Matrix Router)

user@host> **show chassis fabric topology scc**

```
scc-re1:
--------------------------------------------------------------------------------
fchip (mode)
in-links        state   out-links         state
--------------------------------------------------------------------------------
Sib #0 :
---------
SIB0_F0 (F2 ):
LCC0_SIB-L0_F0,03->SIB-S0_F0,00  UP         SIB-S0_F0,00->LCC0_SIB-L0_F1,00  UP
LCC1_SIB-L0_F0,03->SIB-S0_F0,01  UP         SIB-S0_F0,01->LCC1_SIB-L0_F1,08  UP
LCC2_SIB-L0_F0,03->SIB-S0_F0,02  RESET       SIB-S0_F0,02->LCC2_SIB-L0_F1,08  UP
LCC3_SIB-L0_F0,03->SIB-S0_F0,03  RESET       SIB-S0_F0,03->LCC3_SIB-L0_F1,00  UP
LCC0_SIB-L0_F0,02->SIB-S0_F0,04  UP         SIB-S0_F0,04->LCC0_SIB-L0_F1,01  UP
LCC1_SIB-L0_F0,02->SIB-S0_F0,05  UP         SIB-S0_F0,05->LCC1_SIB-L0_F1,09  UP
LCC2_SIB-L0_F0,02->SIB-S0_F0,06  RESET       SIB-S0_F0,06->LCC2_SIB-L0_F1,09  UP
LCC3_SIB-L0_F0,02->SIB-S0_F0,07  RESET       SIB-S0_F0,07->LCC3_SIB-L0_F1,01  UP
LCC0_SIB-L0_F0,07->SIB-S0_F0,08  UP         SIB-S0_F0,08->LCC0_SIB-L0_F1,04  UP
LCC1_SIB-L0_F0,07->SIB-S0_F0,09  UP         SIB-S0_F0,09->LCC1_SIB-L0_F1,12  UP
LCC2_SIB-L0_F0,07->SIB-S0_F0,10  RESET       SIB-S0_F0,10->LCC2_SIB-L0_F1,12  UP
LCC3_SIB-L0_F0,07->SIB-S0_F0,11  RESET       SIB-S0_F0,11->LCC3_SIB-L0_F1,04  UP
LCC0_SIB-L0_F0,06->SIB-S0_F0,12  UP         SIB-S0_F0,12->LCC0_SIB-L0_F1,05  UP
LCC1_SIB-L0_F0,06->SIB-S0_F0,13  UP         SIB-S0_F0,13->LCC1_SIB-L0_F1,13  UP
LCC2_SIB-L0_F0,06->SIB-S0_F0,14  RESET       SIB-S0_F0,14->LCC2_SIB-L0_F1,13  UP
LCC3_SIB-L0_F0,06->SIB-S0_F0,15  RESET       SIB-S0_F0,15->LCC3_SIB-L0_F1,05  UP
SIB0_F1 (F2 ):
LCC0_SIB-L0_F0,11->SIB-S0_F1,00  UP         SIB-S0_F1,00->LCC0_SIB-L0_F1,08  UP
LCC1_SIB-L0_F0,11->SIB-S0_F1,01  UP         SIB-S0_F1,01->LCC1_SIB-L0_F1,00  UP
LCC2_SIB-L0_F0,11->SIB-S0_F1,02  RESET       SIB-S0_F1,02->LCC2_SIB-L0_F1,00  UP
LCC3_SIB-L0_F0,11->SIB-S0_F1,03  RESET       SIB-S0_F1,03->LCC3_SIB-L0_F1,08  UP
LCC0_SIB-L0_F0,10->SIB-S0_F1,04  UP         SIB-S0_F1,04->LCC0_SIB-L0_F1,09  UP
LCC1_SIB-L0_F0,10->SIB-S0_F1,05  UP         SIB-S0_F1,05->LCC1_SIB-L0_F1,01  UP
LCC2_SIB-L0_F0,10->SIB-S0_F1,06  RESET       SIB-S0_F1,06->LCC2_SIB-L0_F1,01  UP
LCC3_SIB-L0_F0,10->SIB-S0_F1,07  RESET       SIB-S0_F1,07->LCC3_SIB-L0_F1,09  UP
LCC0_SIB-L0_F0,15->SIB-S0_F1,08  UP         SIB-S0_F1,08->LCC0_SIB-L0_F1,12  UP
LCC1_SIB-L0_F0,15->SIB-S0_F1,09  UP         SIB-S0_F1,09->LCC1_SIB-L0_F1,04  UP
LCC2_SIB-L0_F0,15->SIB-S0_F1,10  RESET       SIB-S0_F1,10->LCC2_SIB-L0_F1,04  UP
LCC3_SIB-L0_F0,15->SIB-S0_F1,11  RESET       SIB-S0_F1,11->LCC3_SIB-L0_F1,12  UP
LCC0_SIB-L0_F0,14->SIB-S0_F1,12  UP         SIB-S0_F1,12->LCC0_SIB-L0_F1,13  UP
LCC1_SIB-L0_F0,14->SIB-S0_F1,13  UP         SIB-S0_F1,13->LCC1_SIB-L0_F1,05  UP
```

```
LCC2_SIB-L0_F0,14->SIB-S0_F1,14  RESET        SIB-S0_F1,14->LCC2_SIB-L0_F1,05  UP
LCC3_SIB-L0_F0,14->SIB-S0_F1,15  RESET        SIB-S0_F1,15->LCC3_SIB-L0_F1,13  UP
SIB0_F2 (F2 ):
LCC3_SIB-L0_F0,13->SIB-S0_F2,00   RESET      SIB-S0_F2,00->LCC3_SIB-L0_F1,14  UP
LCC2_SIB-L0_F0,13->SIB-S0_F2,01  RESET        SIB-S0_F2,01->LCC2_SIB-L0_F1,06  UP
LCC1_SIB-L0_F0,13->SIB-S0_F2,02  UP         SIB-S0_F2,02->LCC1_SIB-L0_F1,06  UP
LCC0_SIB-L0_F0,13->SIB-S0_F2,03  UP         SIB-S0_F2,03->LCC0_SIB-L0_F1,14  UP
LCC3_SIB-L0_F0,12->SIB-S0_F2,04  RESET        SIB-S0_F2,04->LCC3_SIB-L0_F1,15  UP
LCC2_SIB-L0_F0,12->SIB-S0_F2,05  RESET       SIB-S0_F2,05->LCC2_SIB-L0_F1,07  UP
LCC1_SIB-L0_F0,12->SIB-S0_F2,06  UP         SIB-S0_F2,06->LCC1_SIB-L0_F1,07  UP
LCC0_SIB-L0_F0,12->SIB-S0_F2,07  UP         SIB-S0_F2,07->LCC0_SIB-L0_F1,15  UP
LCC3_SIB-L0_F0,09->SIB-S0_F2,08  RESET        SIB-S0_F2,08->LCC3_SIB-L0_F1,10  UP
LCC2_SIB-L0_F0,09->SIB-S0_F2,09  RESET        SIB-S0_F2,09->LCC2_SIB-L0_F1,02  UP
LCC1_SIB-L0_F0,09->SIB-S0_F2,10  UP         SIB-S0_F2,10->LCC1_SIB-L0_F1,02  UP
LCC0_SIB-L0_F0,09->SIB-S0_F2,11  UP         SIB-S0_F2,11->LCC0_SIB-L0_F1,10  UP
LCC3_SIB-L0_F0,08->SIB-S0_F2,12  RESET        SIB-S0_F2,12->LCC3_SIB-L0_F1,11  UP
LCC2_SIB-L0_F0,08->SIB-S0_F2,13  RESET        SIB-S0_F2,13->LCC2_SIB-L0_F1,03  UP
LCC1_SIB-L0_F0,08->SIB-S0_F2,14  UP         SIB-S0_F2,14->LCC1_SIB-L0_F1,03  UP
LCC0_SIB-L0_F0,08->SIB-S0_F2,15  UP         SIB-S0_F2,15->LCC0_SIB-L0_F1,11  UP
SIB0_F3 (F2 ):
LCC3_SIB-L0_F0,05->SIB-S0_F3,00  RESET        SIB-S0_F3,00->LCC3_SIB-L0_F1,06  UP
LCC2_SIB-L0_F0,05->SIB-S0_F3,01  RESET        SIB-S0_F3,01->LCC2_SIB-L0_F1,14  UP
LCC1_SIB-L0_F0,05->SIB-S0_F3,02  UP         SIB-S0_F3,02->LCC1_SIB-L0_F1,14  UP
LCC0_SIB-L0_F0,05->SIB-S0_F3,03  UP         SIB-S0_F3,03->LCC0_SIB-L0_F1,06  UP
LCC3_SIB-L0_F0,04->SIB-S0_F3,04  RESET        SIB-S0_F3,04->LCC3_SIB-L0_F1,07  UP
LCC2_SIB-L0_F0,04->SIB-S0_F3,05  RESET        SIB-S0_F3,05->LCC2_SIB-L0_F1,15  UP
LCC1_SIB-L0_F0,04->SIB-S0_F3,06  UP         SIB-S0_F3,06->LCC1_SIB-L0_F1,15  UP
LCC0_SIB-L0_F0,04->SIB-S0_F3,07  UP         SIB-S0_F3,07->LCC0_SIB-L0_F1,07  UP
LCC3_SIB-L0_F0,01->SIB-S0_F3,08  RESET        SIB-S0_F3,08->LCC3_SIB-L0_F1,02  UP
LCC2_SIB-L0_F0,01->SIB-S0_F3,09  RESET        SIB-S0_F3,09->LCC2_SIB-L0_F1,10  UP
LCC1_SIB-L0_F0,01->SIB-S0_F3,10  UP         SIB-S0_F3,10->LCC1_SIB-L0_F1,10  UP
LCC0_SIB-L0_F0,01->SIB-S0_F3,11  UP         SIB-S0_F3,11->LCC0_SIB-L0_F1,02  UP
LCC3_SIB-L0_F0,00->SIB-S0_F3,12  RESET        SIB-S0_F3,12->LCC3_SIB-L0_F1,03  UP
LCC2_SIB-L0_F0,00->SIB-S0_F3,13  RESET        SIB-S0_F3,13->LCC2_SIB-L0_F1,11  UP
LCC1_SIB-L0_F0,00->SIB-S0_F3,14  UP         SIB-S0_F3,14->LCC1_SIB-L0_F1,11  UP
LCC0_SIB-L0_F0,00->SIB-S0_F3,15  UP         SIB-S0_F3,15->LCC0_SIB-L0_F1,03  UP
Sib #1 :
---------
SIB1_F0 (F2 ):
LCC0_SIB-L1_F0,03->SIB-S1_F0,00 RESET        SIB-S1_F0,00->LCC0_SIB-L1_F1,00  UP
LCC1_SIB-L1_F0,03->SIB-S1_F0,01 RESET        SIB-S1_F0,01->LCC1_SIB-L1_F1,08  UP
LCC2_SIB-L1_F0,03->SIB-S1_F0,02 RESET        SIB-S1_F0,02->LCC2_SIB-L1_F1,08  UP
LCC3_SIB-L1_F0,03->SIB-S1_F0,03 RESET        SIB-S1_F0,03->LCC3_SIB-L1_F1,00  UP
LCC0_SIB-L1_F0,02->SIB-S1_F0,04 RESET        SIB-S1_F0,04->LCC0_SIB-L1_F1,01  UP
```

```
LCC1_SIB-L1_F0,02->SIB-S1_F0,05 RESET        SIB-S1_F0,05->LCC1_SIB-L1_F1,09  UP
LCC2_SIB-L1_F0,02->SIB-S1_F0,06 RESET        SIB-S1_F0,06->LCC2_SIB-L1_F1,09  UP
LCC3_SIB-L1_F0,02->SIB-S1_F0,07 RESET        SIB-S1_F0,07->LCC3_SIB-L1_F1,01  UP
LCC0_SIB-L1_F0,07->SIB-S1_F0,08 RESET        SIB-S1_F0,08->LCC0_SIB-L1_F1,04  UP
LCC1_SIB-L1_F0,07->SIB-S1_F0,09 RESET        SIB-S1_F0,09->LCC1_SIB-L1_F1,12  UP
LCC2_SIB-L1_F0,07->SIB-S1_F0,10 RESET        SIB-S1_F0,10->LCC2_SIB-L1_F1,12  UP
LCC3_SIB-L1_F0,07->SIB-S1_F0,11 RESET        SIB-S1_F0,11->LCC3_SIB-L1_F1,04  UP
LCC0_SIB-L1_F0,06->SIB-S1_F0,12 RESET        SIB-S1_F0,12->LCC0_SIB-L1_F1,05  UP
LCC1_SIB-L1_F0,06->SIB-S1_F0,13 RESET        SIB-S1_F0,13->LCC1_SIB-L1_F1,13  UP
LCC2_SIB-L1_F0,06->SIB-S1_F0,14 RESET        SIB-S1_F0,14->LCC2_SIB-L1_F1,13  UP
LCC3_SIB-L1_F0,06->SIB-S1_F0,15 RESET        SIB-S1_F0,15->LCC3_SIB-L1_F1,05  UP
SIB1_F1 (F2 ):
LCC0_SIB-L1_F0,11->SIB-S1_F1,00 RESET        SIB-S1_F1,00->LCC0_SIB-L1_F1,08  UP
LCC1_SIB-L1_F0,11->SIB-S1_F1,01 RESET        SIB-S1_F1,01->LCC1_SIB-L1_F1,00  UP
LCC2_SIB-L1_F0,11->SIB-S1_F1,02 RESET        SIB-S1_F1,02->LCC2_SIB-L1_F1,00  UP
LCC3_SIB-L1_F0,11->SIB-S1_F1,03 RESET        SIB-S1_F1,03->LCC3_SIB-L1_F1,08  UP
LCC0_SIB-L1_F0,10->SIB-S1_F1,04 RESET        SIB-S1_F1,04->LCC0_SIB-L1_F1,09  UP
LCC1_SIB-L1_F0,10->SIB-S1_F1,05 RESET        SIB-S1_F1,05->LCC1_SIB-L1_F1,01  UP
LCC2_SIB-L1_F0,10->SIB-S1_F1,06 RESET        SIB-S1_F1,06->LCC2_SIB-L1_F1,01  UP
LCC3_SIB-L1_F0,10->SIB-S1_F1,07 RESET        SIB-S1_F1,07->LCC3_SIB-L1_F1,09  UP
LCC0_SIB-L1_F0,15->SIB-S1_F1,08 RESET        SIB-S1_F1,08->LCC0_SIB-L1_F1,12  UP
LCC1_SIB-L1_F0,15->SIB-S1_F1,09 RESET        SIB-S1_F1,09->LCC1_SIB-L1_F1,04  UP
LCC2_SIB-L1_F0,15->SIB-S1_F1,10 RESET        SIB-S1_F1,10->LCC2_SIB-L1_F1,04  UP
LCC3_SIB-L1_F0,15->SIB-S1_F1,11 RESET        -S1_F1,11->LCC3_SIB-L1_F1,12,05  UP
LCC0_SIB-L1_F0,14->SIB-S1_F1,12 RESET        SIB-S1_F1,12->LCC0_SIB-L1_F1,13  UP
LCC1_SIB-L1_F0,14->SIB-S1_F1,13 RESET        SIB-S1_F1,13->LCC1_SIB-L1_F1,05  UP
LCC2_SIB-L1_F0,14->SIB-S1_F1,14 RESET        SIB-S1_F1,14->LCC2_SIB-L1_F1,05  UP
```

show chassis fabric topology lcc

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```
lcc0-re0:
--------------------------------------------------------------------------
   fchip (mode)
in-links                state         out-links               state
--------------------------------------------------------------------
Sib #2 :
---------
SIB2_F0  (F1 ):
FPC0_T->SIB-L2_F0,00    DOWN       SIB-L2_F0,00->SIB-S2_F3,15 DOWN
FPC0_B->SIB-L2_F0,01    UP         SIB-L2_F0,01->SIB-S2_F3,11 DOWN
FPC1_T->SIB-L2_F0,02    DOWN       SIB-L2_F0,02->SIB-S2_F0,04 DOWN
FPC1_B->SIB-L2_F0,03    DOWN       SIB-L2_F0,03->SIB-S2_F0,00 DOWN
```

```
FPC2_T->SIB-L2_F0,04    DOWN      SIB-L2_F0,04->SIB-S2_F3,07 DOWN
FPC2_B->SIB-L2_F0,05    DOWN      SIB-L2_F0,05->SIB-S2_F3,03 DOWN
FPC3_T->SIB-L2_F0,06    DOWN      SIB-L2_F0,06->SIB-S2_F0,12 DOWN
FPC3_B->SIB-L2_F0,07    DOWN      SIB-L2_F0,07->SIB-S2_F0,08 DOWN
FPC4_T->SIB-L2_F0,08    DOWN      SIB-L2_F0,08->SIB-S2_F2,15 DOWN
FPC4_B->SIB-L2_F0,09    DOWN      SIB-L2_F0,09->SIB-S2_F2,11 DOWN
FPC5_T->SIB-L2_F0,10    DOWN      SIB-L2_F0,10->SIB-S2_F1,04 DOWN
FPC5_B->SIB-L2_F0,11    DOWN      SIB-L2_F0,11->SIB-S2_F1,00 DOWN
FPC6_T->SIB-L2_F0,12    DOWN      SIB-L2_F0,12->SIB-S2_F2,07 DOWN
FPC6_B->SIB-L2_F0,13    UP        SIB-L2_F0,13->SIB-S2_F2,03 DOWN
FPC7_T->SIB-L2_F0,14    DOWN      SIB-L2_F0,14->SIB-S2_F1,12 DOWN
FPC7_B->SIB-L2_F0,15    DOWN      SIB-L2_F0,15->SIB-S2_F1,08 DOWN
SIB2_F1  (F3 ):
SIB-S2_F0,00->SIB-L2_F1,00 UP     SIB-L2_F1,00->FPC7_B    DOWN
SIB-S2_F0,04->SIB-L2_F1,01 UP     SIB-L2_F1,01->FPC7_T    DOWN
SIB-S2_F3,11->SIB-L2_F1,02 UP     SIB-L2_F1,02->FPC6_B    DOWN
SIB-S2_F3,15->SIB-L2_F1,03 UP     SIB-L2_F1,03->FPC6_T    DOWN
SIB-S2_F0,08->SIB-L2_F1,04 UP     SIB-L2_F1,04->FPC5_B    DOWN
SIB-S2_F0,12->SIB-L2_F1,05 UP     SIB-L2_F1,05->FPC5_T    DOWN
SIB-S2_F3,03->SIB-L2_F1,06 UP     SIB-L2_F1,06->FPC4_B    DOWN
SIB-S2_F3,07->SIB-L2_F1,07 UP     SIB-L2_F1,07->FPC4_T    DOWN
SIB-S2_F1,00->SIB-L2_F1,08 UP     SIB-L2_F1,08->FPC3_B    DOWN
SIB-S2_F1,04->SIB-L2_F1,09 UP     SIB-L2_F1,09->FPC3_T    DOWN
SIB-S2_F2,11->SIB-L2_F1,10 UP     SIB-L2_F1,10->FPC2_B    DOWN
SIB-S2_F2,15->SIB-L2_F1,11 UP     SIB-L2_F1,11->FPC2_T    DOWN
SIB-S2_F1,08->SIB-L2_F1,12 UP     SIB-L2_F1,12->FPC1_B    DOWN
SIB-S2_F1,12->SIB-L2_F1,13 UP     SIB-L2_F1,13->FPC1_T    DOWN
SIB-S2_F2,03->SIB-L2_F1,14 UP     SIB-L2_F1,14->FPC0_B    DOWN
SIB-S2_F2,07->SIB-L2_F1,15 UP     SIB-L2_F1,15->FPC0_T    DOWN
Sib #4 :
---------
SIB4_F0  (F1 ):
FPC0_T->SIB-L4_F0,00    RESET     SIB-L4_F0,00->SIB-S4_F3,15 UP
FPC0_B->SIB-L4_F0,01    UP        SIB-L4_F0,01->SIB-S4_F3,11 UP
FPC1_T->SIB-L4_F0,02    RESET     SIB-L4_F0,02->SIB-S4_F0,04 UP
FPC1_B->SIB-L4_F0,03    RESET     SIB-L4_F0,03->SIB-S4_F0,00 UP
FPC2_T->SIB-L4_F0,04    RESET     SIB-L4_F0,04->SIB-S4_F3,07 UP
FPC2_B->SIB-L4_F0,05    RESET     SIB-L4_F0,05->SIB-S4_F3,03 UP
FPC3_T->SIB-L4_F0,06    RESET     SIB-L4_F0,06->SIB-S4_F0,12 UP
FPC3_B->SIB-L4_F0,07    RESET     SIB-L4_F0,07->SIB-S4_F0,08 UP
FPC4_T->SIB-L4_F0,08    RESET     SIB-L4_F0,08->SIB-S4_F2,15 UP
FPC4_B->SIB-L4_F0,09    RESET     SIB-L4_F0,09->SIB-S4_F2,11 UP
FPC5_T->SIB-L4_F0,10    RESET     SIB-L4_F0,10->SIB-S4_F1,04 UP
FPC5_B->SIB-L4_F0,11    RESET     SIB-L4_F0,11->SIB-S4_F1,00 UP
```

```
FPC6_T->SIB-L4_F0,12    RESET      SIB-L4_F0,12->SIB-S4_F2,07 UP
FPC6_B->SIB-L4_F0,13    UP         SIB-L4_F0,13->SIB-S4_F2,03 UP
FPC7_T->SIB-L4_F0,14    RESET      SIB-L4_F0,14->SIB-S4_F1,12 UP
FPC7_B->SIB-L4_F0,15    RESET      SIB-L4_F0,15->SIB-S4_F1,08 UP
SIB4_F1  (F3 ):
SIB-S4_F0,00->SIB-L4_F1,00 UP      SIB-L4_F1,00->FPC7_B    UP
SIB-S4_F0,04->SIB-L4_F1,01 UP      SIB-L4_F1,01->FPC7_T    UP
SIB-S4_F3,11->SIB-L4_F1,02 UP      SIB-L4_F1,02->FPC6_B    UP
SIB-S4_F3,15->SIB-L4_F1,03 UP      SIB-L4_F1,03->FPC6_T    UP
SIB-S4_F0,08->SIB-L4_F1,04 UP      SIB-L4_F1,04->FPC5_B    UP
SIB-S4_F0,12->SIB-L4_F1,05 UP      SIB-L4_F1,05->FPC5_T    UP
SIB-S4_F3,03->SIB-L4_F1,06 UP      SIB-L4_F1,06->FPC4_B    UP
SIB-S4_F3,07->SIB-L4_F1,07 UP      SIB-L4_F1,07->FPC4_T    UP
SIB-S4_F1,00->SIB-L4_F1,08 UP      SIB-L4_F1,08->FPC3_B    UP
SIB-S4_F1,04->SIB-L4_F1,09 UP      SIB-L4_F1,09->FPC3_T    UP
SIB-S4_F2,11->SIB-L4_F1,10 UP      SIB-L4_F1,10->FPC2_B    UP
SIB-S4_F2,15->SIB-L4_F1,11 UP      SIB-L4_F1,11->FPC2_T    UP
SIB-S4_F1,08->SIB-L4_F1,12 UP      SIB-L4_F1,12->FPC1_B    UP
SIB-S4_F1,12->SIB-L4_F1,13 UP      SIB-L4_F1,13->FPC1_T    UP
SIB-S4_F2,03->SIB-L4_F1,14 UP      SIB-L4_F1,14->FPC0_B    UP
SIB-S4_F2,07->SIB-L4_F1,15 UP      SIB-L4_F1,15->FPC0_T    UP
```

show chassis fabric topology (TX Matrix Plus Router)

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```
sfc0-re0:
--------------------------------------------------------------------------

F13_SIB0
=========

Out-Links:
=========
SFC0_F13_SIB_00      -> LCC00_ST_SIB_L00                VCSEL    HSL2    HSL2
                                                        Status   Channel Status
==========================================================================================
SF_30_00_FB_D(04,11) -> FPC0_T_SG(0,0,0)_FB_D(01,11)    OK       112     Up
SF_30_00_FB_D(04,10) -> FPC0_T_SG(0,0,1)_FB_D(01,10)    OK       112     Up
SF_30_00_FB_D(04,09) -> FPC0_T_SG(0,0,2)_FB_D(01,09)    OK       112     Up
SF_30_00_FB_D(04,08) -> FPC0_T_SG(0,0,3)_FB_D(01,08)    OK       112     Up
SF_30_00_FB_D(04,07) -> FPC0_T_SG(0,0,4)_FB_D(01,07)    OK       112     Up
SF_30_00_FB_D(04,06) -> FPC0_T_SG(0,0,5)_FB_D(01,06)    OK       112     Up
SF_30_00_FB_D(04,05) -> FPC0_T_SG(0,0,6)_FB_D(01,05)    OK       112     Up
```

```
SF_30_00_FB_D(04,04) -> FPC0_T_SG(0,0,7)_FB_D(01,04)     OK       112     Up
SF_30_01_FB_B(16,11) -> FPC4_T_SG(2,0,0)_FB_B(13,11)     OK       119     Up
SF_30_01_FB_B(16,10) -> FPC4_T_SG(2,0,1)_FB_B(13,10)     OK       119     Up
SF_30_01_FB_B(16,09) -> FPC4_T_SG(2,0,2)_FB_B(13,09)     OK       119     Up
SF_30_01_FB_B(16,08) -> FPC4_T_SG(2,0,3)_FB_B(13,08)     OK       119     Up
SF_30_01_FB_B(16,07) -> FPC4_T_SG(2,0,4)_FB_B(13,07)     OK       119     Up
SF_30_01_FB_B(16,06) -> FPC4_T_SG(2,0,5)_FB_B(13,06)     OK       119     Up
SF_30_01_FB_B(16,05) -> FPC4_T_SG(2,0,6)_FB_B(13,05)     OK       119     Up
SF_30_01_FB_B(16,04) -> FPC4_T_SG(2,0,7)_FB_B(13,04)     OK       119     Up
SF_30_02_FB_D(05,08) -> FPC1_T_SG(0,2,0)_FB_D(02,08)     OK       126     Up
SF_30_02_FB_D(05,07) -> FPC1_T_SG(0,2,1)_FB_D(02,07)     OK       126     Up
SF_30_02_FB_D(05,06) -> FPC1_T_SG(0,2,2)_FB_D(02,06)     OK       126     Up
SF_30_02_FB_D(05,05) -> FPC1_T_SG(0,2,3)_FB_D(02,05)     OK       126     Up
SF_30_02_FB_D(05,03) -> FPC1_T_SG(0,2,4)_FB_D(02,03)     OK       126     Up
SF_30_02_FB_D(05,02) -> FPC1_T_SG(0,2,5)_FB_D(02,02)     OK       126     Up
SF_30_02_FB_D(05,01) -> FPC1_T_SG(0,2,6)_FB_D(02,01)     OK       126     Up
SF_30_02_FB_D(05,00) -> FPC1_T_SG(0,2,7)_FB_D(02,00)     OK       126     Up
SF_30_03_FB_B(17,08) -> FPC5_T_SG(2,2,0)_FB_B(14,08)     OK       133     Up
SF_30_03_FB_B(17,07) -> FPC5_T_SG(2,2,1)_FB_B(14,07)     OK       133     Up
SF_30_03_FB_B(17,06) -> FPC5_T_SG(2,2,2)_FB_B(14,06)     OK       133     Up
SF_30_03_FB_B(17,05) -> FPC5_T_SG(2,2,3)_FB_B(14,05)     OK       133     Up
SF_30_03_FB_B(17,03) -> FPC5_T_SG(2,2,4)_FB_B(14,03)     OK       133     Up
SF_30_03_FB_B(17,02) -> FPC5_T_SG(2,2,5)_FB_B(14,02)     OK       133     Up
SF_30_03_FB_B(17,01) -> FPC5_T_SG(2,2,6)_FB_B(14,01)     OK       133     Up
SF_30_03_FB_B(17,00) -> FPC5_T_SG(2,2,7)_FB_B(14,00)     OK       133     Up
SF_30_04_FB_C(10,11) -> FPC2_T_SG(1,0,0)_FB_C(07,11)     OK       140     Up
SF_30_04_FB_C(10,10) -> FPC2_T_SG(1,0,1)_FB_C(07,10)     OK       140     Up
SF_30_04_FB_C(10,09) -> FPC2_T_SG(1,0,2)_FB_C(07,09)     OK       140     Up
SF_30_04_FB_C(10,08) -> FPC2_T_SG(1,0,3)_FB_C(07,08)     OK       140     Up
SF_30_04_FB_C(10,07) -> FPC2_T_SG(1,0,4)_FB_C(07,07)     OK       140     Up
SF_30_04_FB_C(10,06) -> FPC2_T_SG(1,0,5)_FB_C(07,06)     OK       140     Up
SF_30_04_FB_C(10,05) -> FPC2_T_SG(1,0,6)_FB_C(07,05)     OK       140     Up
SF_30_04_FB_C(10,04) -> FPC2_T_SG(1,0,7)_FB_C(07,04)     OK       140     Up
SF_30_05_FB_A(22,11) -> FPC6_T_SG(3,0,0)_FB_A(19,11)     OK       147     Up
SF_30_05_FB_A(22,10) -> FPC6_T_SG(3,0,1)_FB_A(19,10)     OK       147     Up
SF_30_05_FB_A(22,09) -> FPC6_T_SG(3,0,2)_FB_A(19,09)     OK       147     Up
SF_30_05_FB_A(22,08) -> FPC6_T_SG(3,0,3)_FB_A(19,08)     OK       147     Up
SF_30_05_FB_A(22,07) -> FPC6_T_SG(3,0,4)_FB_A(19,07)     OK       147     Up
SF_30_05_FB_A(22,06) -> FPC6_T_SG(3,0,5)_FB_A(19,06)     OK       147     Up
SF_30_05_FB_A(22,05) -> FPC6_T_SG(3,0,6)_FB_A(19,05)     OK       147     Up
SF_30_05_FB_A(22,04) -> FPC6_T_SG(3,0,7)_FB_A(19,04)     OK       147     Up
SF_30_06_FB_C(11,08) -> FPC3_T_SG(1,2,0)_FB_C(08,08)     OK       154     Up
SF_30_06_FB_C(11,07) -> FPC3_T_SG(1,2,1)_FB_C(08,07)     OK       154     Up
SF_30_06_FB_C(11,06) -> FPC3_T_SG(1,2,2)_FB_C(08,06)     OK       154     Up
```

```
SF_30_06_FB_C(11,05) -> FPC3_T_SG(1,2,3)_FB_C(08,05)     OK       154     Up
SF_30_06_FB_C(11,03) -> FPC3_T_SG(1,2,4)_FB_C(08,03)     OK       154     Up
SF_30_06_FB_C(11,02) -> FPC3_T_SG(1,2,5)_FB_C(08,02)     OK       154     Up
SF_30_06_FB_C(11,01) -> FPC3_T_SG(1,2,6)_FB_C(08,01)     OK       154     Up
SF_30_06_FB_C(11,00) -> FPC3_T_SG(1,2,7)_FB_C(08,00)     OK       154     Up
…
```

show chassis fabric topology sfc (TX Matrix Plus Router)

`user@host>` **show chassis fabric topology sfc *0***

```
sfc0-re0:
--------------------------------------------------------------------------

F13_SIB0
=========

Out-Links:
=========
SFC0_F13_SIB_00      -> LCC00_ST_SIB_L00                VCSEL    HSL2    HSL2
                                                        Status   Channel Status
==========================================================================================
SF_30_00_FB_D(04,11) -> FPC0_T_SG(0,0,0)_FB_D(01,11)     OK       112     Up
SF_30_00_FB_D(04,10) -> FPC0_T_SG(0,0,1)_FB_D(01,10)     OK       112     Up
SF_30_00_FB_D(04,09) -> FPC0_T_SG(0,0,2)_FB_D(01,09)     OK       112     Up
SF_30_00_FB_D(04,08) -> FPC0_T_SG(0,0,3)_FB_D(01,08)     OK       112     Up
SF_30_00_FB_D(04,07) -> FPC0_T_SG(0,0,4)_FB_D(01,07)     OK       112     Up
SF_30_00_FB_D(04,06) -> FPC0_T_SG(0,0,5)_FB_D(01,06)     OK       112     Up
SF_30_00_FB_D(04,05) -> FPC0_T_SG(0,0,6)_FB_D(01,05)     OK       112     Up
SF_30_00_FB_D(04,04) -> FPC0_T_SG(0,0,7)_FB_D(01,04)     OK       112     Up
SF_30_01_FB_B(16,11) -> FPC4_T_SG(2,0,0)_FB_B(13,11)     OK       119     Up
SF_30_01_FB_B(16,10) -> FPC4_T_SG(2,0,1)_FB_B(13,10)     OK       119     Up
SF_30_01_FB_B(16,09) -> FPC4_T_SG(2,0,2)_FB_B(13,09)     OK       119     Up
SF_30_01_FB_B(16,08) -> FPC4_T_SG(2,0,3)_FB_B(13,08)     OK       119     Up
SF_30_01_FB_B(16,07) -> FPC4_T_SG(2,0,4)_FB_B(13,07)     OK       119     Up
SF_30_01_FB_B(16,06) -> FPC4_T_SG(2,0,5)_FB_B(13,06)     OK       119     Up
SF_30_01_FB_B(16,05) -> FPC4_T_SG(2,0,6)_FB_B(13,05)     OK       119     Up
SF_30_01_FB_B(16,04) -> FPC4_T_SG(2,0,7)_FB_B(13,04)     OK       119     Up
SF_30_02_FB_D(05,08) -> FPC1_T_SG(0,2,0)_FB_D(02,08)     OK       126     Up
SF_30_02_FB_D(05,07) -> FPC1_T_SG(0,2,1)_FB_D(02,07)     OK       126     Up
SF_30_02_FB_D(05,06) -> FPC1_T_SG(0,2,2)_FB_D(02,06)     OK       126     Up
SF_30_02_FB_D(05,05) -> FPC1_T_SG(0,2,3)_FB_D(02,05)     OK       126     Up
SF_30_02_FB_D(05,03) -> FPC1_T_SG(0,2,4)_FB_D(02,03)     OK       126     Up
SF_30_02_FB_D(05,02) -> FPC1_T_SG(0,2,5)_FB_D(02,02)     OK       126     Up
```

```
SF_30_02_FB_D(05,01) -> FPC1_T_SG(0,2,6)_FB_D(02,01)     OK       126     Up
SF_30_02_FB_D(05,00) -> FPC1_T_SG(0,2,7)_FB_D(02,00)     OK       126     Up
SF_30_03_FB_B(17,08) -> FPC5_T_SG(2,2,0)_FB_B(14,08)     OK       133     Up
SF_30_03_FB_B(17,07) -> FPC5_T_SG(2,2,1)_FB_B(14,07)     OK       133     Up
SF_30_03_FB_B(17,06) -> FPC5_T_SG(2,2,2)_FB_B(14,06)     OK       133     Up
SF_30_03_FB_B(17,05) -> FPC5_T_SG(2,2,3)_FB_B(14,05)     OK       133     Up
SF_30_03_FB_B(17,03) -> FPC5_T_SG(2,2,4)_FB_B(14,03)     OK       133     Up
SF_30_03_FB_B(17,02) -> FPC5_T_SG(2,2,5)_FB_B(14,02)     OK       133     Up
SF_30_03_FB_B(17,01) -> FPC5_T_SG(2,2,6)_FB_B(14,01)     OK       133     Up
SF_30_03_FB_B(17,00) -> FPC5_T_SG(2,2,7)_FB_B(14,00)     OK       133     Up
SF_30_04_FB_C(10,11) -> FPC2_T_SG(1,0,0)_FB_C(07,11)     OK       140     Up
SF_30_04_FB_C(10,10) -> FPC2_T_SG(1,0,1)_FB_C(07,10)     OK       140     Up
SF_30_04_FB_C(10,09) -> FPC2_T_SG(1,0,2)_FB_C(07,09)     OK       140     Up
SF_30_04_FB_C(10,08) -> FPC2_T_SG(1,0,3)_FB_C(07,08)     OK       140     Up
SF_30_04_FB_C(10,07) -> FPC2_T_SG(1,0,4)_FB_C(07,07)     OK       140     Up
SF_30_04_FB_C(10,06) -> FPC2_T_SG(1,0,5)_FB_C(07,06)     OK       140     Up
SF_30_04_FB_C(10,05) -> FPC2_T_SG(1,0,6)_FB_C(07,05)     OK       140     Up
SF_30_04_FB_C(10,04) -> FPC2_T_SG(1,0,7)_FB_C(07,04)     OK       140     Up
SF_30_05_FB_A(22,11) -> FPC6_T_SG(3,0,0)_FB_A(19,11)     OK       147     Up
SF_30_05_FB_A(22,10) -> FPC6_T_SG(3,0,1)_FB_A(19,10)     OK       147     Up
SF_30_05_FB_A(22,09) -> FPC6_T_SG(3,0,2)_FB_A(19,09)     OK       147     Up
SF_30_05_FB_A(22,08) -> FPC6_T_SG(3,0,3)_FB_A(19,08)     OK       147     Up
SF_30_05_FB_A(22,07) -> FPC6_T_SG(3,0,4)_FB_A(19,07)     OK       147     Up
SF_30_05_FB_A(22,06) -> FPC6_T_SG(3,0,5)_FB_A(19,06)     OK       147     Up
SF_30_05_FB_A(22,05) -> FPC6_T_SG(3,0,6)_FB_A(19,05)     OK       147     Up
SF_30_05_FB_A(22,04) -> FPC6_T_SG(3,0,7)_FB_A(19,04)     OK       147     Up
SF_30_06_FB_C(11,08) -> FPC3_T_SG(1,2,0)_FB_C(08,08)     OK       154     Up
SF_30_06_FB_C(11,07) -> FPC3_T_SG(1,2,1)_FB_C(08,07)     OK       154     Up
SF_30_06_FB_C(11,06) -> FPC3_T_SG(1,2,2)_FB_C(08,06)     OK       154     Up
SF_30_06_FB_C(11,05) -> FPC3_T_SG(1,2,3)_FB_C(08,05)     OK       154     Up
SF_30_06_FB_C(11,03) -> FPC3_T_SG(1,2,4)_FB_C(08,03)     OK       154     Up
SF_30_06_FB_C(11,02) -> FPC3_T_SG(1,2,5)_FB_C(08,02)     OK       154     Up
SF_30_06_FB_C(11,01) -> FPC3_T_SG(1,2,6)_FB_C(08,01)     OK       154     Up
SF_30_06_FB_C(11,00) -> FPC3_T_SG(1,2,7)_FB_C(08,00)     OK       154     Up
…
```

show chassis fabric topology lcc (TX Matrix Plus Router)

`user@host>` **show chassis fabric topology lcc *0***

```
lcc0-re0:
--------------------------------------------------------------------------

SIB0
```

```
=========

Out-Links:
=========
LCC00_ST_SIB_L00             -> SFC0_F13_SIB_00          VCSEL    HSL2    HSL2
                                                         Status   Channel Status
================================================================================
FPC0_T_SG(0,0,0)_FB_D(04,11) -> SF_10_00_FB_D(01,11)     OK       12      Up
FPC0_T_SG(0,0,1)_FB_D(04,10) -> SF_10_00_FB_D(01,10)     OK       12      Up
FPC0_T_SG(0,0,2)_FB_D(04,09) -> SF_10_00_FB_D(01,09)     OK       12      Up
FPC0_T_SG(0,0,3)_FB_D(04,08) -> SF_10_00_FB_D(01,08)     OK       12      Up
FPC0_T_SG(0,0,4)_FB_D(04,07) -> SF_10_00_FB_D(01,07)     OK       12      Up
FPC0_T_SG(0,0,5)_FB_D(04,06) -> SF_10_00_FB_D(01,06)     OK       12      Up
FPC0_T_SG(0,0,6)_FB_D(04,05) -> SF_10_00_FB_D(01,05)     OK       12      Up
FPC0_T_SG(0,0,7)_FB_D(04,04) -> SF_10_00_FB_D(01,04)     OK       12      Up
FPC0_B_SG(0,1,0)_FB_D(03,07) -> SF_10_10_FB_D(00,07)     OK       15      Up
FPC0_B_SG(0,1,1)_FB_D(03,06) -> SF_10_10_FB_D(00,06)     OK       15      Up
FPC0_B_SG(0,1,2)_FB_D(03,05) -> SF_10_10_FB_D(00,05)     OK       15      Up
FPC0_B_SG(0,1,3)_FB_D(03,04) -> SF_10_10_FB_D(00,04)     OK       15      Up
FPC0_B_SG(0,1,4)_FB_D(03,03) -> SF_10_10_FB_D(00,03)     OK       15      Up
FPC0_B_SG(0,1,5)_FB_D(03,02) -> SF_10_10_FB_D(00,02)     OK       15      Up
FPC0_B_SG(0,1,6)_FB_D(03,01) -> SF_10_10_FB_D(00,01)     OK       15      Up
FPC0_B_SG(0,1,7)_FB_D(03,00) -> SF_10_10_FB_D(00,00)     OK       15      Up
FPC1_T_SG(0,2,0)_FB_D(05,08) -> SF_10_02_FB_D(02,08)     OK       18      Up
FPC1_T_SG(0,2,1)_FB_D(05,07) -> SF_10_02_FB_D(02,07)     OK       18      Up
FPC1_T_SG(0,2,2)_FB_D(05,06) -> SF_10_02_FB_D(02,06)     OK       18      Up
FPC1_T_SG(0,2,3)_FB_D(05,05) -> SF_10_02_FB_D(02,05)     OK       18      Up
FPC1_T_SG(0,2,4)_FB_D(05,03) -> SF_10_02_FB_D(02,03)     OK       18      Up
FPC1_T_SG(0,2,5)_FB_D(05,02) -> SF_10_02_FB_D(02,02)     OK       18      Up
FPC1_T_SG(0,2,6)_FB_D(05,01) -> SF_10_02_FB_D(02,01)     OK       18      Up
FPC1_T_SG(0,2,7)_FB_D(05,00) -> SF_10_02_FB_D(02,00)     OK       18      Up
FPC1_B_SG(0,3,0)_FB_D(04,03) -> SF_10_11_FB_D(01,03)     OK       21      Up
FPC1_B_SG(0,3,1)_FB_D(04,02) -> SF_10_11_FB_D(01,02)     OK       21      Up
FPC1_B_SG(0,3,2)_FB_D(04,01) -> SF_10_11_FB_D(01,01)     OK       21      Up
FPC1_B_SG(0,3,3)_FB_D(04,00) -> SF_10_11_FB_D(01,00)     OK       21      Up
FPC1_B_SG(0,3,4)_FB_D(03,11) -> SF_10_11_FB_D(00,11)     OK       21      Up
FPC1_B_SG(0,3,5)_FB_D(03,10) -> SF_10_11_FB_D(00,10)     OK       21      Up
FPC1_B_SG(0,3,6)_FB_D(03,09) -> SF_10_11_FB_D(00,09)     OK       21      Up
FPC1_B_SG(0,3,7)_FB_D(03,08) -> SF_10_11_FB_D(00,08)     OK       21      Up
FPC2_T_SG(1,0,0)_FB_C(10,11) -> SF_10_04_FB_C(07,11)     OK       12      Up
FPC2_T_SG(1,0,1)_FB_C(10,10) -> SF_10_04_FB_C(07,10)     OK       12      Up
FPC2_T_SG(1,0,2)_FB_C(10,09) -> SF_10_04_FB_C(07,09)     OK       12      Up
FPC2_T_SG(1,0,3)_FB_C(10,08) -> SF_10_04_FB_C(07,08)     OK       12      Up
FPC2_T_SG(1,0,4)_FB_C(10,07) -> SF_10_04_FB_C(07,07)     OK       12      Up
```

```
FPC2_T_SG(1,0,5)_FB_C(10,06) -> SF_10_04_FB_C(07,06)     OK       12      Up
FPC2_T_SG(1,0,6)_FB_C(10,05) -> SF_10_04_FB_C(07,05)     OK       12      Up
FPC2_T_SG(1,0,7)_FB_C(10,04) -> SF_10_04_FB_C(07,04)     OK       12      Up
FPC2_B_SG(1,1,0)_FB_C(09,07) -> SF_10_14_FB_C(06,07)     OK       15      Up
FPC2_B_SG(1,1,1)_FB_C(09,06) -> SF_10_14_FB_C(06,06)     OK       15      Up
FPC2_B_SG(1,1,2)_FB_C(09,05) -> SF_10_14_FB_C(06,05)     OK       15      Up
FPC2_B_SG(1,1,3)_FB_C(09,04) -> SF_10_14_FB_C(06,04)     OK       15      Up
FPC2_B_SG(1,1,4)_FB_C(09,03) -> SF_10_14_FB_C(06,03)     OK       15      Up
FPC2_B_SG(1,1,5)_FB_C(09,02) -> SF_10_14_FB_C(06,02)     OK       15      Up
FPC2_B_SG(1,1,6)_FB_C(09,01) -> SF_10_14_FB_C(06,01)     OK       15      Up
FPC2_B_SG(1,1,7)_FB_C(09,00) -> SF_10_14_FB_C(06,00)     OK       15      Up
FPC3_T_SG(1,2,0)_FB_C(11,08) -> SF_10_06_FB_C(08,08)     OK       18      Up
FPC3_T_SG(1,2,1)_FB_C(11,07) -> SF_10_06_FB_C(08,07)     OK       18      Up
FPC3_T_SG(1,2,2)_FB_C(11,06) -> SF_10_06_FB_C(08,06)     OK       18      Up
FPC3_T_SG(1,2,3)_FB_C(11,05) -> SF_10_06_FB_C(08,05)     OK       18      Up
FPC3_T_SG(1,2,4)_FB_C(11,03) -> SF_10_06_FB_C(08,03)     OK       18      Up
FPC3_T_SG(1,2,5)_FB_C(11,02) -> SF_10_06_FB_C(08,02)     OK       18      Up
FPC3_T_SG(1,2,6)_FB_C(11,01) -> SF_10_06_FB_C(08,01)     OK       18      Up
...
```

show chassis fabric topology (T4000 Core Router)

`user@host>` **show chassis fabric topology 0**

```
 fchip (mode)
          In-links               State             Out-links               State
--------------------------------------------------------------------------------

SIB0 :
---------

Onboard Links
-------------
SIB0_XF1,14_0->SIB0_XF,00_0      Up      SIB0_XF,00_0->SIB0_XF1,14_0      Up
SIB0_XF,00_0->SIB0_XF1,14_0      Up      SIB0_XF1,14_0->SIB0_XF,00_0      Up
SIB0_XF1,13_0->SIB0_XF,01_0      Up      SIB0_XF,01_0->SIB0_XF1,13_0      Up
SIB0_XF,01_0->SIB0_XF1,13_0      Up      SIB0_XF1,13_0->SIB0_XF,01_0      Up
SIB0_XF1,12_0->SIB0_XF,02_0      Up      SIB0_XF,02_0->SIB0_XF1,12_0      Up
SIB0_XF,02_0->SIB0_XF1,12_0      Up      SIB0_XF1,12_0->SIB0_XF,02_0      Up
SIB0_XF1,11_0->SIB0_XF,03_0      Up      SIB0_XF,03_0->SIB0_XF1,11_0      Up
SIB0_XF,03_0->SIB0_XF1,11_0      Up      SIB0_XF1,11_0->SIB0_XF,03_0      Up
SIB0_XF1,10_0->SIB0_XF,04_0      Up      SIB0_XF,04_0->SIB0_XF1,10_0      Up
SIB0_XF,04_0->SIB0_XF1,10_0      Up      SIB0_XF1,10_0->SIB0_XF,04_0      Up
SIB0_XF1,09_0->SIB0_XF,05_0      Up      SIB0_XF,05_0->SIB0_XF1,09_0      Up
```

```
SIB0_XF,05_0->SIB0_XF1,09_0      Up      SIB0_XF1,09_0->SIB0_XF,05_0      Up
SIB0_XF2,14_0->SIB0_XF,06_0      Up      SIB0_XF,06_0->SIB0_XF2,14_0      Up
SIB0_XF,06_0->SIB0_XF2,14_0      Up      SIB0_XF2,14_0->SIB0_XF,06_0      Up
SIB0_XF2,13_0->SIB0_XF,07_0      Up      SIB0_XF,07_0->SIB0_XF2,13_0      Up
SIB0_XF,07_0->SIB0_XF2,13_0      Up      SIB0_XF2,13_0->SIB0_XF,07_0      Up
SIB0_XF2,12_0->SIB0_XF,08_0      Up      SIB0_XF,08_0->SIB0_XF2,12_0      Up
SIB0_XF,08_0->SIB0_XF2,12_0      Up      SIB0_XF2,12_0->SIB0_XF,08_0      Up
SIB0_XF2,11_0->SIB0_XF,09_0      Up      SIB0_XF,09_0->SIB0_XF2,11_0      Up
SIB0_XF,09_0->SIB0_XF2,11_0      Up      SIB0_XF2,11_0->SIB0_XF,09_0      Up
SIB0_XF2,10_0->SIB0_XF,10_0      Up      SIB0_XF,10_0->SIB0_XF2,10_0      Up
SIB0_XF,10_0->SIB0_XF2,10_0      Up      SIB0_XF2,10_0->SIB0_XF,10_0      Up
SIB0_XF2,09_0->SIB0_XF,11_0      Up      SIB0_XF,11_0->SIB0_XF2,09_0      Up
SIB0_XF,11_0->SIB0_XF2,09_0      Up      SIB0_XF2,09_0->SIB0_XF,11_0      Up
SIB0_XF3,13_0->SIB0_XF,12_0      Up      SIB0_XF,12_0->SIB0_XF3,13_0      Up
SIB0_XF,12_0->SIB0_XF3,13_0      Up      SIB0_XF3,13_0->SIB0_XF,12_0      Up
SIB0_XF3,12_0->SIB0_XF,13_0      Up      SIB0_XF,13_0->SIB0_XF3,12_0      Up
SIB0_XF,13_0->SIB0_XF3,12_0      Up      SIB0_XF3,12_0->SIB0_XF,13_0      Up
SIB0_XF3,11_0->SIB0_XF,14_0      Up      SIB0_XF,14_0->SIB0_XF3,11_0      Up
SIB0_XF,14_0->SIB0_XF3,11_0      Up      SIB0_XF3,11_0->SIB0_XF,14_0      Up
SIB0_XF3,10_0->SIB0_XF,15_0      Up      SIB0_XF,15_0->SIB0_XF3,10_0      Up
SIB0_XF,15_0->SIB0_XF3,10_0      Up      SIB0_XF3,10_0->SIB0_XF,15_0      Up

PFE Links
---------------
FPC2PFE0->SIB0_XF1,05_0          Up      SIB0_XF1,05_0->FPC2PFE0          Up
FPC3PFE0->SIB0_XF2,15_0          Up      SIB0_XF2,15_0->FPC3PFE0          Up
FPC5PFE0->SIB0_XF2,05_0          Up      SIB0_XF2,05_0->FPC5PFE0          Up
FPC5PFE1->SIB0_XF2,07_0          Up      SIB0_XF2,07_0->FPC5PFE1          Up
FPC6PFE0->SIB0_XF3,01_0          Up      SIB0_XF3,01_0->FPC6PFE0          Up
FPC6PFE0->SIB0_XF3,01_1          Up      SIB0_XF3,01_1->FPC6PFE0          Up
FPC6PFE0->SIB0_XF3,02_0          Up      SIB0_XF3,02_0->FPC6PFE0          Up
FPC6PFE1->SIB0_XF3,03_0          Up      SIB0_XF3,03_0->FPC6PFE1          Up
FPC6PFE1->SIB0_XF3,03_1          Up      SIB0_XF3,03_1->FPC6PFE1          Up
FPC6PFE1->SIB0_XF3,02_1          Up      SIB0_XF3,02_1->FPC6PFE1          Up
```

show chassis fabric topology lcc (TX Matrix Plus Router with 3D SIBs)

`user@host>` **show chassis fabric topology lcc 6**

```
lcc6-re0:
--------------------------------------------------------------------------
  fchip (mode)
          In-links              State            Out-links              State
--------------------------------------------------------------------------
```

```
SIB0 :
---------
CXP0_Evn->LCC_SIB0_XF3,10_0      Up      LCC_SIB0_XF3,10_0->CXP0_Evn      Up
CXP0_Odd->LCC_SIB0_XF3,11_0      Up      LCC_SIB0_XF3,11_0->CXP0_Odd      Up
CXP1_Evn->LCC_SIB0_XF3,12_0      Up      LCC_SIB0_XF3,12_0->CXP1_Evn      Up
CXP1_Odd->LCC_SIB0_XF3,13_0      Up      LCC_SIB0_XF3,13_0->CXP1_Odd      Up
CXP2_Evn->LCC_SIB0_XF2,09_0      Up      LCC_SIB0_XF2,09_0->CXP2_Evn      Up
CXP2_Odd->LCC_SIB0_XF2,10_0      Up      LCC_SIB0_XF2,10_0->CXP2_Odd      Up
CXP3_Evn->LCC_SIB0_XF2,11_0      Up      LCC_SIB0_XF2,11_0->CXP3_Evn      Up
CXP3_Odd->LCC_SIB0_XF2,12_0      Up      LCC_SIB0_XF2,12_0->CXP3_Odd      Up
CXP4_Evn->LCC_SIB0_XF2,13_0      Up      LCC_SIB0_XF2,13_0->CXP4_Evn      Up
CXP4_Odd->LCC_SIB0_XF1,09_0      Up      LCC_SIB0_XF1,09_0->CXP4_Odd      Up
CXP5_Evn->LCC_SIB0_XF2,14_0      Up      LCC_SIB0_XF2,14_0->CXP5_Evn      Up
CXP5_Odd->LCC_SIB0_XF1,10_0      Up      LCC_SIB0_XF1,10_0->CXP5_Odd      Up
CXP6_Evn->LCC_SIB0_XF1,11_0      Up      LCC_SIB0_XF1,11_0->CXP6_Evn      Up
CXP6_Odd->LCC_SIB0_XF1,12_0      Up      LCC_SIB0_XF1,12_0->CXP6_Odd      Up
CXP7_Evn->LCC_SIB0_XF1,13_0      Up      LCC_SIB0_XF1,13_0->CXP7_Evn      Up
CXP7_Odd->LCC_SIB0_XF1,14_0      Up      LCC_SIB0_XF1,14_0->CXP7_Odd      Up
SIB1 :
---------
SIB2 :
---------
CXP0_Evn->LCC_SIB2_XF3,10_0      Up      LCC_SIB2_XF3,10_0->CXP0_Evn      Up
CXP0_Odd->LCC_SIB2_XF3,11_0      Up      LCC_SIB2_XF3,11_0->CXP0_Odd      Up
CXP1_Evn->LCC_SIB2_XF3,12_0      Up      LCC_SIB2_XF3,12_0->CXP1_Evn      Up
CXP1_Odd->LCC_SIB2_XF3,13_0      Up      LCC_SIB2_XF3,13_0->CXP1_Odd      Up
CXP2_Evn->LCC_SIB2_XF2,09_0      Up      LCC_SIB2_XF2,09_0->CXP2_Evn      Up
CXP2_Odd->LCC_SIB2_XF2,10_0      Up      LCC_SIB2_XF2,10_0->CXP2_Odd      Up
CXP3_Evn->LCC_SIB2_XF2,11_0      Up      LCC_SIB2_XF2,11_0->CXP3_Evn      Up
CXP3_Odd->LCC_SIB2_XF2,12_0      Up      LCC_SIB2_XF2,12_0->CXP3_Odd      Up
CXP4_Evn->LCC_SIB2_XF2,13_0      Up      LCC_SIB2_XF2,13_0->CXP4_Evn      Up
CXP4_Odd->LCC_SIB2_XF1,09_0      Up      LCC_SIB2_XF1,09_0->CXP4_Odd      Up
CXP5_Evn->LCC_SIB2_XF2,14_0      Up      LCC_SIB2_XF2,14_0->CXP5_Evn      Up
CXP5_Odd->LCC_SIB2_XF1,10_0      Up      LCC_SIB2_XF1,10_0->CXP5_Odd      Up
CXP6_Evn->LCC_SIB2_XF1,11_0      Up      LCC_SIB2_XF1,11_0->CXP6_Evn      Up
CXP6_Odd->LCC_SIB2_XF1,12_0      Up      LCC_SIB2_XF1,12_0->CXP6_Odd      Up
CXP7_Evn->LCC_SIB2_XF1,13_0      Up      LCC_SIB2_XF1,13_0->CXP7_Evn      Up
CXP7_Odd->LCC_SIB2_XF1,14_0      Up      LCC_SIB2_XF1,14_0->CXP7_Odd      Up
SIB3 :
---------
CXP0_Evn->LCC_SIB3_XF3,10_0      Up      LCC_SIB3_XF3,10_0->CXP0_Evn      Up
CXP0_Odd->LCC_SIB3_XF3,11_0      Up      LCC_SIB3_XF3,11_0->CXP0_Odd      Up
CXP1_Evn->LCC_SIB3_XF3,12_0      Up      LCC_SIB3_XF3,12_0->CXP1_Evn      Up
CXP1_Odd->LCC_SIB3_XF3,13_0      Up      LCC_SIB3_XF3,13_0->CXP1_Odd      Up
```

```
CXP2_Evn->LCC_SIB3_XF2,09_0      Up      LCC_SIB3_XF2,09_0->CXP2_Evn      Up
CXP2_Odd->LCC_SIB3_XF2,10_0      Up      LCC_SIB3_XF2,10_0->CXP2_Odd      Up
CXP3_Evn->LCC_SIB3_XF2,11_0      Up      LCC_SIB3_XF2,11_0->CXP3_Evn      Up
CXP3_Odd->LCC_SIB3_XF2,12_0      Up      LCC_SIB3_XF2,12_0->CXP3_Odd      Up
CXP4_Evn->LCC_SIB3_XF2,13_0      Up      LCC_SIB3_XF2,13_0->CXP4_Evn      Up
CXP4_Odd->LCC_SIB3_XF1,09_0      Up      LCC_SIB3_XF1,09_0->CXP4_Odd      Up
CXP5_Evn->LCC_SIB3_XF2,14_0      Up      LCC_SIB3_XF2,14_0->CXP5_Evn      Up
CXP5_Odd->LCC_SIB3_XF1,10_0      Up      LCC_SIB3_XF1,10_0->CXP5_Odd      Up
CXP6_Evn->LCC_SIB3_XF1,11_0      Up      LCC_SIB3_XF1,11_0->CXP6_Evn      Up
CXP6_Odd->LCC_SIB3_XF1,12_0      Up      LCC_SIB3_XF1,12_0->CXP6_Odd      Up
CXP7_Evn->LCC_SIB3_XF1,13_0      Up      LCC_SIB3_XF1,13_0->CXP7_Evn      Up
CXP7_Odd->LCC_SIB3_XF1,14_0      Up      LCC_SIB3_XF1,14_0->CXP7_Odd      Up
SIB4 :
---------
CXP0_Evn->LCC_SIB4_XF3,10_0      Up      LCC_SIB4_XF3,10_0->CXP0_Evn      Up
CXP0_Odd->LCC_SIB4_XF3,11_0      Up      LCC_SIB4_XF3,11_0->CXP0_Odd      Up
CXP1_Evn->LCC_SIB4_XF3,12_0      Up      LCC_SIB4_XF3,12_0->CXP1_Evn      Up
CXP1_Odd->LCC_SIB4_XF3,13_0      Up      LCC_SIB4_XF3,13_0->CXP1_Odd      Up
CXP2_Evn->LCC_SIB4_XF2,09_0      Up      LCC_SIB4_XF2,09_0->CXP2_Evn      Up
CXP2_Odd->LCC_SIB4_XF2,10_0      Up      LCC_SIB4_XF2,10_0->CXP2_Odd      Up
CXP3_Evn->LCC_SIB4_XF2,11_0      Up      LCC_SIB4_XF2,11_0->CXP3_Evn      Up
CXP3_Odd->LCC_SIB4_XF2,12_0      Up      LCC_SIB4_XF2,12_0->CXP3_Odd      Up
CXP4_Evn->LCC_SIB4_XF2,13_0      Up      LCC_SIB4_XF2,13_0->CXP4_Evn      Up
CXP4_Odd->LCC_SIB4_XF1,09_0      Up      LCC_SIB4_XF1,09_0->CXP4_Odd      Up
CXP5_Evn->LCC_SIB4_XF2,14_0      Up      LCC_SIB4_XF2,14_0->CXP5_Evn      Up
CXP5_Odd->LCC_SIB4_XF1,10_0      Up      LCC_SIB4_XF1,10_0->CXP5_Odd      Up
CXP6_Evn->LCC_SIB4_XF1,11_0      Up      LCC_SIB4_XF1,11_0->CXP6_Evn      Up
CXP6_Odd->LCC_SIB4_XF1,12_0      Up      LCC_SIB4_XF1,12_0->CXP6_Odd      Up
CXP7_Evn->LCC_SIB4_XF1,13_0      Up      LCC_SIB4_XF1,13_0->CXP7_Evn      Up
CXP7_Odd->LCC_SIB4_XF1,14_0      Up      LCC_SIB4_XF1,14_0->CXP7_Odd      Up
```

show chassis fabric topology (PTX5000 Router)

`user@host>` **show chassis fabric topology**

```
In-link  : FPC# FE# TQ# (TQ-TX sub-chnl #) ->
           SIB# TF#_FCORE# (TF-RX port#, TF-RX sub-chn#, TF-RX inst#)

 Out-link : SIB# TF#_FCORE# (TF-TX port#, TF-TX sub-chn#, TF-TX inst#) ->
           FPC# FE# TQ# (TQ-RX sub-chnl #)
(6, 4, 06) in FPC02FE0TQ0(02)->S01F0_0(6,4,06) will be TF Rx Port 6, TF CCL Rx
Sub-Channel 4, TF CCL Rx Instance 6.
(2, 7, 10) in S01F0_0(2,7,10)->FPC02FE0TQ0(02) will be TF-Tx Port 2, TF CCL Tx
Sub-channel 7, TF CCL Tx Instance 10.
```

```
SIB 0 FCHIP 0 FCORE 0 :
-----------------------
          In-links               State             Out-links               State
--------------------------------------------------------------------------------
FPC00FE0TQ0(00)->S00F0_0(7,4,07) OK      S00F0_0(3,7,11)->FPC00FE0TQ0(00) OK
FPC00FE1TQ1(00)->S00F0_0(7,6,07) OK      S00F0_0(3,5,11)->FPC00FE1TQ1(00) OK
FPC00FE2TQ2(00)->S00F0_0(7,5,07) OK      S00F0_0(3,6,11)->FPC00FE2TQ2(00) OK
FPC00FE3TQ3(00)->S00F0_0(7,7,07) OK      S00F0_0(3,4,11)->FPC00FE3TQ3(00) OK
FPC01FE0TQ0(00)->S00F0_0(7,0,07) OK      S00F0_0(3,3,11)->FPC01FE0TQ0(00) OK
FPC01FE1TQ1(00)->S00F0_0(7,1,07) OK      S00F0_0(3,1,11)->FPC01FE1TQ1(00) OK
FPC01FE2TQ2(00)->S00F0_0(7,2,07) OK      S00F0_0(3,2,11)->FPC01FE2TQ2(00) Error
FPC01FE3TQ3(00)->S00F0_0(7,3,07) OK      S00F0_0(3,0,11)->FPC01FE3TQ3(00) OK
FPC02FE0TQ0(00)->S00F0_0(6,4,06) OK      S00F0_0(2,7,10)->FPC02FE0TQ0(00) OK
FPC02FE1TQ1(00)->S00F0_0(6,5,06) OK      S00F0_0(2,5,10)->FPC02FE1TQ1(00) OK
FPC02FE2TQ2(00)->S00F0_0(6,6,06) OK      S00F0_0(2,6,10)->FPC02FE2TQ2(00) OK
FPC02FE3TQ3(00)->S00F0_0(6,7,06) OK      S00F0_0(2,4,10)->FPC02FE3TQ3(00) OK
FPC03FE0TQ0(00)->S00F0_0(6,0,06) Down    S00F0_0(2,3,10)->FPC03FE0TQ0(00) Down
FPC03FE1TQ1(00)->S00F0_0(6,1,06) Down    S00F0_0(2,0,10)->FPC03FE1TQ1(00) Down
FPC03FE2TQ2(00)->S00F0_0(6,2,06) Down    S00F0_0(2,2,10)->FPC03FE2TQ2(00) Down
FPC03FE3TQ3(00)->S00F0_0(6,3,06) Down    S00F0_0(2,1,10)->FPC03FE3TQ3(00) Down
FPC04FE0TQ0(00)->S00F0_0(5,4,05) OK      S00F0_0(1,7,09)->FPC04FE0TQ0(00) OK
FPC04FE1TQ1(00)->S00F0_0(5,5,05) OK      S00F0_0(1,6,09)->FPC04FE1TQ1(00) OK
FPC04FE2TQ2(00)->S00F0_0(5,6,05) OK      S00F0_0(1,4,09)->FPC04FE2TQ2(00) OK
FPC04FE3TQ3(00)->S00F0_0(5,7,05) OK      S00F0_0(1,5,09)->FPC04FE3TQ3(00) OK
FPC05FE0TQ0(00)->S00F0_0(5,0,05) OK      S00F0_0(1,3,09)->FPC05FE0TQ0(00) OK
FPC05FE1TQ1(00)->S00F0_0(5,1,05) OK      S00F0_0(1,0,09)->FPC05FE1TQ1(00) OK
FPC05FE2TQ2(00)->S00F0_0(5,2,05) OK      S00F0_0(1,2,09)->FPC05FE2TQ2(00) OK
FPC05FE3TQ3(00)->S00F0_0(5,3,05) OK      S00F0_0(1,1,09)->FPC05FE3TQ3(00) OK
FPC06FE0TQ0(00)->S00F0_0(4,4,04) Down    S00F0_0(0,7,08)->FPC06FE0TQ0(00) Down
FPC06FE1TQ1(00)->S00F0_0(4,5,04) Down    S00F0_0(0,5,08)->FPC06FE1TQ1(00) Down
FPC06FE2TQ2(00)->S00F0_0(4,6,04) Down    S00F0_0(0,6,08)->FPC06FE2TQ2(00) Down
FPC06FE3TQ3(00)->S00F0_0(4,7,04) Down    S00F0_0(0,4,08)->FPC06FE3TQ3(00) Down
FPC07FE0TQ0(00)->S00F0_0(4,2,04) Down    S00F0_0(0,3,08)->FPC07FE0TQ0(00) Down
FPC07FE1TQ1(00)->S00F0_0(4,0,04) Down    S00F0_0(0,0,08)->FPC07FE1TQ1(00) Down
FPC07FE2TQ2(00)->S00F0_0(4,1,04) Down    S00F0_0(0,1,08)->FPC07FE2TQ2(00) Down
FPC07FE3TQ3(00)->S00F0_0(4,3,04) Down    S00F0_0(0,2,08)->FPC07FE3TQ3(00) Down

SIB 0 FCHIP 0 FCORE 1 :
-----------------------
          In-links               State             Out-links               State
--------------------------------------------------------------------------------
FPC00FE0TQ0(01)->S00F0_1(3,4,11) OK      S00F0_1(7,6,07)->FPC00FE0TQ0(01) OK
FPC00FE1TQ1(01)->S00F0_1(3,5,11) OK      S00F0_1(7,4,07)->FPC00FE1TQ1(01) OK
FPC00FE2TQ2(01)->S00F0_1(3,6,11) OK      S00F0_1(7,7,07)->FPC00FE2TQ2(01) OK
```

```
FPC00FE3TQ3(01)->S00F0_1(3,7,11) OK      S00F0_1(7,5,07)->FPC00FE3TQ3(01) OK
FPC01FE0TQ0(01)->S00F0_1(3,0,11) OK      S00F0_1(7,2,07)->FPC01FE0TQ0(01) OK
FPC01FE1TQ1(01)->S00F0_1(3,1,11) OK      S00F0_1(7,0,07)->FPC01FE1TQ1(01) OK
FPC01FE2TQ2(01)->S00F0_1(3,2,11) OK      S00F0_1(7,3,07)->FPC01FE2TQ2(01) OK
FPC01FE3TQ3(01)->S00F0_1(3,3,11) OK      S00F0_1(7,1,07)->FPC01FE3TQ3(01) OK
FPC02FE0TQ0(01)->S00F0_1(2,4,10) OK      S00F0_1(6,5,06)->FPC02FE0TQ0(01) OK
FPC02FE1TQ1(01)->S00F0_1(2,5,10) OK      S00F0_1(6,4,06)->FPC02FE1TQ1(01) OK
FPC02FE2TQ2(01)->S00F0_1(2,6,10) OK      S00F0_1(6,7,06)->FPC02FE2TQ2(01) OK
FPC02FE3TQ3(01)->S00F0_1(2,7,10) OK      S00F0_1(6,6,06)->FPC02FE3TQ3(01) OK
FPC03FE0TQ0(01)->S00F0_1(2,0,10) Down    S00F0_1(6,1,06)->FPC03FE0TQ0(01) Down
FPC03FE1TQ1(01)->S00F0_1(2,1,10) Down    S00F0_1(6,0,06)->FPC03FE1TQ1(01) Down
FPC03FE2TQ2(01)->S00F0_1(2,2,10) Down    S00F0_1(6,3,06)->FPC03FE2TQ2(01) Down
FPC03FE3TQ3(01)->S00F0_1(2,3,10) Down    S00F0_1(6,2,06)->FPC03FE3TQ3(01) Down
FPC04FE0TQ0(01)->S00F0_1(1,4,09) OK      S00F0_1(5,5,05)->FPC04FE0TQ0(01) OK
FPC04FE1TQ1(01)->S00F0_1(1,5,09) OK      S00F0_1(5,4,05)->FPC04FE1TQ1(01) OK
FPC04FE2TQ2(01)->S00F0_1(1,6,09) OK      S00F0_1(5,7,05)->FPC04FE2TQ2(01) OK
FPC04FE3TQ3(01)->S00F0_1(1,7,09) OK      S00F0_1(5,6,05)->FPC04FE3TQ3(01) OK
FPC05FE0TQ0(01)->S00F0_1(1,0,09) OK      S00F0_1(5,1,05)->FPC05FE0TQ0(01) OK
FPC05FE1TQ1(01)->S00F0_1(1,1,09) OK      S00F0_1(5,0,05)->FPC05FE1TQ1(01) OK
FPC05FE2TQ2(01)->S00F0_1(1,2,09) OK      S00F0_1(5,3,05)->FPC05FE2TQ2(01) OK
FPC05FE3TQ3(01)->S00F0_1(1,3,09) OK      S00F0_1(5,2,05)->FPC05FE3TQ3(01) OK
FPC06FE0TQ0(01)->S00F0_1(0,4,08) Down    S00F0_1(4,7,04)->FPC06FE0TQ0(01) Down
FPC06FE1TQ1(01)->S00F0_1(0,5,08) Down    S00F0_1(4,0,04)->FPC06FE1TQ1(01) Down
FPC06FE2TQ2(01)->S00F0_1(0,6,08) Down    S00F0_1(4,6,04)->FPC06FE2TQ2(01) Down
FPC06FE3TQ3(01)->S00F0_1(0,7,08) Down    S00F0_1(4,1,04)->FPC06FE3TQ3(01) Down
FPC07FE0TQ0(01)->S00F0_1(0,0,08) Down    S00F0_1(4,3,04)->FPC07FE0TQ0(01) Down
FPC07FE1TQ1(01)->S00F0_1(0,1,08) Down    S00F0_1(4,4,04)->FPC07FE1TQ1(01) Down
FPC07FE2TQ2(01)->S00F0_1(0,2,08) Down    S00F0_1(4,2,04)->FPC07FE2TQ2(01) Down
FPC07FE3TQ3(01)->S00F0_1(0,3,08) Down    S00F0_1(4,5,04)->FPC07FE3TQ3(01) Down

SIB 1 FCHIP 0 FCORE 0 :
-----------------------
          In-links               State             Out-links              State
--------------------------------------------------------------------------------
FPC00FE0TQ0(02)->S01F0_0(7,4,07) Error   S01F0_0(3,7,11)->FPC00FE0TQ0(02) Down
FPC00FE1TQ1(02)->S01F0_0(7,6,07) OK      S01F0_0(3,5,11)->FPC00FE1TQ1(02) OK
FPC00FE2TQ2(02)->S01F0_0(7,5,07) OK      S01F0_0(3,6,11)->FPC00FE2TQ2(02) OK
FPC00FE3TQ3(02)->S01F0_0(7,7,07) OK      S01F0_0(3,4,11)->FPC00FE3TQ3(02) OK
FPC01FE0TQ0(02)->S01F0_0(7,0,07) OK      S01F0_0(3,3,11)->FPC01FE0TQ0(02) OK
FPC01FE1TQ1(02)->S01F0_0(7,1,07) OK      S01F0_0(3,1,11)->FPC01FE1TQ1(02) OK
FPC01FE2TQ2(02)->S01F0_0(7,2,07) OK      S01F0_0(3,2,11)->FPC01FE2TQ2(02) OK
FPC01FE3TQ3(02)->S01F0_0(7,3,07) OK      S01F0_0(3,0,11)->FPC01FE3TQ3(02) OK
FPC02FE0TQ0(02)->S01F0_0(6,4,06) OK      S01F0_0(2,7,10)->FPC02FE0TQ0(02) OK
FPC02FE1TQ1(02)->S01F0_0(6,5,06) OK      S01F0_0(2,5,10)->FPC02FE1TQ1(02) OK
```

```
FPC02FE2TQ2(02)->S01F0_0(6,6,06) OK      S01F0_0(2,6,10)->FPC02FE2TQ2(02) OK
FPC02FE3TQ3(02)->S01F0_0(6,7,06) OK      S01F0_0(2,4,10)->FPC02FE3TQ3(02) OK
FPC03FE0TQ0(02)->S01F0_0(6,0,06) Down    S01F0_0(2,3,10)->FPC03FE0TQ0(02) Down
FPC03FE1TQ1(02)->S01F0_0(6,1,06) Down    S01F0_0(2,0,10)->FPC03FE1TQ1(02) Down
FPC03FE2TQ2(02)->S01F0_0(6,2,06) Down    S01F0_0(2,2,10)->FPC03FE2TQ2(02) Down
FPC03FE3TQ3(02)->S01F0_0(6,3,06) Down    S01F0_0(2,1,10)->FPC03FE3TQ3(02) Down
FPC04FE0TQ0(02)->S01F0_0(5,4,05) OK      S01F0_0(1,7,09)->FPC04FE0TQ0(02) OK
FPC04FE1TQ1(02)->S01F0_0(5,5,05) OK      S01F0_0(1,6,09)->FPC04FE1TQ1(02) OK
FPC04FE2TQ2(02)->S01F0_0(5,6,05) OK      S01F0_0(1,4,09)->FPC04FE2TQ2(02) OK
FPC04FE3TQ3(02)->S01F0_0(5,7,05) OK      S01F0_0(1,5,09)->FPC04FE3TQ3(02) OK
FPC05FE0TQ0(02)->S01F0_0(5,0,05) OK      S01F0_0(1,3,09)->FPC05FE0TQ0(02) OK
FPC05FE1TQ1(02)->S01F0_0(5,1,05) OK      S01F0_0(1,0,09)->FPC05FE1TQ1(02) OK
FPC05FE2TQ2(02)->S01F0_0(5,2,05) OK      S01F0_0(1,2,09)->FPC05FE2TQ2(02) OK
FPC05FE3TQ3(02)->S01F0_0(5,3,05) OK      S01F0_0(1,1,09)->FPC05FE3TQ3(02) OK
FPC06FE0TQ0(02)->S01F0_0(4,4,04) Down    S01F0_0(0,7,08)->FPC06FE0TQ0(02) Down
FPC06FE1TQ1(02)->S01F0_0(4,5,04) Down    S01F0_0(0,5,08)->FPC06FE1TQ1(02) Down
FPC06FE2TQ2(02)->S01F0_0(4,6,04) Down    S01F0_0(0,6,08)->FPC06FE2TQ2(02) Down
FPC06FE3TQ3(02)->S01F0_0(4,7,04) Down    S01F0_0(0,4,08)->FPC06FE3TQ3(02) Down
FPC07FE0TQ0(02)->S01F0_0(4,2,04) Down    S01F0_0(0,3,08)->FPC07FE0TQ0(02) Down
FPC07FE1TQ1(02)->S01F0_0(4,0,04) Down    S01F0_0(0,0,08)->FPC07FE1TQ1(02) Down
FPC07FE2TQ2(02)->S01F0_0(4,1,04) Down    S01F0_0(0,1,08)->FPC07FE2TQ2(02) Down
FPC07FE3TQ3(02)->S01F0_0(4,3,04) Down    S01F0_0(0,2,08)->FPC07FE3TQ3(02) Down

SIB 1 FCHIP 0 FCORE 1 :
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          In-links               State             Out-links              State
--------------------------------------------------------------------------------
FPC00FE0TQ0(03)->S01F0_1(3,4,11) OK      S01F0_1(7,6,07)->FPC00FE0TQ0(03) OK
FPC00FE1TQ1(03)->S01F0_1(3,5,11) OK      S01F0_1(7,4,07)->FPC00FE1TQ1(03) OK
FPC00FE2TQ2(03)->S01F0_1(3,6,11) OK      S01F0_1(7,7,07)->FPC00FE2TQ2(03) OK
FPC00FE3TQ3(03)->S01F0_1(3,7,11) OK      S01F0_1(7,5,07)->FPC00FE3TQ3(03) OK
FPC01FE0TQ0(03)->S01F0_1(3,0,11) OK      S01F0_1(7,2,07)->FPC01FE0TQ0(03) OK
FPC01FE1TQ1(03)->S01F0_1(3,1,11) OK      S01F0_1(7,0,07)->FPC01FE1TQ1(03) OK
FPC01FE2TQ2(03)->S01F0_1(3,2,11) OK      S01F0_1(7,3,07)->FPC01FE2TQ2(03) OK
FPC01FE3TQ3(03)->S01F0_1(3,3,11) OK      S01F0_1(7,1,07)->FPC01FE3TQ3(03) OK
FPC02FE0TQ0(03)->S01F0_1(2,4,10) OK      S01F0_1(6,5,06)->FPC02FE0TQ0(03) OK
FPC02FE1TQ1(03)->S01F0_1(2,5,10) OK      S01F0_1(6,4,06)->FPC02FE1TQ1(03) OK
FPC02FE2TQ2(03)->S01F0_1(2,6,10) OK      S01F0_1(6,7,06)->FPC02FE2TQ2(03) OK
FPC02FE3TQ3(03)->S01F0_1(2,7,10) OK      S01F0_1(6,6,06)->FPC02FE3TQ3(03) OK
FPC03FE0TQ0(03)->S01F0_1(2,0,10) Down    S01F0_1(6,1,06)->FPC03FE0TQ0(03) Down
FPC03FE1TQ1(03)->S01F0_1(2,1,10) Down    S01F0_1(6,0,06)->FPC03FE1TQ1(03) Down
FPC03FE2TQ2(03)->S01F0_1(2,2,10) Down    S01F0_1(6,3,06)->FPC03FE2TQ2(03) Down
FPC03FE3TQ3(03)->S01F0_1(2,3,10) Down    S01F0_1(6,2,06)->FPC03FE3TQ3(03) Down
FPC04FE0TQ0(03)->S01F0_1(1,4,09) OK      S01F0_1(5,5,05)->FPC04FE0TQ0(03) OK
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FPC04FE1TQ1(03)->S01F0_1(1,5,09) OK      S01F0_1(5,4,05)->FPC04FE1TQ1(03) OK
FPC04FE2TQ2(03)->S01F0_1(1,6,09) OK      S01F0_1(5,7,05)->FPC04FE2TQ2(03) OK
FPC04FE3TQ3(03)->S01F0_1(1,7,09) OK      S01F0_1(5,6,05)->FPC04FE3TQ3(03) OK
FPC05FE0TQ0(03)->S01F0_1(1,0,09) OK      S01F0_1(5,1,05)->FPC05FE0TQ0(03) OK
FPC05FE1TQ1(03)->S01F0_1(1,1,09) OK      S01F0_1(5,0,05)->FPC05FE1TQ1(03) OK
FPC05FE2TQ2(03)->S01F0_1(1,2,09) OK      S01F0_1(5,3,05)->FPC05FE2TQ2(03) OK
FPC05FE3TQ3(03)->S01F0_1(1,3,09) OK      S01F0_1(5,2,05)->FPC05FE3TQ3(03) OK
FPC06FE0TQ0(03)->S01F0_1(0,4,08) Down    S01F0_1(4,7,04)->FPC06FE0TQ0(03) Down
FPC06FE1TQ1(03)->S01F0_1(0,5,08) Down    S01F0_1(4,0,04)->FPC06FE1TQ1(03) Down
FPC06FE2TQ2(03)->S01F0_1(0,6,08) Down    S01F0_1(4,6,04)->FPC06FE2TQ2(03) Down
FPC06FE3TQ3(03)->S01F0_1(0,7,08) Down    S01F0_1(4,1,04)->FPC06FE3TQ3(03) Down
FPC07FE0TQ0(03)->S01F0_1(0,0,08) Down    S01F0_1(4,3,04)->FPC07FE0TQ0(03) Down
FPC07FE1TQ1(03)->S01F0_1(0,1,08) Down    S01F0_1(4,4,04)->FPC07FE1TQ1(03) Down
FPC07FE2TQ2(03)->S01F0_1(0,2,08) Down    S01F0_1(4,2,04)->FPC07FE2TQ2(03) Down
FPC07FE3TQ3(03)->S01F0_1(0,3,08) Down    S01F0_1(4,5,04)->FPC07FE3TQ3(03) Down
```

show chassis fabric topology (PTX10008 Router)

`user@host>` **show chassis fabric topology**

```
 In-link  : FPC# FE# ASIC# (TX inst#, TX sub-chnl #) ->
            SIB# ASIC#_FCORE# (RX port#, RX sub-chn#, RX inst#)

 Out-link : SIB# ASIC#_FCORE# (TX port#, TX sub-chn#, TX inst#) ->
            FPC# FE# ASIC# (RX inst#, RX sub-chnl #)
SIB 0 FCHIP 0 FCORE 0 :
-----------------------
          In-links               State             Out-links               State
--------------------------------------------------------------------------------
FPC00FE0(1,17)->S00F0_0(01,0,01) OK      S00F0_0(00,0,00)->FPC00FE0(1,09) OK
FPC00FE0(1,09)->S00F0_0(02,0,02) OK      S00F0_0(00,1,00)->FPC00FE0(1,17) OK
FPC00FE0(1,07)->S00F0_0(02,2,02) OK      S00F0_0(00,2,00)->FPC00FE0(1,07) OK
FPC00FE1(1,12)->S00F0_0(01,1,01) OK      S00F0_0(00,3,00)->FPC00FE1(1,06) OK
FPC00FE1(1,06)->S00F0_0(01,2,01) OK      S00F0_0(01,1,01)->FPC00FE1(1,12) OK
FPC00FE1(1,10)->S00F0_0(01,3,01) OK      S00F0_0(01,3,01)->FPC00FE1(1,10) OK
FPC00FE2(1,16)->S00F0_0(00,4,00) OK      S00F0_0(00,4,00)->FPC00FE2(1,08) OK
FPC00FE2(1,08)->S00F0_0(01,6,01) OK      S00F0_0(00,5,00)->FPC00FE2(1,16) OK
FPC00FE2(1,06)->S00F0_0(01,7,01) OK      S00F0_0(00,6,00)->FPC00FE2(1,06) OK
FPC05FE0(1,07)->S00F0_0(05,5,05) OK      S00F0_0(05,2,05)->FPC05FE0(1,17) OK
FPC05FE0(1,09)->S00F0_0(05,7,05) OK      S00F0_0(06,4,06)->FPC05FE0(1,07) OK
FPC05FE0(1,17)->S00F0_0(09,3,09) OK      S00F0_0(06,7,06)->FPC05FE0(1,09) OK
FPC05FE1(1,06)->S00F0_0(06,1,06) OK      S00F0_0(06,0,06)->FPC05FE1(1,06) OK
FPC05FE1(1,08)->S00F0_0(06,3,06) OK      S00F0_0(06,2,06)->FPC05FE1(1,08) OK
FPC05FE1(1,16)->S00F0_0(09,7,09) OK      S00F0_0(09,6,09)->FPC05FE1(1,16) OK
```

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FPC05FE2(1,10)->S00F0_0(09,0,09) OK      S00F0_0(05,0,05)->FPC05FE2(1,06) OK
FPC05FE2(1,06)->S00F0_0(09,1,09) OK      S00F0_0(05,1,05)->FPC05FE2(1,10) OK
FPC05FE2(1,12)->S00F0_0(09,2,09) OK      S00F0_0(05,3,05)->FPC05FE2(1,12) OK
FPC05FE3(1,11)->S00F0_0(09,4,09) OK      S00F0_0(09,4,09)->FPC05FE3(1,07) OK
FPC05FE3(1,07)->S00F0_0(09,5,09) OK      S00F0_0(09,5,09)->FPC05FE3(1,11) OK
FPC05FE3(1,13)->S00F0_0(09,6,09) OK      S00F0_0(09,7,09)->FPC05FE3(1,13) OK
FPC05FE4(1,16)->S00F0_0(05,3,05) OK      S00F0_0(05,4,05)->FPC05FE4(1,06) OK
FPC05FE4(1,06)->S00F0_0(06,5,06) OK      S00F0_0(05,6,05)->FPC05FE4(1,08) OK
FPC05FE4(1,08)->S00F0_0(06,7,06) OK      S00F0_0(09,2,09)->FPC05FE4(1,16) OK
FPC05FE5(1,10)->S00F0_0(05,0,05) OK      S00F0_0(09,0,09)->FPC05FE5(1,06) OK
FPC05FE5(1,06)->S00F0_0(05,1,05) OK      S00F0_0(09,1,09)->FPC05FE5(1,10) OK
FPC05FE5(1,12)->S00F0_0(05,2,05) OK      S00F0_0(09,3,09)->FPC05FE5(1,12) OK
FPC06FE0(1,17)->S00F0_0(05,6,05) OK      S00F0_0(06,6,06)->FPC06FE0(1,17) OK
FPC06FE0(1,07)->S00F0_0(07,0,07) OK      S00F0_0(08,0,08)->FPC06FE0(1,07) OK
FPC06FE0(1,09)->S00F0_0(07,2,07) OK      S00F0_0(08,2,08)->FPC06FE0(1,09) OK
FPC06FE1(1,16)->S00F0_0(06,2,06) OK      S00F0_0(06,3,06)->FPC06FE1(1,16) OK
FPC06FE1(1,06)->S00F0_0(07,4,07) OK      S00F0_0(07,4,07)->FPC06FE1(1,06) OK
FPC06FE1(1,08)->S00F0_0(07,6,07) OK      S00F0_0(07,6,07)->FPC06FE1(1,08) OK
FPC06FE2(1,06)->S00F0_0(05,4,05) OK      S00F0_0(06,5,06)->FPC06FE2(1,06) OK
FPC06FE2(1,10)->S00F0_0(07,1,07) OK      S00F0_0(08,1,08)->FPC06FE2(1,10) OK
FPC06FE2(1,12)->S00F0_0(07,3,07) OK      S00F0_0(08,3,08)->FPC06FE2(1,12) OK
FPC06FE3(1,07)->S00F0_0(06,0,06) OK      S00F0_0(06,1,06)->FPC06FE3(1,07) OK
FPC06FE3(1,11)->S00F0_0(07,5,07) OK      S00F0_0(07,5,07)->FPC06FE3(1,11) OK
FPC06FE3(1,13)->S00F0_0(07,7,07) OK      S00F0_0(07,7,07)->FPC06FE3(1,13) OK
FPC06FE4(1,16)->S00F0_0(06,6,06) OK      S00F0_0(05,7,05)->FPC06FE4(1,16) OK
FPC06FE4(1,06)->S00F0_0(08,0,08) OK      S00F0_0(07,0,07)->FPC06FE4(1,06) OK
FPC06FE4(1,08)->S00F0_0(08,2,08) OK      S00F0_0(07,2,07)->FPC06FE4(1,08) OK
FPC06FE5(1,06)->S00F0_0(06,4,06) OK      S00F0_0(05,5,05)->FPC06FE5(1,06) OK
FPC06FE5(1,10)->S00F0_0(08,1,08) OK      S00F0_0(07,1,07)->FPC06FE5(1,10) OK
FPC06FE5(1,12)->S00F0_0(08,3,08) OK      S00F0_0(07,3,07)->FPC06FE5(1,12) OK

SIB 0 FCHIP 1 FCORE 0 :
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          In-links               State             Out-links               State
--------------------------------------------------------------------------------
FPC00FE0(1,15)->S00F1_0(15,4,15) OK      S00F1_0(16,4,16)->FPC00FE0(1,15) OK
FPC00FE0(1,11)->S00F1_0(17,4,17) OK      S00F1_0(18,4,18)->FPC00FE0(1,11) OK
FPC00FE0(1,13)->S00F1_0(17,6,17) OK      S00F1_0(18,6,18)->FPC00FE0(1,13) OK
FPC00FE1(1,08)->S00F1_0(15,6,15) OK      S00F1_0(16,6,16)->FPC00FE1(1,08) OK
FPC00FE1(1,14)->S00F1_0(17,5,17) OK      S00F1_0(18,5,18)->FPC00FE1(1,14) OK
FPC00FE1(1,16)->S00F1_0(17,7,17) OK      S00F1_0(18,7,18)->FPC00FE1(1,16) OK
FPC00FE2(1,14)->S00F1_0(16,0,16) OK      S00F1_0(16,0,16)->FPC00FE2(1,14) OK
FPC00FE2(1,10)->S00F1_0(18,0,18) OK      S00F1_0(18,0,18)->FPC00FE2(1,10) OK
FPC00FE2(1,12)->S00F1_0(18,2,18) OK      S00F1_0(18,2,18)->FPC00FE2(1,12) OK
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FPC05FE0(1,11)->S00F1_0(02,0,02) OK      S00F1_0(02,1,02)->FPC05FE0(1,13) OK
FPC05FE0(1,13)->S00F1_0(02,2,02) OK      S00F1_0(02,3,02)->FPC05FE0(1,11) OK
FPC05FE0(1,15)->S00F1_0(04,7,04) OK      S00F1_0(03,6,03)->FPC05FE0(1,15) OK
FPC05FE1(1,10)->S00F1_0(02,4,02) OK      S00F1_0(02,5,02)->FPC05FE1(1,12) OK
FPC05FE1(1,12)->S00F1_0(02,6,02) OK      S00F1_0(02,7,02)->FPC05FE1(1,10) OK
FPC05FE1(1,14)->S00F1_0(04,3,04) OK      S00F1_0(04,2,04)->FPC05FE1(1,14) OK
FPC05FE2(1,16)->S00F1_0(04,4,04) OK      S00F1_0(03,4,03)->FPC05FE2(1,08) OK
FPC05FE2(1,08)->S00F1_0(04,5,04) OK      S00F1_0(03,5,03)->FPC05FE2(1,16) OK
FPC05FE2(1,14)->S00F1_0(04,6,04) OK      S00F1_0(03,7,03)->FPC05FE2(1,14) OK
FPC05FE3(1,17)->S00F1_0(04,0,04) OK      S00F1_0(04,0,04)->FPC05FE3(1,09) OK
FPC05FE3(1,09)->S00F1_0(04,1,04) OK      S00F1_0(04,1,04)->FPC05FE3(1,17) OK
FPC05FE3(1,15)->S00F1_0(04,2,04) OK      S00F1_0(04,3,04)->FPC05FE3(1,15) OK
FPC05FE4(1,10)->S00F1_0(03,0,03) OK      S00F1_0(03,1,03)->FPC05FE4(1,12) OK
FPC05FE4(1,12)->S00F1_0(03,2,03) OK      S00F1_0(03,3,03)->FPC05FE4(1,10) OK
FPC05FE4(1,14)->S00F1_0(03,7,03) OK      S00F1_0(04,6,04)->FPC05FE4(1,14) OK
FPC05FE5(1,16)->S00F1_0(03,4,03) OK      S00F1_0(04,4,04)->FPC05FE5(1,08) OK
FPC05FE5(1,08)->S00F1_0(03,5,03) OK      S00F1_0(04,5,04)->FPC05FE5(1,16) OK
FPC05FE5(1,14)->S00F1_0(03,6,03) OK      S00F1_0(04,7,04)->FPC05FE5(1,14) OK
FPC06FE0(1,15)->S00F1_0(01,0,01) OK      S00F1_0(00,3,00)->FPC06FE0(1,15) OK
FPC06FE0(1,11)->S00F1_0(02,1,02) OK      S00F1_0(01,0,01)->FPC06FE0(1,13) OK
FPC06FE0(1,13)->S00F1_0(02,3,02) OK      S00F1_0(01,2,01)->FPC06FE0(1,11) OK
FPC06FE1(1,14)->S00F1_0(01,4,01) OK      S00F1_0(00,7,00)->FPC06FE1(1,14) OK
FPC06FE1(1,10)->S00F1_0(02,5,02) OK      S00F1_0(01,4,01)->FPC06FE1(1,12) OK
FPC06FE1(1,12)->S00F1_0(02,7,02) OK      S00F1_0(01,6,01)->FPC06FE1(1,10) OK
FPC06FE2(1,08)->S00F1_0(01,2,01) OK      S00F1_0(00,1,00)->FPC06FE2(1,08) OK
FPC06FE2(1,16)->S00F1_0(15,0,15) OK      S00F1_0(01,5,01)->FPC06FE2(1,16) OK
FPC06FE2(1,14)->S00F1_0(15,2,15) OK      S00F1_0(01,7,01)->FPC06FE2(1,14) OK
FPC06FE3(1,09)->S00F1_0(01,6,01) OK      S00F1_0(00,5,00)->FPC06FE3(1,09) OK
FPC06FE3(1,17)->S00F1_0(19,4,19) OK      S00F1_0(02,4,02)->FPC06FE3(1,17) OK
FPC06FE3(1,15)->S00F1_0(19,6,19) OK      S00F1_0(02,6,02)->FPC06FE3(1,15) OK
FPC06FE4(1,14)->S00F1_0(01,7,01) OK      S00F1_0(01,3,01)->FPC06FE4(1,14) OK
FPC06FE4(1,10)->S00F1_0(03,1,03) OK      S00F1_0(02,0,02)->FPC06FE4(1,12) OK
FPC06FE4(1,12)->S00F1_0(03,3,03) OK      S00F1_0(02,2,02)->FPC06FE4(1,10) OK
FPC06FE5(1,08)->S00F1_0(01,5,01) OK      S00F1_0(01,1,01)->FPC06FE5(1,08) OK
FPC06FE5(1,16)->S00F1_0(19,0,19) OK      S00F1_0(03,0,03)->FPC06FE5(1,16) OK
FPC06FE5(1,14)->S00F1_0(19,2,19) OK      S00F1_0(03,2,03)->FPC06FE5(1,14) OK

SIB 1 FCHIP 0 FCORE 0 :
-----------------------
          In-links               State             Out-links               State
--------------------------------------------------------------------------------
FPC00FE0(1,05)->S01F0_0(01,0,01) OK      S01F0_0(00,0,00)->FPC00FE0(0,01) OK
FPC00FE0(0,01)->S01F0_0(02,0,02) OK      S01F0_0(00,1,00)->FPC00FE0(1,05) OK
FPC00FE0(0,07)->S01F0_0(02,2,02) OK      S01F0_0(00,2,00)->FPC00FE0(0,07) OK
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FPC00FE1(1,04)->S01F0_0(00,4,00) OK      S01F0_0(00,4,00)->FPC00FE1(0,00) OK
FPC00FE1(0,00)->S01F0_0(01,6,01) OK      S01F0_0(00,5,00)->FPC00FE1(1,04) OK
FPC00FE1(0,06)->S01F0_0(01,7,01) OK      S01F0_0(00,6,00)->FPC00FE1(0,06) OK
FPC00FE2(1,01)->S01F0_0(01,1,01) OK      S01F0_0(00,3,00)->FPC00FE2(0,06) OK
FPC00FE2(0,06)->S01F0_0(01,2,01) OK      S01F0_0(01,1,01)->FPC00FE2(1,01) OK
FPC00FE2(1,00)->S01F0_0(01,3,01) OK      S01F0_0(01,3,01)->FPC00FE2(1,00) OK
FPC05FE0(0,07)->S01F0_0(05,5,05) OK      S01F0_0(05,2,05)->FPC05FE0(1,05) OK
FPC05FE0(0,01)->S01F0_0(05,7,05) OK      S01F0_0(06,4,06)->FPC05FE0(0,07) OK
FPC05FE0(1,05)->S01F0_0(09,3,09) OK      S01F0_0(06,7,06)->FPC05FE0(0,01) OK
FPC05FE1(1,00)->S01F0_0(09,0,09) OK      S01F0_0(05,0,05)->FPC05FE1(0,06) OK
FPC05FE1(0,06)->S01F0_0(09,1,09) OK      S01F0_0(05,1,05)->FPC05FE1(1,00) OK
FPC05FE1(1,01)->S01F0_0(09,2,09) OK      S01F0_0(05,3,05)->FPC05FE1(1,01) OK
FPC05FE2(0,06)->S01F0_0(06,1,06) OK      S01F0_0(06,0,06)->FPC05FE2(0,06) OK
FPC05FE2(0,00)->S01F0_0(06,3,06) OK      S01F0_0(06,2,06)->FPC05FE2(0,00) OK
FPC05FE2(1,04)->S01F0_0(09,7,09) OK      S01F0_0(09,6,09)->FPC05FE2(1,04) OK
FPC05FE3(1,00)->S01F0_0(09,4,09) OK      S01F0_0(09,4,09)->FPC05FE3(0,06) OK
FPC05FE3(0,06)->S01F0_0(09,5,09) OK      S01F0_0(09,5,09)->FPC05FE3(1,00) OK
FPC05FE3(1,01)->S01F0_0(09,6,09) OK      S01F0_0(09,7,09)->FPC05FE3(1,01) OK
FPC05FE4(0,04)->S01F0_0(05,3,05) OK      S01F0_0(05,4,05)->FPC05FE4(0,14) OK
FPC05FE4(0,14)->S01F0_0(06,5,06) OK      S01F0_0(05,6,05)->FPC05FE4(0,16) OK
FPC05FE4(0,16)->S01F0_0(06,7,06) OK      S01F0_0(09,2,09)->FPC05FE4(0,04) OK
FPC05FE5(1,00)->S01F0_0(05,0,05) OK      S01F0_0(09,0,09)->FPC05FE5(0,06) OK
FPC05FE5(0,06)->S01F0_0(05,1,05) OK      S01F0_0(09,1,09)->FPC05FE5(1,00) OK
FPC05FE5(1,01)->S01F0_0(05,2,05) OK      S01F0_0(09,3,09)->FPC05FE5(1,01) OK
FPC06FE0(1,05)->S01F0_0(05,6,05) OK      S01F0_0(06,6,06)->FPC06FE0(1,05) OK
FPC06FE0(0,07)->S01F0_0(07,0,07) OK      S01F0_0(08,0,08)->FPC06FE0(0,07) OK
FPC06FE0(0,01)->S01F0_0(07,2,07) OK      S01F0_0(08,2,08)->FPC06FE0(0,01) OK
FPC06FE1(0,06)->S01F0_0(05,4,05) OK      S01F0_0(06,5,06)->FPC06FE1(0,06) OK
FPC06FE1(1,00)->S01F0_0(07,1,07) OK      S01F0_0(08,1,08)->FPC06FE1(1,00) OK
FPC06FE1(1,01)->S01F0_0(07,3,07) OK      S01F0_0(08,3,08)->FPC06FE1(1,01) OK
FPC06FE2(1,04)->S01F0_0(06,2,06) OK      S01F0_0(06,3,06)->FPC06FE2(1,04) OK
FPC06FE2(0,06)->S01F0_0(07,4,07) OK      S01F0_0(07,4,07)->FPC06FE2(0,06) OK
FPC06FE2(0,00)->S01F0_0(07,6,07) OK      S01F0_0(07,6,07)->FPC06FE2(0,00) OK
FPC06FE3(0,06)->S01F0_0(06,0,06) OK      S01F0_0(06,1,06)->FPC06FE3(0,06) OK
FPC06FE3(1,00)->S01F0_0(07,5,07) OK      S01F0_0(07,5,07)->FPC06FE3(1,00) OK
FPC06FE3(1,01)->S01F0_0(07,7,07) OK      S01F0_0(07,7,07)->FPC06FE3(1,01) OK
FPC06FE4(0,04)->S01F0_0(06,6,06) OK      S01F0_0(05,7,05)->FPC06FE4(0,04) OK
FPC06FE4(0,14)->S01F0_0(08,0,08) OK      S01F0_0(07,0,07)->FPC06FE4(0,14) OK
FPC06FE4(0,16)->S01F0_0(08,2,08) OK      S01F0_0(07,2,07)->FPC06FE4(0,16) OK
FPC06FE5(0,06)->S01F0_0(06,4,06) OK      S01F0_0(05,5,05)->FPC06FE5(0,06) OK
FPC06FE5(1,00)->S01F0_0(08,1,08) OK      S01F0_0(07,1,07)->FPC06FE5(1,00) OK
FPC06FE5(1,01)->S01F0_0(08,3,08) OK      S01F0_0(07,3,07)->FPC06FE5(1,01) OK

SIB 1 FCHIP 1 FCORE 0 :
```

```
-----------------------
          In-links               State             Out-links               State
-------------------------------------------------------------------------------
FPC00FE0(1,03)->S01F1_0(15,4,15) OK      S01F1_0(16,4,16)->FPC00FE0(1,03) OK
FPC00FE0(0,02)->S01F1_0(17,4,17) OK      S01F1_0(18,4,18)->FPC00FE0(0,02) OK
FPC00FE0(0,03)->S01F1_0(17,6,17) OK      S01F1_0(18,6,18)->FPC00FE0(0,03) OK
FPC00FE1(1,02)->S01F1_0(16,0,16) OK      S01F1_0(16,0,16)->FPC00FE1(1,02) OK
FPC00FE1(1,00)->S01F1_0(18,0,18) OK      S01F1_0(18,0,18)->FPC00FE1(1,00) OK
FPC00FE1(1,01)->S01F1_0(18,2,18) OK      S01F1_0(18,2,18)->FPC00FE1(1,01) OK
FPC00FE2(0,00)->S01F1_0(15,6,15) OK      S01F1_0(16,6,16)->FPC00FE2(0,00) OK
FPC00FE2(1,02)->S01F1_0(17,5,17) OK      S01F1_0(18,5,18)->FPC00FE2(1,02) OK
FPC00FE2(1,04)->S01F1_0(17,7,17) OK      S01F1_0(18,7,18)->FPC00FE2(1,04) OK
FPC05FE0(0,02)->S01F1_0(02,0,02) OK      S01F1_0(02,1,02)->FPC05FE0(0,03) OK
FPC05FE0(0,03)->S01F1_0(02,2,02) OK      S01F1_0(02,3,02)->FPC05FE0(0,02) OK
FPC05FE0(1,03)->S01F1_0(04,7,04) OK      S01F1_0(03,6,03)->FPC05FE0(1,03) OK
FPC05FE1(1,04)->S01F1_0(04,4,04) OK      S01F1_0(03,4,03)->FPC05FE1(0,00) OK
FPC05FE1(0,00)->S01F1_0(04,5,04) OK      S01F1_0(03,5,03)->FPC05FE1(1,04) OK
FPC05FE1(1,02)->S01F1_0(04,6,04) OK      S01F1_0(03,7,03)->FPC05FE1(1,02) OK
FPC05FE2(1,00)->S01F1_0(02,4,02) OK      S01F1_0(02,5,02)->FPC05FE2(1,01) OK
FPC05FE2(1,01)->S01F1_0(02,6,02) OK      S01F1_0(02,7,02)->FPC05FE2(1,00) OK
FPC05FE2(1,02)->S01F1_0(04,3,04) OK      S01F1_0(04,2,04)->FPC05FE2(1,02) OK
FPC05FE3(1,04)->S01F1_0(04,0,04) OK      S01F1_0(04,0,04)->FPC05FE3(0,00) OK
FPC05FE3(0,00)->S01F1_0(04,1,04) OK      S01F1_0(04,1,04)->FPC05FE3(1,04) OK
FPC05FE3(1,02)->S01F1_0(04,2,04) OK      S01F1_0(04,3,04)->FPC05FE3(1,02) OK
FPC05FE4(0,10)->S01F1_0(03,0,03) OK      S01F1_0(03,1,03)->FPC05FE4(0,12) OK
FPC05FE4(0,12)->S01F1_0(03,2,03) OK      S01F1_0(03,3,03)->FPC05FE4(0,10) OK
FPC05FE4(0,08)->S01F1_0(03,7,03) OK      S01F1_0(04,6,04)->FPC05FE4(0,08) OK
FPC05FE5(1,04)->S01F1_0(03,4,03) OK      S01F1_0(04,4,04)->FPC05FE5(0,00) OK
FPC05FE5(0,00)->S01F1_0(03,5,03) OK      S01F1_0(04,5,04)->FPC05FE5(1,04) OK
FPC05FE5(1,02)->S01F1_0(03,6,03) OK      S01F1_0(04,7,04)->FPC05FE5(1,02) OK
FPC06FE0(1,03)->S01F1_0(01,0,01) OK      S01F1_0(00,3,00)->FPC06FE0(1,03) OK
FPC06FE0(0,02)->S01F1_0(02,1,02) OK      S01F1_0(01,0,01)->FPC06FE0(0,03) OK
FPC06FE0(0,03)->S01F1_0(02,3,02) OK      S01F1_0(01,2,01)->FPC06FE0(0,02) OK
FPC06FE1(0,00)->S01F1_0(01,2,01) OK      S01F1_0(00,1,00)->FPC06FE1(0,00) OK
FPC06FE1(1,04)->S01F1_0(15,0,15) OK      S01F1_0(01,5,01)->FPC06FE1(1,04) OK
FPC06FE1(1,02)->S01F1_0(15,2,15) OK      S01F1_0(01,7,01)->FPC06FE1(1,02) OK
FPC06FE2(1,02)->S01F1_0(01,4,01) OK      S01F1_0(00,7,00)->FPC06FE2(1,02) OK
FPC06FE2(1,00)->S01F1_0(02,5,02) OK      S01F1_0(01,4,01)->FPC06FE2(1,01) OK
FPC06FE2(1,01)->S01F1_0(02,7,02) OK      S01F1_0(01,6,01)->FPC06FE2(1,00) OK
FPC06FE3(0,00)->S01F1_0(01,6,01) OK      S01F1_0(00,5,00)->FPC06FE3(0,00) OK
FPC06FE3(1,04)->S01F1_0(19,4,19) OK      S01F1_0(02,4,02)->FPC06FE3(1,04) OK
FPC06FE3(1,02)->S01F1_0(19,6,19) OK      S01F1_0(02,6,02)->FPC06FE3(1,02) OK
FPC06FE4(0,08)->S01F1_0(01,7,01) OK      S01F1_0(01,3,01)->FPC06FE4(0,08) OK
FPC06FE4(0,10)->S01F1_0(03,1,03) OK      S01F1_0(02,0,02)->FPC06FE4(0,12) OK
```

```
FPC06FE4(0,12)->S01F1_0(03,3,03) OK      S01F1_0(02,2,02)->FPC06FE4(0,10) OK
FPC06FE5(0,00)->S01F1_0(01,5,01) OK      S01F1_0(01,1,01)->FPC06FE5(0,00) OK
FPC06FE5(1,04)->S01F1_0(19,0,19) OK      S01F1_0(03,0,03)->FPC06FE5(1,04) OK
FPC06FE5(1,02)->S01F1_0(19,2,19) OK      S01F1_0(03,2,03)->FPC06FE5(1,02) OK

SIB 2
Not Online

SIB 3
Not Online

SIB 4
Not Online

SIB 5
Not Online
```

show chassis fabric topology (QFX10008 Switch)

`user@host>` **show chassis fabric topology**

```
 In-link  : FPC# FE# ASIC# (TX inst#, TX sub-chnl #) ->
            SIB# ASIC#_FCORE# (RX port#, RX sub-chn#, RX inst#)

 Out-link : SIB# ASIC#_FCORE# (TX port#, TX sub-chn#, TX inst#) ->
            FPC# FE# ASIC# (RX inst#, RX sub-chnl #)
SIB 0 FCHIP 0 FCORE 0 :
-----------------------
          In-links               State             Out-links               State
--------------------------------------------------------------------------------
FPC00FE0(1,17)->S00F0_0(01,0,01) OK      S00F0_0(00,0,00)->FPC00FE0(1,09) OK
FPC00FE0(1,09)->S00F0_0(02,0,02) OK      S00F0_0(00,1,00)->FPC00FE0(1,17) OK
FPC00FE0(1,07)->S00F0_0(02,2,02) OK      S00F0_0(00,2,00)->FPC00FE0(1,07) OK
FPC00FE1(1,12)->S00F0_0(01,1,01) OK      S00F0_0(00,3,00)->FPC00FE1(1,06) OK
FPC00FE1(1,06)->S00F0_0(01,2,01) OK      S00F0_0(01,1,01)->FPC00FE1(1,12) OK
FPC00FE1(1,10)->S00F0_0(01,3,01) OK      S00F0_0(01,3,01)->FPC00FE1(1,10) OK
FPC00FE2(1,16)->S00F0_0(00,4,00) OK      S00F0_0(00,4,00)->FPC00FE2(1,08) OK
FPC00FE2(1,08)->S00F0_0(01,6,01) OK      S00F0_0(00,5,00)->FPC00FE2(1,16) OK
FPC00FE2(1,06)->S00F0_0(01,7,01) OK      S00F0_0(00,6,00)->FPC00FE2(1,06) OK

SIB 0 FCHIP 1 FCORE 0 :
-----------------------
          In-links               State             Out-links               State
--------------------------------------------------------------------------------
```

```
FPC00FE0(1,15)->S00F1_0(15,4,15) OK      S00F1_0(16,4,16)->FPC00FE0(1,15) OK
FPC00FE0(1,11)->S00F1_0(17,4,17) OK      S00F1_0(18,4,18)->FPC00FE0(1,11) OK
FPC00FE0(1,13)->S00F1_0(17,6,17) OK      S00F1_0(18,6,18)->FPC00FE0(1,13) OK
FPC00FE1(1,08)->S00F1_0(15,6,15) OK      S00F1_0(16,6,16)->FPC00FE1(1,08) OK
FPC00FE1(1,14)->S00F1_0(17,5,17) OK      S00F1_0(18,5,18)->FPC00FE1(1,14) OK
FPC00FE1(1,16)->S00F1_0(17,7,17) OK      S00F1_0(18,7,18)->FPC00FE1(1,16) OK
FPC00FE2(1,14)->S00F1_0(16,0,16) OK      S00F1_0(16,0,16)->FPC00FE2(1,14) OK
FPC00FE2(1,10)->S00F1_0(18,0,18) OK      S00F1_0(18,0,18)->FPC00FE2(1,10) OK
FPC00FE2(1,12)->S00F1_0(18,2,18) OK      S00F1_0(18,2,18)->FPC00FE2(1,12) OK

SIB 1
Not Online

SIB 2
Not Online

SIB 3
Not Online

SIB 4
Not Online

SIB 5
Not Online
```

show chassis fabric unreachable-destinations

Syntax

```
show chassis fabric unreachable-destinations
```

Release Information

Command introduced before Junos OS Release 11.4.
Command introduced in Junos OS Release 12.1X48R4 for PTX Series Packet Transport Switches.
Command introduced in Junos OS Release 13.1R3 for TX Matrix routers.

Description

(M320 and T Series routers only) Display the list of destinations that have transitioned from a reachable state to an unreachable state.

Required Privilege Level

view

RELATED DOCUMENTATION

show chassis fabric reachability | 1387

List of Sample Output

show chassis fabric unreachable-destinations(T640 and T1600 routers) on page 1461
show chassis fabric unreachable-destinations(TX Matrix routers) on page 1461

Output Fields

The table lists the output fields for the **show chassis fabric unreachable-destinations** command. Output fields are listed in the approximate order in which they appear.

Table 73: show chassis fabric unreachable-destinations Output Fields

Field Name	Field Description
Flexible PIC Concentrator (FPC) number	Source FPC number where unreachable destinations are present.
Packet Forwarding Engine number	Source Packet Forwarding Engine number where unreachable destinations are present.
Destination error on Packet Forwarding Engine	List of destination FPCs *FPC number*/Packet Forwarding Engines *Packet Forwarding Engine number* that are not reachable from the source FPCs *FPC number*/Packet Forwarding Engines *Packet Forwarding Engine number* over the fabric.

Sample Output

show chassis fabric unreachable-destinations(T640 and T1600 routers)

`user@host>` **show chassis fabric unreachable-destinations**

```
Fabric management unreachable destinations:
FPC 2
  PFE 0
      Destination error on PFEs    2/0 3/0 3/1 7/0
FPC 3
  PFE 0
      Destination error on PFEs    2/0 3/0 3/1 7/0
FPC 3
  PFE 1
      Destination error on PFEs    2/0 3/0 3/1 7/0
FPC 7
  PFE 0
      Destination error on PFEs    2/0 3/0 3/1 7/0
```

show chassis fabric unreachable-destinations(TX Matrix routers)

`user@host>` **show chassis fabric unreachable-destinations**

```
Fabric management unreachable destinations:
FPC 10
  PFE 0
      Destination error on PFEs    10/0 16/0 16/1 17/0 17/1 19/0 20/1 21/1 22/1
24/0
       26/0 27/0 27/1 28/1 29/1 31/1
FPC 12
  PFE 0
      Destination error on PFEs    12/0 16/0 16/1 17/0 17/1 19/0 20/1 21/1 22/1
24/0
       26/0 27/0 27/1 28/1 29/1 31/1
FPC 16
  PFE 0
      Destination error on PFEs    10/0 12/0
FPC 16
  PFE 1
      Destination error on PFEs    10/0 12/0
FPC 17
  PFE 0
```

```
      Destination error on PFEs    10/0 12/0
FPC 17
  PFE 1
      Destination error on PFEs    10/0 12/0
FPC 19
  PFE 0
      Destination error on PFEs    10/0 12/0
FPC 20
  PFE 1
      Destination error on PFEs    10/0 12/0
FPC 21
  PFE 1
      Destination error on PFEs    10/0 12/0
FPC 22
  PFE 1
      Destination error on PFEs    10/0 12/0
FPC 24
  PFE 0
      Destination error on PFEs    10/0 12/0
FPC 26
  PFE 0
      Destination error on PFEs    10/0 12/0
FPC 27
  PFE 0
      Destination error on PFEs    10/0 12/0
FPC 27
  PFE 1
      Destination error on PFEs    10/0
FPC 28
  PFE 1
      Destination error on PFEs    10/0 12/0
FPC 29
  PFE 1
      Destination error on PFEs    10/0 12/0
FPC 31
  PFE 1
      Destination error on PFEs    10/0 12/0
```

show chassis fan

List of Syntax

Syntax on page 1463
Syntax (MX Series Routers) on page 1463
Syntax (MX104, MX204, MX2010, MX2020, MX2008, and MX10003 Universal Routing Platform) on page 1463
Syntax (QFX Series) on page 1463
Syntax (TX Matrix Router) on page 1463
Syntax (TX Matrix Plus Router) on page 1463

Syntax

```
show chassis fan
```

Syntax (MX Series Routers)

```
show chassis fan
<all-members>
<local>
<member member-id>
```

Syntax (MX104, MX204, MX2010, MX2020, MX2008, and MX10003 Universal Routing Platform)

```
show chassis fan
<satellite [slot-id slot-id |device-alias alias-name]>
```

Syntax (QFX Series)

```
show chassis fan
<interconnect-device name>
```

Syntax (TX Matrix Router)

```
show chassis fan
<lcc number | scc>
```

Syntax (TX Matrix Plus Router)

```
show chassis fan
```

<lcc *number* | sfc *number*>

Release Information

Command introduced in Junos OS Release 10.0 on MX Series 5G Universal Routing Platforms, M120 routers, and M320 routers, T320 routers, T640 routers, T1600 routers, TX Matrix Routers, and TX Matrix Plus routers.
Command introduced in Junos OS Release 11.1 for the QFX Series.
Command introduced in Junos OS Release 11.4 for EX Series switches.
Command introduced in Junos OS Release 12.1 for T4000 routers.
Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 Universal Routing Platforms, PTX5000 Packet Transport Routers, and ACX Series Routers.
Command introduced in Junos OS Release 13.2 for MX104 Universal Routing Platforms.
Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.
satellite option introduced in Junos OS Release 14.2R3.
Command introduced in Junos OS Release 17.2 for MX2008 and PTX10008 Routers.
Command introduced in Junos OS Release 17.3 for MX150 Router Appliance.
Command introduced in Junos OS Release 17.4 for MX204 Universal Routing Platforms.
Command introduced in Junos OS Release 18.1R1 for EX9251 Switches.
Command introduced in Junos OS Release 18.2 for MX10008 Universal Routing Platforms and EX9253 Switches.
Command output introduced for Junos OS Evolved Release 19.1R1.

Description

(T Series routers, TX Matrix routers, TX Matrix Plus routers, M120 routers, M320 routers, MX104 routers, MX2010 routers, MX2020 routers, MX2008 routers, MX Series 5G Universal Routing Platforms, QFX3008-I Interconnect devices, QFX Series, OCX Series, EX Series switches, and PTX Series Packet Transport Routers only) Show information about the fan tray and fans.

Options

all-members—(MX Series routers only) (Optional) Display information about the fan tray and fans for all members of the Virtual Chassis configuration.

local—(MX Series routers only) (Optional) Display information about the fan tray and fans for the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display information about the fan tray and fans for the specified member of the Virtual Chassis configuration. For an MX Series Virtual Chassis, replace *member-id* variable with a value 0 or 1.

interconnect-device *name*—(QFX3000-G QFabric systems only) (Optional) Display information about the fan tray and fans for the specified QFX3008-I Interconnect device.

lcc *number*—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display information about the fan tray and fans for the specified T640 router (line-card chassis) that is connected

to a TX Matrix router. On a TX Matrix Plus router, display information about the fan tray and fans for the specified router (line-card chassis) that is connected to a TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

satellite [slot-id *slot-id* | device-alias *alias-name*]—(Junos Fusion only) (Optional) Display information about the fan tray and fans for the specified satellite device or devices in a Junos Fusion, or for all satellite devices if no satellite devices are specified.

scc —(TX Matrix routers only) (Optional) Display information about the fan tray and fans for the TX Matrix router (switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) Display information about the fan tray and fans for the TX Matrix Plus router (switch-fabric chassis). Replace *number* variable with **0**.

Required Privilege Level
view

List of Sample Output

show chassis fan on page 1467
show chassis fan (QFabric Systems) on page 1467
show chassis fan (EX Series Switches) on page 1469
show chassis fan (T4000 Core Router) on page 1469
show chassis fan (TX Matrix Router) on page 1470
show chassis fan (TX Matrix Plus Router) on page 1471
show chassis fan (TX Matrix Plus Router with 3D SIBs) on page 1473
show chassis fan (PTX5000 Packet Transport Router) on page 1476
show chassis fan (MX150) on page 1477
show chassis fan (MX104 Router) on page 1477
show chassis fan (MX2010 Router) on page 1477
show chassis fan (ACX4000 Router) on page 1478
show chassis fan (ACX5048 Router) on page 1478
show chassis fan (QFX5100 Switch and OCX Series) on page 1478
show chassis fan (EX9251 switches) on page 1478
show chassis fan (EX9253 switches) on page 1479
show chassis fan (Junos OS Evolved) on page 1479

Output Fields

Table 74 on page 1466 lists the output fields for the **show chassis fan** command. Output fields are listed in the approximate order in which they appear.

Table 74: show chassis fan Output Fields

Field Name	Field Description
Item	Fan item identifier.
Status	Status of the fan: • **OK**—Fan is running properly and within the normal range. • **Check**—Fan is in **Check** state because of some fault or alarm condition.
RPM	(T Series routers, TX Matrix routers, TX Matrix Plus routers, MX Series 5G Universal Routing Platforms, QFX3108 Interconnect devices, and EX Series switches only) Fan speed in revolutions per minute (RPM).
% RPM	(PTX10003, MX2010 routers, MX2020 routers, MX2008 routers, and PTX Series Packet Transport Routers only) Percentage of the fan speed being used.
Measurement	(T Series routers, TX Matrix routers, TX Matrix Plus routers, MX Series 5G Universal Routing Platforms, QFX3108 Interconnect devices, and EX Series switches only) Fan speed status based on different chassis cooling requirements: • Spinning at high speed • Spinning at intermediate speed • Spinning at normal speed • Spinning at low speed (except EX Series switches) (PTX10003, MX2010 routers, MX2020 routers, MX2008 routers, and PTX Series Packet Transport Routers only) Fan speed in revolutions per minute (RPM) for each fan in the fan tray.

Sample Output

show chassis fan

user@host> **show chassis fan**

```
Item                      Status   RPM     Measurement
Top Tray Fan 1            OK       3790    Spinning at normal speed
Top Tray Fan 2            OK       3769    Spinning at normal speed
Top Tray Fan 3            OK       3769    Spinning at normal speed
Top Tray Fan 4            OK       3790    Spinning at normal speed
Top Tray Fan 5            OK       3790    Spinning at normal speed
Top Tray Fan 6            OK       3769    Spinning at normal speed
Top Tray Fan 7            OK       3790    Spinning at normal speed
Top Tray Fan 8            OK       3769    Spinning at normal speed
Top Tray Fan 9            OK       3769    Spinning at normal speed
Top Tray Fan 10           OK       3790    Spinning at normal speed
Top Tray Fan 11           OK       3790    Spinning at normal speed
Top Tray Fan 12           OK       3769    Spinning at normal speed
Bottom Tray Fan 1         OK       2880    Spinning at normal speed
Bottom Tray Fan 2         OK       2912    Spinning at normal speed
Bottom Tray Fan 3         OK       2928    Spinning at normal speed
Bottom Tray Fan 4         OK       2896    Spinning at normal speed
Bottom Tray Fan 5         OK       2896    Spinning at normal speed
Bottom Tray Fan 6         OK       2928    Spinning at normal speed
```

show chassis fan (QFabric Systems)

user@host> **show chassis fan interconnect-device *interconnect1***

```
Item                      Status   RPM     Measurement
TFT 0 Fan 0               OK       2849    Spinning at normal speed
TFT 0 Fan 1               OK       2821    Spinning at normal speed
TFT 0 Fan 2               OK       2735    Spinning at normal speed
TFT 0 Fan 3               OK       2815    Spinning at normal speed
TFT 0 Fan 4               OK       2828    Spinning at normal speed
TFT 0 Fan 5               OK       2863    Spinning at normal speed
BFT 1 Fan 0               OK       2941    Spinning at normal speed
BFT 1 Fan 1               OK       3008    Spinning at normal speed
BFT 1 Fan 2               OK       3073    Spinning at normal speed
BFT 1 Fan 3               OK       2925    Spinning at normal speed
BFT 1 Fan 4               OK       2863    Spinning at normal speed
```

```
BFT 1 Fan 5              OK      2933    Spinning at normal speed
SFT 0 Fan 0 Rotor 0      OK      15472   Spinning at normal speed
SFT 0 Fan 0 Rotor 1      OK      14477   Spinning at normal speed
SFT 0 Fan 1 Rotor 0      OK      15561   Spinning at normal speed
SFT 0 Fan 1 Rotor 1      OK      14210   Spinning at normal speed
SFT 0 Fan 2 Rotor 0      OK      16167   Spinning at normal speed
SFT 0 Fan 2 Rotor 1      OK      14248   Spinning at normal speed
SFT 0 Fan 3 Rotor 0      OK      16463   Spinning at normal speed
SFT 0 Fan 3 Rotor 1      OK      14099   Spinning at normal speed
SFT 1 Fan 0 Rotor 0      OK      15083   Spinning at normal speed
SFT 1 Fan 0 Rotor 1      OK      13533   Spinning at normal speed
SFT 1 Fan 1 Rotor 0      OK      16071   Spinning at normal speed
SFT 1 Fan 1 Rotor 1      OK      14400   Spinning at normal speed
SFT 1 Fan 2 Rotor 0      OK      15517   Spinning at normal speed
SFT 1 Fan 2 Rotor 1      OK      14210   Spinning at normal speed
SFT 1 Fan 3 Rotor 0      OK      16413   Spinning at normal speed
SFT 1 Fan 3 Rotor 1      OK      14400   Spinning at normal speed
SFT 2 Fan 0 Rotor 0      OK      15297   Spinning at normal speed
SFT 2 Fan 0 Rotor 1      OK      14634   Spinning at normal speed
SFT 2 Fan 1 Rotor 0      OK      15561   Spinning at normal speed
SFT 2 Fan 1 Rotor 1      OK      14285   Spinning at normal speed
SFT 2 Fan 2 Rotor 0      OK      15835   Spinning at normal speed
SFT 2 Fan 2 Rotor 1      OK      14400   Spinning at normal speed
SFT 2 Fan 3 Rotor 0      OK      15789   Spinning at normal speed
SFT 2 Fan 3 Rotor 1      OK      14323   Spinning at normal speed
SFT 3 Fan 0 Rotor 0      OK      16314   Spinning at normal speed
SFT 3 Fan 0 Rotor 1      OK      14876   Spinning at normal speed
SFT 3 Fan 1 Rotor 0      OK      15835   Spinning at normal speed
SFT 3 Fan 1 Rotor 1      OK      14323   Spinning at normal speed
SFT 3 Fan 2 Rotor 0      OK      16265   Spinning at normal speed
SFT 3 Fan 2 Rotor 1      OK      14594   Spinning at normal speed
SFT 3 Fan 3 Rotor 0      OK      16071   Spinning at normal speed
SFT 3 Fan 3 Rotor 1      OK      14323   Spinning at normal speed
SFT 4 Fan 0 Rotor 0      OK      15652   Spinning at normal speed
SFT 4 Fan 0 Rotor 1      OK      14438   Spinning at normal speed
SFT 4 Fan 1 Rotor 0      OK      16167   Spinning at normal speed
SFT 4 Fan 1 Rotor 1      OK      14555   Spinning at normal speed
SFT 4 Fan 2 Rotor 0      OK      16023   Spinning at normal speed
SFT 4 Fan 2 Rotor 1      OK      14361   Spinning at normal speed
SFT 4 Fan 3 Rotor 0      OK      16216   Spinning at normal speed
SFT 4 Fan 3 Rotor 1      OK      14438   Spinning at normal speed
SFT 5 Fan 0 Rotor 0      OK      15297   Spinning at normal speed
SFT 5 Fan 0 Rotor 1      OK      14173   Spinning at normal speed
SFT 5 Fan 1 Rotor 0      OK      15472   Spinning at normal speed
```

```
SFT 5 Fan 1 Rotor 1       OK       13846   Spinning at normal speed
SFT 5 Fan 2 Rotor 0       OK       15340   Spinning at normal speed
SFT 5 Fan 2 Rotor 1       OK       13917   Spinning at normal speed
SFT 5 Fan 3 Rotor 0       OK       15835   Spinning at normal speed
SFT 5 Fan 3 Rotor 1       OK       13917   Spinning at normal speed
SFT 6 Fan 0 Rotor 0       OK       15743   Spinning at normal speed
SFT 6 Fan 0 Rotor 1       OK       14594   Spinning at normal speed
SFT 6 Fan 1 Rotor 0       OK       16167   Spinning at normal speed
SFT 6 Fan 1 Rotor 1       OK       14634   Spinning at normal speed
SFT 6 Fan 2 Rotor 0       OK       16167   Spinning at normal speed
SFT 6 Fan 2 Rotor 1       OK       14516   Spinning at normal speed
SFT 6 Fan 3 Rotor 0       OK       16666   Spinning at normal speed
SFT 6 Fan 3 Rotor 1       OK       14438   Spinning at normal speed
SFT 7 Fan 0 Rotor 0       OK       15517   Spinning at normal speed
SFT 7 Fan 0 Rotor 1       OK       14438   Spinning at normal speed
SFT 7 Fan 1 Rotor 0       OK       15517   Spinning at normal speed
SFT 7 Fan 1 Rotor 1       OK       14361   Spinning at normal speed
SFT 7 Fan 2 Rotor 0       OK       16167   Spinning at normal speed
SFT 7 Fan 2 Rotor 1       OK       14555   Spinning at normal speed
SFT 7 Fan 3 Rotor 0       OK       15697   Spinning at normal speed
SFT 7 Fan 3 Rotor 1       OK       14361   Spinning at normal speed
```

show chassis fan (EX Series Switches)

`user@host>` **show chassis fan**

```
Item                      Status   RPM     Measurement
Fan 1                     OK       3477    Spinning at normal speed
Fan 2                     OK       3477    Spinning at normal speed
Fan 3                     OK       3479    Spinning at normal speed
Fan 4                     OK       3508    Spinning at normal speed
Fan 5                     OK       3517    Spinning at normal speed
Fan 6                     OK       3531    Spinning at normal speed
Fan 7                     OK       3439    Spinning at normal speed
Fan 8                     OK       3424    Spinning at normal speed
Fan 9                     OK       3413    Spinning at normal speed
Fan 10                    OK       3439    Spinning at normal speed
Fan 11                    OK       3446    Spinning at normal speed
Fan 12                    OK       3432    Spinning at normal speed
```

show chassis fan (T4000 Core Router)

`user@host>` **show chassis fan**

```
      Item                      Status   RPM     Measurement
      Top Left Front fan        OK       5190    Spinning at high speed
      Top Left Middle fan       OK       5220    Spinning at high speed
      Top Left Rear fan         OK       5190    Spinning at high speed
      Top Right Front fan       OK       5160    Spinning at high speed
      Top Right Middle fan      OK       5190    Spinning at high speed
      Top Right Rear fan        OK       5160    Spinning at high speed
      Bottom Left Front fan     OK       6030    Spinning at high speed
      Bottom Left Middle fan    OK       6090    Spinning at high speed
      Bottom Left Rear fan      OK       6090    Spinning at high speed
      Bottom Right Front fan    OK       6030    Spinning at high speed
      Bottom Right Middle fan   OK       6060    Spinning at high speed
      Bottom Right Rear fan     OK       6060    Spinning at high speed
      Rear Tray Top fan         OK       10000   Spinning at high speed
      Rear Tray Second fan      OK       10000   Spinning at high speed
      Rear Tray Third fan       OK       10000   Spinning at high speed
      Rear Tray Fourth fan      OK       10000   Spinning at high speed
      Rear Tray Fifth fan       OK       10000   Spinning at high speed
      Rear Tray Sixth fan       OK       10000   Spinning at high speed
      Rear Tray Seventh fan     OK       10000   Spinning at high speed
      Rear Tray Bottom fan      OK       10000   Spinning at high speed
```

show chassis fan (TX Matrix Router)

`user@host>` **show chassis fan**

```
scc-re0:
--------------------------------------------------------------------------
      Item                      Status   RPM     Measurement
      Top Left Front fan        OK       3420    Spinning at normal speed
      Top Left Middle fan       OK       3390    Spinning at normal speed
      Top Left Rear fan         OK       3420    Spinning at normal speed
      Top Right Front fan       OK       3390    Spinning at normal speed
      Top Right Middle fan      OK       3420    Spinning at normal speed
      Top Right Rear fan        OK       3390    Spinning at normal speed
      Bottom Left Front fan     OK       3420    Spinning at normal speed
      Bottom Left Middle fan    OK       3450    Spinning at normal speed
      Bottom Left Rear fan      OK       3420    Spinning at normal speed
      Bottom Right Front fan    OK       3420    Spinning at normal speed
      Bottom Right Middle fan   OK       3420    Spinning at normal speed
      Bottom Right Rear fan     OK       3420    Spinning at normal speed
      Rear Tray Top fan         OK       3420    Spinning at normal speed
      Rear Tray Second fan      OK       5190    Spinning at normal speed
```

```
      Rear Tray Third fan       OK       5190    Spinning at normal speed
      Rear Tray Fourth fan      OK       5190    Spinning at normal speed
      Rear Tray Fifth fan       OK       3420    Spinning at normal speed
      Rear Tray Sixth fan       OK       3420    Spinning at normal speed
      Rear Tray Seventh fan     OK       3420    Spinning at normal speed
      Rear Tray Bottom fan      OK       3420    Spinning at normal speed

lcc2-re0:
--------------------------------------------------------------------------
      Item                      Status   RPM     Measurement
      Top Left Front fan        OK       3420    Spinning at normal speed
      Top Left Middle fan       OK       3420    Spinning at normal speed
      Top Left Rear fan         OK       3450    Spinning at normal speed
      Top Right Front fan       OK       3420    Spinning at normal speed
      Top Right Middle fan      OK       3450    Spinning at normal speed
      Top Right Rear fan        OK       3360    Spinning at normal speed
      Bottom Left Front fan     OK       3420    Spinning at normal speed
      Bottom Left Middle fan    OK       3480    Spinning at normal speed
      Bottom Left Rear fan      OK       3420    Spinning at normal speed
      Bottom Right Front fan    OK       3420    Spinning at normal speed
      Bottom Right Middle fan   OK       3390    Spinning at normal speed
      Bottom Right Rear fan     OK       3420    Spinning at normal speed
      Rear Tray Top fan         OK       3420    Spinning at normal speed
      Rear Tray Second fan      OK       3420    Spinning at normal speed
      Rear Tray Third fan       OK       3420    Spinning at normal speed
      Rear Tray Fourth fan      OK       3420    Spinning at normal speed
      Rear Tray Fifth fan       OK       3420    Spinning at normal speed
      Rear Tray Sixth fan       OK       3420    Spinning at normal speed
      Rear Tray Seventh fan     OK       3420    Spinning at normal speed
      Rear Tray Bottom fan      OK       3420    Spinning at normal speed
```

show chassis fan (TX Matrix Plus Router)

user@host> **show chassis fan**

```
  sfc0-re0:
--------------------------------------------------------------------------
      Item                      Status   RPM     Measurement
      Fan Tray 0 Fan 1          OK       4350    Spinning at normal speed
      Fan Tray 0 Fan 2          OK       4380    Spinning at normal speed
      Fan Tray 0 Fan 3          OK       4410    Spinning at normal speed
      Fan Tray 0 Fan 4          OK       4380    Spinning at normal speed
      Fan Tray 0 Fan 5          OK       4350    Spinning at normal speed
      Fan Tray 0 Fan 6          OK       4380    Spinning at normal speed
```

```
      Fan Tray 1 Fan 1          OK       4410    Spinning at normal speed
      Fan Tray 1 Fan 2          OK       4380    Spinning at normal speed
      Fan Tray 1 Fan 3          OK       4410    Spinning at normal speed
      Fan Tray 1 Fan 4          OK       4380    Spinning at normal speed
      Fan Tray 1 Fan 5          OK       4410    Spinning at normal speed
      Fan Tray 1 Fan 6          OK       4410    Spinning at normal speed
      Fan Tray 2 Fan 1          OK       4380    Spinning at normal speed
      Fan Tray 2 Fan 2          OK       4380    Spinning at normal speed
      Fan Tray 2 Fan 3          OK       4380    Spinning at normal speed
      Fan Tray 2 Fan 4          OK       4410    Spinning at normal speed
      Fan Tray 2 Fan 5          OK       4380    Spinning at normal speed
      Fan Tray 2 Fan 6          OK       4410    Spinning at normal speed
      Fan Tray 2 Fan 7          OK       4410    Spinning at normal speed
      Fan Tray 2 Fan 8          OK       4380    Spinning at normal speed
      Fan Tray 2 Fan 9          OK       4380    Spinning at normal speed
      Fan Tray 3 Fan 1          OK       4350    Spinning at normal speed
      Fan Tray 3 Fan 2          OK       4380    Spinning at normal speed
      Fan Tray 3 Fan 3          OK       4410    Spinning at normal speed
      Fan Tray 3 Fan 4          OK       4440    Spinning at normal speed
      Fan Tray 3 Fan 5          OK       4380    Spinning at normal speed
      Fan Tray 3 Fan 6          OK       4410    Spinning at normal speed
      Fan Tray 3 Fan 7          OK       4410    Spinning at normal speed
      Fan Tray 3 Fan 8          OK       4380    Spinning at normal speed
      Fan Tray 3 Fan 9          OK       4410    Spinning at normal speed
      Fan Tray 4 Fan 1          OK       4410    Spinning at normal speed
      Fan Tray 4 Fan 2          OK       4410    Spinning at normal speed
      Fan Tray 4 Fan 3          OK       4380    Spinning at normal speed
      Fan Tray 4 Fan 4          OK       4380    Spinning at normal speed
      Fan Tray 4 Fan 5          OK       4410    Spinning at normal speed
      Fan Tray 4 Fan 6          OK       4410    Spinning at normal speed
      Fan Tray 4 Fan 7          OK       4410    Spinning at normal speed
      Fan Tray 4 Fan 8          OK       4410    Spinning at normal speed
      Fan Tray 4 Fan 9          OK       4410    Spinning at normal speed
      Fan Tray 5 Fan 1          OK       4350    Spinning at normal speed
      Fan Tray 5 Fan 2          OK       4380    Spinning at normal speed
      Fan Tray 5 Fan 3          OK       4380    Spinning at normal speed
      Fan Tray 5 Fan 4          OK       4350    Spinning at normal speed
      Fan Tray 5 Fan 5          OK       4380    Spinning at normal speed
      Fan Tray 5 Fan 6          OK       4410    Spinning at normal speed
      Fan Tray 5 Fan 7          OK       4410    Spinning at normal speed
      Fan Tray 5 Fan 8          OK       4380    Spinning at normal speed
      Fan Tray 5 Fan 9          OK       4410    Spinning at normal speed

lcc0-re0:
```

```
---------------------------------------------------------------------------
      Item                      Status   RPM     Measurement
      Top Left Front fan        OK       3420    Spinning at normal speed
      Top Left Middle fan       OK       3420    Spinning at normal speed
      Top Left Rear fan         OK       3420    Spinning at normal speed
      Top Right Front fan       OK       3450    Spinning at normal speed
      Top Right Middle fan      OK       3420    Spinning at normal speed
      Top Right Rear fan        OK       3420    Spinning at normal speed
      Bottom Left Front fan     OK       3420    Spinning at normal speed
      Bottom Left Middle fan    OK       3420    Spinning at normal speed
      Bottom Left Rear fan      OK       3390    Spinning at normal speed
      Bottom Right Front fan    OK       3420    Spinning at normal speed
      Bottom Right Middle fan   OK       3390    Spinning at normal speed
      Bottom Right Rear fan     OK       3390    Spinning at normal speed
      Rear Tray Top fan         OK       7050    Spinning at normal speed
      Rear Tray Second fan      OK       7050    Spinning at normal speed
      Rear Tray Third fan       OK       7050    Spinning at normal speed
      Rear Tray Fourth fan      OK       7050    Spinning at normal speed
      Rear Tray Fifth fan       OK       7050    Spinning at normal speed
      Rear Tray Sixth fan       OK       7050    Spinning at normal speed
      Rear Tray Seventh fan     OK       7050    Spinning at normal speed
      Rear Tray Bottom fan      OK       7050    Spinning at normal speed
```

show chassis fan (TX Matrix Plus Router with 3D SIBs)

user@host> **show chassis fan**

```
sfc0-re0:
---------------------------------------------------------------------------
      Item                      Status   RPM     Measurement
      Fan Tray 0 Fan 1          OK       4830    Spinning at normal speed
      Fan Tray 0 Fan 2          OK       4860    Spinning at normal speed
      Fan Tray 0 Fan 3          OK       4830    Spinning at normal speed
      Fan Tray 0 Fan 4          OK       4800    Spinning at normal speed
      Fan Tray 0 Fan 5          OK       4830    Spinning at normal speed
      Fan Tray 0 Fan 6          OK       4770    Spinning at normal speed
      Fan Tray 1 Fan 1          OK       4800    Spinning at normal speed
      Fan Tray 1 Fan 2          OK       4770    Spinning at normal speed
      Fan Tray 1 Fan 3          OK       4800    Spinning at normal speed
      Fan Tray 1 Fan 4          OK       4770    Spinning at normal speed
      Fan Tray 1 Fan 5          OK       4770    Spinning at normal speed
      Fan Tray 1 Fan 6          OK       4800    Spinning at normal speed
      Fan Tray 2 Fan 1          OK       4800    Spinning at normal speed
      Fan Tray 2 Fan 2          OK       4800    Spinning at normal speed
```

```
      Fan Tray 2 Fan 3          OK       4830    Spinning at normal speed
      Fan Tray 2 Fan 4          OK       4830    Spinning at normal speed
      Fan Tray 2 Fan 5          OK       4830    Spinning at normal speed
      Fan Tray 2 Fan 6          OK       4830    Spinning at normal speed
      Fan Tray 2 Fan 7          OK       4800    Spinning at normal speed
      Fan Tray 2 Fan 8          OK       4830    Spinning at normal speed
      Fan Tray 2 Fan 9          OK       4800    Spinning at normal speed
      Fan Tray 3 Fan 1          OK       4860    Spinning at normal speed
      Fan Tray 3 Fan 2          OK       4860    Spinning at normal speed
      Fan Tray 3 Fan 3          OK       4800    Spinning at normal speed
      Fan Tray 3 Fan 4          OK       4830    Spinning at normal speed
      Fan Tray 3 Fan 5          OK       4830    Spinning at normal speed
      Fan Tray 3 Fan 6          OK       4830    Spinning at normal speed
      Fan Tray 3 Fan 7          OK       4830    Spinning at normal speed
      Fan Tray 3 Fan 8          OK       4800    Spinning at normal speed
      Fan Tray 3 Fan 9          OK       4800    Spinning at normal speed
      Fan Tray 4 Fan 1          OK       4830    Spinning at normal speed
      Fan Tray 4 Fan 2          OK       4830    Spinning at normal speed
      Fan Tray 4 Fan 3          OK       4830    Spinning at normal speed
      Fan Tray 4 Fan 4          OK       4830    Spinning at normal speed
      Fan Tray 4 Fan 5          OK       4830    Spinning at normal speed
      Fan Tray 4 Fan 6          OK       4860    Spinning at normal speed
      Fan Tray 4 Fan 7          OK       4800    Spinning at normal speed
      Fan Tray 4 Fan 8          OK       4860    Spinning at normal speed
      Fan Tray 4 Fan 9          OK       4770    Spinning at normal speed
      Fan Tray 5 Fan 1          OK       4830    Spinning at normal speed
      Fan Tray 5 Fan 2          OK       4830    Spinning at normal speed
      Fan Tray 5 Fan 3          OK       4830    Spinning at normal speed
      Fan Tray 5 Fan 4          OK       4800    Spinning at normal speed
      Fan Tray 5 Fan 5          OK       4800    Spinning at normal speed
      Fan Tray 5 Fan 6          OK       4800    Spinning at normal speed
      Fan Tray 5 Fan 7          OK       4830    Spinning at normal speed
      Fan Tray 5 Fan 8          OK       4830    Spinning at normal speed
      Fan Tray 5 Fan 9          Check    2010

lcc0-re0:
--------------------------------------------------------------------------------
      Item                      Status   RPM     Measurement
      Top Left Front fan        OK       3420    Spinning at normal speed
      Top Left Middle fan       OK       3390    Spinning at normal speed
      Top Left Rear fan         OK       3390    Spinning at normal speed
      Top Right Front fan       OK       3420    Spinning at normal speed
      Top Right Middle fan      OK       3420    Spinning at normal speed
      Top Right Rear fan        OK       3450    Spinning at normal speed
```

```
      Bottom Left Front fan     OK       3420    Spinning at normal speed
      Bottom Left Middle fan    OK       3390    Spinning at normal speed
      Bottom Left Rear fan      OK       3420    Spinning at normal speed
      Bottom Right Front fan    OK       3420    Spinning at normal speed
      Bottom Right Middle fan   OK       3390    Spinning at normal speed
      Bottom Right Rear fan     OK       3420    Spinning at normal speed
      Rear Tray fan 1 (Top)     OK       7740    Spinning at normal speed
      Rear Tray fan 2           OK       7740    Spinning at normal speed
      Rear Tray fan 3           OK       7740    Spinning at normal speed
      Rear Tray fan 4           OK       7740    Spinning at normal speed
      Rear Tray fan 5           OK       7740    Spinning at normal speed
      Rear Tray fan 6           OK       7740    Spinning at normal speed
      Rear Tray fan 7           OK       7740    Spinning at normal speed
      Rear Tray fan 8           OK       7740    Spinning at normal speed
      Rear Tray fan 9           OK       7740    Spinning at normal speed
      Rear Tray fan 10          OK       7740    Spinning at normal speed
      Rear Tray fan 11          OK       7740    Spinning at normal speed
      Rear Tray fan 12          OK       7740    Spinning at normal speed
      Rear Tray fan 13          OK       7740    Spinning at normal speed
      Rear Tray fan 14          OK       7740    Spinning at normal speed
      Rear Tray fan 15          OK       7740    Spinning at normal speed
      Rear Tray fan 16 (Bottom) OK       7740    Spinning at normal speed

lcc2-re0:
--------------------------------------------------------------------------
      Item                      Status   RPM     Measurement
      Top Left Front fan        OK       3420    Spinning at normal speed
      Top Left Middle fan       OK       3390    Spinning at normal speed
      Top Left Rear fan         OK       3420    Spinning at normal speed
      Top Right Front fan       OK       3420    Spinning at normal speed
      Top Right Middle fan      OK       3420    Spinning at normal speed
      Top Right Rear fan        OK       3450    Spinning at normal speed
      Bottom Left Front fan     OK       3420    Spinning at normal speed
      Bottom Left Middle fan    OK       3390    Spinning at normal speed
      Bottom Left Rear fan      OK       3420    Spinning at normal speed
      Bottom Right Front fan    OK       3420    Spinning at normal speed
      Bottom Right Middle fan   OK       3390    Spinning at normal speed
      Bottom Right Rear fan     OK       3420    Spinning at normal speed
      Rear Tray fan 1 (Top)     OK       7740    Spinning at normal speed
      Rear Tray fan 2           OK       7740    Spinning at normal speed
      Rear Tray fan 3           OK       7740    Spinning at normal speed
      Rear Tray fan 4           OK       7740    Spinning at normal speed
      Rear Tray fan 5           OK       7740    Spinning at normal speed
      Rear Tray fan 6           OK       7740    Spinning at normal speed
```

```
      Rear Tray fan 7           OK       7740    Spinning at normal speed
      Rear Tray fan 8           OK       7740    Spinning at normal speed
      Rear Tray fan 9           OK       7740    Spinning at normal speed
      Rear Tray fan 10          OK       7740    Spinning at normal speed
      Rear Tray fan 11          OK       7740    Spinning at normal speed
      Rear Tray fan 12          OK       7740    Spinning at normal speed
      Rear Tray fan 13          OK       7740    Spinning at normal speed
      Rear Tray fan 14          OK       7740    Spinning at normal speed
      Rear Tray fan 15          OK       7740    Spinning at normal speed
      Rear Tray fan 16 (Bottom) OK       7740    Spinning at normal speed
```

show chassis fan (PTX5000 Packet Transport Router)

`user@host>` **show chassis fan**

```
user@host> show chassis fan
      Item                      Status   % RPM     Measurement
      Fan Tray 0 Fan 1          OK       29%       2700 RPM
      Fan Tray 0 Fan 2          OK       29%       2700 RPM
      Fan Tray 0 Fan 3          OK       29%       2742 RPM
      Fan Tray 0 Fan 4          OK       29%       2700 RPM
      Fan Tray 0 Fan 5          OK       30%       2828 RPM
      Fan Tray 0 Fan 6          OK       30%       2828 RPM
      Fan Tray 0 Fan 7          OK       29%       2700 RPM
      Fan Tray 0 Fan 8          OK       30%       2785 RPM
      Fan Tray 0 Fan 9          OK       30%       2828 RPM
      Fan Tray 0 Fan 10         OK       30%       2828 RPM
      Fan Tray 0 Fan 11         OK       30%       2785 RPM
      Fan Tray 0 Fan 12         OK       30%       2828 RPM
      Fan Tray 0 Fan 13         OK       31%       2871 RPM
      Fan Tray 0 Fan 14         OK       30%       2828 RPM
      Fan Tray 1 Fan 1          OK       42%       3033 RPM
      Fan Tray 1 Fan 2          OK       42%       3066 RPM
      Fan Tray 1 Fan 3          OK       43%       3099 RPM
      Fan Tray 1 Fan 4          OK       43%       3166 RPM
      Fan Tray 1 Fan 5          OK       45%       3266 RPM
      Fan Tray 1 Fan 6          OK       43%       3133 RPM
      Fan Tray 2 Fan 1          OK       29%       2099 RPM
      Fan Tray 2 Fan 2          OK       30%       2199 RPM
      Fan Tray 2 Fan 3          OK       30%       2166 RPM
      Fan Tray 2 Fan 4          OK       33%       2399 RPM
      Fan Tray 2 Fan 5          OK       29%       2133 RPM
      Fan Tray 2 Fan 6          OK       32%       2366 RPM
```

show chassis fan (MX150)

```
user@host > show chassis fan
```

```
Item                      Status   RPM     Measurement
      FPC 0 Tray 0 Fan 0        OK       7419    Spinning at normal speed
      FPC 0 Tray 1 Fan 0        OK       7419    Spinning at normal speed
```

show chassis fan (MX104 Router)

```
user@host > show chassis fan
```

```
Item                      Status   RPM     Measurement
      Fan 1                     OK       5640    Spinning at normal speed
      Fan 2                     OK       5640    Spinning at normal speed
      Fan 3                     OK       5760    Spinning at normal speed
      Fan 4                     OK       5640    Spinning at normal speed
      Fan 5                     OK       5640    Spinning at normal speed
```

show chassis fan (MX2010 Router)

```
user@host > show chassis fan
```

```
Item                      Status   % RPM     Measurement
      Fan Tray 0 Fan 1          OK       37%       3360 RPM
      Fan Tray 0 Fan 2          OK       38%       3480 RPM
      Fan Tray 0 Fan 3          OK       37%       3360 RPM
      Fan Tray 0 Fan 4          OK       37%       3360 RPM
      Fan Tray 0 Fan 5          OK       38%       3480 RPM
      Fan Tray 0 Fan 6          OK       37%       3360 RPM
      Fan Tray 1 Fan 1          OK       38%       3480 RPM
      Fan Tray 1 Fan 2          OK       40%       3600 RPM
      Fan Tray 1 Fan 3          OK       38%       3480 RPM
      Fan Tray 1 Fan 4          OK       38%       3480 RPM
      Fan Tray 1 Fan 5          OK       38%       3480 RPM
      Fan Tray 1 Fan 6          OK       38%       3480 RPM
      Fan Tray 2 Fan 1          OK       38%       3480 RPM
      Fan Tray 2 Fan 2          OK       41%       3720 RPM
      Fan Tray 2 Fan 3          OK       38%       3480 RPM
      Fan Tray 2 Fan 4          OK       38%       3480 RPM
      Fan Tray 2 Fan 5          OK       38%       3480 RPM
      Fan Tray 2 Fan 6          OK       38%       3480 RPM
      Fan Tray 3 Fan 1          OK       38%       3480 RPM
      Fan Tray 3 Fan 2          OK       40%       3600 RPM
```

```
      Fan Tray 3 Fan 3          OK       40%       3600 RPM
      Fan Tray 3 Fan 4          OK       40%       3600 RPM
      Fan Tray 3 Fan 5          OK       40%       3600 RPM
      Fan Tray 3 Fan 6          OK       38%       3480 RPM
```

show chassis fan (ACX4000 Router)

`user@host >` **show chassis fan**

```
      Item                      Status   RPM     Measurement
      Fan 1                     OK       4140    Spinning at normal speed
      Fan 2                     OK       4200    Spinning at normal speed
```

show chassis fan (ACX5048 Router)

`user@host >` **show chassis fan**

```
      Item                      Status   RPM     Measurement
      FPC 0 Tray 0 Fan 0        OK       18305   Spinning at normal speed
      FPC 0 Tray 0 Fan 1        OK       15743   Spinning at normal speed
      FPC 0 Tray 1 Fan 0        OK       18305   Spinning at normal speed
      FPC 0 Tray 1 Fan 1        OK       15606   Spinning at normal speed
      FPC 0 Tray 2 Fan 0        OK       19014   Spinning at normal speed
      FPC 0 Tray 2 Fan 1        OK       16167   Spinning at normal speed
      FPC 0 Tray 3 Fan 0        OK       18947   Spinning at normal speed
      FPC 0 Tray 3 Fan 1        OK       16265   Spinning at normal speed
      FPC 0 Tray 4 Fan 0        OK       18120   Spinning at normal speed
      FPC 0 Tray 4 Fan 1        OK       15743   Spinning at normal speed
```

show chassis fan (QFX5100 Switch and OCX Series)

`user@switch >` **show chassis fan**

```
Item                      Status   RPM     Measurement
FPC 0 Tray 0 Fan 0        OK       6428    Spinning at normal speed
FPC 0 Tray 0 Fan 1        OK       5515    Spinning at normal speed
FPC 0 Tray 1 Fan 0        OK       6360    Spinning at normal speed
FPC 0 Tray 1 Fan 1        OK       5532    Spinning at normal speed
```

show chassis fan (EX9251 switches)

`user@switch >` **show chassis fan**

```
Item                    Status   % RPM     Measurement
Fan Tray 0 Fan 0        OK       40%       9600 RPM
Fan Tray 0 Fan 1        OK       40%       8832 RPM
Fan Tray 1 Fan 0        OK       40%       9728 RPM
Fan Tray 1 Fan 1        OK       40%       9088 RPM
Fan Tray 2              Absent
```

show chassis fan (EX9253 switches)

`user@switch >` **show chassis fan**

```
Item                    Status   % RPM    Measurement
Fan Tray 0 Fan 0        OK       40%       7552 RPM
Fan Tray 0 Fan 1        OK       40%       6272 RPM
Fan Tray 0 Fan 2        OK       40%       7552 RPM
Fan Tray 0 Fan 3        OK       40%       6272 RPM
Fan Tray 1 Fan 0        OK       40%       7552 RPM
Fan Tray 1 Fan 1        OK       40%       6272 RPM
Fan Tray 1 Fan 2        OK       40%       7552 RPM
Fan Tray 1 Fan 3        OK       40%       6272 RPM
Fan Tray 2 Fan 0        OK       40%       7552 RPM
Fan Tray 2 Fan 1        OK       40%       6400 RPM
Fan Tray 2 Fan 2        OK       40%       7552 RPM
Fan Tray 2 Fan 3        OK       40%       6272 RPM
Fan Tray 3 Fan 0        OK       40%       7552 RPM
Fan Tray 3 Fan 1        OK       40%       6400 RPM
Fan Tray 3 Fan 2        OK       40%       7552 RPM
Fan Tray 3 Fan 3        OK       40%       6272 RPM
```

show chassis fan (Junos OS Evolved)

`user@device>` **show chassis fan**

```
Item                    Status   % RPM     Measurement
Fan Tray 1 Fan 1        Ok       48%       6597 RPM
Fan Tray 1 Fan 2        Ok       49%       5649 RPM
Fan Tray 2 Fan 1        Ok       49%       6687 RPM
Fan Tray 2 Fan 2        Ok       49%       5649 RPM
Fan Tray 3 Fan 1        Ok       49%       6642 RPM
Fan Tray 3 Fan 2        Ok       49%       5649 RPM
```

show chassis feb

Syntax

```
show chassis feb
```

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 12.2 for the ACX Series Universal Metro Routers.

Description

(ACX Series routers, and M5, M10, and M120 routers only) Display Forwarding Engine Board (FEB) status information.

Options

This command has no options.

Required Privilege Level

view

RELATED DOCUMENTATION

- request chassis feb | **621**
- show chassis fabric feb | **1262**
- show chassis fpc-feb-connectivity | **1568**
- *feb*
- *Understanding Switching Control Board Redundancy*

List of Sample Output

show chassis feb (M10 Router) on page 1482
show chassis feb (M120 Router) on page 1482
show chassis feb detail (M120 Router) on page 1482
show chassis feb detail (ACX2000 Universal Metro Router) on page 1484
show chassis feb detail (ACX1000 Universal Metro Router) on page 1484

Output Fields

Table 75 on page 1481 lists the output fields for the **show chassis feb** command. Output fields are listed in the approximate order in which they appear.

Table 75: show chassis feb

Field Name	Field Description

State	State of the FEB:
	• **Offline**—FEB is powered down.
	• **Online**—FEB is operational and running.
	• **Check**—FEB is in alarmed state where the Switch Interface Board (SIB) plane is partially operational for the following reasons:
	  ◦ FEB is not inserted properly.
	  ◦ Two or more links between the FEB and Packet Forwarding Engine fail.

Temp (C) or Intake temperature	Temperature of the air passing by the FEB, in degrees Celsius or in both degrees Celsius and degrees Fahrenheit.
CPU Utilization (%)	Percentage of CPU being used: • **Total**—Total percentage of CPU being used by the FEB processor. • **Interrupt**—Of the total CPU being used by the FEB processor, the percentage being used for interrupts.
Memory DRAM (MB)	Total DRAM, in megabytes, available to the FEB processor.
Utilization (%)	Percentage of memory utilization: • **Heap**—Percentage of heap space (dynamic memory) being used by the FEB processor. If this number exceeds 80 percent, you might experience a software problem (memory leak). • **Buffer**—Percentage of buffer space being used by the FPC processor for buffering internal messages.
Exhaust A temperature	Temperature of the air flowing past Exhaust A.
Exhaust B temperature	Temperature of the air flowing past Exhaust B.
Total DDR DRAM	Amount of double data rate dynamic random access memory (DDR DRAM) available to the FEB CPU.
Total RLDRAM	Amount of reduced latency dynamic random access memory (RLDRAM) available to the FEB CPU.
Start time (Detail output only)	Time when the Routing Engine detected that the FEB was running.

Table 75: show chassis feb *(continued)*

Field Name	Field Description
Uptime (Detail output only)	How long the Routing Engine has been connected to the FEB, and therefore, how long the Flexible PIC Concentrator (PIC) has been up and running.

Sample Output

show chassis feb (M10 Router)

```
user@host> show chassis feb
```

```
FEB status:
  Temperature                      27 degrees C / 80 degrees F
  CPU utilization                   3 percent
  Interrupt utilization             0 percent
  Heap utilization                 26 percent
  Buffer utilization               50 percent
  Total CPU DRAM                   64 MB
  Internet Processor II               Version 1, Foundry IBM, Part number 9
  Start time:                         2010-05-23 13:59:51 PDT
  Uptime:                             6 hours, 33 minutes, 11 seconds
```

show chassis feb (M120 Router)

```
user@host> show chassis feb
```

```
                    Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State           (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Online           47      4          0       512         7         60
  1  Online           54      3          0       512         7         59
  2  Online           50      4          0       512         7         59
  3  Online           49      4          0       512         7         59
  4  Online           46      3          0       512         7         59
  5  Online           35      3          0       512         7         59
```

show chassis feb detail (M120 Router)

```
user@host> show chassis feb detail
```

```
Slot 0 information:
  State                               Online
  Intake temperature                  48 degrees C / 118 degrees F
  Exhaust A temperature               51 degrees C / 123 degrees F
  Exhaust B temperature               52 degrees C / 125 degrees F
  Total DDR DRAM                     512 MB
  Total RLDRAM                        32 MB
  Start time:                         2006-06-28 15:00:40 PDT
  Uptime:                             10 minutes, 21 seconds
Slot 1 information:
  State                               Online
  Intake temperature                  55 degrees C / 131 degrees F
  Exhaust A temperature               46 degrees C / 114 degrees F
  Exhaust B temperature               45 degrees C / 113 degrees F
  Total DDR DRAM                     512 MB
  Total RLDRAM                        32 MB
  Start time:                         2006-06-28 15:00:33 PDT
  Uptime:                             10 minutes, 28 seconds
Slot 2 information:
  State                               Online
  Intake temperature                  50 degrees C / 122 degrees F
  Exhaust A temperature               47 degrees C / 116 degrees F
  Exhaust B temperature               47 degrees C / 116 degrees F
  Total DDR DRAM                     512 MB
  Total RLDRAM                        32 MB
  Start time:                         2006-06-28 15:00:35 PDT
  Uptime:                             10 minutes, 26 seconds
Slot 3 information:
  State                               Online
  Intake temperature                  49 degrees C / 120 degrees F
  Exhaust A temperature               47 degrees C / 116 degrees F
  Exhaust B temperature               49 degrees C / 120 degrees F
  Total DDR DRAM                     512 MB
  Total RLDRAM                        32 MB
  Start time:                         2006-06-28 15:00:43 PDT
  Uptime:                             10 minutes, 18 seconds
Slot 4 information:
  State                               Online
  Intake temperature                  45 degrees C / 113 degrees F
  Exhaust A temperature               42 degrees C / 107 degrees F
  Exhaust B temperature               42 degrees C / 107 degrees F
  Total DDR DRAM                     512 MB
  Total RLDRAM                        32 MB
  Start time:                         2006-06-28 15:00:29 PDT
```

```
  Uptime:                              10 minutes, 32 seconds
Slot 5 information:
  State                                Online
  Intake temperature                35 degrees C / 95 degrees F
  Exhaust A temperature             33 degrees C / 91 degrees F
  Exhaust B temperature             40 degrees C / 104 degrees F
  Total DDR DRAM                   512 MB
  Total RLDRAM                      32 MB
  Start time:                          2006-06-28 15:00:27 PDT
  Uptime:                              10 minutes, 34 seconds
```

show chassis feb detail (ACX2000 Universal Metro Router)

`user@host>` **show chassis feb**

```
FEB status:
Slot 0 information:
  State                                Online
  Temperature                       72 degrees C / 161 degrees F
  CPU utilization                   17 percent
  Interrupt utilization              7 percent
  Heap utilization                  20 percent
  Buffer utilization                37 percent
  Total CPU DRAM                   512 MB
  Start time:                          2012-05-09 00:58:51 PDT
  Uptime:                              5 days, 21 hours, 6 minutes, 34 seconds
```

show chassis feb detail (ACX1000 Universal Metro Router)

`user@host>` **show chassis feb**

```
FEB status:
Slot 0 information:
  State                                Online
  Temperature                       46 degrees C / 114 degrees F
  CPU utilization                   15 percent
  Interrupt utilization              5 percent
  Heap utilization                  45 percent
  Buffer utilization                37 percent
  Total CPU DRAM                   256 MB
  Start time:                          2012-06-05 19:51:53 PDT
  Uptime:                              19 minutes, 6 seconds
```

show chassis firmware

List of Syntax

Syntax on page 1485
Syntax (TX Matrix Routers) on page 1485
Syntax (TX Matrix Plus Routers) on page 1485
Syntax (MX Series Routers) on page 1485
Syntax (MX104, MX204, MX2010, MX2020, MX10003, and MX2008 Universal Routing Platforms) on page 1485
Syntax (QFX Series) on page 1485
Syntax (ACX5048 and ACX5096 Routers) on page 1486
Syntax (EX Series Switches) on page 1486

Syntax

```
show chassis firmware
```

Syntax (TX Matrix Routers)

```
show chassis firmware
<lcc number | scc>
```

Syntax (TX Matrix Plus Routers)

```
show chassis firmware
<lcc number | sfc number>
```

Syntax (MX Series Routers)

```
show chassis firmware
<all-members>
<local>
<member member-id>
```

Syntax (MX104, MX204, MX2010, MX2020, MX10003, and MX2008 Universal Routing Platforms)

```
show chassis firmware
<satellite [slot-id slot-id |device-alias alias-name]>
```

Syntax (QFX Series)

```
show chassis firmware
interconnect-device name
node-device name
```

Syntax (ACX5048 and ACX5096 Routers)

```
show chassis firmware
interconnect-device name
node-device name
```

Syntax (EX Series Switches)

```
show chassis firmware
<detail>
<satellite [slot-id slot-id |device-alias alias-name]>
```

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.4 for EX Series switches.
sfc option introduced in Junos OS Release 9.6 for the TX Matrix Plus router.
Command introduced for EX8200 switches in Junos OS Release 10.2 for EX Series switches.
Command introduced in Junos OS Release 11.1 for QFX Series.
Command introduced in Junos OS Release 12.2 for ACX Series Universal Metro Routers.
Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 Universal Routing Platforms, and ACX4000 Universal Metro Routers.
Command introduced in Junos OS Release 13.2 for MX104 Universal Routing Platforms.
Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.
Command introduced in Junos OS Release 15.1X54-D20 for ACX5048 and ACX5096 Routers.
satellite option introduced in Junos OS Release 14.2R3.
Command introduced in Junos OS Release 17.2 for MX2008 and PTX10008 Routers.
Command introduced in Junos OS Release 17.3 for MX10003 Universal Routing Platforms and MX150 Router Appliance.
Command introduced in Junos OS Release 17.4 for MX204 Universal Routing Platforms.
Command introduced in Junos OS Release 18.1R1 for EX9251 switches.
Command introduced in Junos OS Release 18.2 for MX10008 Universal Routing Platforms and EX9253 Switches.

Description

On routers and switches, display the version levels of the firmware running on the System Control Board (SCB), Switching and Forwarding Module (SFM), System and Switch Board (SSB), Forwarding Engine Board

(FEB), Flexible PIC Concentrators (FPCs), and Routing Engines. On a TX Matrix Plus router, display the version levels of the firmware running on the FPCs and the Switch Processor Mezzanine Board (SPMBs).

On EX2200, EX3200, EX4200, QFX Series, and OCX Series switches, display the version levels of the firmware running on the switch. On an EX8208 switch, display the version levels of the firmware running on the Switch Fabric and Routing Engine (SRE) modules and on the line cards (shown as FPCs). On an EX8216 switch, display the version levels of the firmware running on the Routing Engine (RE) modules and on the line cards (shown as FPCs).

Options

none—Display the version levels of the firmware running. For an EX4200 switch that is a member of a Virtual Chassis, display version levels for all members. For a TX Matrix router, display version levels for the firmware on the TX Matrix router and on all the T640 routers connected to the TX Matrix router. For a TX Matrix Plus router, display version levels for the firmware on the TX Matrix Plus router and on all the routers connected to the TX Matrix Plus router.

all-members—(MX Series routers only) (Optional) Display the version levels of the firmware running for all members of the Virtual Chassis configuration.

interconnect-device *name*—(QFabric systems) (Optional) Display the version levels of the firmware running on the Interconnect device.

lcc *number*—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display version levels for the firmware on a specified T640 router (line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display the version levels for the firmware on a specified router (line-card chassis) that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

local—(MX Series routers only) (Optional) Display the version levels of the firmware running for the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display the version levels of the firmware running for the specified member of the Virtual Chassis configuration. Replace *member-id* with a value of 0 or 1.

node-device—(QFabric systems only) (Optional) Display the version levels of the firmware running on the Node device.

satellite [slot-id *slot-id* | device-alias *alias-name*]—(Junos Fusion only) (Optional) Display version levels of the firmware running for the specified satellite device or devices in a Junos Fusion, or for all satellite devices if no satellite devices are specified.

scc—(TX Matrix router only) (Optional) Display version levels for the firmware on the TX Matrix router (switch-card chassis).

sfc *number*—(TX Matrix Plus router only) (Optional) Display version levels for the firmware on the TX Matrix Plus router (or switch-fabric chassis). Replace *number* with 0.

detail—(EX3200, EX3300, EX4200, and EX4500 standalone and Virtual Chassis member switches only) (Optional) Display version levels of the firmware running on the switch for its programmable hardware components.

Required Privilege Level
view

List of Sample Output
show chassis firmware (M10 Router) on page 1490
show chassis firmware (M20 Router) on page 1490
show chassis firmware (M40 Router) on page 1490
show chassis firmware (M160 Router) on page 1491
show chassis firmware (MX150) on page 1491
show chassis firmware (MX104 Router) on page 1491
show chassis firmware (MX240 Router) on page 1492
show chassis firmware (MX480 Router) on page 1492
show chassis firmware (MX960 Router) on page 1492
show chassis firmware (MX2020 Router) on page 1492
show chassis firmware (MX204 Router) on page 1493
show chassis firmware (MX10008 Router) on page 1494
show chassis firmware (MX240, MX480, MX960 Router with Application Services Modular Line Card) on page 1495
show chassis firmware (EX4200 Switch) on page 1495
show chassis firmware (EX8200 Switch) on page 1495
show chassis firmware (EX9200 Switch) on page 1496
show chassis firmware (EX9251 Switch) on page 1496
show chassis firmware (EX9253 Switch) on page 1496
show chassis firmware lcc (TX Matrix Router) on page 1497
show chassis firmware scc (TX Matrix Router) on page 1497
show chassis firmware (TX Matrix Plus Router) on page 1497
show chassis firmware lcc (TX Matrix Plus Router) on page 1499
show chassis firmware sfc (TX Matrix Plus Router) on page 1500
show chassis firmware (QFX Series and OCX Series) on page 1500
show chassis firmware (PTX1000 Packet Transport Routers) on page 1501

show chassis firmware (PTX10008 Routers) on page 1501
show chassis firmware interconnect-device (QFabric System) on page 1502
show chassis firmware (ACX2000 Universal Metro Router) on page 1502
show chassis firmware detail (EX3300 Switch) on page 1502
show chassis firmware (MX Routers with Media Services Blade [MSB]) on page 1502
show chassis firmware (ACX5048 Router) on page 1503
show chassis firmware (ACX5096 Router) on page 1503
show chassis firmware (ACX500 Router) on page 1504

Output Fields

Table 76 on page 1489 lists the output fields for the show chassis firmware command. Output fields are listed in the approximate order in which they appear.

Table 76: show chassis firmware Output Fields

Field Name	Field Description
Part	(MX Series, MX2010, MX2020, and MX2008 routers) Chassis part name.
Type	(MX Series, MX2010, MX2020, and MX2008 routers) Type of firmware: On routers: ROM or O/S. On switches: uboot or loader.
Version	(MX Series, MX2010, MX2020, and MX2008 routers) Version of firmware running on the chassis part.
FPC	(*detail* option only) Number of FPC. For a standalone switch, the value is 0. For a Virtual Chassis configuration, value in the range of 0-9; refers to the member ID assigned to the switch.
AFEB	(MX104 routers) Version of the compact Forwarding Engine Board.
Boot	(*detail* option only) Version of the SYSPLD.
PoE	(*detail* option only) Version of the PoE firmware.
PFE-<*number*>	(*detail* option only) Version of the Packet Forwarding Engine used in the switch.
PHY-	(*detail* option only) Version of the physical layer device (PHY) used in the switch.

Table 76: show chassis firmware Output Fields *(continued)*

Field Name	Field Description
microcode	(*detail* option only) Microcode of the physical layer devices (PHY) used in the switch.
uboot	(*detail* option only) Version of the u-boot used in the switch.
loader	(*detail* option only) Version of the loader used in the switch.

Sample Output

show chassis firmware (M10 Router)

```
user@host> show chassis firmware
```

```
Part                    Type       Version
Forwarding engine board ROM        Juniper ROM Monitor Version 4.1b2
                        O/S        Version 4.1I1 by usera on 2000-04-24 11:27
```

show chassis firmware (M20 Router)

```
user@host> show chassis firmware
```

```
Part                    Type       Version
System switch board     ROM        Juniper ROM Monitor Version 3.4b26
                        O/S        Version 3.4I16 by userc on 2000-02-29 2
FPC 1                   ROM        Juniper ROM Monitor Version 3.0b1
                        O/S        Version 3.4I4 by userc on 2000-02-25 21
FPC 2                   ROM        Juniper ROM Monitor Version 3.0b1
                        O/S        Version 3.4I4 by userc on 2000-02-25 21
```

show chassis firmware (M40 Router)

```
user@host> show chassis firmware
```

```
Part                    Type       Version
System control board    ROM        Juniper ROM Monitor Version 2.0i126Copyri
                        O/S        Version 2.0i1 by root on Thu Jul 23 00:51
```

```
FPC 5                    ROM        Juniper ROM Monitor Version 2.0i49Copyrig
                         O/S        Version 2.0i1 by root on Thu Jul 23 00:59
```

show chassis firmware (M160 Router)

`user@host>` **show chassis firmware**

```
Part                     Type       Version
SFM 0                    ROM        Juniper ROM Monitor Version 4.0b2
                         O/S        Version 4.0I1 by usera on 2000-02-29 11:50
SFM 1                    ROM        Juniper ROM Monitor Version 4.0b2
                         O/S        Version 4.0I1 by usera on 2000-02-29 11:50
FPC 0                    ROM        Juniper ROM Monitor Version 4.0b2
                         O/S        Version 4.0I1 by usera on 2000-02-29 11:56
FPC 1                    ROM        Juniper ROM Monitor Version 4.0b2
                         O/S        Version 4.0I1 by usera on 2000-02-29 11:56
FPC 2                    ROM        Juniper ROM Monitor Version 4.0b3
                         O/S        Version 4.0I1 by usera on 2000-02-29 11:56
```

show chassis firmware (MX150)

`user@host >` **show chassis firmware**

```
Part                     Type       Version
FPC                      ROM        PC Bios
                         O/S        Version 17.2I20170220_0929_rohitn by rohitn
on 2017-02-20 09:38:59 UTC
```

show chassis firmware (MX104 Router)

`user@host >` **show chassis firmware**

```
Part                     Type       Version
FPC 0                    ROM        Juniper ROM Monitor Version 13.1b24
                         O/S        Version 13.2-20130514.1 by userb on 2013-
FPC 1                    ROM        Juniper ROM Monitor Version 13.1b24
                         O/S        Version 13.2-20130514.1 by userb on 2013-
FPC 2                    ROM        Juniper ROM Monitor Version 13.1b24
                         O/S        Version 13.2-20130514.1 by userb on 2013-
AFEB                     ROM        Juniper ROM Monitor Version 13.1b24
                         O/S        Version 13.2-20130514.1 by userb on 2013-
```

show chassis firmware (MX240 Router)

```
user@host> show chassis firmware
```

```
Part                    Type       Version
FPC 1                   ROM        Juniper ROM Monitor Version 8.3b1
                        O/S        Version 9.0-20080103.0 by userb on 2008-0
FPC 2                   ROM        Juniper ROM Monitor Version 8.3b1
                        O/S        Version 9.0-20080103.0 by userb on 2008-0
```

show chassis firmware (MX480 Router)

```
user@host> show chassis firmware
```

```
Part                    Type       Version
FPC 1                   ROM        Juniper ROM Monitor Version 8.3b1
                        O/S        Version 9.0-20070916.3 by userb on 2007-0
```

show chassis firmware (MX960 Router)

```
user@host> show chassis firmware
```

```
Part                    Type       Version
FPC 4                   ROM        Juniper ROM Monitor Version 8.0b8
                        O/S        Version 8.2I59 by user3 on 2006-10-31 19:22
FPC 7                   ROM        Juniper ROM Monitor Version 8.2b1
                        O/S        Version 8.2-20061026.1 by userb on 2006-1
```

show chassis firmware (MX2020 Router)

```
user@host> show chassis firmware
```

```
Part                    Type       Version
FPC 0                   ROM        Juniper ROM Monitor Version 10.0b39
                        O/S        Version 12.3-20130415.0 by userb on 2013-
FPC 1                   ROM        Juniper ROM Monitor Version 10.0b39
                        O/S        Version 12.3-20130415.0 by userb on 2013-
FPC 2                   ROM        Juniper ROM Monitor Version 10.0b39
                        O/S        Version 12.3-20130415.0 by userb on 2013-
FPC 3                   ROM        Juniper ROM Monitor Version 10.0b39
                        O/S        Version 12.3-20130415.0 by userb on 2013-
FPC 4                   ROM        Juniper ROM Monitor Version 10.0b39
                        O/S        Version 12.3-20130415.0 by userb on 2013-
```

```
FPC 5                  ROM        Juniper ROM Monitor Version 10.0b39
                       O/S        Version 12.3-20130415.0 by userb on 2013-
FPC 6                  ROM        Juniper ROM Monitor Version 10.0b39
                       O/S        Version 12.3-20130415.0 by userb on 2013-
FPC 7                  ROM        Juniper ROM Monitor Version 10.0b39
                       O/S        Version 12.3-20130415.0 by userb on 2013-
FPC 8                  ROM        Juniper ROM Monitor Version 10.0b39
                       O/S        Version 12.3-20130415.0 by userb on 2013-
FPC 9                  ROM        Juniper ROM Monitor Version 10.0b39
                       O/S        Version 12.3-20130415.0 by userb on 2013-
FPC 10                 ROM        Juniper ROM Monitor Version 10.0b39
                       O/S        Version 12.3-20130415.0 by userb on 2013-
FPC 11                 ROM        Juniper ROM Monitor Version 10.0b39
                       O/S        Version 12.3-20130415.0 by userb on 2013-
FPC 12                 ROM        Juniper ROM Monitor Version 10.0b39
                       O/S        Version 12.3-20130415.0 by userb on 2013-
FPC 13                 ROM        Juniper ROM Monitor Version 10.0b39
                       O/S        Version 12.3-20130415.0 by userb on 2013-
FPC 14                 ROM        Juniper ROM Monitor Version 10.0b39
                       O/S        Version 12.3-20130415.0 by userb on 2013-
FPC 15                 ROM        Juniper ROM Monitor Version 10.0b39
                       O/S        Version 12.3-20130415.0 by userb on 2013-
FPC 16                 ROM        Juniper ROM Monitor Version 10.0b39
                       O/S        Version 12.3-20130415.0 by userb on 2013-
FPC 17                 ROM        Juniper ROM Monitor Version 10.0b39
                       O/S        Version 12.3-20130415.0 by userb on 2013-
FPC 18                 ROM        Juniper ROM Monitor Version 10.0b39
                       O/S        Version 12.3-20130415.0 by userb on 2013-
FPC 19                 ROM        Juniper ROM Monitor Version 10.0b39
                       O/S        Version 12.3-20130415.0 by userb on 2013-
SPMB 0                 ROM        Juniper ROM Monitor Version 12.1b1
                       O/S        Version 12.3-20130415.0 by userb on 2013-
SPMB 1                 ROM        Juniper ROM Monitor Version 12.1b1
                       O/S        Version 12.3-20130415.0 by userb on 2013-
```

show chassis firmware (MX204 Router)

user@host> **show chassis firmware**

```
Part                   Type       Version
RE 0                   PRI BIOS   CBEP_P_SUM1_00.11.01
                       RE-FPGA    300
FPC                    ROM        PC Bios
```

```
                          O/S        Version 17.4I20171105_0609_aahluwalia by
aahluwalia on 2017-11-05 06:09:28 UTC
```

show chassis firmware (MX10008 Router)

`user@host>` **show chassis firmware**

```
Part                      Type       Version
RE 0                      PRI BIOS   CBEP_P_VAL0_00.14.1
                          FPGA       264.0
                          RE-FPGA    41.0
                          RE-SSD1    SF-SBR12050
                          RE-SSD2    SF-SBR12050
                          i40e-NVM   6.01
RE 1                      PRI BIOS   CBEP_P_VAL0_00.13.01
                          FPGA       261.0
                          RE-FPGA    41.0
                          RE-SSD1    SF-SBR12034
                          RE-SSD2    SF-SBR12034
                          i40e-NVM   5.02
FPC 0                     ROM        PC Bios
                          O/S        Version 18.4-20180716_dev_common.0 by builder
 on 2018-07-16 00:43:35 UTC
                          ROM Monitor 0 9.14.0
                          PCIE Sw(0) 1.0.0
                          MPCS(0)    0.2.0
                          I2CS CPLD  0.4.0
                          BOOT CPLD  0.4.0
FPC 2                     ROM        PC Bios
                          O/S        Version 18.4-20180716_dev_common.0 by builder
 on 2018-07-16 00:43:35 UTC
                          ROM Monitor 0 9.14.0
                          PCIE Sw(0) 1.0.0
                          MPCS(0)    0.2.0
                          I2CS CPLD  0.4.0
                          BOOT CPLD  0.4.0
FPC 3                     ROM        PC Bios
                          O/S        Version 18.4-20180716_dev_common.0 by builder
 on 2018-07-16 00:43:35 UTC
                          ROM Monitor 0 9.14.0
                          PCIE Sw(0) 1.0.0
                          MPCS(0)    0.4.0
                          I2CS CPLD  0.8.0
                          BOOT CPLD  0.8.0
```

```
FPM                     FPGA       1.9
FTC 0                   FPGA       2.0
FTC 1                   FPGA       2.0
SFB 0                   FPGA       3.0
SFB 1                   FPGA       3.0
SFB 2                   FPGA       3.0
SFB 3                   FPGA       3.0
SFB 4                   FPGA       3.0
SFB 5                   FPGA       3.0
```

show chassis firmware (MX240, MX480, MX960 Router with Application Services Modular Line Card)

`user@host>` **show chassis firmware**

```
Part                    Type       Version
FPC 1                   ROM        Juniper ROM Monitor Version 12.1b1
                        O/S        Version 12.2I21 by user1 on 2012-06-19 17:
```

show chassis firmware (EX4200 Switch)

`user@switch>` **show chassis firmware**

```
Part                  Type       Version
FPC 0                 uboot      U-Boot 1.1.6 (Feb  6 2008 - 11:27:42)
                      loader     FreeBSD/PowerPC U-Boot bootstrap loader 2.1
FPC 1                 uboot      U-Boot 1.1.6 (Feb  6 2008 - 11:27:42)
                      loader     FreeBSD/PowerPC U-Boot bootstrap loader 2.1
FPC 2                 uboot      U-Boot 1.1.6 (Feb  6 2008 - 11:27:42)
                      loader     FreeBSD/PowerPC U-Boot bootstrap loader 2.1
```

show chassis firmware (EX8200 Switch)

`user@switch>` **show chassis firmware**

```
Part                    Type       Version
FPC 0                   U-Boot     U-Boot 1.1.6 (Mar 25 2009 - 06:13:12) 2.4.0
                        loader     FreeBSD/PowerPC U-Boot bootstrap loader 2.2
FPC 3                   U-Boot     U-Boot 1.1.6 (Dec  4 2009 - 13:17:34) 3.1.0
                        loader     FreeBSD/PowerPC U-Boot bootstrap loader 2.2
```

```
FPC 5                    U-Boot     U-Boot 1.1.6 (Mar 25 2009 - 06:13:12) 2.4.0
                         loader     FreeBSD/PowerPC U-Boot bootstrap loader 2.2
FPC 7                    U-Boot     U-Boot 1.1.6 (Feb  6 2009 - 05:31:46) 2.4.0
                         loader     FreeBSD/PowerPC U-Boot bootstrap loader 2.2
Routing Engine 0         U-Boot     U-Boot 1.1.6 (Mar 25 2009 - 06:13:12) 2.4.0
                                    FreeBSD/PowerPC U-Boot bootstrap loader 2.2
                         loader
Routing Engine 1         U-Boot     U-Boot 1.1.6 (Mar 25 2009 - 06:13:12) 2.4.0
                         loader     FreeBSD/PowerPC U-Boot bootstrap loader 2.2
```

show chassis firmware (EX9200 Switch)

```
user@switch> show chassis firmware
```

```
 Part                    Type       Version
 FPC 2                   ROM        Juniper ROM Monitor Version 11.4b2
                         O/S        Version 14.1I20140312_0741 by userd o
FPC 3                    ROM        Juniper ROM Monitor Version 10.4b1
                         O/S        Version 14.1I20140312_0741 by userd o
```

show chassis firmware (EX9251 Switch)

```
user@switch> show chassis firmware
```

```
Part                     Type       Version
RE 0                     PRI BIOS   CBEP_P_SUM1_00.11.01
                         RE-FPGA    301
FPC                      ROM        PC Bios
                         O/S        Version 18.1R1.4 by builder on 2018-03-06
00:31:54 UTC
```

show chassis firmware (EX9253 Switch)

```
user@switch> show chassis firmware
```

```
Part                     Type       Version
RE 0                     PRI BIOS   CBEP_P_SUM1_00.11.01
                         RE-FPGA    402
RE 1                     PRI BIOS   CBEP_P_SUM1_00.11.01
                         RE-FPGA    402
FPC 0                    ROM        PC Bios
```

```
                         O/S        Version 18.2-20180129_dev_common.1 by builder
 on 2018-01-29 13:35:11 UTC
FPC 1                     ROM        PC Bios
                         O/S        Version 18.2-20180129_dev_common.1 by builder
 on 2018-01-29 13:35:11 UTC
```

show chassis firmware lcc (TX Matrix Router)

`user@host>` **show chassis firmware lcc 0**

```
lcc0-re0:
--------------------------------------------------------------------------
Part                      Type       Version
FPC 1                     ROM        Juniper ROM Monitor Version 6.4b18
                          O/S        Version 7.0-20040804.0 by userb on 2004-0
FPC 2                     ROM        Juniper ROM Monitor Version 6.4b20
                          O/S        Version 7.0-20040804.0 by userb on 2004-0
SPMB 0                    ROM        Juniper ROM Monitor Version 6.4b18
                          O/S        Version 7.0-20040804.0 by userb on 2004-0
```

show chassis firmware scc (TX Matrix Router)

`user@host>` **show chassis firmware scc**

```
scc-re0:
--------------------------------------------------------------------------
Part                      Type       Version
SPMB 0                    ROM        Juniper ROM Monitor Version 6.4b18
                          O/S        Version 7.0-20040804.0 by userb on 2004-0
```

show chassis firmware (TX Matrix Plus Router)

`user@host>` **show chassis firmware**

```
sfc0-re0:
--------------------------------------------------------------------------
Part                      Type       Version
Global FPC 4
Global FPC 6
Global FPC 7
Global FPC 12
Global FPC 14
```

```
Global FPC 15
Global FPC 20
Global FPC 21
Global FPC 22
Global FPC 23
Global FPC 24
Global FPC 25
Global FPC 26
Global FPC 28
Global FPC 29
Global FPC 31
SPMB 0                  ROM        Juniper ROM Monitor Version 9.5b1
                        O/S        Version 9.6-20090507.0 by userb on 2009-0
SPMB 1                  ROM        Juniper ROM Monitor Version 9.5b1
                        O/S        Version 9.6-20090507.0 by userb on 2009-0

lcc0-re1:
--------------------------------------------------------------------------
Part                    Type       Version
FPC 4                   ROM        Juniper ROM Monitor Version 9.0b2
                        O/S        Version 9.6-20090507.0 by userb on 2009-0
FPC 6                   ROM        Juniper ROM Monitor Version 9.0b2
                        O/S        Version 9.6-20090507.0 by userb on 2009-0
FPC 7                   ROM        Juniper ROM Monitor Version 9.0b2
                        O/S        Version 9.6-20090507.0 by userb on 2009-0
SPMB 0                  ROM        Juniper ROM Monitor Version 9.5b1
                        O/S        Version 9.6-20090507.0 by userb on 2009-0
SPMB 1                  ROM        Juniper ROM Monitor Version 9.5b1
                        O/S        Version 9.6-20090507.0 by userb on 2009-0

lcc1-re1:
--------------------------------------------------------------------------
Part                    Type       Version
FPC 4                   ROM        Juniper ROM Monitor Version 9.0b2
                        O/S        Version 9.6-20090507.0 by userb on 2009-0
FPC 6                   ROM        Juniper ROM Monitor Version 9.0b2
                        O/S        Version 9.6-20090507.0 by userb on 2009-0
FPC 7                   ROM        Juniper ROM Monitor Version 9.0b2
                        O/S        Version 9.6-20090507.0 by userb on 2009-0
SPMB 0                  ROM        Juniper ROM Monitor Version 9.5b1
                        O/S        Version 9.6-20090507.0 by userb on 2009-0
SPMB 1                  ROM        Juniper ROM Monitor Version 9.5b1
                        O/S        Version 9.6-20090507.0 by userb on 2009-0
```

```
lcc2-re1:
--------------------------------------------------------------------------
Part                    Type       Version
FPC 4                   ROM        Juniper ROM Monitor Version 9.0b2
                        O/S        Version 9.6-20090507.0 by userb on 2009-0
FPC 5                   ROM        Juniper ROM Monitor Version 9.0b2
                        O/S        Version 9.6-20090507.0 by userb on 2009-0
FPC 6                   ROM        Juniper ROM Monitor Version 9.0b2
                        O/S        Version 9.6-20090507.0 by userb on 2009-0
FPC 7                   ROM        Juniper ROM Monitor Version 7.5b4
                        O/S        Version 9.6-20090507.0 by userb on 2009-0
SPMB 0                  ROM        Juniper ROM Monitor Version 9.5b1
                        O/S        Version 9.6-20090507.0 by userb on 2009-0
SPMB 1                  ROM        Juniper ROM Monitor Version 9.5b1
                        O/S        Version 9.6-20090507.0 by userb on 2009-0

lcc3-re1:
--------------------------------------------------------------------------
Part                    Type       Version
FPC 0                   ROM        Juniper ROM Monitor Version 9.0b2
                        O/S        Version 9.6-20090507.0 by userb on 2009-0
FPC 1                   ROM        Juniper ROM Monitor Version 9.0b2
                        O/S        Version 9.6-20090507.0 by userb on 2009-0
FPC 2                   ROM        Juniper ROM Monitor Version 9.0b2
                        O/S        Version 9.6-20090507.0 by userb on 2009-0
FPC 4                   ROM        Juniper ROM Monitor Version 7.5b4
                        O/S        Version 9.6-20090507.0 by userb on 2009-0
FPC 5                   ROM        Juniper ROM Monitor Version 9.0b2
                        O/S        Version 9.6-20090507.0 by userb on 2009-0
FPC 7                   ROM        Juniper ROM Monitor Version 9.0b2
                        O/S        Version 9.6-20090507.0 by userb on 2009-0
SPMB 0                  ROM        Juniper ROM Monitor Version 9.5b1
                        O/S        Version 9.6-20090507.0 by userb on 2009-0
SPMB 1                  ROM        Juniper ROM Monitor Version 9.5b1
                        O/S        Version 9.6-20090507.0 by userb on 2009-0
```

show chassis firmware lcc (TX Matrix Plus Router)

`user@host>` **show chassis firmware lcc 0**

```
lcc0-re1:
--------------------------------------------------------------------------
Part                    Type       Version
FPC 4                   ROM        Juniper ROM Monitor Version 9.0b2
```

```
                        O/S         Version 9.6-20090507.0 by userb on 2009-0
FPC 6                   ROM         Juniper ROM Monitor Version 9.0b2
                        O/S         Version 9.6-20090507.0 by userb on 2009-0
FPC 7                   ROM         Juniper ROM Monitor Version 9.0b2
                        O/S         Version 9.6-20090507.0 by userb on 2009-0
SPMB 0                  ROM         Juniper ROM Monitor Version 9.5b1
                        O/S         Version 9.6-20090507.0 by userb on 2009-0
SPMB 1                  ROM         Juniper ROM Monitor Version 9.5b1
                        O/S         Version 9.6-20090507.0 by userb on 2009-0
```

show chassis firmware sfc (TX Matrix Plus Router)

`user@host>` **show chassis firmware sfc 0**

```
sfc0-re0:
--------------------------------------------------------------------------
Part                    Type        Version
Global FPC 4
Global FPC 6
Global FPC 7
Global FPC 12
Global FPC 14
Global FPC 15
Global FPC 20
Global FPC 21
Global FPC 22
Global FPC 23
Global FPC 24
Global FPC 25
Global FPC 26
Global FPC 28
Global FPC 29
Global FPC 31
SPMB 0                  ROM         Juniper ROM Monitor Version 9.5b1
                        O/S         Version 9.6-20090507.0 by userb on 2009-0
SPMB 1                  ROM         Juniper ROM Monitor Version 9.5b1
                        O/S         Version 9.6-20090507.0 by userb on 2009-0
```

show chassis firmware (QFX Series and OCX Series)

`user@switch>` **show chassis firmware**

```
Part                    Type       Version
FPC 0
Routing Engine 0        U-Boot     U-Boot 1.1.6 (Sep 15 2010 - 02:11:11) 1.0.5
                        loader     FreeBSD/MIPS U-Boot bootstrap loader 0.1
```

show chassis firmware (PTX1000 Packet Transport Routers)

`user@host>` **show chassis firmware**

```
Part                    Type       Version
FPC 0                   U-Boot      ***
                        loader           FreeBSD/i386 bootstrap loader 1.2
                        BIOS       V0018.2U
                        EC FPGA    2.0
                        MAIN_CPLD  1.f
                        MEZZ_CPLD  1.f
                        RE FPGA    2.3
```

show chassis firmware (PTX10008 Routers)

`user@host>` **show chassis firmware**

```
Part                    Type       Version
RE 0                    PRI BIOS   QFXS_SFP_00.31_01.01
                        GDN BIOS   QFXS_SFP_00.31_01.01
                        FPGA       2.4
                        RE-FPGA    3.2
RE 1                    PRI BIOS   QFXS_SFP_00.31_01.01
                        GDN BIOS   QFXS_SFP_00.31_01.01
                        FPGA       2.3
                        RE-FPGA    3.2
FPC 0                   U-Boot     Bank A: U-Boot 2011.12-gfbea47a (Feb 26 2016
- 22:56:52)
                        CTRL FPGA  4.1
                        PORT FPGA  2.0
FPC 5                   U-Boot     Bank A: U-Boot 2011.12-gfbea47a (Feb 26 2016
- 22:56:52)
                        CTRL FPGA  3.1
                        PORT FPGA  2.0
FPC 6                   U-Boot     Bank B: U-Boot 2011.12-gfbea47a (Feb 26 2016
- 22:56:52)
                        CTRL FPGA  3.1
                        PORT FPGA  2.0
```

```
FPM                     FPGA       1.9
FTC 0                   FPGA       2.0
FTC 1                   FPGA       2.0
SIB 0                   FPGA       3.0
SIB 1                   FPGA       3.0
```

show chassis firmware interconnect-device (QFabric System)

```
user@switch> show chassis firmware interconnect-device interconnect1
```

```
Part                    Type       Version
Routing Engine 0        U-Boot     U-Boot 1.1.6 (May 10 2011 - 04:52:59) 1.1.1
                        loader     FreeBSD/MIPS U-Boot bootstrap loader 0.1
Routing Engine 1        U-Boot     U-Boot 1.1.6 (May 10 2011 - 04:52:59) 1.1.1
                        loader     FreeBSD/MIPS U-Boot bootstrap loader 0.1
```

show chassis firmware (ACX2000 Universal Metro Router)

```
user@switch> show chassis firmware
```

```
Part                    Type       Version
FPC                     O/S        Version 12.2I13 by user2 on 2012-05-29 06:
FEB                     O/S        Version 12.2I13 by user2 on 2012-05-29 06:
```

show chassis firmware detail (EX3300 Switch)

```
user@switch> show chassis firmware detail
```

```
FPC 0
   Boot SYSPLD             3
   PoE firmware            4.1.6
   PFE-0                   3
   PFE-1                   3
   PHY
      microcode            0x514
   Boot Firmware
      uboot                U-Boot 1.1.6 (Aug 21 2011 - 01:45:26)   1.0.0
      loader               FreeBSD/arm U-Boot loader 1.0
```

show chassis firmware (MX Routers with Media Services Blade [MSB])

```
user@switch> show chassis firmware
```

```
Part                    Type       Version
FPC 1                   ROM        Juniper ROM Monitor Version 12.1b1
                        O/S        Version 12.2I21 by user1 on 2012-06-19 17:
```

show chassis firmware (ACX5048 Router)

`user@host>` **show chassis firmware**

```
Part                    Type       Version
FPC                     loader           FreeBSD/i386 bootstrap loader 1.2
                        BIOS       V0018.7
                        TMC FPGA   6.d8
                        PIC0 CPLD0 7.b
                        PIC0 CPLD1 7.b
                        PIC0 CPLD2 7.b
                        PIC0 CPLD3 7.b
                        PIC0 CPLD4 7.b
                        PIC0 CPLD5 7.b
                        PIC0 CPLD6 6.a
                        MRE        17.9
                        Power CPLD 3.a
```

show chassis firmware (ACX5096 Router)

`user@host>` **show chassis firmware**

```
Part                    Type       Version
FPC                     loader           FreeBSD/i386 bootstrap loader 1.2
                        BIOS       V0018.7
                        TMC FPGA   3000001.5
                        PIC0 CPLD0 7.b
                        PIC0 CPLD1 7.b
                        PIC0 CPLD2 7.b
                        PIC0 CPLD3 7.b
                        PIC0 CPLD4 7.b
                        PIC0 CPLD5 7.b
                        PIC0 CPLD6 c6.a
                        PIC0 CPLD7 -NA-
                        PIC0 CPLD8 7.b
                        PIC0 CPLD9 7.b
                        PIC0 CPLD10 7.b
                        PIC0 CPLD11 7.b
                        PIC0 CPLD12 7.b
```

```
                        PIC0 CPLD13 7.b
                        PIC0 CPLD14 c6.a
                        MRE        7.5
                        Power CPLD 4.1
```

show chassis firmware (ACX500 Router)

`user@host>` **show chassis firmware**

```
Part                     Type       Version
FPC                     O/S       Version 15.2-20150815_dev_rbu_1_16q1.0 by userb
 on 2015-08-15 04:18:02 UTC
FEB                     O/S       Version 15.2-20150815_dev_rbu_1_16q1.0 by userb
 on 2015-08-15 04:18:02 UTC
```

show chassis forwarding

Syntax

```
show chassis forwarding
```

Release Information

Current—Command introduced before Junos OS Release 7.4.
Now—Command introduced in Junos OS Release 7.4. Support for Branch SRX Series added in Junos OS Release 10.1

Description

Display status of the forwarding process (fwdd). This command is supported on Branch SRX Series Services Gateways.

Options

This command has no options.

Required Privilege Level

view

List of Sample Output

show chassis forwarding on page 1506

Output Fields

Table 77 on page 1506 lists the output fields for the **show chassis forwarding** command. Output fields are listed in the approximate order in which they appear.

Table 77: show chassis forwarding Output Fields

Field Name	Field Description

FWWD status	Forwarding status:
	• **State**:
	  ◦ **Online**—FWDD is operational and running.
	  ◦ **Offline**—FWDD is not running.
	• **Microkernel CPU utilization**—Percentage of microkernel CPU being used by the forwarding process.
	• **Real-time threads CPU utilization**—Percentage of CPU being used by the forwarding process.
	• **Heap utilization**—Percentage of heap space (dynamic memory) being used by the forwarding process. If this number exceeds 80 percent, there may be a software problem (memory leak).
	• **Buffer utilization**—Percentage of buffer space being used by the forwarding process for buffering internal messages.
	• **Uptime**—How long the forwarding process has been up and running.

Sample Output

show chassis forwarding

`user@host>` **show chassis forwarding**

```
FWDD status:
  State                                Online
  Microkernel CPU utilization        10 percent
  Real-time threads CPU utilization   4 percent
  Heap utilization                   26 percent
  Buffer utilization                  0 percent
  Uptime:                             1 day, 1 hour, 30 minutes, 11 seconds
```

show chassis fpc

List of Syntax

Syntax on page 1507
Syntax (EX Series Switches, PTX Series Routers, ACX Series Routers, TX Matrix and TX Matrix Plus Routers) on page 1507
Syntax (T4000 Routers) on page 1507
Syntax (MX Series Routers and EX Series switches) on page 1507
Syntax (MX104, MX204, MX2010, MX2020, MX10003, and MX2008 Universal Routing Platforms) on page 1508
Syntax (MX10008 Universal Routing Platforms) on page 1508
Syntax (QFX Series) on page 1508
Syntax (OCX Series) on page 1508
Syntax (ACX500 Routers) on page 1508
Syntax (Junos OS Evolved) on page 1508

Syntax

```
show chassis fpc
<detail <slot>> | <pic-status <slot>>
```

Syntax (EX Series Switches, PTX Series Routers, ACX Series Routers, TX Matrix and TX Matrix Plus Routers)

```
show chassis fpc
<detail <fpc-slot>> | <pic-status <fpc-slot>>
<fpc-slot>
```

Syntax (T4000 Routers)

```
show chassis fpc
<detail <fpc-slot>>
<pic-status <fpc-slot>>
```

Syntax (MX Series Routers and EX Series switches)

```
show chassis fpc
<detail <slot>> | <pic-status <slot>>
<all-members>
<local>
<member member-id>
```

Syntax (MX104, MX204, MX2010, MX2020, MX10003, and MX2008 Universal Routing Platforms)

```
show chassis fpc
<slot> detail | <detail <slot>> | <pic-status <slot>>
<fpc-slot>
```

Syntax (MX10008 Universal Routing Platforms)

```
show chassis fpc
<detail>
<errors>
<fpc-slot>
pic-status <fpc-slot>
```

Syntax (QFX Series)

```
show chassis fpc
<detail>
<interconnect-device name <fpc-slot fpc-slot>>
<node-device name>
```

Syntax (OCX Series)

```
show chassis fpc
<detail>
```

Syntax (ACX500 Routers)

```
show chassis fpc
<fpc-slot>
detail <fpc-slot>
pic-status <fpc-slot>
```

Syntax (Junos OS Evolved)

```
show chassis fpc
<detail | pic-status | errors>
<fpc-slot>
```

Release Information

Command introduced before Junos OS Release 7.4.

Command introduced in Junos OS Release 9.0 for EX Series switches.
Command introduced in Junos OS Release 11.1 for QFX Series.
Command introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers.
Command introduced in Junos OS Release 12.2 for ACX Series Universal Metro Routers.
Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 Universal Routing Platforms.
Command introduced in Junos OS Release 13.2 for MX104 Universal Routing Platforms.
Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.
Command introduced in Junos OS Release 17.2 for MX2008 and PTX10008 Routers.
Command introduced in Junos OS Release 17.3 for MX10003 Universal Routing Platforms and MX150 Router Appliance.
Command introduced in Junos OS Release 17.4 for MX204 Universal Routing Platforms.
Command introduced in Junos OS Release 18.1R1 for EX9251 switch.
Command introduced in Junos OS Release 18.2 for EX9253 Switches.

Description

Display status information about the installed Flexible PIC Concentrators (FPCs)and PICs.

Options

none—Display status information for all FPCs. On a TX Matrix router, display status information for all FPCs on the attached T640 routers in the routing matrix. On a TX Matrix Plus router, display status information for all FPCs on the attached routers in the routing matrix.

NOTE: In EX8200 switches, line cards initialize Packet Forwarding Engine during startup. If an error occurs during hardware initialization, the FPCs with bad hardware parts power down after transferring the debug information to the Routing Engine. The Routing Engine marks the FPC offline, logs the error in system log messages (/var/log/messages), and generates an alarm to inform the user.

See the following sample output:

```
user@host> show chassis fpc
                    Temp  CPU Utilization (%)   Memory    Utilization
(%)
Slot State           (C)  Total  Interrupt      DRAM (MB) Heap     Buffer

  0  Empty
  1  Empty
  2  Empty
  3  Empty
  4  Empty
  5  Offline         ---Hard FPC error---
  6  Empty
  7  Online            26      4          0       1024        0
32
```

The following sample output shows the alarm raised for the failed FPCs:

```
user@host> show chassis alarms
4 alarms currently active
Alarm time               Class  Description
2011-03-24 00:52:51 UTC  Major  FPC 5 Hard errors
2011-03-24 00:52:31 UTC  Major  Fan Tray Failure
2011-03-24 00:52:31 UTC  Major  Fan Tray Failure
2011-03-24 00:51:26 UTC  Minor  Loss of communication with Backup RE
```

NOTE: On T4000 routers, when you include the **enhanced-mode** statement at the **[edit chassis network-services]** hierarchy level and reboot the system, only the T4000 Type 5 FPCs present on the router become online while the remaining FPCs are offline, and FPC misconfiguration alarms are generated. The **show chassis alarm** command output displays FPC misconfiguration (**FPC *fpc-slot* misconfig**) as the reason for the generation the alarms.

The following sample output shows the FPC status after the **enhanced-mode** statement is configured on the T4000 router. The T4000 Type 5 FPC present in slot 5 becomes online while the remaining FPCs are offline.

```
user@host> show chassis fpc
                    Temp  CPU Utilization (%)   Memory    Utilization
(%)
Slot State           (C)  Total  Interrupt     DRAM (MB) Heap     Buffer

  0  offline         ---FPC misconfiguration---
  1  offline         ---FPC misconfiguration---
  2  offline         ---FPC misconfiguration---
  3  Empty
  4  Empty
  5  Online            66      50          0       2816       29      27
```

The following sample output shows FPC misconfiguration alarms:

```
user@host> show chassis alarms
3 alarms currently active
Alarm time               Class  Description
2011-03-24 00:52:51 PST  Major  FPC 1 misconfig
2011-03-24 00:52:31 PST  Major  FPC 2 misconfig
2011-03-24 00:52:31 PST  Major  FPC 3 misconfig
```

detail—(Optional) Display detailed status information for all FPCs or for the FPC in the specified slot (see ***fpc-slot*** or ***slot***).

all-members—(MX Series routers and EX Series switches only) (Optional) Display status information for all FPCs on all members of the Virtual Chassis configuration.

interconnect-device *name*—(QFabric systems only) (Optional) Display status information for all FPCs on the Interconnect device.

fpc-slot—(Optional) FPC slot number:

- (TX Matrix and TX Matrix Plus routers only)—On a TX Matrix router, if you specify the number of the T640 router (line-card chassis) by using the **lcc *number*** option (the recommended method), replace ***fpc-slot*** with a value from **0** through **7**. Otherwise, replace ***fpc-slot*** with a value from **0** through **31**. Likewise, on a TX Matrix Plus router, if you specify the number of the specified router (line-card chassis) by using the **lcc *number*** option (the recommended method), replace ***fpc-slot*** with a value from **0** through **7**. Otherwise, replace ***fpc-slot*** with a value from **0** through **31**. For example, the following commands have the same result:

  ```
  user@host> show chassis fpc detail 1 lcc 1
  user@host> show chassis fpc detail 9
  ```

- M120 router—Replace ***fpc-slot*** with a value from **0** through **5**.
- MX80 router—Replace ***fpc-slot*** with a value from **0** through **1**.
- MX104 and MX104-40G routers—Replace ***fpc-slot*** with a value from **0** through **2**.
- MX240 router—Replace ***fpc-slot*** with a value from **0** through **2**.
- MX480 router—Replace ***fpc-slot*** with a value from **0** through **5**.
- MX-960 router—Replace ***fpc-slot*** with a value from **0** through **11**.
- MX2010 router—Replace ***fpc-slot-number*** with a value from **0** through **9**.
- MX2008 router—Replace ***fpc-slot-number*** with a value from **0** through **9**.
- MX2020 router—Replace ***fpc-slot-number*** with a value from **0** through **19**.
- Other routers—Replace ***fpc-slot*** with a value from **0** through **7**.
- EX Series switches:
  - EX3200 switches and EX4200 standalone switches—Replace ***fpc-slot*** with **0**.
  - EX4200 switches in a Virtual Chassis configuration—Replace ***fpc-slot*** with a value from **0** through **9**.
  - EX6210 switches—Replace ***fpc-slot*** with a value from **0** through **9**.
  - EX8208 switches—Replace ***fpc-slot*** with a value from **0** through **7**.
  - EX8216 switches—Replace ***fpc-slot*** with a value from **0** through **15**.
  - EX9204 switches—Replace ***fpc-slot*** with a value from **0** through **2**.
  - EX9208 switches—Replace ***fpc-slot*** with a value from **0** through **5**.
  - EX9214 switches—Replace ***fpc-slot*** with a value from **0** through **11**.
- QFX Series:
  - QFXSeries and OCX Series switches—Replace ***fpc-slot*** with 0.

    - QFabric systems—Replace ***fpc-slot*** with 0 through 31 on the Interconnect device.
  - PTX Series Packet Transport Routers:
    - PTX5000 Packet Transport Router—Replace ***fpc-slot*** with a value from **0** through **7**.
  - ACX Series Universal Metro Routers:
    - ACX1000 and ACX2000 Universal Metro Routers—Replace ***fpc-slot*** with **0**.

interconnect-device *name*—(QFabric systems only) (Optional) Display status information for all FPCs on the Interconnect device.

lcc *number*—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

local—(MX Series routers and EX Series switches only) (Optional) Display status information for all FPCs on the local Virtual Chassis member.

member *member-id*—(MX Series routers and EX Series switches only) (Optional) Display status information for all FPCs on the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value of 0 or 1.

node-device *name*—(QFabric systems only) (Optional) Display status information for each Node device. Each Node device is equivalent to an FPC.

pic-status—(Optional) Display status information for all PICs or for the PIC in the specified slot (see ***fpc-slot***).

NOTE: On T1600 routers, Type 4 FPCs with ASICs based on the SL2.0 chipset do not support the 10-Gigabit Ethernet LAN/WAN PIC with SFP+ (10x10GE [LAN/WAN] SFPP). If you issue the **show chassis fpc** command with the **pic-status** option, the CLI displays the string "Not Supported" for 10x10GE(LAN/WAN) SFPP PICs installed on such FPCs. The following is a sample output:

```
user@host> show chassis fpc pic-status
Slot 0   Online       E2-FPC Type 1
  PIC 0  Online       1x G/E SFP, 1000 BASE
  PIC 1  Online       Adaptive Services-II
  PIC 2  Online       1x G/E IQ, 1000 BASE
  PIC 3  Online       1x G/E IQ, 1000 BASE
Slot 1   Online       FPC Type 3-ES
  PIC 0  Present      UNUSED- Not Supported
Slot 2   Online       FPC Type 4-ES
  PIC 0  Offline      4x OC-192 SONET XFP
  PIC 1  Present      10x10GE(LAN/WAN) SFPP- Not Supported        <<<<<<
Slot 4   Offline      FPC Type 1-ES
Slot 5   Offline      FPC Type 2-ES
Slot 6   Online       E2-FPC Type 3
  PIC 0  Online       1x OC-192 SONET XFP
  PIC 1  Online       4x OC-48 SONET
  PIC 2  Online       4x OC-48 SONET
  PIC 3  Online       MultiServices 500
Slot 7   Online       FPC Type 4-ES
  PIC 0  Online       4x 10GE (LAN/WAN) XFP
  PIC 1  Online       4x 10GE (LAN/WAN) XFP
```

In addition, an entry is logged in the system log messages (/var/log/messages) that the PIC is not supported. The following is a sample message logged in the system log:

```
Apr  5 08:47:36  router1 chassisd[2770]: CHASSISD_UNSUPPORTED_PIC: PIC 1
 in FPC 2 (type 763, version 257) is not supported
```

If you see this issue, contact Juniper Networks Technical Assistance Center (JTAC) for a possible fix. For more information about this issue and a possible solution, see PSN-2010-03-696.

NOTE: When there is a double-bit ECC error in a network processor's memory, the Channelized OC3/STM1 (Multi-Rate) Circuit Emulation MIC with SFP or Channelized E1/T1 Circuit Emulation MIC is switched to the offline state.

```
user@host> show chassis fpc pic-status
```

```
Slot 1   Online       MPC Type 2 3D Q
PIC 0  Offline      1xCOC12/4xCOC3 CH-CE- ECC error detected
```

lcc *number*—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

Required Privilege Level
view

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Output Fields

Table 78 on page 1518 lists the output fields for the **show chassis fpc** command. Output fields are listed in the approximate order in which they appear.

Table 78: show chassis fpc Output Fields

Field Name	Field Description	Level of Output

Slot or **Slot State**	Slot number and state. The state can be one of the following conditions:
	• **Dead**—Held in reset because of errors.
	• **Diag**—Slot is being ignored while the FPC is running diagnostics.
	• **Dormant**—Held in reset.
	• **Empty**—No FPC is present.
	• **Offline**—(PTX Series Packet Transport Routers only) One of the following two states is displayed:
	  ◦ **FPC offlined due to unreachable destinations**
	  ◦ **FPC Offlined due to degraded FPC action**
	• **Online**—FPC is online and running.
	• **Present**—FPC is detected by the chassis daemon but either is not supported by the current version of Junos OS or is inserted in the wrong slot. The output also states either **Hardware Not Supported** or **Hardware Not In Right Slot**. The FPC is coming up but not yet online.
	• **Probed**—Probe is complete; awaiting restart of the Packet Forwarding Engine.
	• **Probe-wait**—Waiting to be probed.
	• **Unknown**—FPC is present but the state is unknown.
	• **Present**—FPC is plugged in. The FPC is not powered on or operational.
	• **Onlining**—FPC is in the process of going online. ASIC and rest of the hardware is initializing.
	• **Offlining**—FPC is in the process of going offline. ASIC and rest of the hardware is being shutdown down to take the offline gracefully.
	• **Fault**—FPC is in an alarmed state in which none of the PICs are operational.
	• **Fault-off**—FPC is powered off due to a fault.
	• **Spare**—FPC is redundant and will move to active state if one of the working FPCs fails to pass traffic.
		all levels

Logical slot	Slot number.	all levels
Temp (C) or Temperature	Temperature of the air passing by the FPC, in degrees Celsius or in both Celsius and Fahrenheit.	all levels all levels

Table 78: show chassis fpc Output Fields *(continued)*

Field Name	Field Description	Level of Output
Temperature (PTX Series)	On PTX Series Packet Transport Routers, temperature details are provided in degrees Celsius and Fahrenheit. Output includes: • Temperature (PMB)—Temperature of the air passing by the Processor Mezzanine Board (PMB) at the bottom of the FPC. • Temperature (Intake)—Temperature of the air flowing into the chassis. • Temperature (Exhaust)—Exhaust temperatures for multiple zones (Exhaust A and Exhaust B). • Temperature (TL*n*)-–Temperature of the specified Lookup ASIC (TL) of the packet forwarding engine on the FPC. • Temperature (TQ*n*)-–Temperature of the specified Queuing and Memory Interface ASIC (TQ) of the packet forwarding engine on the FPC.	**detail**
Total CPU Utilization (%)	Total percentage of CPU being used by the FPC's processor.	all levels
Interrupt CPU Utilization (%)	Of the total CPU being used by the FPC's processor, the percentage being used for interrupts.	none specified
1 min CPU utilization (%) **NOTE:** Supported only on MX240, MX480, MX960, MX2010, MX2020, and MX2008.	Information about the Routing Engine's CPU utilization in the past 1 minute.	none specified
5 min CPU utilization (%) **NOTE:** Supported only on MX240, MX480, MX960, MX2010, MX2020, and MX2008.	Information about the Routing Engine's CPU utilization in the past 5 minutes.	none specified

Table 78: show chassis fpc Output Fields *(continued)*

Field Name	Field Description	Level of Output
15 min CPU utilization (%) **NOTE:** Supported only on MX240, MX480, MX960, MX2010, MX2020, and MX2008.	Information about the Routing Engine's CPU utilization in the past 15 minutes.	none specified
Memory DRAM (MB)	Total DRAM, in megabytes, available to the FPC's processor.	none specified
Heap Utilization (%)	Percentage of heap space (dynamic memory) being used by the FPC's processor. If this number exceeds 80 percent, there may be a software problem (memory leak). **NOTE:** On MX Series routers and EX Series switches in a broadband edge environment, heap utilization levels higher than 70 percent can affect unified ISSU, router stability, or scaling capability.	none specified
Buffer Utilization (%)	Percentage of buffer space being used by the FPC's processor for buffering internal messages.	none specified
Total CPU DRAM	Amount of DRAM available to the FPC's CPU.	**detail**
Total RLDRAM	Amount of reduced latency dynamic random access memory (RLDRAM) available to the FPC CPU.	**detail**
Total DDR DRAM	Amount of double data rate dynamic random access memory (DDR DRAM) available to the FPC CPU.	**detail**
Total SRAM	Amount of static RAM (SRAM) used by the FPC's CPU.	**detail**
Total SDRAM	Total amount of memory used for storing packets and notifications.	**detail**
I/O Manager ASICs information	I/O Manager version number, manufacturer, and part number.	**detail**
Start time	Time when the Routing Engine detected that the FPC was running.	**detail**

Table 78: show chassis fpc Output Fields *(continued)*

Field Name	Field Description	Level of Output
Uptime	How long the Routing Engine has been connected to the FPC and, therefore, how long the FPC has been up and running.	**detail**
PIC type	(**pic-status** output only) Type of PIC.	none specified
GNF (Node slicing)	GNF identifier associated with each line card. (**pic-status** output only) GNF identifier associated with each PIC.	all levels

Sample Output

show chassis fpc (EX6210 Switch)

```
user@switch> show chassis fpc
```

```
                     Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State            (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Empty
  1  Online             7      5          0       1024        0         32
  2  Empty
  3  Empty
  4  Online            25     17          2       2048        0         30
  5  Online            25      3          0       2048        0         24
  6  Online             6      5          0       1024        0         32
  7  Empty
  8  Empty
  9  Online             8      7          0       1024        0         32
```

show chassis fpc (M20 Router)

```
user@host> show chassis fpc
```

```
FPC status:
                Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State       (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Empty         0      0          0         0         0          0
  1  Online       38      0          0         8         0          4
  2  Online       35      0          0         8         0          3
  3  Empty         0      0          0         0         0          0
```

show chassis fpc detail (M Series Routers)

```
user@host> show chassis fpc detail 1
```

```
Slot 1 information:
  State                               Online
  Temperature                      48 degrees C
  Total CPU DRAM                   32 MB
  Total SRAM                        4 MB
  Total SDRAM                     256 MB
  I/O Manager ASICs information       Version 2.0, Foundry IBM, Part number 0
  I/O Manager ASICs information       Version 2.0, Foundry IBM, Part number 0
  Start time                          2000-02-08 02:18:49 UTC
  Uptime                              14 hours, 41 minutes, 41 seconds
```

show chassis fpc detail (MX150)

```
user@host> show chassis fpc detail
```

```
Slot 0 information:
  State                               Online
  Temperature                      42 degrees C / 107 degrees F
  Total CPU DRAM                 2048 MB
  Total RLDRAM                     10 MB
  Total DDR DRAM                    0 MB
  Start time                          2017-04-04 04:44:04 PDT
  Uptime                              7 days, 19 hours, 45 minutes, 50 seconds
```

show chassis fpc (MX104 Router)

```
user@host> show chassis fpc
```

```
Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State            (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Online            32     15          5       2048       22         13
  1  Online            32     15          5       2048       22         13
  2  Online            32     15          5       2048       22         13
```

show chassis fpc detail (MX104 Router)

```
user@host> show chassis fpc detail
```

```
Slot 0 information:
  State                               Online
  Temperature                          32 (C)
  Total CPU DRAM                     2048 MB
  Total SRAM                          403 MB
  Total SDRAM                        1316 MB
  Start time                              2013-05-23 14:39:18 IST
  Uptime                                  1 hour, 20 minutes, 22 seconds
Slot 1 information:
  State                               Online
  Temperature                          32 (C)
  Total CPU DRAM                     2048 MB
  Total SRAM                          403 MB
  Total SDRAM                        1316 MB
  Start time                              2013-05-23 14:39:18 IST
  Uptime                                  1 hour, 20 minutes, 22 seconds
Slot 2 information:
  State                               Online
  Temperature                          32 (C)
  Total CPU DRAM                     2048 MB
  Total SRAM                          403 MB
  Total SDRAM                        1316 MB
  Start time                              2013-05-23 14:39:18 IST
  Uptime                                  1 hour, 20 minutes, 22 seconds
```

show chassis fpc pic-status (MX104 Router)

`user@host>` **show chassis fpc pic-status**

```
Slot 0   Online
Slot 1   Online
  PIC 0  Online       10x 1GE(LAN) -E  SFP
  PIC 1  Online       10x 1GE(LAN) -E  SFP
Slot 2   Online
  PIC 0  Online       4x 10GE(LAN) SFP+
```

show chassis fpc (MX240 Router)

`user@host>` **show chassis fpc**

```
                Temp    CPU Utilization (%)     Memory       Utilization (%)
Slot State            (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Empty
```

```
  1  Online            34      6          0       1024       18         30
  2  Online            33      9          0       1024       24         30
```

If you have installed a Switch Control Board (SCB1) instead of a line card (DPC0) in the multifunction slot on the MX240, the **show chassis fpc** output shows the slot **0** as empty.

show chassis fpc detail (EX9200 Switch)

`user@switch>` **show chassis fpc detail**

```
Slot 2 information:
  State                                 Online
  Temperature                            37
  Total CPU DRAM                       2048 MB
  Total RLDRAM                          331 MB
  Total DDR DRAM                       1536 MB
  Start time:                           2014-03-12 15:35:28 UTC
  Uptime:                               1 hour, 4 minutes, 29 seconds
  Max Power Consumption                 239 Watts
Slot 3 information:
  State                                 Online
  Temperature                            39
  Total CPU DRAM                       2048 MB
  Total RLDRAM                         1036 MB
  Total DDR DRAM                       6656 MB
  Start time:                           2014-03-12 15:00:18 UTC
  Uptime:                               1 hour, 39 minutes, 39 seconds
  Max Power Consumption                 520 Watts
```

show chassis fpc (MX480 Router)

`user@host>` **show chassis fpc**

```
                    Temp  CPU Utilization (%)   CPU Utilization (%)  Memory
Utilization (%)
Slot State            (C)  Total  Interrupt      1min   5min   15min  DRAM (MB)
Heap     Buffer
  0  Online                   1          0        1      2      3    1024
 4         56
  1  Online                   1          0        2      2      3    1024
 4         56
```

show chassis fpc (MX480 Router with 100-Gigabit Ethernet CFP)

```
user@host> show chassis fpc
```

```
                     Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State          (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
 0  Online           33   4      0              2048      10       13
 1  Online           36   7      0              2048      16       13
 2  Online           29   6      0              1024      27       29
 3  Online           33   0      0                 0       0        0
 4  Online           36   7      0              2048      19       13
 5  Online           34  31      11             2048      14       13
```

show chassis fpc pic-status (MX480 Router with 100-Gigabit Ethernet CFP)

```
user@host> show chassis fpc pic-status
```

```
Slot 1   Online       MPC Type 3
  PIC 2  Online       1X100GE CFP
 Slot 2  Online       DPCE 40x 1GE R EQ
  PIC 0  Online       10x 1GE(LAN) EQ
  PIC 1  Online       10x 1GE(LAN) EQ
  PIC 2  Online       10x 1GE(LAN) EQ
  PIC 3  Online       10x 1GE(LAN) EQ
 Slot 3  Online       MPC Type 3
  PIC 0  Online       1X100GE CFP
  PIC 2  Online       1X100GE CFP
 Slot 4  Online       MPC Type 3
  PIC 0  Online       1X100GE CFP
  PIC 2  Online       1X100GE CFP
 Slot 5  Online       MPC Type 2 3D EQ
  PIC 0  Online       2x 10GE  XFP
  PIC 1  Online       2x 10GE  XFP
  PIC 2  Online       10x 1GE(LAN) SFP
  PIC 3  Online       10x 1GE(LAN) SFP
```

show chassis fpc pic-status (EX Series Switch)

```
user@host> show chassis fpc pic-status
```

```
Slot 1   Online       EX9200 32x10G SFP
  PIC 0  Online       8X10GE SFPP
  PIC 1  Online       8X10GE SFPP
  PIC 2  Online       8X10GE SFPP
```

```
  PIC 3  Online       8X10GE SFPP
Slot 2   Online       EX9200 32x10G SFP
  PIC 0  Online       8X10GE SFPP
  PIC 1  Online       8X10GE SFPP
  PIC 2  Online       8X10GE SFPP
  PIC 3  Online       8X10GE SFPP
```

show chassis fpc (MX960 Router with MPC5EQ)

user@host> **show chassis fpc**

```
                     Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State            (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Online            38     16          0       3584        7         13
  1  Online            31     15          0       2048       17         13
  2  Empty
  3  Online            31     14          0       2048       20         13
  4  Online            34     16          0       3584        7         13
  5  Online            34     16          0       3584        7         13
  6  Empty
  7  Online            32      9          0       2048       18         14
  8  Online            36     19          0       3584        7         13
  9  Online            31      9          0       2048       13         13
 10  Online            35     14          0       3584        7         13
 11  Online            33     11          0       2048       18         14
```

show chassis fpc (MX240, MX480, MX960 with Application Services Modular Line Card)

user@host> **show chassis fpc 1 detail**

```
Slot 1 information:
  State                                 Online
  Temperature                        34
  Total CPU DRAM                   3072 MB
  Total RLDRAM                      259 MB
  Total DDR DRAM                   4864 MB
  Start time:                           2012-06-19 10:51:43 PDT
  Uptime:                               16 minutes, 48 seconds
  Max Power Consumption             550 Watts
```

show chassis fpc (MX240, MX480, MX960, MX2010, MX2020, and MX2008 Universal Routing Platforms with Dynamic Power Management)

```
user@host> show chassis fpc 2 detail
```

```
Slot 2 information:
  State                                 Online
  Temperature                            37
  Total CPU DRAM                       3584 MB
  Total XR2                             275 MB
  Total DDR DRAM                       20352 MB
  Start time:                           2014-07-18 02:51:23 PDT
  Uptime:                               5 minutes, 19 seconds
  Max MPC Base Power Consumption       485 Watts
  Max MIC0 Power Consumption            50 Watts
  Max MIC1 Power Consumption            50 Watts
  Max MPC Total Power Consumption      585 Watts
```

show chassis fpc (MX2010 Router with Fabric Grant Bypass Enabled)

Following is the output of the **show chassis fpc** command on an MX2010 router with Switch Fabric Board (SFB), where fabric grant bypass is enabled by default. All MPCs power on.

```
user@host> show chassis fpc
```

```
Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State            (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Online            34     20          0       2048        9         14
  1  Offline           33     22       0       2048        9         14
  2  Online            33     17          0       2048        9         14
  3  Offline           34     25        0       2048        9         14
  4  Online            32     27          0       2048        9         14
  5  Offline           32     26       0      2048        9         14
  6  Empty
  7  Empty
  8  Empty
  9  Empty
```

show chassis fpc (MX2010 Router with Fabric Grant Bypass Disabled)

Following is the output of the **show chassis fpc** command on an MX2010 router with Switch Fabric Board (SFB), where fabric grant bypass has been disabled. MPC1 (MX-MPC1-3D), MPC2 (MX-MPC2-3D), and the 16-port 10-Gigabit Ethernet MPC (MPC-3D-16XGE-SFP) do not power on after you disable fabric grant bypass and reboot the router. Also, FPC misconfiguration alarms are generated.

```
user@host> show chassis fpc
```

```
 Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State            (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Online            34     20          0       2048        9         14
  1  Offline         ---FPC misconfiguration---
  2  Online            33     17          0       2048        9         14
  3  Offline         ---FPC misconfiguration---
  4  Online            32     27          0       2048        9         14
  5  Offline         ---FPC misconfiguration---
  6  Empty
  7  Empty
  8  Empty
  9  Empty
```

show chassis fpc pic-status (MX2010 Router with Fabric Grant Bypass Enabled)

Following is the output of the **show chassis fpc pic-status** command on an MX2010 router with Switch Fabric Board (SFB), where fabric grant bypass has been enabled by default. All MPCs power on.

```
user@host> show chassis fpc pic-status
```

```
Slot 0   Present      MPCE Type 3 3D
Slot 1   Present      MPC Type 2 3D EQ
Slot 2   Present      MPCE Type 3 3D
Slot 3   Present      MPC 3D 16x 10GE
Slot 4   Present      MPCE Type 3 3D
Slot 5   Present      MPCE Type 1 3D Q
```

show chassis fpc pic-status (MX2010 Router with Fabric Grant Bypass Disabled)

Following is the output of the **show chassis fpc pic-status** command on an MX2010 router with Switch Fabric Board (SFB), where fabric grant bypass has been disabled. MPC1 (MX-MPC1-3D), MPC2 (MX-MPC2-3D), and the 16-port 10-Gigabit Ethernet MPC (MPC-3D-16XGE-SFP) do not power on after you disable fabric grant bypass mode and reboot the router.

```
user@host> show chassis fpc pic-status
```

```
Slot 0   Present      MPCE Type 3 3D
Slot 1   Offline      MPC Type 2 3D EQ
Slot 2   Present      MPCE Type 3 3D
Slot 3   Offline      MPC 3D 16x 10GE
```

```
Slot 4   Present      MPCE Type 3 3D
Slot 5   Offline      MPCE Type 1 3D Q
```

show chassis fpc (MX2020 Routers)

user@host> **show chassis fpc**

```
                     Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State            (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Online            10     12          0       2048       18         13
  1  Online             8      9          0       2048       18         13
  2  Online             7      9          0       2048       18         13
  3  Online             8     10          0       2048       18         13
  4  Online             9     10          0       2048       18         13
  5  Online             8      9          0       2048       18         13
  6  Online             8     10          0       2048       18         13
  7  Online             9      9          0       2048       18         13
  8  Online             9     10          0       2048       18         13
  9  Online            10      9          0       2048       18         13
 10  Online            16      8          0       2048       18         13
 11  Online            11     10          0       2048       18         13
 12  Online            10     10          0       2048       18         13
 13  Online            11      9          0       2048       18         13
 14  Online            12     10          0       2048       18         13
 15  Online            13      9          0       2048       18         13
 16  Online            13      9          0       2048       18         13
 17  Online            12      9          0       2048       18         13
 18  Online            12      8          0       2048       18         13
 19  Online            14     10          0       2048       18         13
```

show chassis fpc (MX10003 Router)

user@host> **show chassis fpc**

```
                     Temp  CPU Utilization (%)   CPU Utilization (%)  Memory
Utilization (%)
Slot State            (C)  Total  Interrupt      1min   5min   15min  DRAM (MB)
Heap     Buffer
  0  Online            59     25          0       25     24     23    3136
12         11
  1  Online            62     29          0       26     24     23    3136
12         11
```

show chassis fpc detail (MX10003 Router)

```
user@host> show chassis fpc detail
```

```
Slot 0 information:
  State                               Online
  Total CPU DRAM                 3136 MB
  Total RLDRAM                    771 MB
  Total DDR DRAM                 18432 MB
  Temperature                       60 degrees C / 140 degrees F
  Start time                           2017-07-19 20:49:58 PDT
  Uptime                               2 hours, 29 minutes, 22 seconds
  Max MPC base power consumption   910 Watts
  Max MIC1 power consumption        95 Watts
  Max MPC total power consumption 1005 Watts
Slot 1 information:
  State                               Online
  Total CPU DRAM                 3136 MB
  Total RLDRAM                    771 MB
  Total DDR DRAM                 18432 MB
  Temperature                       63 degrees C / 145 degrees F
  Start time                           2017-07-19 20:48:01 PDT
  Uptime                               2 hours, 31 minutes, 19 seconds
  Max MPC base power consumption   910 Watts
  Max MIC1 power consumption       155 Watts
  Max MPC total power consumption 1065 Watts
```

show chassis fpc <fpc-slot> (MX10003 Router)

```
user@host> show chassis fpc 0
```

```
                     Temp  CPU Utilization (%)   CPU Utilization (%)  Memory
Utilization (%)
Slot State            (C)  Total  Interrupt      1min   5min   15min  DRAM (MB)
Heap     Buffer
  0  Online            49     26          0       22     22     23    3136
12         11
```

show chassis fpc (MX204 Router)

```
user@host> show chassis fpc
```

```
                    Temp  CPU Utilization (%)   CPU Utilization (%)  Memory
Utilization (%)
Slot State            (C)  Total  Interrupt      1min   5min   15min  DRAM (MB)
Heap     Buffer
  0  Online           Absent   8          0        8      8      8    3136
 8          8
```

show chassis fpc detail (MX204 Router)

```
user@host> show chassis fpc detail
```

```
Slot 0 information:
  State                                 Online
  Total CPU DRAM                  3136 MB
  Total RLDRAM                     257 MB
  Total DDR DRAM                  4096 MB
  Temperature                       Absent
  Start time                            2017-11-05 22:14:01 PST
  Uptime                                2 days, 8 hours, 5 minutes, 55 seconds
```

show chassis fpc <fpc-slot> (MX204 Router)

```
user@host> show chassis fpc 0
```

```
                     Temp  CPU Utilization (%)   CPU Utilization (%)  Memory
Utilization (%)
Slot State            (C)  Total  Interrupt      1min   5min   15min  DRAM (MB)
Heap     Buffer
  0  Online           Absent   8          0        8      8      8    3136
 8          8
```

show chassis fpc (MX2020 Router with MPC5EQ and MPC6E)

```
user@host> show chassis fpc
```

```
                     Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State            (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Online             31     20          0       3584        7         13
  1  Online             28     19          0       2048       17         13
  2  Online             27     10          0       2048       18         14
```

```
  3  Online           26     10          0       2048       13         13
  4  Online           29     19          0       3584        7         13
  5  Online           28     68          0       2048       20         13
  6  Empty
  7  Empty
  8  Empty
  9  Online           36     19          0       3584       10         13
 10  Online           37     26          0       3584       10         13
 11  Empty
 12  Empty
 13  Empty
 14  Empty
 15  Empty
 16  Empty
 17  Online           28     43          0       3584       10         13
 18  Online           29     19          0       3584        7         13
 19  Online           31     19          0       3584        7         13
```

show chassis fpc detail (MX2020 Router with MPC5EQ and MPC6E)

user@host> **show chassis fpc detail**

```
Slot 0 information:
  State                               Online
  Temperature                          31
  Total CPU DRAM                     3584 MB
  Total XR2                           291 MB
  Total DDR DRAM                    24960 MB
  Start time:                         2014-04-22 23:33:19 PDT
  Uptime:                             6 minutes, 24 seconds
  Max Power Consumption               607 Watts
Slot 1 information:
  State                               Online
  Temperature                          28
  Total CPU DRAM                     2048 MB
  Total RLDRAM                       1036 MB
  Total DDR DRAM                     6656 MB
  Start time:                         2014-04-22 23:33:24 PDT
  Uptime:                             6 minutes, 19 seconds
  Max Power Consumption               520 Watts
Slot 2 information:
  State                               Online
  Temperature                          27
```

```
  Total CPU DRAM                  2048 MB
  Total RLDRAM                    1036 MB
  Total DDR DRAM                  11264 MB
  Start time:                          2014-04-22 23:33:34 PDT
  Uptime:                              6 minutes, 9 seconds
  Max Power Consumption            608 Watts
Slot 3 information:
  State                                Online
  Temperature                       26
  Total CPU DRAM                  2048 MB
  Total RLDRAM                     734 MB
  Total DDR DRAM                  3108 MB
  Start time:                          2014-04-22 23:33:39 PDT
  Uptime:                              6 minutes, 4 seconds
  Max Power Consumption            368 Watts
Slot 4 information:
  State                                Online
  Temperature                       29
  Total CPU DRAM                  3584 MB
  Total XR2                        291 MB
  Total DDR DRAM                  24960 MB
  Start time:                          2014-04-22 23:33:51 PDT
  Uptime:                              5 minutes, 52 seconds
  Max Power Consumption            607 Watts
Slot 5 information:
  State                                Online
  Temperature                       28
  Total CPU DRAM                  2048 MB
  Total RLDRAM                    1324 MB
  Total DDR DRAM                  5120 MB
  Start time:                          2014-04-22 23:33:57 PDT
  Uptime:                              5 minutes, 46 seconds
  Max Power Consumption            440 Watts
Slot 9 information:
  State                                Online
 Temperature                       25
  Total CPU DRAM                  3584 MB
  Total XR2                        518 MB
  Total DDR DRAM                  49920 MB
  Start time:                          2014-04-22 23:31:20 PDT
  Uptime:                              8 minutes, 23 seconds
  Max Power Consumption           1130 Watts
Slot 10 information:
  State                                Online
```

```
  Temperature                        32
  Total CPU DRAM                   3584 MB
  Total XR2                         518 MB
  Total DDR DRAM                   49920 MB
  Start time:                           2014-04-22 23:31:25 PDT
  Uptime:                               8 minutes, 18 seconds
  Max Power Consumption            1130 Watts
Slot 17 information:
  State                                 Online
  Temperature                        25
  Total CPU DRAM                   3584 MB
  Total XR2                         518 MB
  Total DDR DRAM                   49920 MB
  Start time:                           2014-04-22 23:31:29 PDT
  Uptime:                               8 minutes, 14 seconds
  Max Power Consumption            1130 Watts
Slot 18 information:
  State                                 Online
  Temperature                        29
  Total CPU DRAM                   3584 MB
  Total XR2                         291 MB
  Total DDR DRAM                   24960 MB
  Start time:                           2014-04-22 23:34:11 PDT
  Uptime:                               5 minutes, 32 seconds
  Max Power Consumption             607 Watts
Slot 19 information:
  State                                 Online
  Temperature                        32
  Total CPU DRAM                   3584 MB
  Total XR2                         291 MB
  Total DDR DRAM                   24960 MB
  Start time:                           2014-04-22 23:34:20 PDT
  Uptime:                               5 minutes, 23 seconds
  Max Power Consumption             607 Watts
```

show chassis fpc pic-status (MX2020 Router with MPC5EQ and MPC6E)

user@host> **show chassis fpc pic-status**

```
Slot 0   Online       MPC5E 3D Q 24XGE+6XLGE
  PIC 0  Online       12X10GE SFPP OTN
  PIC 1  Online       12X10GE SFPP OTN
  PIC 2  Offline      3X40GE QSFPP
  PIC 3  Offline      3X40GE QSFPP
```

```
Slot 1   Online       MPCE Type 3 3D
  PIC 0  Online       10X10GE SFPP
  PIC 2  Online       1X100GE CXP
Slot 2   Online       MPC4E 3D 2CGE+8XGE
  PIC 0  Online       4x10GE SFPP
  PIC 1  Online       1X100GE CFP
  PIC 2  Online       4x10GE SFPP
  PIC 3  Online       1X100GE CFP
Slot 3   Online       MPCE Type 2 3D P
  PIC 0  Online       2x 10GE  XFP
  PIC 1  Online       2x 10GE  XFP
Slot 4   Online       MPC5E 3D Q 2CGE+4XGE
  PIC 0  Online       2X10GE SFPP OTN
  PIC 1  Online       1X100GE CFP2 OTN
  PIC 2  Online       2X10GE SFPP OTN
  PIC 3  Online       1X100GE CFP2 OTN
Slot 5   Online       MPC 3D 16x 10GE
  PIC 0  Online       4x 10GE(LAN) SFP+
  PIC 1  Online       4x 10GE(LAN) SFP+
  PIC 2  Online       4x 10GE(LAN) SFP+
  PIC 3  Online       4x 10GE(LAN) SFP+
Slot 9   Online       MPC6E 3D
  PIC 0  Online       2X100GE CFP2 OTN
  PIC 1  Online       2X100GE CFP2 OTN
Slot 10  Online       MPC6E 3D
  PIC 0  Online       24X10GE SFPP OTN
  PIC 1  Online       4X100GE CXP
Slot 17  Online       MPC6E 3D
  PIC 0  Online       24X10GE SFPP
  PIC 1  Online       4X100GE CXP
Slot 18  Online       MPC5E 3D Q 24XGE+6XLGE
  PIC 0  Offline      12X10GE SFPP OTN
  PIC 1  Offline      12X10GE SFPP OTN
  PIC 2  Online       3X40GE QSFPP
  PIC 3  Online       3X40GE QSFPP
Slot 19  Online       MPC5E 3D Q 24XGE+6XLGE
  PIC 0  Online       12X10GE SFPP OTN
  PIC 1  Offline      12X10GE SFPP OTN
  PIC 2  Offline      3X40GE QSFPP
  PIC 3  Online       3X40GE QSFPP
```

show chassis fpc detail (MX Series Routers)

`user@host>` **show chassis fpc detail 2**

```
Slot 0 information:
  State                                 Online
  Temperature                            36 degrees C / 96 degrees F
  Total CPU DRAM                       1024 MB
  Total RLDRAM                          256 MB
  Total DDR DRAM                       4096 MB
  Start time:                           2009-08-11 21:20:30 PDT
  Uptime:                               2 hours, 8 minutes, 50 seconds
  Max Power Consumption                 335 Watts
```

show chassis fpc detail (EX Series Switches)

`user@host>` **show chassis fpc detail 2**

```
Slot 1 information:
  State                                 Online
  Temperature                            41
  Total CPU DRAM                       2048 MB
  Total RLDRAM                         1036 MB
  Total DDR DRAM                       11264 MB
  Start time:                           2013-04-02 00:04:52 PDT
  Uptime:                               7 days, 9 hours, 47 minutes, 46 seconds
  Max Power Consumption                 610 Watts
Slot 2 information:
  State                                 Online
  Temperature                            41
  Total CPU DRAM                       2048 MB
  Total RLDRAM                         1036 MB
  Total DDR DRAM                       11264 MB
  Start time:                           2013-04-02 00:04:56 PDT
  Uptime:                               7 days, 9 hours, 47 minutes, 42 seconds
  Max Power Consumption                 610 Watts
```

show chassis fpc detail (EX9251 Switches)

`user@switch>` **show chassis fpc detail 2**

```
Slot 0 information:
  State                                   Online
  Total CPU DRAM                       3136 MB
  Total RLDRAM                          257 MB
  Total DDR DRAM                       4096 MB
  Temperature                            Absent
```

```
  Start time                          2018-03-12 14:59:49 PDT
  Uptime                              1 day, 1 hour, 10 minutes, 48 seconds
```

show chassis fpc detail (EX9253 Switches)

```
user@switch> show chassis fpc detail 1
```

```
Slot 1 information:
  State                               Online
  Total CPU DRAM                 3136 MB
  Total RLDRAM                    771 MB
  Total DDR DRAM                 18432 MB
  Temperature                       59 degrees C / 138 degrees F
  Start time                          2018-03-04 14:20:42 PST
  Uptime                              3 days, 10 hours, 40 minutes, 57 seconds
  Max MPC base power consumption   910 Watts
  Max MIC1 power consumption        95 Watts
  Max MPC total power consumption 1005 Watts
```

show chassis fpc (Hardware Not Supported)

```
user@host> show chassis fpc
```

```
show chassis fpc
                    Temp  CPU Utilization (%)   Memory    Utilization (%)
 Slot State           (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Online         -------------------- CPU less FPC --------------------
  1  Present        ------ Hardware Not In Right Slot ------
  2  Online                    0          0         0         0          0
  3  Present        ------ Hardware Not Supported ------
  4  Empty
  5  Empty
  6  Online                    0          0         0         0          0
```

show chassis fpc detail (Hardware Not Supported)

```
user@host> show chassis fpc detail
```

```
Slot 0 information:
  State                               Online
  Total CPU DRAM                      ---- CPU less FPC ----
  Start time                          2006-07-07 03:21:00 UTC
```

```
  Uptime                              27 minutes, 51 seconds
 Slot 1 information:
  State                               Present
  Reason                              --- Hardware Not In Right Slot ---
 Slot 2 information:
  State                               Online
  Total CPU DRAM                   32 MB
  Start time                          2006-07-07 03:20:59 UTC
  Uptime                              27 minutes, 52 seconds
 Slot 3 information:
  State                               Present
  Reason                              --- Hardware Not Supported ---
  Total CPU DRAM                    0 MB
 Slot 6 information:
  State                               Online
  Total CPU DRAM                   32 MB
  Start time                          2006-07-07 03:21:01 UTC
  Uptime                              27 minutes, 50 seconds
```

show chassis fpc pic-status

user@host> **show chassis fpc pic-status**

```
Slot 0 Online
  PIC 1    1x OC-12 ATM, MM
  PIC 2    1x OC-12 ATM, MM
  PIC 3    1x OC-12 ATM, MM
Slot 1 Online
  PIC 0    1x OC-48 SONET, SMIR
Slot 2 Online
  PIC 0    1x OC-192 SONET, SMSR
```

show chassis fpc pic-status (M Series Routers)

user@host> **show chassis fpc pic-status**

```
Slot 1   Online       FPC Type 1
  PIC 0  Present      2x OC-3 ATM, MM- Hardware Error
  PIC 1  Online       4x OC-3 SONET, SMIR
Slot 2   Online       E-FPC Type 2
  PIC 0  Online       4x G/E, 1000 BASE-SX
  PIC 1  Online       2x G/E SFP, 1000 BASE
```

```
  PIC 3  Online       1x Tunnel
Slot 3   Online       E-FPC Type 1
  PIC 0  Online       1x G/E IQ, 1000 BASE
  PIC 2  Online       1x G/E SFP, 1000 BASE
Slot 4   Online       E-FPC Type 2
  PIC 0  Online       4x G/E SFP, 1000 BASE
  PIC 1  Online       4x G/E SFP, 1000 BASE
  PIC 2  Online       4x G/E SFP, 1000 BASE
  PIC 3  Online       4x G/E SFP, 1000 BASE
Slot 5   Online       FPC Type 2
...
```

show chassis fpc pic-status (M120 Router)

user@host> **show chassis fpc pic-status**

```
Slot 1   Online       M120 CFPC 10GE
  PIC 0  Online       1x 10GE(LAN/WAN) XFP
Slot 3   Online       M120 FPC Type 2 (proto)
  PIC 0  Online       2x G/E IQ, 1000 BASE
  PIC 1  Online       4x OC-3 SONET, SMIR
  PIC 2  Online       2x G/E IQ, 1000 BASE
  PIC 3  Online       8x 1GE(LAN), IQ2
Slot 4   Online       M120 FPC Type 3 (proto)
  PIC 0  Online       10x 1GE(LAN), 1000 BASE
Slot 5   Online       M120 FPC Type 1 (proto)
  PIC 0  Present      1x G/E, 1000 BASE-LX- Not Supported
  PIC 1  Online       1x CHOC3 IQ SONET, SMLR
  PIC 2  Online       4x CHDS3 IQ
  PIC 3  Online       1x G/E SFP, 1000 BASE
```

show chassis fpc pic-status (MX240, MX480, and MX960 Routers with Application Services Modular Line Card)

In the following output **Slot 1 and Slot 5** are the Application Services Modular Carrier Cards (AS MCC), **PIC 0** is the Application Services Modular Storage Card (AS MSC), and **PIC 2** is the Application Services Modular Processing Card (AS MXC).

user@host>**show chassis fpc pic-status**

```
Slot 2   Online       MPC Type 1 3D Q
  Slot 1   Online       AS-MCC
  PIC 0  Online       AS-MSC
```

```
  PIC 2  Online       AS-MXC
Slot 4   Offline      MPC 3D 16x 10GE
Slot 5   Offline      AS-MCC
```

show chassis fpc lcc (TX Matrix Router)

`user@host>` **show chassis fpc lcc 0**

```
lcc0-re0:
--------------------------------------------------------------------------
                     Temp  CPU       Utilization (%)  Memory    Utilization (%)
Slot State      (C)  Total  Interrupt     DRAM (MB)       Heap   Buffer
  0  Empty
  1  Online      27      2          0       256         8         44
  2  Online      27      3          0        256        15         44
  3  Empty
  4  Empty
  5  Empty
  6  Empty
  7  Empty
```

show chassis fpc pic-status (TX Matrix Router)

`user@host>` **show chassis fpc pic-status**

```
lcc0-re0:
--------------------------------------------------------------------------
Slot 0   Online       FPC Type 3
  PIC 0  Online       1x OC-192 SM SR1
  PIC 1  Online       1x OC-192 SM SR2
  PIC 2  Online       1x OC-192 SM SR1
  PIC 3  Online       1x Tunnel
Slot 1   Online       FPC Type 2
  PIC 0  Online       1x OC-48 SONET, SMSR
  PIC 1  Online       1x OC-48 SONET, SMSR

lcc1-re0:
--------------------------------------------------------------------------

lcc2-re0:
--------------------------------------------------------------------------
Slot 1   Online       FPC Type 3
  PIC 0  Online       1x OC-192 SM SR1
```

```
Slot 5   Online       FPC Type 2
  PIC 0  Online       1x OC-48 SONET, SMSR
  PIC 1  Online       2x G/E, 1000 BASE-LX
  PIC 2  Online       2x G/E, 1000 BASE-LX
  PIC 3  Online       1x OC-48 SONET, SMSR

lcc3-re0:
--------------------------------------------------------------------------
```

show chassis fpc pic-status lcc (TX Matrix Router)

`user@host>` **show chassis fpc pic-status lcc 0**

```
lcc0-re0:
--------------------------------------------------------------------------
Slot 0   Online       FPC Type 3
  PIC 0  Online       1x OC-192 SM SR2
Slot 1   Online       FPC Type 2
  PIC 0  Online       2x OC-12 ATM2 IQ, MM
  PIC 1  Online       1x OC-48 SONET, SMSR
  PIC 2  Online       1x OC-48 SONET, SMSR
  PIC 3  Online       4x G/E, 1000 BASE-SX
```

show chassis fpc (TX Matrix Plus Router)

`user@host>` **show chassis fpc**

```
lcc0-re0:
--------------------------------------------------------------------------
                     Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State            (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Empty
  1  Online            38      4          0       2048        3         24
  2  Online            43      8          0       2048        6         24
  3  Empty
  4  Online            43      6          0       2048        6         24
  5  Empty
  6  Online            42     13          0       2048        6         24
  7  Online            45      7          0       2048        3         24

lcc2-re0:
--------------------------------------------------------------------------
                     Temp  CPU Utilization (%)   Memory    Utilization (%)
```

```
Slot State            (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Online            42     10          0       2048        6         24
  1  Empty
  2  Online            42     11          0       2048        6         24
  3  Online            40      5          0       2048        3         24
  4  Online            33     26          0       1024        8         49
  5  Empty
  6  Online            43      8          0       2048        6         24
  7  Online            46      6          0       2048        3         24

lcc3-re0:
--------------------------------------------------------------------------
                     Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State            (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Empty
  1  Empty
  2  Online            39     30          0       2048        7         24
  3  Empty
  4  Online            41      8          0       2048        6         24
  5  Online            41     12          0       2048        6         24
  6  Online            40      8          0       2048        6         24
  7  Online            42      4          0       2048        3         24
```

show chassis fpc lcc (TX Matrix Plus Router)

`user@host>` **show chassis fpc lcc 0**

```
lcc0-re0:
--------------------------------------------------------------------------
                     Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State            (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Empty
  1  Online            38      4          0       2048        3         24
  2  Online            43      8          0       2048        6         24
  3  Empty
  4  Online            43      6          0       2048        6         24
  5  Empty
  6  Online            42     14          0       2048        6         24
  7  Online            45      6          0       2048        3         24
```

show chassis fpc detail (TX Matrix Plus Router)

`user@host>` **show chassis fpc details**

```
lcc0-re0:
--------------------------------------------------------------------------
Slot 1 information:
  State                                 Online
  Temperature                        38 degrees C / 100 degrees F
  Total CPU DRAM                   2048 MB
  Total SRAM                         64 MB
  Total SDRAM                      1280 MB
  Start time                            2010-10-04 20:06:22 PDT
  Uptime                                1 hour, 32 minutes, 51 seconds
Slot 2 information:
  State                                 Online
  Temperature                        43 degrees C / 109 degrees F
  Total CPU DRAM                   2048 MB
  Total SRAM                        128 MB
  Total SDRAM                      2560 MB
  Start time                            2010-10-04 20:06:37 PDT
  Uptime                                1 hour, 32 minutes, 36 seconds
Slot 4 information:
  State                                 Online
  Temperature                        43 degrees C / 109 degrees F
  Total CPU DRAM                   2048 MB
  Total SRAM                        128 MB
  Total SDRAM                      2560 MB
  Start time                            2010-10-04 20:06:40 PDT
  Uptime                                1 hour, 32 minutes, 33 seconds
Slot 6 information:
  State                                 Online
  Temperature                        42 degrees C / 107 degrees F
  Total CPU DRAM                   2048 MB
  Total SRAM                        128 MB
  Total SDRAM                      2560 MB
  Start time                            2010-10-04 20:06:42 PDT
  Uptime                                1 hour, 32 minutes, 31 seconds
Slot 7 information:
  State                                 Online
  Temperature                        45 degrees C / 113 degrees F
  Total CPU DRAM                   2048 MB
  Total SRAM                         64 MB
  Total SDRAM                      1280 MB
  Start time                            2010-10-04 20:06:43 PDT
  Uptime                                1 hour, 32 minutes, 30 seconds
```

```
lcc2-re0:
--------------------------------------------------------------------------
Slot 0 information:
  State                                 Online
  Temperature                            42 degrees C / 107 degrees F
  Total CPU DRAM                       2048 MB
  Total SRAM                            128 MB
  Total SDRAM                          2560 MB
  Start time                            2010-10-04 20:06:35 PDT
  Uptime                                1 hour, 32 minutes, 38 seconds
Slot 2 information:
  State                                 Online
  Temperature                            42 degrees C / 107 degrees F
  Total CPU DRAM                       2048 MB
  Total SRAM                            128 MB
  Total SDRAM                          2560 MB
  Start time                            2010-10-04 20:06:37 PDT
  Uptime                                1 hour, 32 minutes, 36 seconds
Slot 3 information:
  State                                 Online
  Temperature                            40 degrees C / 104 degrees F
  Total CPU DRAM                       2048 MB
  Total SRAM                              64 MB
  Total SDRAM                          1280 MB
  Start time                            2010-10-04 20:06:28 PDT
  Uptime                                1 hour, 32 minutes, 45 seconds
Slot 4 information:
  State                                 Online
  Temperature                            33 degrees C / 91 degrees F
  Total CPU DRAM                       1024 MB
  Total SRAM                              64 MB
  Total SDRAM                          1280 MB
  Start time                            2010-10-04 20:08:03 PDT
  Uptime                                1 hour, 31 minutes, 10 seconds
Slot 6 information:
  State                                 Online
  Temperature                            43 degrees C / 109 degrees F
  Total CPU DRAM                       2048 MB
  Total SRAM                            128 MB
  Total SDRAM                          2560 MB
  Start time                            2010-10-04 20:06:44 PDT
  Uptime                                1 hour, 32 minutes, 29 seconds
Slot 7 information:
  State                                 Online
```

```
  Temperature                      46 degrees C / 114 degrees F
  Total CPU DRAM                 2048 MB
  Total SRAM                       64 MB
  Total SDRAM                    1280 MB
  Start time                          2010-10-04 20:06:46 PDT
  Uptime                              1 hour, 32 minutes, 27 seconds

lcc3-re0:
--------------------------------------------------------------------------
Slot 2 information:
  State                               Online
  Temperature                      38 degrees C / 100 degrees F
  Total CPU DRAM                 2048 MB
  Total SRAM                      128 MB
  Total SDRAM                    2560 MB
  Start time                          2010-10-04 20:17:31 PDT
  Uptime                              1 hour, 21 minutes, 42 seconds
Slot 4 information:
  State                               Online
  Temperature                      41 degrees C / 105 degrees F
  Total CPU DRAM                 2048 MB
  Total SRAM                      128 MB
  Total SDRAM                    2560 MB
  Start time                          2010-10-04 20:17:34 PDT
  Uptime                              1 hour, 21 minutes, 39 seconds
Slot 5 information:
  State                               Online
  Temperature                      41 degrees C / 105 degrees F
  Total CPU DRAM                 2048 MB
  Total SRAM                      128 MB
  Total SDRAM                    2560 MB
  Start time                          2010-10-04 20:17:36 PDT
  Uptime                              1 hour, 21 minutes, 37 seconds
Slot 6 information:
  State                               Online
  Temperature                      40 degrees C / 104 degrees F
  Total CPU DRAM                 2048 MB
  Total SRAM                      128 MB
  Total SDRAM                    2560 MB
  Start time                          2010-10-04 20:17:39 PDT
  Uptime                              1 hour, 21 minutes, 34 seconds
Slot 7 information:
  State                               Online
  Temperature                      42 degrees C / 107 degrees F
```

```
  Total CPU DRAM                2048 MB
  Total SRAM                      64 MB
  Total SDRAM                   1280 MB
  Start time                         2010-10-04 20:17:41 PDT
  Uptime                             1 hour, 21 minutes, 32 seconds
```

show chassis fpc pic-status (TX Matrix Plus Router)

user@host> **show chassis fpc pic-status**

```
lcc0-re0:
--------------------------------------------------------------------------
Slot 1   Online       FPC Type 2-ES
  PIC 0  Online       8x 1GE(LAN), IQ2
Slot 2   Online       FPC Type 4-ES
  PIC 0  Online       4x 10GE (LAN/WAN) XFP
Slot 4   Online       FPC Type 4-ES
  PIC 0  Online       4x 10GE (LAN/WAN) XFP
Slot 6   Online       FPC Type 4-ES
  PIC 0  Online       4x 10GE (LAN/WAN) XFP
  PIC 1  Online       4x 10GE (LAN/WAN) XFP
Slot 7   Online       FPC Type 3-ES
  PIC 0  Online       10x 1GE(LAN), 1000 BASE
  PIC 2  Online       1x OC-192 SM SR2
  PIC 3  Online       10x 1GE(LAN), 1000 BASE

lcc2-re0:
--------------------------------------------------------------------------
Slot 0   Online       FPC Type 4-ES
  PIC 0  Online       4x 10GE (LAN/WAN) XFP
Slot 2   Online       FPC Type 4-ES
  PIC 0  Online       4x 10GE (LAN/WAN) XFP
  PIC 1  Online       4x 10GE (LAN/WAN) XFP
Slot 3   Online       FPC Type 2-ES
  PIC 0  Online       8x 1GE(LAN), IQ2
Slot 4   Online       FPC Type 4
  PIC 0  Online       10x10GE(LAN/WAN) SFPP
Slot 6   Online       FPC Type 4-ES
  PIC 0  Online       4x OC-192 SONET XFP
Slot 7   Online       FPC Type 3-ES
  PIC 0  Online       10x 1GE(LAN), 1000 BASE
  PIC 1  Offline      1x 10GE(LAN/WAN) IQ2E
  PIC 2  Online       1x OC-192 SM SR2
```

```
  PIC 3  Online       1x Tunnel

lcc3-re0:
--------------------------------------------------------------------------
Slot 2   Online       FPC Type 4-ES
  PIC 0  Online       10x10GE(LAN/WAN) SFPP
Slot 4   Online       FPC Type 4-ES
  PIC 0  Online       4x OC-192 SONET XFP
Slot 5   Online       FPC Type 4-ES
  PIC 0  Online       4x OC-192 SONET XFP
  PIC 1  Online       4x 10GE (LAN/WAN) XFP
Slot 6   Online       FPC Type 4-ES
  PIC 1  Online       4x 10GE (LAN/WAN) XFP
Slot 7   Online       FPC Type 3-ES
  PIC 0  Online       10x 1GE(LAN), 1000 BASE
  PIC 1  Online       8x 1GE(TYPE3), IQ2E
  PIC 2  Online       4x OC-48 SONET
```

show chassis fpc (T1600 Router)

user@host> **show chassis fpc**

```
                     Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State            (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Empty
  1  Empty
  2  Online            49      3          0       2048        3         24
  3  Online            46      6          0       2048        6         24
  4  Empty
  5  Online            46      5          0       2048        3         24
  6  Empty
  7  Online            44      8          0       1024        7         49
```

show chassis fpc detail (T1600 Router)

user@host> **show chassis fpc detail**

```
show chassis fpc detail
Slot 2 information:
  State                               Online
  Temperature                      49 degrees C / 120 degrees F
  Total CPU DRAM                 2048 MB
```

```
  Total SRAM                      64 MB
  Total SDRAM                   1280 MB
  Start time                         2010-10-04 21:12:52 PDT
  Uptime                             32 minutes, 9 seconds
Slot 3 information:
  State                              Online
  Temperature                     47 degrees C / 116 degrees F
  Total CPU DRAM                2048 MB
  Total SRAM                     128 MB
  Total SDRAM                   2560 MB
  Start time                         2010-10-04 21:13:06 PDT
  Uptime                             31 minutes, 55 seconds
Slot 5 information:
  State                              Online
  Temperature                     46 degrees C / 114 degrees F
  Total CPU DRAM                2048 MB
  Total SRAM                      64 MB
  Total SDRAM                   1280 MB
  Start time                         2010-10-04 21:12:56 PDT
  Uptime                             32 minutes, 5 seconds
Slot 7 information:
  State                              Online
  Temperature                     44 degrees C / 111 degrees F
  Total CPU DRAM                1024 MB
  Total SRAM                      64 MB
  Total SDRAM                   1280 MB
  Start time                         2010-10-04 21:14:34 PDT
  Uptime                             30 minutes, 27 seconds
```

show chassis fpc <fpc-slot> (EX Series Switch)

`user@host>` **show chassis fpc 2**

```
                     Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State            (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  2  Online           40     12          0       2048       19         14
```

show chassis fpc slot (T1600 Router)

`user@host>` **show chassis fpc slot 2**

```
                    Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State           (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  2  Online           49      3          0       2048        3         24
```

show chassis fpc pic-status (T1600 Router)

`user@host>` **show chassis fpc pic-status**

```
Slot 2   Online       FPC Type 1-ES
  PIC 0  Online       Load Type 1
  PIC 1  Online       4x 1GE(LAN), IQ2E
  PIC 3  Online       1x OC-12-3 SFP
Slot 3   Online       FPC Type 4-ES
  PIC 0  Online       4x 10GE (LAN/WAN) XFP
  PIC 1  Online       4x OC-192 SONET XFP
Slot 5   Online       FPC Type 2-ES
  PIC 0  Online       Load Type 2
  PIC 1  Online       8x 1GE(LAN), IQ2E
  PIC 2  Online       8x 1GE(LAN), IQ2E
  PIC 3  Online       1x OC-48-12-3 SFP
Slot 7   Online       FPC Type 4
  PIC 0  Online       4x 10GE (LAN/WAN) XFP
```

show chassis fpc (T4000 Router)

`user@host>` **show chassis fpc**

```
                    Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State           (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Online           48     15          0       2816       21         27
  1  Empty
  2  Empty
  3  Online           51     15          0       2816       21         27
  4  Empty
  5  Online           39      8          0       2048        6         23
  6  Online           49     15          0       2816       21         27
  7  Empty
```

show chassis fpc detail (T4000 Router)

user@host> **show chassis fpc detail**

```
Slot 0 information:
  State                               Online
  Temperature                      48 degrees C / 118 degrees F
  Total CPU DRAM                  2816 MB
  Total SRAM                      1554 MB
  Total SDRAM                     10752 MB
  Start time                          2012-02-09 22:56:25 PST
  Uptime                              2 hours, 40 minutes, 52 seconds
Slot 3 information:
  State                               Online
  Temperature                      51 degrees C / 123 degrees F
  Total CPU DRAM                  2816 MB
  Total SRAM                      1554 MB
  Total SDRAM                     10752 MB
  Start time                          2012-02-09 22:56:22 PST
  Uptime                              2 hours, 40 minutes, 55 seconds
Slot 5 information:
  State                               Online
  Temperature                      39 degrees C / 102 degrees F
  Total CPU DRAM                  2048 MB
  Total SRAM                       128 MB
  Total SDRAM                     2560 MB
  Start time                          2012-02-09 22:51:27 PST
  Uptime                              2 hours, 45 minutes, 50 seconds
Slot 6 information:
  State                               Online
  Temperature                      49 degrees C / 120 degrees F
  Total CPU DRAM                  2816 MB
  Total SRAM                      1554 MB
  Total SDRAM                     10752 MB
  Start time                          2012-02-09 22:56:29 PST
  Uptime                              2 hours, 40 minutes, 48 seconds
```

show chassis fpc pic-status (T4000 Router)

user@host> **show chassis fpc pic-status**

```
Slot 0   Online       FPC Type 5-3D
  PIC 0  Online       12x10GE (LAN/WAN) SFPP
  PIC 1  Online       12x10GE (LAN/WAN) SFPP
Slot 3   Online       FPC Type 5-3D
```

```
  PIC 0  Online       1x100GE
  PIC 1  Online       12x10GE (LAN/WAN) SFPP
Slot 5   Online       FPC Type 4-ES
  PIC 0  Online       100GE
  PIC 1  Online       100GE CFP
Slot 6   Online       FPC Type 5-3D
  PIC 0  Online       12x10GE (LAN/WAN) SFPP
  PIC 1  Online       12x10GE (LAN/WAN) SFPP
```

show chassis fpc (QFX Series and OCX Series)

user@switch> **show chassis fpc**

```
Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State            (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
0  Online            26      2          0       2820        0         49
```

show chassis fpc detail (QFX3500 Switches)

user@switch> **show chassis fpc detail**

```
Slot 0 information:
  State                               Online
  Temperature                      28 degrees C / 82 degrees F
  Total CPU DRAM                 2820 MB
  Total SRAM                        0 MB
  Total SDRAM                       0 MB
  Start time                          2010-09-20 01:34:13 PDT
  Uptime                              3 days, 3 hours, 31 minutes, 48 seconds
```

show chassis fpc pic-status (QFX3500 Switches)

user@switch> **show chassis fpc pic-status**

```
Slot 0   Online       QFX 48x10G 4x40G Switch
  PIC 0  Online       48x 10G-SFP+
  PIC 1  Online       15x 10G-SFP+
```

show chassis fpc interconnect-device (QFabric System)

user@switch> **show chassis fpc interconnect-device interconnect1**

```
FPC status:
                    Temp
Slot State           (C)
  0  Online            0
  1  Online            0
  2  Online            0
  3  Online            0
  4  Online            0
  5  Online            0
  6  Online            0
  7  Online            0
  8  Online            0
  9  Online            0
 10  Online            0
 11  Online            0
 12  Online            0
 13  Online            0
 14  Online            0
 15  Online            0
```

show chassis fpc interconnect-device (QFabric System)

`user@switch>` **show chassis fpc interconnect-device interconnect1 3**

```
FPC status:
                    Temp
Slot State           (C)
  3  Online            0
```

show chassis fpc interconnect-device detail (QFabric System)

`user@switch>` **show chassis fpc interconnect-device interconnect1 3 detail**

```
Slot 3 information:
  State                               Online
  Temperature                      0 degrees C / 32 degrees F
  Start time                          2011-08-18 10:45:04 PDT
  Uptime                              1 minute, 49 seconds
```

show chassis fpc pic-status interconnect-device (QFabric System)

`user@switch>` **show chassis fpc pic-status interconnect-device interconnect1**

```
Slot 0   Online       QFX 16-port QSFP+ Front Card
  PIC 0  Online       16x 40G-QSFP+
  PIC 1  Online       16x 40G-GE
Slot 1   Online       QFX 16-port QSFP+ Front Card
  PIC 0  Online       16x 40G-QSFP+
 PIC 1  Online       16x 40G-GE
Slot 2   Online       QFX 16-port QSFP+ Front Card
  PIC 0  Online       16x 40G-QSFP+
  PIC 1  Online       16x 40G-GE
Slot 3   Online       QFX 16-port QSFP+ Front Card
  PIC 0  Online       16x 40G-QSFP+
  PIC 1  Online       16x 40G-GE
Slot 4   Online       QFX 16-port QSFP+ Front Card
  PIC 0  Online       16x 40G-QSFP+
  PIC 1  Online       16x 40G-GE
Slot 5   Online       QFX 16-port QSFP+ Front Card
  PIC 0  Online       16x 40G-QSFP+
  PIC 1  Online       16x 40G-GE
Slot 6   Online       QFX 16-port QSFP+ Front Card
  PIC 0  Online       16x 40G-QSFP+
  PIC 1  Online       16x 40G-GE
Slot 7   Online       QFX 16-port QSFP+ Front Card
  PIC 0  Online       16x 40G-QSFP+
  PIC 1  Online       16x 40G-GE
Slot 8   Online       QFX Fabric Rear Card
  PIC 0  Online       16x 40G-GE
Slot 9   Online       QFX Fabric Rear Card
  PIC 0  Online       16x 40G-GE
Slot 10  Online       QFX Fabric Rear Card
  PIC 0  Online       16x 40G-GE
Slot 11  Online       QFX Fabric Rear Card
  PIC 0  Online       16x 40G-GE
Slot 12  Online       QFX Fabric Rear Card
  PIC 0  Online       16x 40G-GE
Slot 13  Online       QFX Fabric Rear Card
  PIC 0  Online       16x 40G-GE
Slot 14  Online       QFX Fabric Rear Card
  PIC 0  Online       16x 40G-GE
Slot 15  Online       QFX Fabric Rear Card
  PIC 0  Online       16x 40G-GE
```

show chassis fpc pic-status node-device (QFabric System)

`user@switch>` **show chassis fpc pic-status node-device node1**

```
Slot node1 Online      QFX 48x10G 4x40G Switch
  PIC 0  Online       48x 10G-SFP+
  PIC 1  Online       4x 40G-QSFP+
```

show chassis fpc (PTX5000 Packet Transport Router)

`user@host>` **show chassis fpc**

```
                    Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State           (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Empty
  1  Empty
  2  Online           50      6          0       2816        5         27
  3  Empty
  4  Empty
  5  Online           48      9          0       2816        5         27
  6  Empty
  7  Online           49      8          0       2816        5         27
```

show chassis fpc detail (PTX5000 Packet Transport Router)

`user@host>` **show chassis fpc detail**

```
Slot 2 information:
  State                               Online
  Temperature                      35 degrees C / 95 degrees F (PMB)
  Temperature                      35 degrees C / 95 degrees F (Intake)
  Temperature                      50 degrees C / 122 degrees F (Exhaust A)
  Temperature                      54 degrees C / 129 degrees F (Exhaust B)
  Temperature                      54 degrees C / 129 degrees F (TL0)
  Temperature                      52 degrees C / 125 degrees F (TQ0)
  Temperature                      61 degrees C / 141 degrees F (TL1)
  Temperature                      58 degrees C / 136 degrees F (TQ1)
  Temperature                      57 degrees C / 134 degrees F (TL2)
  Temperature                      58 degrees C / 136 degrees F (TQ2)
  Temperature                      62 degrees C / 143 degrees F (TL3)
  Temperature                      61 degrees C / 141 degrees F (TQ3)
  Total CPU DRAM                 2816 MB
  Total SRAM                        0 MB
  Total SDRAM                       0 MB
  Start time                          2012-01-12 12:05:42 PST
  Uptime                              3 hours, 14 minutes, 7 seconds
```

```
Slot 5 information:
  State                               Online
  Temperature                      35 degrees C / 95 degrees F (PMB)
  Temperature                      34 degrees C / 93 degrees F (Intake)
  Temperature                      48 degrees C / 118 degrees F (Exhaust A)
  Temperature                      53 degrees C / 127 degrees F (Exhaust B)
  Temperature                      54 degrees C / 129 degrees F (TL0)
  Temperature                      52 degrees C / 125 degrees F (TQ0)
  Temperature                      69 degrees C / 156 degrees F (TL1)
  Temperature                      56 degrees C / 132 degrees F (TQ1)
  Temperature                      54 degrees C / 129 degrees F (TL2)
  Temperature                      56 degrees C / 132 degrees F (TQ2)
  Temperature                      59 degrees C / 138 degrees F (TL3)
  Temperature                      60 degrees C / 140 degrees F (TQ3)
  Total CPU DRAM                 2816 MB
  Total SRAM                        0 MB
  Total SDRAM                       0 MB
  Start time                          2012-01-12 12:05:43 PST
  Uptime                              3 hours, 14 minutes, 6 seconds
Slot 7 information:
  State                               Online
  Temperature                      35 degrees C / 95 degrees F (PMB)
  Temperature                      33 degrees C / 91 degrees F (Intake)
  Temperature                      50 degrees C / 122 degrees F (Exhaust A)
  Temperature                      55 degrees C / 131 degrees F (Exhaust B)
  Temperature                      56 degrees C / 132 degrees F (TL0)
  Temperature                      56 degrees C / 132 degrees F (TQ0)
  Temperature                      61 degrees C / 141 degrees F (TL1)
  Temperature                      57 degrees C / 134 degrees F (TQ1)
  Temperature                      55 degrees C / 131 degrees F (TL2)
  Temperature                      59 degrees C / 138 degrees F (TQ2)
  Temperature                      62 degrees C / 143 degrees F (TL3)
  Temperature                      62 degrees C / 143 degrees F (TQ3)
  Total CPU DRAM                 2816 MB
  Total SRAM                        0 MB
  Total SDRAM                       0 MB
  Start time                          2012-01-12 12:05:44 PST
  Uptime                              3 hours, 14 minutes, 5 seconds
```

show chassis fpc pic-status (PTX5000 Packet Transport Router)

`user@host>` **show chassis fpc pic-status**

```
Slot 2   Online       FPC
  PIC 0  Online       24x 10GE(LAN) SFP+
  PIC 1  Online       24x 10GE(LAN) SFP+
Slot 5   Online       FPC
  PIC 0  Online       24x 10GE(LAN) SFP+
  PIC 1  Online       2x 40GE CFP
Slot 7   Online       FPC
  PIC 0  Online       24x 10GE(LAN) SFP+
  PIC 1  Online       2x 40GE CFP
```

show chassis fpc (PTX10008 Router)

user@host> **show chassis fpc**

```
                     Temp  CPU Utilization (%)   CPU Utilization (%)  Memory
Utilization (%)
Slot State            (C)  Total  Interrupt      1min   5min   15min  DRAM (MB)
Heap     Buffer
  0  Online            38     26          2       26     26     26    1953
20         32
  1  Empty
  2  Empty
  3  Empty
  4  Empty
  5  Online            67     26          2       26     26     26    1953
25         32
  6  Online            52     26          2       26     26     26    1953
25         32
  7  Empty
```

show chassis fpc detail (PTX10008 Router)

user@host> **show chassis fpc detail**

```
Slot 6 information:
  State                               Online
  Total CPU DRAM                 8192 MB
  Temperature                      42 degrees C / 107 degrees F
  Start time                          2018-09-17 02:42:16 PDT
  Uptime                              53 minutes, 40 seconds
  Max power consumption            675 Watts
Slot 7 information:
```

```
  State                                 Online
  Total CPU DRAM                    8192 MB
  Temperature                         51 degrees C / 123 degrees F
  Start time                            2018-09-17 02:42:26 PDT
  Uptime                                53 minutes, 30 seconds
  Max power consumption              1150 Watts
```

show chassis fpc (PTX10016 Router)

user@host> **show chassis fpc**

```
                     Temp  CPU Utilization (%)   CPU Utilization (%)  Memory
Utilization (%)
Slot State            (C)  Total  Interrupt      1min   5min   15min  DRAM (MB)
Heap     Buffer
  0  Empty
  1  Online            36     27          2       27     27     27    1953
22         32
  2  Empty
  3  Online            36     27          2       27     27     27    1953
22         32
  4  Empty
  5  Empty
  6  Online            35     27          2       27     27     27    1953
22         32
  7  Empty
  8  Online            34     27          2       27     27     27    1953
22         32
  9  Online            46     24          2       24     24     24    1953
26         32
 10  Empty
 11  Empty
 12  Empty
 13  Empty
 14  Empty
 15  Empty
```

show chassis fpc detail (PTX10016 Router)

user@host> **show chassis fpc detail**

```
Slot 0 information:
  State                              Online
  Total CPU DRAM                  8192 MB
  Temperature                       44 degrees C / 111 degrees F
  Start time                         2018-09-10 07:01:09 PDT
  Uptime                             6 days, 23 hours, 17 minutes, 9 seconds
  Max power consumption           1150 Watts
Slot 4 information:
  State                              Online
  Total CPU DRAM                  8192 MB
  Temperature                       40 degrees C / 104 degrees F
  Start time                         2018-09-10 07:01:17 PDT
  Uptime                             6 days, 23 hours, 17 minutes, 1 second
  Max power consumption           1150 Watts
Slot 6 information:
  State                              Online
  Total CPU DRAM                  8192 MB
  Temperature                       42 degrees C / 107 degrees F
  Start time                         2018-09-10 07:01:27 PDT
  Uptime                             6 days, 23 hours, 16 minutes, 51 seconds
  Max power consumption           1150 Watts
Slot 7 information:
  State                              Online
  Total CPU DRAM                  8192 MB
  Temperature                       41 degrees C / 105 degrees F
  Start time                         2018-09-10 07:01:32 PDT
  Uptime                             6 days, 23 hours, 16 minutes, 46 seconds
  Max power consumption           1150 Watts
Slot 9 information:
  State                              Online
  Total CPU DRAM                 16384 MB
  Temperature                       42 degrees C / 107 degrees F
  Start time                         2018-09-10 07:01:45 PDT
  Uptime                             6 days, 23 hours, 16 minutes, 33 seconds
  Max power consumption           1150 Watts
Slot 10 information:
  State                              Online
  Total CPU DRAM                  8192 MB
  Temperature                       41 degrees C / 105 degrees F
  Start time                         2018-09-10 07:01:46 PDT
  Uptime                             6 days, 23 hours, 16 minutes, 32 seconds
  Max power consumption           1150 Watts
Slot 11 information:
```

```
  State                               Online
  Total CPU DRAM                  16384 MB
  Temperature                       40 degrees C / 104 degrees F
  Start time                          2018-09-10 07:01:55 PDT
  Uptime                              6 days, 23 hours, 16 minutes, 23 seconds
  Max power consumption           1150 Watts
Slot 14 information:
  State                               Online
  Total CPU DRAM                  8192 MB
  Temperature                       42 degrees C / 107 degrees F
  Start time                          2018-09-10 07:01:54 PDT
  Uptime                              6 days, 23 hours, 16 minutes, 24 seconds
  Max power consumption           1150 Watts
Slot 15 information:
  State                               Online
  Total CPU DRAM                  16384 MB
  Temperature                       41 degrees C / 105 degrees F
  Start time                          2018-09-10 07:02:03 PDT
  Uptime                              6 days, 23 hours, 16 minutes, 15 seconds
  Max power consumption           1150 Watts
```

show chassis fpc (ACX2000 Universal Metro Router)

`user@host>` **show chassis fpc**

```
                     Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State            (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Online           61     17          6       512        21         37
```

show chassis fpc 0 (ACX2000 Universal Metro Router)

`user@host>` **show chassis fpc 0**

```
                     Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State            (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Online           61     17          6       512        21         37
```

show chassis fpc detail (ACX2000 Universal Metro Router)

`user@host>` **show chassis fpc detail**

```
Slot 0 information:
  State                               Online
  Temperature                      61 degrees C / 141 degrees F
  Total CPU DRAM                  512 MB
  Start time                          2012-05-29 02:52:06 PDT
  Uptime                              27 minutes, 17 seconds
```

show chassis fpc pic-status (ACX2000 Universal Metro Router)

user@host> **show chassis fpc pic-status**

```
Slot 0   Online
  PIC 0  Online       16x CHE1T1, RJ48
  PIC 1  Online       8x 1GE(LAN) RJ45
  PIC 2  Online       2x 1GE(LAN) SFP
  PIC 3  Online       2x 10GE(LAN) SFP+
```

show chassis FPC 1 (MX Routers with Media Services Blade [MSB])

user@switch> **show chassis fpc 1**

```
                    Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State            (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  1  Online            34      5          0       3072        5         13
```

show chassis FPC 1 detail (MX Routers with Media Services Blade [MSB])

user@switch> **show chassis fpc 1 detail**

```
Slot 1 information:
  State                               Online
  Temperature                       34
  Total CPU DRAM                  3072 MB
  Total RLDRAM                     259 MB
  Total DDR DRAM                  4864 MB
  Start time:                         2012-06-19 10:51:43 PDT
  Uptime:                             16 minutes, 48 seconds
  Max Power Consumption            550 Watts
```

Sample Output

show chassis fpc (Node Slicing)

user@router>show chassis fpc

```
                     Temp  CPU Utilization (%)   CPU Utilization (%)  Memory
Utilization (%)
Slot State            (C)  Total  Interrupt      1min   5min   15min  DRAM (MB)
Heap     Buffer    GNF
  0  Online            45     12          0       12     12     12    3584
 6         25       3
  1  Online            57     22          0       20     20     20    3136
16         22       2
  2  Online            50     19          0       17     17     16    3584
 6         25       3
  3  Online            28     10          0       11     11     11    2048
10         20       6
  4  Online            42     20          0       20     19     19    3584
 8         25       6
  5  Online            58     22          0       21     20     20    3136
16         22       4
  6  Online            49     17          0       15     16     16    3136
13         20       1
  7  Online            44     11          0       10     10     10    3584
 6         25       5
  8  Online            40     19          0       18     18     18    3584
 8         25       5
  9  Online            44     19          0       20     20     20    3584
 8         25       5
```

Sample Output

show chassis fpc pic-status (Node Slicing)

`user@router>` **show chassis fpc pic-status**

```
Slot 0   Online       MPC5E 3D 24XGE+6XLGE                        GNF 3
  PIC 0  Online       12X10GE SFPP OTN
  PIC 1  Offline      12X10GE SFPP OTN
  PIC 2  Offline      3X40GE QSFPP
```

```
  PIC 3  Online       3X40GE QSFPP
Slot 1   Online       MPC9E 3D                                        GNF 2
  PIC 1  Online       MRATE-12xQSFPP-XGE-XLGE-CGE
Slot 2   Online       MPC5E 3D Q 2CGE+4XGE                            GNF 3
  PIC 0  Online       2X10GE SFPP OTN
  PIC 1  Online       1X100GE CFP2 OTN
  PIC 2  Online       2X10GE SFPP OTN
  PIC 3  Online       1X100GE CFP2 OTN
Slot 3   Online       MPCE Type 2 3D EQ                               GNF 6
Slot 4   Online       MPC6E 3D                                        GNF 6
  PIC 0  Online       24X10GE SFPP
  PIC 1  Online       2X100GE CFP2 OTN
Slot 5   Online       MPC9E 3D                                        GNF 4
  PIC 0  Online       MRATE-12xQSFPP-XGE-XLGE-CGE
Slot 6   Online       MPC7E 3D MRATE-12xQSFPP-XGE-XLGE-CGE            GNF 1
  PIC 0  Online       MRATE-6xQSFPP-XGE-XLGE-CGE
  PIC 1  Online       MRATE-6xQSFPP-XGE-XLGE-CGE
Slot 7   Online       MPC5E 3D 2CGE+4XGE                              GNF 5
  PIC 0  Online       2X10GE SFPP OTN
  PIC 1  Online       1X100GE CFP2 OTN
  PIC 2  Online       2X10GE SFPP OTN
  PIC 3  Online       1X100GE CFP2 OTN
Slot 8   Online       MPC6E 3D                                        GNF 5
  PIC 0  Online       24X10GE SFPP OTN
Slot 9   Online       MPC6E 3D                                        GNF 5
  PIC 0  Online       24X10GE SFPP
  PIC 1  Online       4X100GE CXP
```

show chassis fpc pic-status (PTX5000 Router)

user@router>show chassis fpc pic-status

```
Slot 0   Online       FPC-P2
  PIC 0  Online       Universal pic 96x10_24x40
  PIC 1  Online       Universal pic 96x10_24x40
Slot 1   Online       FPC-P2
  PIC 1  Online       Universal pic 96x10_24x40
```

show chassis fpc (PTX10003-80C)

`user@router>` **show chassis fpc**

```
                    Temp  CPU Utilization (%)   CPU Utilization (%)  Memory
Utilization (%)
Slot State           (C)  Total  Interrupt      1min   5min   15min  DRAM (MB)
Heap     Buffer
  0  Online
  1  Online
  2  Online
  3  Online
```

Starting in Junos OS Evolved Release 19.1R1, on PTX10003-80C and PTX10003-160C devices, the **show chassis fpc** command does not display the Temperature, CPU Utilization, and Memory Utilization information, as these are fixed configuration routers and the FPCs in these routers do not have dedicated CPUs.

Starting in Junos OS Evolved Release 19.1R1, on PTX10003-80C and PTX10003-160C devices, if you have configured a field-replaceable unit (FRU) to be powered off and rebooted the device, the **show chassis fpc** output will display the state of the FRU as Present and reason as **Configured power off** (see the following output:

`user@router>` **show chassis fpc**

```
                    Temp  CPU Utilization (%)   CPU Utilization (%)  Memory
Utilization (%)
Slot State           (C)  Total  Interrupt      1min   5min   15min  DRAM (MB)
Heap     Buffer
  0  Present         ---Configured power off---
  1  Online
```

Starting in Junos OS Evolved Release 19.1R1, the **show chassis fpc** output incorrectly displays the FPC offline reason as **Offlined by cli command** when the FPC becomes offline because of an fpc major or fatal error. This behavior is applicable only if you have configured the offline action for major or fatal error severity, by using the command **set chassis error major action offline**. See the output below:

`user@router>` **show chassis fpc**

```
                    Temp  CPU Utilization (%)   CPU Utilization (%)  Memory
Utilization (%)
Slot State           (C)  Total  Interrupt      1min   5min   15min  DRAM (MB)
Heap     Buffer
  0  Offline         ---Offlined due to major errors---
```

show chassis fpc errors

Syntax

```
show chassis fpc errors;
```

Release Information

Command introduced in Junos OS Release 12.3 for the T Series routers.
Command introduced in Junos OS Release 13.3 for the PTX Series routers.
Command introduced in Junos OS Release 14.2 for the MX240, MX480, MX960, and MX2020 routers.

Description

Display chassis error information including FPC number, severity of error, number of error occurred, cleared, threshold, and corresponding action.

Error Severity Level	Default Threshold	Default Action
Fatal	1	Restart the FPC
Major	1	Get the current state of the FPC and raise an alarm.
Minor	10	Write a log for the event.

NOTE: The MX104 router does not support the **show chassis fpc error** CLI command. This command is not available in MX104 in the Junos OS releases 13.3R7, 15.1R2, 14.1R5, 14.2R4, 13.3R8, and later.

Options

detail—Display the entire list of errors that contribute to a failure for all the FPCs.

fpc-slot—Display the list of errors pertaining to the FPC installed in a particular slot

Required Privilege Level

view

RELATED DOCUMENTATION

fpc error | 381

List of Sample Output

show chassis fpc errors on page 1565
show chassis fpc errors (MX480 Router) on page 1566

Output Fields

Table 79 on page 1565 lists the output fields for the **show chassis fpc errors** command. Output fields are listed in the approximate order in which they appear.

Table 79: show chassis fpc errors Output Fields

Field Name	Field Description
FPC	The FPC number.
Level	The severity of the error. It can be configured as follows: • **fatal**—Fatal error on FPC • **major**—Major error on FPC • **minor**—Minor error on FPC
Occurred	Number of error instances occurred.
Cleared	Number of error instances cleared.
Threshold	Configured threshold value. The associated detection and recovery actions are triggered when this threshold value is crossed.
Action	The detection and recovery actions that are triggered when the threshold value is crossed. • Restart the FPC. • Get the current state of the FPC and raise an alarm. • Write a log for the event.

Sample Output

show chassis fpc errors

`user@host>` **show chassis fpc errors**

```
FPC  Level Occurred Cleared Threshold Action-Taken Action
0   Minor      0       0     10          LOG|
    Major      0       0      1        GET STATE|ALARM|
```

```
    Fatal      0      0      1         RESET
    Pfe-State: pfe-0 -ENABLED | pfe-1 -ENABLED | pfe-2 -ENABLED | pfe-3 -ENABLED
| pfe-4 -ENABLED | pfe-5 -ENABLED | pfe-6 -ENABLED | pfe-7 -ENABLED |
1   Minor      0      0     10          LOG|
    Major      0      0      1        GET STATE|ALARM|
    Fatal      0      0      1         RESET
    Pfe-State: pfe-0 -ENABLED | pfe-1 -ENABLED | pfe-2 -ENABLED | pfe-3 -ENABLED
| pfe-4 -ENABLED | pfe-5 -ENABLED | pfe-6 -ENABLED | pfe-7 -ENABLED |
2   Minor      0      0     10          LOG|
    Major      0      0      1        GET STATE|ALARM|
    Fatal      0      0      1         RESET
    Pfe-State: pfe-0 -ENABLED | pfe-1 -ENABLED | pfe-2 -ENABLED | pfe-3 -ENABLED
| pfe-4 -ENABLED | pfe-5 -ENABLED | pfe-6 -ENABLED | pfe-7 -ENABLED |
4   Minor      0      0     10          LOG|
    Major      0      0      1        GET STATE|ALARM|
    Fatal      0      0      1         RESET
    Pfe-State: pfe-0 -ENABLED | pfe-1 -ENABLED | pfe-2 -ENABLED | pfe-3 -ENABLED
| pfe-4 -ENABLED | pfe-5 -ENABLED | pfe-6 -ENABLED | pfe-7 -ENABLED |
5   Minor      0      0     10          LOG|
    Major      0      0      1        GET STATE|ALARM|
    Fatal      0      0      1         RESET
    Pfe-State: pfe-0 -ENABLED | pfe-1 -ENABLED | pfe-2 -ENABLED | pfe-3 -ENABLED
| pfe-4 -ENABLED | pfe-5 -ENABLED | pfe-6 -ENABLED | pfe-7 -ENABLED |
6   Minor      0      0     10          LOG|
    Major      0      0      1        GET STATE|ALARM|
    Fatal      0      0      1         RESET
    Pfe-State: pfe-0 -ENABLED | pfe-1 -ENABLED | pfe-2 -ENABLED | pfe-3 -ENABLED
| pfe-4 -ENABLED | pfe-5 -ENABLED | pfe-6 -ENABLED | pfe-7 -ENABLED |
7   Minor      0      0     10          LOG|
    Major      0      0      1        GET STATE|ALARM|
    Fatal      0      0      1         RESET
    Pfe-State: pfe-0 -ENABLED | pfe-1 -ENABLED | pfe-2 -ENABLED | pfe-3 -ENABLED
| pfe-4 -ENABLED | pfe-5 -ENABLED | pfe-6 -ENABLED | pfe-7 -ENABLED |
```

show chassis fpc errors (MX480 Router)

`user@host>` **show chassis fpc errors**

```
FPC  Level Occurred Cleared Threshold Action-Taken Action
1   Minor      0      0     10      0   LOG|
    Major      0      0      1      0 GET STATE|CM ALARM|DISABLE PFE
    Fatal      0      0      1      0  RESET
    Pfe-State: pfe-0 -ENABLED | pfe-1 -ENABLED | pfe-2 -ENABLED | pfe-3 -ENABLED
```

```
| pfe-4 -ENABLED | pfe-5 -ENABLED | pfe-6 -ENABLED | pfe-7 -ENABLED |
2   Minor      0      0     10      0   LOG|
    Major      0      0      1      0 GET STATE|CM ALARM|DISABLE PFE
    Fatal      0      0      1      0  RESET
    Pfe-State: pfe-0 -ENABLED | pfe-1 -ENABLED | pfe-2 -ENABLED | pfe-3 -ENABLED
| pfe-4 -ENABLED | pfe-5 -ENABLED | pfe-6 -ENABLED | pfe-7 -ENABLED |
3   Minor      0      0     10      0   LOG|
    Major      0      0      1      0 GET STATE|CM ALARM|DISABLE PFE
    Fatal      0      0      1      0  RESET
    Pfe-State: pfe-0 -ENABLED | pfe-1 -ENABLED | pfe-2 -ENABLED | pfe-3 -ENABLED
| pfe-4 -ENABLED | pfe-5 -ENABLED | pfe-6 -ENABLED | pfe-7 -ENABLED |
5   Minor      0      0     10      0   LOG|
    Major      0      0      1      0 GET STATE|CM ALARM|DISABLE PFE
    Fatal      0      0      1      0  RESET
    Pfe-State: pfe-0 -ENABLED | pfe-1 -ENABLED | pfe-2 -ENABLED | pfe-3 -ENABLED
| pfe-4 -ENABLED | pfe-5 -ENABLED | pfe-6 -ENABLED | pfe-7 -ENABLED |
```

show chassis fpc-feb-connectivity

Syntax

```
show chassis fpc-feb-connectivity
```

Release Information

Command introduced in Junos OS Release 8.0.

Description

(M120 router only) Display the Flexible PIC Concentrator (FPC) and Forwarding Engine Board (FEB) mapping and their respective states.

Options

This command has no options.

Required Privilege Level

view

RELATED DOCUMENTATION

- request chassis fpc | 623
- show chassis fpc | 1507
- show chassis fabric fpcs | 1271
- Resynchronizing FPC Sequence Numbers with Active FPCs when an FPC Comes Online | 196
- *MX960 Flexible PIC Concentrator Description*

List of Sample Output

show chassis fpc-feb-connectivity on page 1570

Output Fields

Table 80 on page 1568 lists the output fields for the **show chassis fpc-feb-connectivity** command. Output fields are listed in the approximate order in which they appear.

Table 80: show chassis fpc-feb-connectivity Output Fields

Field Name	Field Description
FPC	Slot number of the Flexible PIC Concentrator (FPC).

Table 80: show chassis fpc-feb-connectivity Output Fields *(continued)*

Field Name	Field Description
FPC type	Type of FPC: **Type 1**, **Type 2**, **Type 3**, or **cFPC**.
FPC state	State of the FPC. State can be any of the following: • **Announce offline**—Intermediate state where FPC is going down but is not offline and the Chassis manager acknowledges that the FPC is in the process of going offline. • **Announce online**—Intermediate state where FPC is coming up but is not online and the Chassis manager acknowledges that the FPC is in the process of coming online. • **Empty**—No FPC is present. • **Offline**—FPC is powered down. • **Online**—FPC is online and running. • **Present**—The chassis process has detected the FPC, but the FPC is either not supported by the current version of the Junos OS or FPC is coming up but is not online. • **Ready**—FPC is in transition state.
Connected FEB	Slot number of the Forwarding Engine Board (FEB) connected to the FPC or **None** if the FPC is not connected to a FEB.
FEB state	State of the FEB. State can be any of the following: • **Announce offline**—Intermediate state where FEB is going down but is not offline and the Chassis manager acknowledges that the FEB is in the process of going offline. • **Announce online**—Intermediate state where FEB is coming up but is not online and the Chassis manager acknowledges that the FEB is in the process of coming online. • **Empty**—No FEB is present. • **Offline**—FEB is powered down. • **Online**—FEB is online and running. • **Present**—The chassis process has detected the FEB, but the FEB is either not supported by the current version of the Junos OS or FEB is coming up but is not online. • **Ready**—FEB is in transition state.
Link status	Status of the link connecting the R-FEB and R-FPC: • **Error** • **Misconfiguration**—Configuration between the R-FEB and the F-FPC is incorrect. • **OK**

Sample Output

show chassis fpc-feb-connectivity

`user@host>` **show chassis fpc-feb-connectivity**

```
FPC  FPC type  FPC state       Connected FEB  FEB state       Link status
0    cFPC      Online          0              Empty
1    cFPC      Online          1              Online          OK
2    Type 3    Online          3              Online          OK
3    Type 2    Online          None
4    Type 1    Online          4              Online          OK
5    Type 3    Online          None
    FIFO errors: 0, HS link CRC errors: 0, MTU errors: 0, Resource errors: 0
  Egress queues: 8 supported, 8 in use
  Queue counters:       Queued packets  Transmitted packets      Dropped packets
    0 best-effort                   0                    0                    0
    1 expedited-fo                  0                    0                    0
    2 assured-forw                  0                    0                    0
    3 network-cont                  0                    0                    0
  Active alarms  : PLL, LOS, LINK
  Active defects : PLL, LOF, LOS, SEF, LOP, BERR-SF, PLM-P, LINK
  PCS statistics                      Seconds
    Bit errors                             0
    Errored blocks                         3
  MAC statistics:                     Receive         Transmit
    Total octets                           0                0
    Total packets                          0                0
```

show chassis hardware

List of Syntax

Syntax on page 1571
Syntax (EX Series, MX104, MX204, MX2010, MX2020, MX10003, MX10008, and MX2008 Universal Routing Platforms) on page 1571
Syntax (TX Matrix Router) on page 1571
Syntax (TX Matrix Plus Router) on page 1571
Syntax (MX Series Routers) on page 1572
Syntax (QFX Series) on page 1572

Syntax

```
show chassis hardware
<detail | extensive>
<clei-models>
<models>
```

Syntax (EX Series, MX104, MX204, MX2010, MX2020, MX10003, MX10008, and MX2008 Universal Routing Platforms)

```
show chassis hardware
<clei-models>
<detail | extensive>
<models>
<satellite [slot-id slot-id |device-alias alias-name]>
```

Syntax (TX Matrix Router)

```
show chassis hardware
<clei-models>
<detail | extensive>
<models>
<lcc number |  scc>
```

Syntax (TX Matrix Plus Router)

```
show chassis hardware
<clei-models>
<detail | extensive>
<models>
<lcc number |  sfc number>
```

Syntax (MX Series Routers)

```
show chassis hardware
<detail | extensive>
<clei-models>
<models>
<all-members>
<local>
<member member-id>
```

Syntax (QFX Series)

```
show chassis hardware
<detail | extensive>
<clei-models>
<interconnect-device name>
<node-device name>
<models>
```

Release Information

Command introduced before Junos OS Release 7.4.
models option introduced in Junos OS Release 8.2.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced in Junos OS Release 9.6 for the TX Matrix Plus router.
Command introduced in Junos OS Release 11.1 for QFX Series.
Command introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers.
Command introduced in Junos OS Release 12.2 for ACX Series Universal Metro Routers.
Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 Universal Routing Platforms.
Information for **disk** and **usb** introduced in Junos OS Release 15.1X53-D60 for QFX10002, QFX10008, and QFX10016 switches.
Command introduced in Junos OS Release 15.1X54-D20 for ACX5048 and ACX5096 Routers.
Command introduced in Junos OS Release 17.2 for MX2008 Universal Routing Platforms and PTX10008 Routers.
Command introduced in Junos OS Release 17.3 for MX10003 Universal Routing Platforms and MX150 Router Appliance.
Command introduced in Junos OS Release 17.4 for MX204 Routers.
Command introduced in Junos OS Release 18.1R1 for EX9251 Switches.
Command introduced in Junos OS Release 18.2R1 for MX10008 Routers and EX9253 Switches.

NOTE: Routers and routing platforms use the basic syntax, unless otherwise listed. For example, the EX Series has an additional satellite parameter available.

Description

Display a list of all Flexible PIC Concentrators (FPCs) and PICs installed in the router or switch chassis, including the hardware version level and serial number.

In the EX Series switch command output, FPC refers to the following:

- On EX2200 switches, EX3200 switches, EX4200 standalone switches, and EX4500 switches—Refers to the switch; FPC *number* is always 0.
- On EX4200 switches in a Virtual Chassis configuration—Refers to the member of a Virtual Chassis; FPC *number* equals the member ID, from 0 through 9.
- On EX8208 and EX8216 switches—Refers to a line card; FPC *number* equals the slot number for the line card.

On QFX3500, QFX5100, and OCX Series standalone switches, and PTX1000 routers both the FPC and FPC *number* are always **0**.

On T4000 Type 5 FPCs, there are no **top temperature sensor** or **bottom temperature sensor** parameters. Instead, **fan intake temperature sensor** and **fan exhaust temperature sensors** parameters are displayed.

Starting from Junos OS Release 11.4, the output of the **show chassis hardware models** operational mode command displays the enhanced midplanes FRU model numbers (CHAS-BP3-MX240-S, CHAS-BP3-MX480-S or CHAS-BP3-MX960-S) based on the router. Prior to release 11.4, the FRU model numbers are left blank when the router has enhanced midplanes. Note that the enhanced midplanes are introduced through the Junos OS Release 13.3, but can be supported on all Junos OS releases.

Starting with Junos OS Release 14.1, the output of the **show chassis hardware detail | extensive | clei-models | models** operational mode command displays the new DC power supply module (PSM) and power distribution unit (PDU) that are added to provide power to the high-density FPC (FPC2-PTX-P1A) and other components in a PTX5000 Packet Transport Router.

Options

none—Display information about hardware. For a TX Matrix router, display information about the TX Matrix router and its attached T640 routers. For a TX Matrix Plus router, display information about the TX Matrix Plus router and its attached routers.

clei-models—(Optional) Display Common Language Equipment Identifier (CLEI) barcode and model number for orderable field-replaceable units (FRUs).

detail—(Optional) Include RAM and disk information in output.

extensive—(Optional) Display ID EEPROM information.

all-members—(MX Series routers only) (Optional) Display hardware-specific information for all the members of the Virtual Chassis configuration.

interconnect-device *name*—(QFabric systems only) (Optional) Display hardware-specific information for the Interconnect device.

lcc *number*—(TX Matrix routers and TX Matrix Plus router only) (Optional) On a TX Matrix router, display hardware information for a specified T640 router (line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display hardware information for a specified router (line-card chassis) that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

local—(MX Series routers only) (Optional) Display hardware-specific information for the local Virtual Chassis members.

member *member-id*—(MX Series routers and EX Series switches) (Optional) Display hardware-specific information for the specified member of the Virtual Chassis configuration. Replace *member-id* variable with a value 0 or 1.

models—(Optional) Display model numbers and part numbers for orderable FRUs and, for components that use ID EEPROM format v2, the CLEI code.

node-device *name*—(QFabric systems only) (Optional) Display hardware-specific information for the Node device.

satellite [slot-id *slot-id* | device-alias *alias-name*]—(Junos Fusion only) (Optional) Display hardware information for the specified satellite device in a Junos Fusion, or for all satellite devices in the Junos Fusion if no satellite devices are specified.

scc—(TX Matrix router only) (Optional) Display hardware information for the TX Matrix router (switch-card chassis).

sfc *number*—(TX Matrix Plus router only) (Optional) Display hardware information for the TX Matrix Plus router (switch-fabric chassis). Replace *number* variable with **0**.

Additional Information

The **show chassis hardware detail** command now displays DIMM information for the following Routing Engines, as shown in Table 81 on page 1575.

Table 81: Routing Engines Displaying DIMM Information

Routing Engines	Routers
RE-S-1800x2 and RE-S-1800x4	MX240, MX480, and MX960 routers
RE-A-1800x2	M120 and M320 routers

In Junos OS Release 11.4 and later, the output for the **show chassis hardware models** operational mode command for MX Series routers display the enhanced midplanes FRU model numbers—CHAS-BP3-MX240-S, CHAS-BP3-MX480-S, or CHAS-BP3-MX960-S—based on the router. In releases before Junos OS Release 11.4, the FRU model numbers are left blank when the router has enhanced midplanes. Note that the enhanced midplanes are introduced through Junos OS Release 13.3, but can be supported on all Junos OS releases.

Starting with Junos OS Release 17.3R1, the output of the **show chassis hardware** command displays the mode in which vMX is running (performance mode or lite mode) in the part number field for the FPC. **RIOT-PERF** indicates performance mode and **RIOT-LITE** indicates lite mode.

Required Privilege Level
view

RELATED DOCUMENTATION

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List of Sample Output

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Output Fields

Table 82 on page 1576 lists the output fields for the **show chassis hardware** command. Output fields are listed in the approximate order in which they appear.

Table 82: show chassis hardware Output Fields

Field Name	Field Description	Level of Output
Item		All levels

Table 82: show chassis hardware Output Fields *(continued)*

Field Name	Field Description	Level of Output
	Chassis component: • (EX Series switches)—Information about the chassis, Routing Engine (SRE and Routing Engine modules in EX8200 switches), power supplies, fan trays, and LCD panel. Also displays information about Flexible PIC Concentrators (FPCs) and associated Physical Interface Cards (PICs). Information about the backplane, midplane, and SIBs (SF modules) is displayed for EX8200 switches. • (MX Series routers and EX Series switches)—Information about the backplane, Routing Engine, Power Entry Modules (PEMs), and fan trays. Also displays information about Flexible PIC Concentrators (FPCs) and associated Physical Interface Cards (PICs), Modular Port Concentrators (MPCs) and associated Modular Interface Cards (MICs), or Dense Port Concentrators (DPCs). MX80 routers have a single Routing Engine and a built-in Packet Forwarding Engine that attaches directly to MICs. The Packet Forwarding Engine has two “pseudo” FPCs (FPC 0 and FPC1). MX80 routers also have a Forwarding Engine Board (FEB). MX104 routers have a built-in Packet forwarding Engine and a Forwarding Engine Board (FEB). The Packet Forwarding Engine of the MX104 router has three “pseudo” FPCs (FPC0, FPC1, and FPC2). • (M Series routers, except for the M320 router)—Information about the backplane; power supplies; fan trays; Routing Engine; maxicab (the connection between the Routing Engine and the backplane, for the M40 router only); SCB, SSB, SFM, or FEB; MCS and PCG (for the M160 router only); each FPC and PIC; and each fan, blower, and impeller. • (M120, M320, and T Series routers)—Information about the backplane, power supplies, fan trays, midplane, FPM (craft interface), CIP, PEM, SCG, CB, FPC, PIC, SFP, SPMB, and SIB. • (QFX Series)—Information about the chassis, Pseudo CB, Routing Engine, power supplies, fan trays, Interconnect devices, and Node devices. Also displays information about Flexible PIC Concentrators (FPCs) and associated Physical Interface Cards (PICs). • (PTX Series)—Information about the chassis, midplane, craft interface (FPM), power distribution units (PDUs) and Power Supply Modules (PSMs), Centralized Clock Generators (CCGs), Routing Engines, Control Boards (CBs) and Switch Processor Mezzanine Boards (SPMBs), Flexible PIC Concentrators (FPCs), PICs, Switch Interface Boards (SIBs), and fan trays (vertical and horizontal). • (MX2010, MX2020, and MX2008 routers)—Information about the chassis, midplane, craft interface (FPM), power midplane (PMP), Power Supply Modules (PSMs), Power Distribution Modules (PDMs), Routing	

Table 82: show chassis hardware Output Fields *(continued)*

Field Name	Field Description	Level of Output
	Engines, Control Boards (CBs) and Switch Processor Mezzanine Boards (SPMBs), Switch Fabric Boards (SFBs), Flexible PIC Concentrators (FPCs), PICs, adapter cards (ADCs) and fan trays. • (vMX routers)—Information about the chassis, midplane, Routing Engines, and Control Boards (CBs). Also displays information about Flexible PIC Concentrators (FPCs) and associated Modular Interface Cards (MICs) and Physical Interface Cards (PICs).	
Version	Revision level of the chassis component.	All levels
Part number	Part number of the chassis component.	All levels
Serial number	Serial number of the chassis component. The serial number of the backplane is also the serial number of the router chassis. Use this serial number when you need to contact Juniper Networks Customer Support about the router or switch chassis.	All levels
Assb ID or **Assembly ID**	(**extensive** keyword only) Identification number that describes the FRU hardware.	**extensive**
Assembly Version	(**extensive** keyword only) Version number of the FRU hardware.	**extensive**
Assembly Flags	(**extensive** keyword only) Flags.	**extensive**
FRU model number	(**clei-models**, **extensive**, and **models** keyword only) Model number of the FRU hardware component.	none specified
CLEI code	(**clei-models** and **extensive** keyword only) Common Language Equipment Identifier code. This value is displayed only for hardware components that use ID EEPROM format v2. This value is not displayed for components that use ID EEPROM format v1.	none specified
EEPROM Version	ID EEPROM version used by the hardware component: **0x00** (version 0), **0x01** (version 1), or **0x02** (version 2).	**extensive**
Description	Brief description of the hardware item: • Type of power supply. • Type of PIC. If the PIC type is not supported on the current software release, the output states **Hardware Not Supported**.	All levels

Table 82: show chassis hardware Output Fields *(continued)*

Field Name	Field Description	Level of Output
	• Type of FPC: **FPC Type 1**, **FPC Type 2**, **FPC Type 3**, **FPC Type 4** , or **FPC TypeOC192**. On EX Series switches, a brief description of the FPC. The following list shows the PIM abbreviation in the output and the corresponding PIM name. • **2x FE**—Either two built-in Fast Ethernet interfaces (fixed PIM) or dual-port Fast Ethernet PIM • **4x FE**—4-port Fast Ethernet ePIM • **1x GE Copper**—Copper Gigabit Ethernet ePIM (one 10-Mbps, 100-Mbps, or 1000-Mbps port) • **1x GE SFP**—SFP Gigabit Ethernet ePIM (one fiber port) • **2x Serial**—Dual-port serial PIM • **2x T1**—Dual-port T1 PIM • **2x E1**—Dual-port E1 PIM • **2x CT1E1**—Dual-port channelized T1/E1 PIM • **1x T3**—T3 PIM (one port) • **1x E3**—E3 PIM (one port) • **4x BRI S/T**—4-port ISDN BRI S/T PIM • **4x BRI U**—4-port ISDN BRI U PIM • **1x ADSL Annex A**—ADSL 2/2+ Annex A PIM (one port, for POTS) • **1x ADSL Annex B**—ADSL 2/2+ Annex B PIM (one port, for ISDN) • **2x SHDSL (ATM)**—G SHDSL PIM (2-port two-wire module or 1-port four-wire module) • **1x TGM550**—TGM550 Telephony Gateway Module (Avaya VoIP gateway module with one console port, two analog **LINE** ports, and two analog **TRUNK** ports) • **1x DS1 TIM510**—TIM510 E1/T1 Telephony Interface Module (Avaya VoIP media module with one E1 or T1 trunk termination port and ISDN PRI backup) • **4x FXS, 4xFX0, TIM514**—TIM514 Analog Telephony Interface Module (Avaya VoIP media module with four analog **LINE** ports and four analog **TRUNK** ports) • **4x BRI TIM521**—TIM521 BRI Telephony Interface Module (Avaya VoIP media module with four ISDN BRI ports) • **Crypto Accelerator Module**—For enhanced performance of cryptographic algorithms used in IP Security (IPsec) services	

Table 82: show chassis hardware Output Fields *(continued)*

Field Name	Field Description	Level of Output
	• **MPC M 16x 10GE**—16-port 10-Gigabit Module Port Concentrator that supports SFP+ optical transceivers. (Not on EX Series switches.) • For hosts, the Routing Engine type. • For small form-factor pluggable transceiver (SFP) modules, the type of fiber: **LX**, **SX**, **LH**, or **T**. • LCD description for EX Series switches (except EX2200 switches). • **MPC2**—1-port MPC2 that supports two separate slots for MICs. • **MPC3E**—1-port MPC3E that supports two separate slots for MICs (MIC-3D-1X100GE-CFP and MIC-3D-20GE-SFP) on MX960, MX480, and MX240 routers. The MPC3E maps one MIC to one PIC (1 MIC, 1 PIC), which differs from the mapping of legacy MPCs. • 100GBASE-LR4, pluggable CFP optics • Supports the Enhanced MX Switch Control Board with fabric redundancy and existing SCBs without fabric redundancy. • Interoperates with existing MX Series line cards, including Flexible Port Concentrators (FPC), Dense Port Concentrators (DPCs), and Modular Port Concentrators (MPCs). • **MPC4E**—Fixed configuration MPC4E that is available in two flavors: MPC4E-3D-32XGE-SFPP and MPC4E-3D-2CGE-8XGE on MX2020, MX960, MX480, and MX240 routers. • LCD description for MX Series routers	

Sample Output

show chassis hardware (MX10008 Router)

`user@host>` **show chassis hardware**

```
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                DE487             JNP10008 [MX10008]
Midplane         REV 27   750-054097   ACPD4307          Midplane 8
Routing Engine 0          BUILTIN      BUILTIN           RE X10 LT
Routing Engine 1          BUILTIN      BUILTIN           RE X10
CB 0             REV 02   750-079563   CAFF4580          Control Board
CB 1             REV 04   750-079563   CAGL8034          Control Board
..
```

```
...
..
4
FPC 3            REV 04   750-084779   CAKR7019          JNP10K-LC2101
  CPU            REV 05   750-073391   CAKJ2854          LC 2101 PMB
  PIC 0                   BUILTIN      BUILTIN           4xQSFP28 SYNCE
    Xcvr 0       REV 01   740-058734   1ACQ104300K       QSFP-100GBASE-SR4
  PIC 1                   BUILTIN      BUILTIN           4xQSFP28 SYNCE
    Xcvr 0       REV 01   740-061405   1ACQ12110AN       QSFP-100GBASE-SR4
  PIC 2                   BUILTIN      BUILTIN           4xQSFP28 SYNCE
    Xcvr 0       REV 01   740-046565   QG1105B2          QSFP+-40G-SR4
  PIC 3                   BUILTIN      BUILTIN           4xQSFP28 SYNCE
    Xcvr 0       REV 01   740-045627   QH08036X          40GBASE eSR4
  PIC 4                   BUILTIN      BUILTIN           4xQSFP28 SYNCE
    Xcvr 0       REV 01   740-067443   XWR0RY7           QSFP+-40G-SR4
    Xcvr 1       REV 01   740-067443   XWR0RYH           QSFP+-40G-SR4
    Xcvr 2       REV 01   740-067443   XWR0RYP           QSFP+-40G-SR4
    Xcvr 3       REV 01   740-067443   XWS028S           QSFP+-40G-SR4
  PIC 5                   BUILTIN      BUILTIN           4xQSFP28 SYNCE
    Xcvr 3       REV 01   740-058734   1ACQ113406C       QSFP-100GBASE-SR4
FPD Board        REV 07   711-054687   ACPC7142          Front Panel Display
PEM 0            REV 02   740-049388   1EDL62102N9       Power Supply AC
PEM 1            REV 02   740-049388   1EDL60300KX       Power Supply AC
PEM 2            REV 02   740-049388   1EDL60300DL       Power Supply AC
PEM 3            REV 02   740-049388   1EDL61701BT       Power Supply AC
PEM 4            REV 02   740-049388   1EDL62102P7       Power Supply AC
PEM 5            REV 02   740-049388   1EDL62102PP       Power Supply AC
FTC 0            REV 14   750-050108   ACPE4038          Fan Controller 8
FTC 1            REV 14   750-050108   ACPE4032          Fan Controller 8
Fan Tray 0       REV 09   760-054372   ACPD6799          Fan Tray 8
Fan Tray 1       REV 09   760-054372   ACNZ3584          Fan Tray 8
SFB 0            REV 24   750-050058   ACPD4587          Switch Fabric (SIB) 8
SFB 1            REV 24   750-050058   ACNZ0635          Switch Fabric (SIB) 8
SFB 2            REV 24   750-050058   ACPD4908          Switch Fabric (SIB) 8
SFB 3            REV 24   750-050058   ACNZ0617          Switch Fabric (SIB) 8
SFB 4            REV 24   750-050058   ACNZ0527          Switch Fabric (SIB) 8
SFB 5            REV 23   750-050058   ACNX6980          Switch Fabric (SIB) 8
```

show chassis hardware clei-models (PTX10016 Routers)

`user@host>` **show chassis hardware clei-models**

```
Hardware inventory:
Item             Version  Part number  CLEI code         FRU model number
```

```
Midplane         REV 24   750-077138   CMMUN00ARA        JNP10016
CB 0             REV 04   711-065897   PROTOXCLEI        PROTO-ASSEMBLY
CB 1             REV 05   711-065897   PROTOXCLEI        PROTO-ASSEMBLY
FPC 2
  PIC 0                   BUILTIN
FPC 4            REV 35   750-071976   CMUIANABAA        JNP10K-LC1101
  PIC 0                   BUILTIN
FPC 5            REV 13   750-068822   CMUIAM9BAC        QFX10000-36Q
  PIC 0                   BUILTIN
FPC 6            REV 41   750-071976   CMUIANABAB        JNP10K-LC1101
  PIC 0                   BUILTIN
FPC 7            REV 35   750-071976   CMUIANABAA        JNP10K-LC1101
  PIC 0                   BUILTIN
FPC 8            REV 35   750-071976   CMUIANABAA        JNP10K-LC1101
  PIC 0                   BUILTIN
FPC 9            REV 41   750-071976   CMUIANABAB        JNP10K-LC1101
  PIC 0                   BUILTIN
FPC 10           REV 35   750-071976   CMUIANABAA        JNP10K-LC1101
  PIC 0                   BUILTIN
FPC 11           REV 35   750-071976   CMUIANABAA        JNP10K-LC1101
  PIC 0                   BUILTIN
FPC 13           REV 41   750-071976   CMUIANABAB        JNP10K-LC1101
  PIC 0                   BUILTIN
FPC 15           REV 37   750-071976   CMUIANABAA        JNP10K-LC1101
  PIC 0                   BUILTIN
Power Supply 0   REV 01   740-073147   CMUPADPBAA        JNP10K-PWR-DC
Power Supply 1   REV 01   740-073147   CMUPADPBAA        JNP10K-PWR-DC
Power Supply 2   REV 01   740-073147   CMUPADPBAA        JNP10K-PWR-DC
Power Supply 3   REV 01   740-073147   CMUPADPBAA        JNP10K-PWR-DC
Power Supply 4   REV 01   740-073147   CMUPADPBAA        JNP10K-PWR-DC
Power Supply 5   REV 01   740-073147   CMUPADPBAA        JNP10K-PWR-DC
Power Supply 6   REV 01   740-073147   CMUPADPBAA        JNP10K-PWR-DC
Power Supply 7   REV 01   740-073147   CMUPADPBAA        JNP10K-PWR-DC
Power Supply 8   REV 01   740-073147   CMUPADPBAA        JNP10K-PWR-DC
Power Supply 9   REV 01   740-073147   CMUPADPBAA        JNP10K-PWR-DC
Fan Tray 0                                             QFX5100-FAN-AFO
Fan Tray 1                                             QFX5100-FAN-AFO
SIB 0            REV 15   750-077140   CMUCAH6CAA        JNP10016-SF
SIB 1            REV 15   750-077140   CMUCAH6CAA        JNP10016-SF
SIB 2            REV 15   750-077140   CMUCAH6CAA        JNP10016-SF
SIB 3            REV 15   750-077140   CMUCAH6CAA        JNP10016-SF
SIB 4            REV 15   750-077140   CMUCAH6CAA        JNP10016-SF
SIB 5            REV 15   750-077140   CMUCAH6CAA        JNP10016-SF
FPD Board        REV 07   711-054687
```

show chassis hardware detail (EX9251 Switch)

`user@switch>` **show chassis hardware**

```
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                BLANK             EX9251
Routing Engine 0          BUILTIN      BUILTIN           RE-S-2X00x6
CB 0             REV 05   750-069579   CAGT1382          EX9251
FPC 0                     BUILTIN      BUILTIN           MPC
  PIC 0                   BUILTIN      BUILTIN           4XQSFP28 PIC
    Xcvr 0       REV 01   740-044512   APF14500007NHC    QSFP+-40G-CU50CM
    Xcvr 2       REV 01   740-046565   QH21035H          QSFP+-40G-SR4
  PIC 1                   BUILTIN      BUILTIN           8XSFPP PIC
    Xcvr 0       REV 01   740-031980   AA15393URH7       SFP+-10G-SR
    Xcvr 1       REV 01   740-031980   AA162832LVG       SFP+-10G-SR
    Xcvr 2       REV 01   740-031980   MXA0NKJ           SFP+-10G-SR
    Xcvr 3       REV 01   740-031980   MXA0K75           SFP+-10G-SR
    Xcvr 4       REV 01   740-021308   MXA138L           SFP+-10G-SR
    Xcvr 5       REV 01   740-021308   13T511102684      SFP+-10G-SR
    Xcvr 6       REV 01   740-021308   MXA138E           SFP+-10G-SR
    Xcvr 7       REV 01   740-021308   MXA152N           SFP+-10G-SR
PEM 0            REV 02   740-070749   1F186390060       AC AFO 650W PSU
PEM 1            REV 02   740-070749   1F186390045       AC AFO 650W PSU
Fan Tray 0                                               Fan Tray, Front to Back
Airflow - AFO
Fan Tray 1                                               Fan Tray, Front to Back
Airflow - AFO
```

show chassis hardware extensive (T640 Router)

`user@host>` **show chassis hardware extensive**

```
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                                  T640
 Jedec Code:   0x7fb0            EEPROM Version:    0x01
 P/N:        ...........       S/N:             ...........
 Assembly ID:  0x0507            Assembly Version:  00.00
 Date:         00-00-0000        Assembly Flags:    0x00
 Version:    ...........
 ID: Gibson LCC Chassis
 Board Information Record:
  Address 0x00: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
 I2C Hex Data:
```

```
  Address 0x00: 7f b0 01 ff 05 07 00 00 00 00 00 00 00 00 00 00
  Address 0x10: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x20: ff ff ff ff ff ff ff ff ff ff ff ff 00 00 00 00
  Address 0x30: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x40: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Midplane         REV 04   710-002726   AX5633
 Jedec Code:   0x7fb0            EEPROM Version:    0x01
 P/N:          710-002726.       S/N:               AX5633.
 Assembly ID:  0x0127            Assembly Version:  01.04
 Date:         06-27-2001        Assembly Flags:    0x00
 Version:      REV 04.....
 ID: Gibson Backplane
 Board Information Record:
  Address 0x00: ad 01 08 00 00 90 69 0e f8 00 ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 01 ff 01 27 01 04 52 45 56 20 30 34 00 00
  Address 0x10: 00 00 00 00 37 31 30 2d 30 30 32 37 32 36 00 00
  Address 0x20: 53 2f 4e 20 41 58 35 36 33 33 00 00 00 1b 06 07
  Address 0x30: d1 ff ff ff ad 01 08 00 00 90 69 0e f8 00 ff ff
  Address 0x40: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
FPM GBUS         REV 02   710-002901   HE3245
 ...
FPM Display      REV 02   710-002897   HA4873
 ...
CIP              REV 05   710-002895   HA4729
...
PEM 1            RevX02   740-002595   MD21815          Power Entry Module
 ...
SCG 0            REV 04   710-003423   HF6023
 ...
SCG 1            REV 04   710-003423   HF6061
 ...
Routing Engine 0 REV 01   740-005022   210865700292     RE-3.0
...
CB 0             REV 06   710-002728   HE3614
...
FPC 1            REV 01   710-002385   HE3009           FPC Type 1
...              REV 06   710-001726   HC0010
```

show chassis hardware interconnect-device (QFabric Systems)

`user@switch>` **show chassis hardware interconnect-device interconnect1**

```
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis          REV 07                                  QFX_olive
Midplane         REV 07   750-021261   BH0208188289      QFX Midplane
CB 0             REV 07   750-021261   BH0208188289      QFXIC08-CB4S
```

show chassis hardware lcc (TX Matrix Router)

`user@host>` **show chassis hardware lcc 0**

```
lcc0-re0:
--------------------------------------------------------------------------
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                65751             T640
Midplane         REV 03   710-005608   RA1408            T640 Backplane
FPM GBUS         REV 09   710-002901   RA2784            T640 FPM Board
FPM Display      REV 05   710-002897   RA2825            FPM Display
CIP              REV 06   710-002895   HT0684            T Series CIP
PEM 0            Rev 11   740-002595   PM18483           Power Entry Module
PEM 1            Rev 11   740-002595   qb13984           Power Entry Module
SCG 0            REV 11   710-003423   HT0022            T640 Sonet Clock Gen.
Routing Engine 0 REV 13   740-005022   210865700363      RE-3.0 (RE-600)
CB 0             REV 03   710-007655   HW1195            Control Board (CB-T)
FPC 1            REV 05   710-007527   HM3245            FPC Type 2
  CPU            REV 14   710-001726   HM1084            FPC CPU
  PIC 0          REV 02   750-007218   AZ1112            2x OC-12 ATM2 IQ, SMIR
  PIC 1          REV 02   750-007745   HG3462            4x OC-3 SONET, SMIR
  PIC 2          REV 14   750-001901   BA5390            4x OC-12 SONET, SMIR
  PIC 3          REV 09   750-008155   HS3012            2x G/E IQ, 1000 BASE
    SFP 0                 NON-JNPR     P1186TY           SFP-S
    SFP 1        REV 01   740-007326   P11WLTF           SFP-SX
  MMB 1          REV 02   710-005555   HL7514            MMB-288mbit
  PPB 0          REV 04   710-003758   HM4405            PPB Type 2
  PPB 1          REV 04   710-003758   AV1960            PPB Type 2
FPC 2            REV 08   710-010154   HZ3578            E-FPC Type 3
  CPU            REV 05   710-010169   HZ3219            FPC CPU-Enhanced
  PIC 0          REV 02   750-009567   HX2882            1x 10GE(LAN),XENPAK
    SFP 0        REV 01   740-009898   USC202U709        XENPAK-LR
  PIC 1          REV 03   750-003336   HJ9954            4x OC-48 SONET, SMSR
  PIC 2          REV 01   750-004535   HC0235            1x OC-192 SM SR1
  PIC 3          REV 07   750-007141   HX1699            10x 1GE(LAN), 1000 BASE
    SFP 0        REV 01   740-007326   2441042           SFP-SX
    SFP 1        REV 01   740-007326   2441027           SFP-SX
```

```
  MMB 0          REV 03   710-010171   HV2365           MMB-5M3-288mbit
  MMB 1          REV 03   710-010171   HZ3888           MMB-5M3-288mbit
SPMB 0           REV 09   710-003229   HW5245           T Series Switch CPU
SIB 3            REV 07   710-005781   HR5927           SIB-L8-F16
  B Board        REV 06   710-005782   HR5971           SIB-L8-F16 (B)
SIB 4            REV 07   710-005781   HR5903           SIB-L8-F16
  B Board        REV 06   710-005782   HZ5275           SIB-L8-F16 (B)
```

show chassis hardware models (MX2010 Router)

`user@host >` **show chassis hardware models**

```
Hardware inventory:
Item             Version  Part number  Serial number     FRU model number
FPM Board        REV 06   711-032349   ZX8744           711-032349
PSM 4            REV 0C   740-033727   VK00254          00000000000000000000000
PSM 5            REV 0B   740-033727   VG00015          00000000000000000000000
PSM 6            REV 0B   740-033727   VH00097          00000000000000000000000
PSM 7            REV 0C   740-033727   VJ00151          00000000000000000000000
PSM 8            REV 0C   740-033727   VJ00149          00000000000000000000000
PDM 0            REV 0B   740-038109   WA00008
PDM 1            REV 0B   740-038109   WA00014
Routing Engine 0 REV 02   740-041821   9009094134       RE-S-1800X4-16G-S
Routing Engine 1 REV 02   740-041821   9009094141       RE-S-1800X4-16G-S
CB 0             REV 08   750-040257   CAAB3491         750-040257
CB 1             REV 08   750-040257   CAAB3489         750-040257
SFB 0            REV 06   711-032385   ZV1828           711-032385
SFB 1            REV 07   711-032385   ZZ2568           711-032385
SFB 2            REV 07   711-032385   ZZ2563           711-032385
SFB 3            REV 07   711-032385   ZZ2564           711-032385
SFB 4            REV 07   711-032385   ZZ2580           711-032385
SFB 5            REV 07   711-032385   ZZ2579           711-0323856
SFB 6            REV 07   711-032385   CAAB4882         711-044170
SFB 7            REV 07   711-032385   CAAB4898         711-044170
FPC 0            REV 33   750-028467   CAAB1919         MPC-3D-16XGE-SFPP
FPC 1            REV 21   750-033205   ZG5027           MX-MPC3-3D
  MIC 0          REV 03   750-033307   ZV6299           MIC3-3D-10XGE-SFPP
  MIC 1          REV 03   750-033307   ZV6268           MIC3-3D-10XGE-SFPP
FPC 8            REV 22   750-031089   ZT9746           MX-MPC2-3D
  MIC 0          REV 26   750-028392   ABBS1150         MIC-3D-20GE-SFP
  MIC 1          REV 26   750-028387   ABBR9582         MIC-3D-4XGE-XFP
FPC 9            REV 11   750-036284   ZL3591           MPCE-3D-16XGE-SFPP
ADC 0            REV 05   750-043596   CAAC2073         750-043596
ADC 1            REV 01   750-043596   ZV4117           750-043596
```

```
ADC 8           REV 01   750-043596   ZV4107           750-043596
ADC 9           REV 02   750-043596   ZW1555           750-043596
Fan Tray 0      REV 2A   760-046960   ACAY0015
Fan Tray 1      REV 2A   760-046960   ACAY0019
Fan Tray 2      REV 2A   760-046960   ACAY0020
Fan Tray 3      REV 2A   760-046960   ACAY0021
```

show chassis hardware node-device (QFabric Systems)

`user@switch>` **show chassis hardware node-device node1**

```
Routing Engine 0   BUILTIN      BUILTIN           QFX Routing Engine
node1              REV 05   711-032234   ED3694            QFX3500-48S4Q-AFI

  CPU                      BUILTIN      BUILTIN           FPC CPU
  PIC 0                    BUILTIN      BUILTIN           48x 10G-SFP+
    Xcvr 8         REV 01   740-030658   AD0946A028B       SFP+-10G-USR
```

show chassis hardware scc (TX Matrix Router)

`user@host>` **show chassis hardware scc**

```
scc-re0:
--------------------------------------------------------------------------
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                                  TX Matrix
Midplane         REV 04   710-004396   RB0014            SCC Midplane
FPM GBUS         REV 04   710-004617   HW9141            SCC FPM Board
FPM Display      REV 04   710-004619   HS5950            SCC FPM
CIP 0            REV 01   710-010218   HV9151            SCC CIP
CIP 1            REV 01   710-010218   HV9152            SCC CIP
PEM 1            Rev 11   740-002595   QB13977           Power Entry Module
Routing Engine 0 REV 05   740-008883   P11123900153      RE-4.0 (RE-1600)
CB 0             REV 01   710-011709   HR5964            Control Board (CB-TX)
SPMB 0           REV 09   710-003229   HW5293            T Series Switch CPU
SIB 3
SIB 4            REV 01   710-005839   HW1177            SIB-S8-F16
  B Board        REV 01   710-005840   HW1202            SIB-S8-F16 (B)
```

show chassis hardware sfc (TX Matrix Plus Router)

`user@host>` **show chassis hardware sfc 0**

```
sfc0-re0:
--------------------------------------------------------------------------
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                JN112F007AHB      TXP
Midplane         REV 05   710-022574   TS4027            SFC Midplane
FPM Display      REV 03   710-024027   DX0282            TXP FPM Display
CIP 0            REV 04   710-023792   DW4889            TXP CIP
CIP 1            REV 04   710-023792   DW4887            TXP CIP
PEM 0            Rev 07   740-027463   UM26368           Power Entry Module
Routing Engine 0 REV 01   740-026942   737A-1064         SFC RE
Routing Engine 1 REV 01   740-026942   737A-1082         SFC RE
CB 0             REV 09   710-022606   DW6099            SFC Control Board
CB 1             REV 09   710-022606   DW6096            SFC Control Board
SPMB 0                    BUILTIN                        SFC Switch CPU
SPMB 1                    BUILTIN                        SFC Switch CPU
SIB F13 0        REV 04   710-022600   DX0841            F13 SIB
  B Board        REV 03   710-023431   DX0966            F13 SIB Mezz
SIB F13 1        REV 04   750-024564   DW5776            F13 SIB
  B Board        REV 03   710-023431   DW9028            F13 SIB
SIB F13 3        REV 04   750-024564   DW5762            F13 SIB
  B Board        REV 03   710-023431   DW9059            F13 SIB
SIB F13 4        REV 04   750-024564   DW5797            F13 SIB
  B Board        REV 03   710-023431   DW9041            F13 SIB
SIB F13 6        REV 04   750-024564   DW5770            F13 SIB
  B Board        REV 03   710-023431   DW9079            F13 SIB Mezz
SIB F13 7        REV 04   750-024564   DW5758            F13 SIB
  B Board        REV 03   710-023431   DW9047            F13 SIB
SIB F13 8        REV 04   750-024564   DW5761            F13 SIB
  B Board        REV 03   710-023431   DW9043            F13 SIB Mezz
SIB F13 9        REV 04   750-024564   DW5754            F13 SIB
  B Board        REV 03   710-023431   DW9078            F13 SIB Mezz
SIB F13 11       REV 04   710-022600   DX0826            F13 SIB
  B Board        REV 03   710-023431   DX0967            F13 SIB Mezz
SIB F13 12       REV 04   750-024564   DW5794            F13 SIB
  B Board        REV 03   710-023431   DW9044            F13 SIB Mezz
SIB F2S 0/0      REV 05   710-022603   DW7897            F2S SIB
  B Board        REV 05   710-023787   DW7657            NEO PMB
SIB F2S 0/2      REV 05   710-022603   DW7833            F2S SIB
  B Board        REV 05   710-023787   DW7526            NEO PMB
SIB F2S 0/4      REV 05   710-022603   DW7875            F2S SIB
  B Board        REV 05   710-023787   DW7588            NEO PMB
SIB F2S 0/6      REV 05   710-022603   DW7860            F2S SIB
  B Board        REV 05   710-023787   DW7589            NEO PMB
```

```
SIB F2S 1/0      REV 04   710-022603   DW4820          F2S SIB
  B Board        REV 05   710-023787   DW8510          NEO PMB
SIB F2S 1/2      REV 05   710-022603   DW7849          F2S SIB
  B Board        REV 05   710-023787   DW7525          NEO PMB
SIB F2S 1/4      REV 05   710-022603   DW7927          F2S SIB
  B Board        REV 05   710-023787   DW7556          F2S SIB Mezz
SIB F2S 1/6      REV 05   710-022603   DW7866          F2S SIB
  B Board        REV 05   710-023787   DW7651          NEO PMB
SIB F2S 2/0      REV 05   710-022603   DW7880          F2S SIB
  B Board        REV 05   710-023787   DW7523          NEO PMB
SIB F2S 2/2      REV 05   710-022603   DW7895          F2S SIB
  B Board        REV 05   710-023787   DW7591          NEO PMB
SIB F2S 2/4      REV 05   710-022603   DW7907          F2S SIB
  B Board        REV 05   710-023787   DW7590          NEO PMB
SIB F2S 2/6      REV 05   710-022603   DW7785          F2S SIB
  B Board        REV 05   710-023787   DW7524          NEO PMB
SIB F2S 3/0      REV 05   710-022603   DW7782          F2S SIB
  B Board        REV 05   710-023787   DW7634          NEO PMB
SIB F2S 3/2      REV 05   710-022603   DW7793          F2S SIB
  B Board        REV 05   710-023787   DW7548          NEO PMB
SIB F2S 3/4      REV 05   710-022603   DW7779          F2S SIB
  B Board        REV 05   710-023787   DW7587          NEO PMB
SIB F2S 3/6      REV 05   710-022603   DW7930          F2S SIB
  B Board        REV 05   710-023787   DW7505          NEO PMB
SIB F2S 4/0      REV 05   710-022603   DW7867          F2S SIB
  B Board        REV 05   710-023787   DW7656          NEO PMB
SIB F2S 4/2      REV 05   710-022603   DW7917          F2S SIB
  B Board        REV 05   710-023787   DW7640          NEO PMB
SIB F2S 4/4      REV 05   710-022603   DW7929          F2S SIB
  B Board        REV 05   710-023787   DW7643          NEO PMB
SIB F2S 4/6      REV 05   710-022603   DW7870          F2S SIB
  B Board        REV 05   710-023787   DW7635          NEO PMB
Fan Tray 0       REV 06   760-024497   DV7831          Front Fan Tray
Fan Tray 1       REV 06   760-024497   DV9614          Front Fan Tray
Fan Tray 2       REV 06   760-024502   DV9618          Rear Fan Tray
Fan Tray 3       REV 06   760-024502   DV9616          Rear Fan Tray
Fan Tray 4       REV 06   760-024502   DV7807          Rear Fan Tray
Fan Tray 5       REV 06   760-024502   DV7828          Rear Fan Tray
```

show chassis in-service-upgrade

Syntax

```
show chassis in-service-upgrade
```

Release Information

Command introduced in Junos OS Release 9.0.
Command introduced in Junos OS Release 12.3R2, 13.1R2, and 13.2R1 for TX Matrix Plus routers.
Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 Universal Routing Platforms.
Command introduced in Junos OS Release 13.2 for PTX5000 routers.
Command introduced in Junos OS Release 13.2X51-D15 for the QFX Series.
Command introduced in Junos OS Release 17.2 for MX2008 Universal Routing Platforms.
Command introduced in Junos OS Release 18.2 for EX9253 Switches.

Description

Display the status of Flexible PIC Concentrators (FPCs) and their corresponding PICs after the most recent unified in-service software upgrade (ISSU). This command must be issued on the master Routing Engine.

NOTE: Only Intelligent Queuing (IQ) PICs are displayed by this command output. Unified ISSU status for other PIC types is controlled internally by the FPC.

Options

This command has no options.

Required Privilege Level

view

RELATED DOCUMENTATION

- *request system software abort*
- *request system software in-service-upgrade*
- *Getting Started with Unified In-Service Software Upgrade*
- *Example: Performing a Unified ISSU*

List of Sample Output

show chassis in-service-upgrade on page 1591

show chassis in-service-upgrade (MX2010 Router) on page 1592
show chassis in-service-upgrade (MX2020 Router) on page 1592
show chassis in-service-upgrade (MX2008 Router) on page 1592
show chassis in-service-upgrade (TX Matrix Plus Router) on page 1593
show chassis in-service-upgrade (QFX5100 Switch) on page 1594
show chassis in-service-upgrade (EX9253 Switch) on page 1594

Output Fields

Table 83 on page 1591 lists the output fields for the **show chassis in-service-upgrade** command. Output fields are listed in the approximate order in which they appear.

Table 83: show chassis in-service-upgrade Output Fields

Field Name	Field Description
Item	Flexible PIC Concentrator (FPC) slot number.
Status	FPC and corresponding PIC state. State can be either of the follwing: • **Online**—FPC is online and running. • **Offline**—FPC is powered down.
Reason	Reason for the state (if offline).

Sample Output

show chassis in-service-upgrade

```
user@host> show chassis in-service-upgrade
```

```
Item            Status                  Reason
FPC 0           Online
FPC 1           Online
FPC 2           Online
  PIC 0         Online
  PIC 1         Online
FPC 3           Offline                 Offlined by CLI command

FPC 4           Online
  PIC 1         Online
FPC 5           Online
  PIC 0         Online
FPC 6           Online
```

```
    PIC 3        Online
  FPC 7          Online
```

show chassis in-service-upgrade (MX2010 Router)

```
user@host> show chassis in-service-upgrade
```

```
Item           Status                  Reason
  FPC 0          Online
  FPC 1          Online
  FPC 8          Online
  FPC 9          Online
```

show chassis in-service-upgrade (MX2020 Router)

```
user@host> show chassis in-service-upgrade
```

```
  Item           Status                  Reason
  FPC 0          Online
  FPC 1          Online
  FPC 2          Online
  FPC 3          Online
  FPC 4          Online
  FPC 5          Online
  FPC 6          Online
  FPC 7          Online
  FPC 8          Online
  FPC 9          Online
  FPC 10         Online
  FPC 11         Online
  FPC 12         Online
  FPC 13         Online
  FPC 14         Online
  FPC 15         Online
  FPC 16         Online
  FPC 17         Online
  FPC 18         Online
  FPC 19         Online
```

show chassis in-service-upgrade (MX2008 Router)

```
user@host> show chassis in-service-upgrade
```

```
  Item           Status                  Reason
  FPC 0          Online
  FPC 3          Online
  FPC 5          Online
  FPC 7          Online
  FPC 9          Online
```

show chassis in-service-upgrade (TX Matrix Plus Router)

`user@host>` **show chassis in-service-upgrade**

```
lcc0-re0:
--------------------------------------------------------------------------
  Item           Status                  Reason
  FPC 1          Online
    PIC 0        Online
  FPC 2          Online
  FPC 3          Online
    PIC 1        Online
  FPC 4          Online
  FPC 6          Online
  FPC 7          Online

lcc1-re0:
--------------------------------------------------------------------------
  Item           Status                  Reason
  FPC 0          Online
    PIC 3        Online
  FPC 1          Online
  FPC 2          Online
  FPC 4          Online
  FPC 6          Online
  FPC 7          Online

lcc2-re0:
--------------------------------------------------------------------------
  Item           Status                  Reason
  FPC 0          Online
  FPC 2          Online
  FPC 3          Online
    PIC 0        Online
  FPC 4          Online
  FPC 6          Online
  FPC 7          Online
```

```
    PIC 1        Online

lcc3-re0:
--------------------------------------------------------------------------
  Item           Status                  Reason
  FPC 0          Online
    PIC 0        Online
  FPC 1          Online
  FPC 2          Online
  FPC 3          Online
    PIC 2        Online
  FPC 4          Online
  FPC 5          Online
  FPC 6          Online
  FPC 7          Online
    PIC 1        Online
```

show chassis in-service-upgrade (QFX5100 Switch)

`user@switch>` **show chassis in-service-upgrade**

```
  Item           Status                  Reason
  FPC 0          Online (ISSU)
```

show chassis in-service-upgrade (EX9253 Switch)

`user@switch>` **show chassis in-service-upgrade**

```
 Item           Status                  Reason
  FPC 0          Online
  FPC 1          Online
```

show chassis lccs

Syntax

```
show chassis lccs
```

Release Information

Command introduced before Junos OS Release 7.4.

Description

(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, display the status of all T640 LCC connected to the TX Matrix router. On a TX Matrix Plus router, display the status of all LCC connected to the TX Matrix Plus router.

Options

This command has no options.

Required Privilege Level

view

RELATED DOCUMENTATION

- request chassis lcc | 633
- *Configuring Line-Card Upgrade Groups for Nonstop Software Upgrade*
- *fpc*

List of Sample Output

show chassis lccs on page 1596
show chassis lccs (TX Matrix Plus router with 3D SIBs) on page 1596

Output Fields

Table 84 on page 1595 lists the output fields for the **show chassis lccs** command. Output fields are listed in the approximate order in which they appear.

Table 84: show chassis lccs Output Fields

Field Name	Field Description
Slot	LCC slot number.

Table 84: show chassis lccs Output Fields *(continued)*

Field Name	Field Description
State	LCC status: • **Online**—LCC is online and running. • **Offline**—LCC is powered down. • **Empty**—No LCC is present.
Uptime	How long the LCC has been up and running.

Sample Output

show chassis lccs

```
user@host> show chassis lccs
```

```
Slot  State               Uptime
 0    Online            3 minutes, 17 seconds
 1    Empty
 2    Online            3 minutes, 23 seconds
 3    Empty
```

show chassis lccs (TX Matrix Plus router with 3D SIBs)

```
user@host> show chassis lccs
```

```
Slot  State               Uptime
 0    Offline
 1    Empty
 2    Online            1 day, 4 hours, 57 minutes, 7 seconds
 3    Empty
 4    Online            1 day, 4 hours, 56 minutes, 58 seconds
 5    Empty
 6    Empty
 7    Online            3 hours, 45 minutes, 41 seconds
```

show chassis lcc-mode

Syntax

```
show chassis lcc-mode
```

Release Information

Command introduced in Junos OS Release 13.1.

Description

(TX Matrix Plus routers only) Display the mode in which LCCs are connected to a TX Matrix Plus router.

NOTE: This command is supported only on TX Matrix Plus routers with 3D SIBs.

Options

This command has no options.

Required Privilege Level

view

RELATED DOCUMENTATION

lcc-mode | **419**

Routing Matrix with a TXP-Mixed-LCC-3D Configuration

List of Sample Output

show chassis lcc-mode (TX Matrix Plus Router with 3D SIBs) on page 1598

Output Fields

Table 85 on page 1597 lists the output fields for the **show chassis lcc-mode** command. Output fields are listed in the approximate order in which they appear.

Table 85: show chassis lcc-mode Output Fields

Field Name	Field Description
Slot	The LCC number.

Table 85: show chassis lcc-mode Output Fields *(continued)*

Field Name	Field Description
LCC-mode	Displays the mode of the LCC: • **T1600**—LCC functions as a T1600 router. • **T4000**—LCC functions as a T4000 router. • **EMPTY**—LCC is not configured as either a T1600 or a T4000 router.

Sample Output

show chassis lcc-mode (TX Matrix Plus Router with 3D SIBs)

```
user@host> show chassis lcc-mode
```

```
Slot         LCC-mode
 0           T4000
 1           EMPTY
 2           T4000
 3           EMPTY
 4           T4000
 5           EMPTY
 6           T1600
 7           EMPTY
```

show chassis location

List of Syntax

Syntax on page 1599
Syntax (TX Matrix Router) on page 1599
Syntax (TX Matrix Plus Router) on page 1599
Syntax (MX Series Router) on page 1599
Syntax (QFX Series) on page 1599

Syntax

```
show chassis location
```

Syntax (TX Matrix Router)

```
show chassis location
<fpc | interface (by-name name | by-slot fpc number  lcc number) | lcc number | scc>
```

Syntax (TX Matrix Plus Router)

```
show chassis location
<fpc | interface (by-name name | by-slot fpc number  lcc number) | lcc number | sfc number>
```

Syntax (MX Series Router)

```
show chassis location
<all-members>
<local>
<member member-id>
```

Syntax (QFX Series)

```
show chassis location
<interconnect-device name>
<node-device name>
```

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
Command introduced in Junos OS Release 11.1 for the QFX Series.

Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

Description

Display the physical location of the chassis. This command can only be used on the master Routing Engine.

Options

none—Display all information about the physical location of the chassis. On a TX Matrix router, display all information about the physical location of the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display all information about the physical location of the TX Matrix Plus router and its attached routers.

all-members—(MX Series routers only) (Optional) Display the physical location of the chassis for all the member routers in the Virtual Chassis configuration.

fpc—(TX Matrix router and TX Matrix Plus router only) (Optional) Display the physical location of all Flexible PIC Concentrators (FPCs).

interconnect-device *name*—(QFabric systems only) (Optional) Display the physical location of the Interconnect device.

interface by-name *name*—(TX Matrix and TX Matrix Plus routers only) (Optional) Display the physical location of a specified interface name. On a TX Matrix router, this option displays the FPC number and T640 router (line-card chassis) number associated with the specified interface. On a TX Matrix Plus router, this option displays the FPC number and router (line-card chassis) number associated with the specified interface.

interface by-slot fpc *number* lcc *number*—(TX Matrix and TX Matrix Plus router only) (Optional) On a TX Matrix router, display the global FPC number of an interface by specifying its local FPC number and T640 router (line-card chassis) number. On a TX Matrix Plus router, display the global FPC number of an interface by specifying its local FPC number and router (line-card chassis) number.

- The global FPC number is the FPC slot number when all the FPC slots in the routing matrix are considered: **0** through **31**. On TX Matrix Plus router with 3D SIBs, the value is **0** through **63**. The local FPC number is the FPC slot number on a particular T640 router.
- For **fpc**, replace ***number*** with a value from **0** through **7**.
- For **lcc**, replace ***number*** with a value from **0** through **7**.

lcc *number*—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display the physical location of a specified T640 router (line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router , display the physical location of a specified router (line-card chassis) that is connected to a TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

local—(MX Series routers only) (Optional) Display the physical location of the chassis for the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display the physical location of the chassis for the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value of 0 or 1.

node-device *name*—(QFabric systems only) (Optional) Display the physical location of the Node device.

scc—(TX Matrix routers only) (Optional) Display the physical location of the TX Matrix router (switch-card chassis).

sfc—(TX Matrix Plus routers only) (Optional) Display the physical location of the TX Matrix Plus router (or switch-fabric chassis).

Required Privilege Level
view

RELATED DOCUMENTATION

Displaying Chassis Physical Locations for a Routing Matrix with a TX Matrix Plus Router

List of Sample Output
show chassis location on page 1602
show chassis location fpc (TX Matrix Router) on page 1602
show chassis location interface by-slot (TX Matrix Router) on page 1603
show chassis location fpc (TX Matrix Plus Router) on page 1603
show chassis location interface by-slot (TX Matrix Plus Router) on page 1603
show chassis location (QFX Series and OCX Series) on page 1603
show chassis location (QFabric Systems) on page 1603

Output Fields

Table 86 on page 1602 lists the output fields for the **show chassis location** command. Output fields are listed in the approximate order in which they appear.

Table 86: show chassis location Output Fields

Field Name	Field Description
country-code	Country code information.
postal-code	Postal code information.
Building	Building information.
Floor	Floor information.
Global FPC	Global FPC number. The FPC slot number, when all FPC slots in the routing matrix are considered. The range of values is **0** through **31**. On TX Matrix Plus router with 3D SIBs the value is **0** through **63**.
LATA	Local access transport area information.
LCC	Line-card chassis number. On a TX Matrix router, the number of a particular T640 router connected to the TX Matrix router. On a TX Matrix Plus router, the number of a particular router connected to the TX Matrix Plus router.
Local FPC	Local FPC number. On a TX Matrix router, the FPC slot number on a particular T640 router. On a TX Matrix Plus router, the FPC slot number on a particular router.

Sample Output

show chassis location

```
user@host> show chassis location
```

```
country-code: US
postal-code: 94404
Building: Building 2, Floor: 2
```

show chassis location fpc (TX Matrix Router)

```
user@host> show chassis location fpc
```

```
Global FPC    LCC     Local FPC
    17          2         1
    21          2         5
```

show chassis location interface by-slot (TX Matrix Router)

`user@host>` **show chassis location interface by-slot fpc 1 lcc 1**

```
Global FPC: 9
```

show chassis location fpc (TX Matrix Plus Router)

`user@host>` **show chassis location fpc**

```
Global FPC    LCC     Local FPC
     0          0         0
     1          0         1
```

show chassis location interface by-slot (TX Matrix Plus Router)

`user@host>` **show chassis location interface by-slot fpc 2 lcc 1**

```
Global FPC: 10
```

show chassis location (QFX Series and OCX Series)

`user@switch>` **show chassis location**

```
country-code: US
postal-code: 94404
Building: Building 2, Floor: 2
```

show chassis location (QFabric Systems)

`user@switch>` **show chassis location interconnect-device interconnect1**

```
country-code: US
postal-code: 94404
Building: Building 2, Floor: 2
```

show chassis mac-addresses

List of Syntax

Syntax on page 1604
Syntax (TX Matrix Router) on page 1604
Syntax (TX Matrix Plus Router) on page 1604
Syntax (MX Series Router) on page 1604
Syntax (QFX Series) on page 1604

Syntax

```
show chassis mac-addresses
```

Syntax (TX Matrix Router)

```
show chassis mac-addresses
<lcc number | scc>
```

Syntax (TX Matrix Plus Router)

```
show chassis mac-addresses
<lcc number | sfc number>
```

Syntax (MX Series Router)

```
show chassis mac-addresses
<all-members>
<local>
<member member-id>
```

Syntax (QFX Series)

```
show chassis mac-addresses
<interconnect-device name>
<node-group name>
```

Release Information

Command introduced before JUNOS Release 7.4.
Command introduced in JUNOS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Command introduced in Junos OS Release 11.1 for QFX Series.

Command introduced in Junos OS Release 12.2 for ACX Series Universal Metro Routers.
Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 Universal Routing Platforms.
Command introduced in Junos OS Release 15.1X54-D20 for ACX5048 and ACX5096 Routers.
Command introduced in Junos OS Release 17.2 for MX2008 Universal Routing Platforms and PTX10008 Routers.
Command introduced in Junos OS Release 17.3 for MX10003 Universal Routing Platforms and MX150 Router Appliance.
Command introduced in Junos OS Release 17.4 for MX204 Universal Routing Platforms.
Command introduced in JUNOS Release 18.1R1 for EX9251 switches.
Command introduced in Junos OS Release 18.2 for EX9253 Switches and MX10008 Universal Routing Platforms.

Description

Display the media access control (MAC) addresses for the router, switch chassis, or switch.

Options

none—(TX Matrix, TX Matrix Plus routers, QFX Series, and OCX Series Switches) Display the MAC addresses for the router chassis or switch. On a TX Matrix router, display MAC addresses on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display MAC addresses on the TX Matrix Plus router and its attached routers.

all-members—(MX Series routers only) (Optional) Display the MAC addresses for all the member routers of the Virtual Chassis configuration.

interconnect-device *name*—(QFabric switches only) (Optional) Display the MAC addresses for the Interconnect device.

lcc *number*—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display MAC addresses for a specified T640 router (or line-card chassis) that is connected to the TX Matrix Plus router. On a TX Matrix Plus router, display MAC addresses for a specified router (line-card chassis) that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

local—(MX Series routers only) (Optional) Display the MAC addresses for the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display the MAC addresses for the specified member of the Virtual Chassis configuration. Replace *member-id* with a value of 0 or 1.

node-group *name*—(QFabric switches only) (Optional) Display the MAC addresses for the specified Node group.

scc—(TX Matrix routers only) (Optional) Display MAC addresses for the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) Display MAC addresses for the TX Matrix Plus router (or switch-fabric chassis).

Required Privilege Level
view

RELATED DOCUMENTATION

ACX2000 and ACX2100 Routers Hardware and CLI Terminology Mapping

List of Sample Output

show chassis mac-addresses on page 1607
show chassis mac-addresses (MX2010 Router) on page 1608
show chassis mac-addresses (PTX10008 Router) on page 1608
show chassis mac-addresses (TX Matrix Router) on page 1608
show chassis mac-addresses (TX Matrix Plus Router) on page 1609
show chassis mac-addresses (QFX Series and OCX Series) on page 1610
show chassis mac-addresses interconnect-device (QFabric Switches) on page 1610
show chassis mac-addresses node-group (QFabric Switches) on page 1610
show chassis mac-addresses (ACX5048 and ACX5096 Routers) on page 1611
show chassis mac-addresses (ACX500 Routers) on page 1611
show chassis mac-addresses (EX9251 Switche) on page 1611
show chassis mac-addresses (EX9253 Switche) on page 1611

Output Fields

Table 87 on page 1606 lists the output fields for the **show chassis mac-addresses** command. Output fields are listed in the approximate order in which they appear.

Table 87: show chassis mac-addresses Output Fields

Field Name	Field Description
MAC address information	

Table 87: show chassis mac-addresses Output Fields *(continued)*

Field Name	Field Description
Public base address	Base address of the MAC addresses allocated to this router or switch, for example 00:24:dc:18:09:40. This address is also printed on the box of the device. Public MAC addresses are those addresses your switch/router assigns to Ethernet interfaces. The public base address is the first MAC address your device assigns to an interface. Consecutive public count MAC addresses are reserved for additional interfaces.
	Number of allocated public addresses, for example 64. Public addresses are calculated starting with the public base address. If the public base address is 00:24:dc:18:09:40, then The MAC address of ge-0/0/0 on this device is 00:24:dc:18:09:40, and ge-0/0/1 is 00:24:dc:18:09:41, and so on, up to 64 available addresses.
Private base address	Base address of the private MAC addresses allocated to this router or switch. The private base address is the first MAC address after the allocated consecutive public count addresses. For example, if 00:24:dc:18:09:40 is the public base and 0x40 is the public count in hex, then 00:24:dc:18:09:80 would be the private base.
Private count	Number of allocated private addresses.

Sample Output

show chassis mac-addresses

`user@host>` **show chassis mac-addresses**

```
MAC address information
  Public base address   0:90:69:0:4:0
  Public count       1008
  Private base address   0:90:69:0:7:f0
  Private count       16
```

show chassis mac-addresses (MX2010 Router)

```
user@host> show chassis mac-addresses
```

```
MAC address information:
  Public base address     64:87:88:04:50:00
  Public count            1984
  Private base address    64:87:88:04:57:c0
  Private count           64
```

show chassis mac-addresses (PTX10008 Router)

```
user@host> show chassis mac-addresses
```

```
MAC address information:
  Public base address      30:b6:4f:0a:7a:bb
  Public count             1856
  Private base address     30:b6:4f:0a:81:fb
  Private count            192
```

show chassis mac-addresses (TX Matrix Router)

```
user@host> show chassis mac-addresses
```

```
scc-re0:
--------------------------------------------------------------------------
MAC address information:
  Public base address     00:05:85:9e:cc:00
  Public count            8064
  Private base address    00:05:85:9e:eb:80
  Private count           128
lcc0-re0:
--------------------------------------------------------------------------
MAC address information:
  Public base address     00:05:85:68:98:00
  Public count            2032
  Private base address    00:05:85:68:9f:f0
  Private count           16
lcc2-re0:
--------------------------------------------------------------------------
MAC address information:
  Public base address     00:05:85:68:78:00
  Public count            2032
```

```
  Private base address    00:05:85:68:7f:f0
  Private count           16
```

show chassis mac-addresses (TX Matrix Plus Router)

`user@host>` **show chassis mac-addresses**

```
sfc0-re0:
--------------------------------------------------------------------------
MAC address information:
  Public base address     00:1d:b5:14:00:00
  Public count            65023
  Private base address    00:1d:b5:14:fd:ff
  Private count           512

lcc0-re0:
--------------------------------------------------------------------------
MAC address information:
  Public base address     00:1f:12:7a:84:00
  Public count            2032
  Private base address    00:1f:12:7a:8b:f0
  Private count           16

lcc1-re0:
--------------------------------------------------------------------------
MAC address information:
  Public base address     00:22:83:42:48:00
  Public count            2032
  Private base address    00:22:83:42:4f:f0
  Private count           16

lcc2-re0:
--------------------------------------------------------------------------
MAC address information:
  Public base address     00:1f:12:c3:58:00
  Public count            2032
  Private base address    00:1f:12:c3:5f:f0
  Private count           16

lcc3-re0:
--------------------------------------------------------------------------
MAC address information:
  Public base address     00:21:59:ef:b8:00
  Public count            2032
```

```
  Private base address    00:21:59:ef:bf:f0
  Private count           16
```

show chassis mac-addresses (QFX Series and OCX Series)

```
user@switch> show chassis mac-addresses
```

```
MAC address information:
Public base address 02:00:08:00:00:00
Public count 512
Private base address 02:00:00:00:00:00
Private count 64
```

show chassis mac-addresses interconnect-device (QFabric Switches)

```
user@switch> show chassis mac-addresses interconnect-device interconnect1
```

```
MAC address information:
  Public base address     00:1f:12:30:9c:c0
  Public count            58
  Private base address    00:1f:12:30:9c:fa
  Private count           6
```

show chassis mac-addresses node-group (QFabric Switches)

```
user@switch> show chassis mac-addresses node-group NW-NG-0
```

```
MAC address information:
------------------------
RE:
  FC MAC base    00:11:00:00:00:00
  FC MAC count   2
  VLAN MAC       00:11:00:00:00:09
EC6007
  Base address   00:00:01:76:00:00
  Count          64
EC6008
  Base address   00:22:83:22:52:ae
  Count          260
```

show chassis mac-addresses (ACX5048 and ACX5096 Routers)

`user@host>` **show chassis mac-addresses**

```
FPC 0
    Base address   64:64:9b:5e:0a:00
    Count          1280
```

show chassis mac-addresses (ACX500 Routers)

`user@host>` **show chassis mac-addresses**

```
MAC address information:
  Public base address     f0:1c:2d:1b:60:80
  Public count            112
  Private base address    f0:1c:2d:1b:60:f0
  Private count           16
```

show chassis mac-addresses (EX9251 Switche)

`user@switch>` **show chassis mac-addresses**

```
 MAC address information:
  Public base address      4c:16:fc:90:68:00
  Public count             2032
  Private base address     4c:16:fc:90:6f:f0
  Private count            16
```

show chassis mac-addresses (EX9253 Switche)

`user@switch>` **show chassis mac-addresses**

```
 MAC address information:
  Public base address      38:4f:49:8f:00:b8
  Public count             2330
  Private base address     38:4f:49:8f:09:d2
  Private count            1766
```

show chassis network-services

Syntax

```
show chassis network-services
```

Release Information

Command introduced in Junos OS Release 9.4.
Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 Universal Routing Platforms.
Command introduced in Junos OS Release 13.2 for MX104 Universal Routing Platforms.
Command introduced in Junos OS Release 15.F5 for PTX Series Routers with third-generation FPCs.
Command introduced in Junos OS Release 17.2 for PTX10008 Routers and MX2008 Universal Routing Platforms.
Command introduced in Junos OS Release 17.3 for MX10003 Universal Routing Platforms.
Command introduced in Junos OS Release 17.4 for MX204 Universal Routing Platforms.
Command introduced in Junos OS Release 18.2 for MX10008 Universal Routing Platforms.

Description

Display the network services mode that the router is configured to run in—IP Network Services mode, Ethernet Network Services mode, Enhanced IP Network Services mode, Enhanced Ethernet Network Services mode, or Enhanced mode.

Options

all-ethernet—All Ethernet network services

all-ip—All IP network services

enhanced-ethernet—Enhanced ethernet network services

enhanced-ip—Enhanced IP network services

enhanced-mode—Enhanced network services

ethernet—Ethernet network services

ip—IP network services

lan—Ethernet LAN services

Required Privilege Level

view

RELATED DOCUMENTATION

enhanced-mode | 356

List of Sample Output

show chassis network services on page 1613
show chassis network services (MX104 Router) on page 1613
show chassis network services (MX2010 Router) on page 1614
show chassis network services (MX2020 Router) on page 1614
show chassis network services (MX2008 Router) on page 1614
show chassis network-services (MX10003 Router) on page 1614
show chassis network-services (MX204 Router) on page 1614
show chassis network-services (MX10008 Router) on page 1614
show chassis network services (PTX Router with third-generation FPCs) on page 1615

Output Fields

Table 88 on page 1613 lists the output fields for the **show chassis network services** command. Output fields are listed in the approximate order in which they appear.

Table 88: show chassis network services Output Fields

Field Name	Field Description
Network Services Mode	Network services mode configured for the router: • **IP**—IP Network Services mode. • **Ethernet**—Ethernet Network Services mode. • **enhanced-ip**—Enhanced IP Network Services mode • **enhanced-ethernet**—Enhanced Ethernet Network Services mode • **Enhanced-Mode**—Enhanced mode for PTX Series routers that have third-generation FPCs installed. See enhanced-mode.

Sample Output

show chassis network services

```
user@host> show chassis network services
```

```
Network Services Mode: IP
```

show chassis network services (MX104 Router)

```
user@host> show chassis network services
```

```
Network Services Mode: IP
```

show chassis network services (MX2010 Router)

```
user@host> show chassis network services
```

```
Network Services Mode: Enhanced-IP
```

show chassis network services (MX2020 Router)

```
user@host> show chassis network services
```

```
Network Services Mode: Enhanced-IP
```

show chassis network services (MX2008 Router)

```
user@host> show chassis network-services
```

```
Network Services Mode: Enhanced-IP
```

show chassis network-services (MX10003 Router)

```
user@host> show chassis network-services
```

```

Network Services Mode: Enhanced-IP
```

show chassis network-services (MX204 Router)

```
user@host> show chassis network-services
```

```

Network Services Mode: Enhanced-IP
```

show chassis network-services (MX10008 Router)

```
user@host> show chassis network-services
```

```
Network Services Mode: Enhanced-IP
```

show chassis network services (PTX Router with third-generation FPCs)

`user@host>` **show chassis network services**

```
Network Services Mode: Enhanced-Mode
```

show chassis oss-map

Syntax

```
show chassis oss-map
```

Release Information

Command introduced in Junos OS Release 12.3R3, 13.1R2, and 13.2R1 for T4000 routers.

Description

(T4000 routers only) Display the operations support systems (OSS) mapping details.

Required Privilege Level

view

RELATED DOCUMENTATION

Configuring OSS Mapping to Represent a T4000 Chassis as a T1600 or a T640 Chassis | 289

Example: Configuring a T4000 Chassis to Represent a T640 Chassis | 291

oss-map | 465

Output Fields

Table 89 on page 1616 lists the output fields for the **show chassis oss-map** command. Output fields are listed in the approximate order in which they appear.

Table 89: show chassis oss-map Output Fields

Field Name	Field Description
Chassis type	Displays the original chassis type.
Oss-map	Displays the mapped chassis type.

Sample Output

```
user@T4000# show chassis oss-map
```

```
Chassis type            Oss-map
T4000                   T640
```

show chassis pic

List of Syntax

Syntax on page 1618
Syntax (TX Matrix and TX Matrix Plus Routers) on page 1618
Syntax (MX Series Routers and EX Series Switches) on page 1618
Syntax (PTX Series Packet Transport Router and MX240, MX480, MX960, MX2010, and MX2020 Routers) on page 1618
Syntax (QFX Series) on page 1618
Syntax (ACX5048 and ACX5096 Routers) on page 1618
Syntax (ACX500 Routers) on page 1619

Syntax

```
show chassis pic fpc-slot slot-number pic-slot slot-number
```

Syntax (TX Matrix and TX Matrix Plus Routers)

```
show chassis pic fpc-slot slot-number pic-slot slot-number
<lcc number>
```

Syntax (MX Series Routers and EX Series Switches)

```
show chassis pic fpc-slot slot-number  pic-slot slot-number
<all-members>
<local>
<member member-id>
```

Syntax (PTX Series Packet Transport Router and MX240, MX480, MX960, MX2010, and MX2020 Routers)

```
show chassis pic transport fpc-slot  slot-number pic-slot slot-number
```

Syntax (QFX Series)

```
show chassis pic fpc-slot slot-number pic-slot slot-number
<interconnect-device name (fpc-slot slot-number | pic-slot slot-number)>
<node-device name pic-slot slot-number>
```

Syntax (ACX5048 and ACX5096 Routers)

```
show chassis pic
(fpc-slot slot-number | pic-slot slot-number)
```

Syntax (ACX500 Routers)

```
show chassis pic
(fpc-slot slot-number | pic-slot slot-number)
```

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
Command introduced in Junos OS Release 11.1 for QFX Series.
Command introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.
Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 3D Universal Edge Routers.
Command introduced in Junos OS Release 13.2 for PTX Series Packet Transport Routers and MX104 3D Universal Edge Routers.
Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.
transport option introduced in Junos OS Release 16.1R1 for MX Series Routers.
Command introduced in Junos OS Release 17.2 for MX2008 3D Universal Edge Routers and PTX10008 Routers.
Command introduced in Junos OS Release 17.3 for MX10003 3D Universal Edge Routers and MX150 Router Appliance.
Command introduced in Junos OS Release 17.4 for MX204 3D Universal Edge Routers.

Description

Display status information about the PIC installed in the specified Flexible PIC Concentrator (FPC) and PIC slot.

Options

fpc-slot *slot-number*—Display information about the PIC in this particular FPC slot:

- On a TX Matrix router, if you specify the number of the T640 router by using the **lcc *number*** option (the recommended method), replace ***slot-number*** with a value from **0** through **7**. Otherwise, replace ***slot-number*** with a value from **0** through **31**.

  Likewise, on a TX Matrix Plus router, if you specify the number of the T1600 router by using the **lcc *number*** option (the recommended method), replace ***slot-number*** with a value from **0** through **7**. Otherwise, replace ***slot-number*** with a value from **0** through **31**. For example, the following commands have the same result:

  ```
  user@host> show chassis pic fpc-slot 1 lcc 1 pic-slot 1
  user@host> show chassis pic fpc-slot 9 pic-slot 1
  ```

- M120 routers only—Replace ***slot-number*** with a value from **0** through **5**.
- MX80 routers only—Replace ***slot-number*** with a value from **0** through **1**.
- MX104 routers only—Replace ***slot-number*** with a value from **0** through **2**.
- MX240 routers only—Replace ***slot-number*** with a value from **0** through **2**.
- MX480 routers only—Replace ***slot-number*** with a value from **0** through **5**.
- MX960 routers only—Replace ***slot-number*** with a value from **0** through **11**.
- MX2010 routers only—Replace ***slot-number*** with a value from **0** through **9**.
- MX2020 routers only—Replace ***slot-number*** with a value from **0** through **19**.
- MX2008 routers only—Replace ***slot-number*** with a value from **0** through **9**.
- MX10003 routers only—Replace ***slot-number*** with a value from **0** through **1**.
- Other routers—Replace ***slot-number*** with a value from **0** through **7**.
- EX Series switches:
  - EX3200 switches and EX4200 standalone switches—Replace ***slot-number*** with 0.
  - EX4200 switches in a Virtual Chassis configuration—Replace ***slot-number*** with a value from 0 through 9 (switch's member ID).
  - EX8208 switches—Replace ***slot-number*** with a value from 0 through 7 (line card).
  - EX8216 switches—Replace ***slot-number*** with a value from 0 through 15 (line card).
- QFX Series:
  - QFX3500, QFX3600, QFX5100, and OCX Series standalone switches—Replace ***slot-number*** with 0. In the command output, FPC refers to a line card. The FPC number equals the slot number for the line card.
  - QFabric systems—Replace ***slot-number*** with any number between 0 and 15. In the command output, FPC refers to a line card. The FPC number equals the slot number for the line card.

all-members—(MX Series routers and EX Series switches only) (Optional) Display PIC information for all member routers in the Virtual Chassis configuration.

interconnect-device *name*—(QFabric systems only) (Optional) Display PIC information for a specified Interconnect device.

lcc *number*—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display PIC information for a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display PIC information for a specified router (line-card chassis) that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

local—(MX Series routers and EX Series switches only) (Optional) Display PIC information for the local Virtual Chassis member.

member *member-id*—(MX Series routers and EX Series switches only) (Optional) Display PIC information for the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value of 0 or 1.

node-device *name*—(QFabric systems only) (Optional) Display PIC information for a specified Node device.

pic-slot *slot-number*—Display information about the PIC in this particular PIC slot. For routers, replace ***slot-number*** with a value from **0** through **3**. For EX3200 and EX4200 switches, replace ***slot-number*** with 0 for built-in network interfaces and 1 for interfaces on uplink modules. For EX8208 and EX8216 switches, replace ***slot-number*** with 0. For the QFX3500 standalone switch and the QFabric system, replace ***slot-number*** with 0 or 1.

transport—Display PIC information for optical transport network.

Required Privilege Level
view

RELATED DOCUMENTATION

request chassis pic | **642**

show chassis hardware | **1571**

100-Gigabit Ethernet Type 4 PIC with CFP Overview

List of Sample Output

show chassis pic fpc-slot pic-slot on page 1626
show chassis pic fpc-slot pic-slot (PIC Offline) on page 1626
show chassis pic fpc-slot pic-slot (FPC Offline) on page 1627
show chassis pic fpc-slot pic-slot (FPC Not Present) on page 1627
show chassis pic fpc-slot pic-slot (PIC Not Present) on page 1627

show chassis pic fpc-slot 3 pic-slot 0 (M120 Router) on page 1627
show chassis pic fpc-slot pic-slot (MX150) on page 1627
show chassis pic fpc-slot pic-slot (MX960 Router with Bidirectional Optics) on page 1628
show chassis pic fpc-slot pic-slot (MX480 Router with 100-Gigabit Ethernet MIC) on page 1628
show chassis pic fpc-slot pic-slot (MX240, MX480, MX960 Routers with Application Services Modular Line Card) on page 1629
show chassis pic fpc-slot pic-slot (MX960 Router with MPC5EQ) on page 1629
show chassis pic fpc-slot pic-slot (MX960 Router with MPC3E and 100-Gigabit DWDM OTN MIC) on page 1630
show chassis pic fpc-slot pic-slot (MX10003 Routers) on page 1630
show chassis pic fpc-slot pic-slot (PTX3000 Router with 5-port 100-Gigabit DWDM OTN PIC on page 1631
show chassis pic fpc-slot pic-slot (MX480 Router with MPC4E) on page 1631
show chassis pic fpc-slot pic-slot (MX480 router with OTN Interface) on page 1632
show chassis pic fpc-slot pic-slot (MX2010 Router with OTN Interfaces) on page 1632
show chassis pic fpc-slot pic-slot (MX2010 Router) on page 1633
show chassis pic fpc-slot pic-slot (MX2020 Router) on page 1633
show chassis pic fpc-slot pic-slot (MX2020 Router with MPC5EQ and MPC6E) on page 1634
show chassis pic fpc-slot pic-slot (MX2020 Router with MPC6E and OTN MIC) on page 1634
show chassis pic fpc-slot pic-slot (MX2020 Router with MPC4E) on page 1635
show chassis pic fpc-slot pic-slot (MX2010 Router) on page 1635
show chassis pic fpc-slot pic-slot (T1600 Router with 100-Gigabit Ethernet PIC) on page 1636
show chassis pic fpc-slot pic-slot lcc (TX Matrix Router) on page 1636
show chassis pic fpc-slot pic-slot lcc (TX Matrix Plus Router) on page 1636
show chassis pic fpc-slot pic-slot (Next-Generation SONET/SDH SFP) on page 1637
show chassis pic fpc-slot pic-slot (12-Port T1/E1) on page 1637
show chassis pic fpc-slot 0 pic-slot 1 (4x CHOC3 SONET CE SFP) on page 1637
show chassis pic fpc-slot 0 pic-slot 0 (SONET/SDH OC3/STM1 [Multi-Rate] MIC with SFP) on page 1638
show chassis pic fpc-slot 3 pic-slot 0 (8-port Channelized SONET/SDH OC3/STM1 [Multi-Rate] MIC with SFP) on page 1638
show chassis pic fpc-slot 5 pic-slot 0 (4-port Channelized SONET/SDH OC3/STM1 [Multi-Rate] MIC with SFP) on page 1639
show chassis pic fpc-slot 1 pic-slot 0 (1-port OC192/STM64 MIC with XFP) on page 1639
show chassis pic fpc-slot 1 pic-slot 2 (8-port DS3/E3 MIC) on page 1640
show chassis pic fpc-slot pic-slot (OTN) on page 1640
show chassis pic fpc-slot pic-slot (QFX3500 Switch) on page 1640
show chassis pic fpc-slot pic-slot (QFX5100 Switches and OCX Series) on page 1640
show chassis pic interconnect-device fpc-slot pic-slot (QFabric Systems) on page 1641
show chassis pic node-device fpc-slot pic-slot (QFabric System) on page 1641
show chassis pic fpc-slot 0 pic-slot 1 (ACX2000 Universal Access Router) on page 1642
show chassis pic FPC-slot 1 PIC-slot 0 (MX Routers with Media Services Blade [MSB]) on page 1642
show chassis pic FPC slot 1, PIC slot 2 (MX Routers with Media Services Blade [MSB]) on page 1643
show chassis pic transport fpc-slot pic-slot (PTX Series Packet Transport Routers) on page 1643

show chassis pic transport fpc-slot pic-slot (MX960 Router with MPC3E and 100-Gigabit DWDM OTN MIC) on page 1643
show chassis pic fpc-slot 0 pic-slot 0 (ACX5096 Router) on page 1643
show chassis pic fpc-slot 0 pic-slot 0 (ACX5048 Router) on page 1648
show chassis pic fpc-slot 0 pic-slot 0 (ACX500 Router) on page 1649
show chassis pic fpc-slot 0 pic-slot 1 (ACX500 Router) on page 1649
show chassis pic transport fpc-slot pic-slot (PTX Series Packet Transport Routers) on page 1649
show chassis pic transport fpc-slot pic-slot (MX960 Router with MPC3E and 100-Gigabit DWDM OTN MIC) on page 1650
show chassis pic fpc-slot 7 pic-slot 1 (MX960 Router MPC10E-15C-MRATE Line Card) on page 1650

Output Fields

Table 90 on page 1623 lists the output fields for the **show chassis pic** command. Output fields are listed in the approximate order in which they appear.

Table 90: show chassis pic Output Fields

Field Name	Field Description
Type	PIC type. **NOTE:** On the 1-port OC192/STM64 MICs with the SDH framing mode, the type is displayed as **MIC-3D-1STM64-XFP** and with the SONET framing mode, the type is displayed as **MIC-3D-1OC192-XFP**. By default, the 1-port OC192/STM64 MICs displays the type as **MIC-3D-1OC192-XFP**.
Account Layer2 Overhead	(MX Series routers) Indicates whether functionality to count the Layer 2 overhead bytes in the interface statistics at the PIC level is enabled or disabled.
ASIC type	Type of ASIC on the PIC.

Table 90: show chassis pic Output Fields *(continued)*

Field Name	Field Description
State	Status of the PIC. State is displayed only when a PIC is in the slot. • **Online**— PIC is online and running. • **Offline**—PIC is powered down. • **Empty**—No PIC is present. • **Present**—PIC is plugged in. The PIC is not powered on or operational. • **Onlining**—PIC is in the process of going online. PICs and rest of the hardware is initializing. • **Offlining**—PIC is in the process of going offline. PIC and rest of the hardware is being shutdown down to take the offline gracefully. • **Fault**—PIC is in an alarmed state and the PIC is not operational.
PIC version	PIC hardware version.
Uptime	How long the PIC has been online.
Package	(Multiservices PICs only) Services package supported: **Layer-2** or **Layer-3**.
Port Number	Port number for the PIC.
Cable Type	Type of cable connected to the port: **LH**, **LX**, or **SX.**
PIC Port Information (MX480 Router 100-Gigabit Ethernet CFP)	Port-level information for the PIC. • Port—Port number • Cable type—Type of optical transceiver installed. • Fiber type—Type of fiber. SM is single-mode. • Xcvr vendor—Transceiver vendor name. • Xcvr vendor part number—Transceiver vendor part number. • Wavelength—Wavelength of the transmitted signal. Uplinks and downlinks are always 1550 nm. There is a separate fiber for each direction • Xcvr Firmware—Transceiver firmware version.

Table 90: show chassis pic Output Fields *(continued)*

Field Name	Field Description

PIC Port Information (MX960 Router Bidirectional Optics)	Port-level information for the PIC.
	• Port—Port number
	• Cable type—Type of small form-factor pluggable (SFP) optical transceiver installed. Uplink interfaces display -U. Down link interfaces display -D.
	• Fiber type—Type of fiber. SM is single-mode.
	• Xcvr vendor—Transceiver vendor name.
	• Xcvr vendor part number—Transceiver vendor part number.
	  ◦ BX10-10-km bidirectional optics.
	  ◦ BX40-40-km bidirectional optics.
	  ◦ SFP-LX-40-km SFP optics.
	• Wavelength—Wavelength of the transmitted signal. Uplinks are always 1310 nm. Downlinks are either 1490 nm or 1550 nm.

PIC Port Information (Next-Generation SONET/SDH SFP)	Port-level information for the next-generation SONET/SDH SFP PIC. • Port—Port number. • Cable type—Type of small form-factor pluggable (SFP) optical transceiver installed. • Fiber type—Type of fiber: **SM** (single-mode) or **MM** (multimode). • Xcvr vendor—Transceiver vendor name. • Xcvr vendor part number—Transceiver vendor part number. • Wavelength—Wavelength of the transmitted signal. Next-generation SONET/SDH SFPs use 1310 nm.
PIC port information (MX104 router)	Port-level information for the PIC. • Port—Port number • Cable type—Type of optical transceiver installed. • Fiber type—Type of fiber. SM is single-mode. • Xcvr vendor—Transceiver vendor name. • Xcvr vendor part number—Transceiver vendor part number. • Wavelength—Wavelength of the transmitted signal. • Xcvr Firmware—Firmware version of the transceiver.

Table 90: show chassis pic Output Fields *(continued)*

Field Name	Field Description
Port speed information	Information pertaining to port speed: • Port—Port number. • PFE—Packet Forwarding Engine slot number. • Capable Port Speed—Speed supported by each port.
Multirate Mode	Rate-selectabilty status for the MIC: **Enabled** or **Disabled**.
Channelization	Indicates whether channelization is enabled or disabled on the DS3/E3 MIC.
Administrative State	Indicates the administrative state of the PIC. Possible values are: In Service (Default) and Out of Service.
Operational State	Indicates the operational state of the PIC. Possible values are: Normal and Fault.

Sample Output

show chassis pic fpc-slot pic-slot

```
user@host> show chassis pic fpc-slot 2 pic-slot 0
```

```
PIC fpc slot 2 pic slot 0 information:
  Type                            10x 1GE(LAN), 1000 BASE
  ASIC type                       H chip
  State                           Online
  PIC version                     1.1
  Uptime                          1 day, 50 minutes, 58 seconds
PIC Port Information:
  Port         Cable          Xcvr              Xcvr Vendor
  Number       Type           Vendor Name       Part Number
  0            GIGE 1000EX    FINISAR CORP.     FTRJ8519P1BNL-J3
  1            GIGE 1000EX    FINISAR CORP.     FTRJ-8519-7D-JUN
```

show chassis pic fpc-slot pic-slot (PIC Offline)

```
user@host> show chassis pic fpc-slot 1 pic-slot 0
```

```
PIC fpc slot 1 pic slot 0 information:
  State                           Offline
```

show chassis pic fpc-slot pic-slot (FPC Offline)

user@host> **show chassis pic fpc-slot 1 pic-slot 0**

```
FPC 1 is not online
```

show chassis pic fpc-slot pic-slot (FPC Not Present)

user@host> **show chassis pic fpc-slot 4 pic-slot 0**

```
FPC slot 4 is empty
```

show chassis pic fpc-slot pic-slot (PIC Not Present)

user@host> **show chassis pic fpc-slot 5 pic-slot 2**

```
FPC 5, PIC 2 is empty
```

show chassis pic fpc-slot 3 pic-slot 0 (M120 Router)

user@host> **show chassis pic fpc-slot 3 pic-slot 0**

```
PC slot 3, PIC slot 0 information:
  Type                            2x G/E IQ, 1000 BASE
  ASIC type                       IQ GE 2 VLAN-TAG FPGA
  State                           Online
  PIC version                1.16
  Uptime                        3 hours, 3 minutes

PIC Port Information:
  Port        Cable             Xcvr              Xcvr Vendor
  Number      Type              Vendor Name       Part Number
  0           GIGE 1000SX       FINISAR CORP.     FTRJ8519P1BNL-J3
  1           GIGE 1000SX       FINISAR CORP.     FTRJ-8519-7D-JUN
```

show chassis pic fpc-slot pic-slot (MX150)

user@host> **show chassis pic fpc-slot 0 pic-slot 0**

```
FPC slot 0, PIC slot 0 information:
  Type                            Virtual
  State                           Online
  PIC version                  0.0
  Uptime                          7 days, 19 hours, 44 minutes, 40 seconds

PIC port information:
                         Fiber                    Xcvr vendor       Wave-    Xcvr

  Port Cable type        type  Xcvr vendor        part number       length
Firmware
  10   GIGE 1000T        n/a   Methode Elec.      SP7041-M1-JN      n/a      0.0

  11   GIGE 1000T        n/a   Methode Elec.      SP7041-M1-JN      n/a      0.0
```

show chassis pic fpc-slot pic-slot (MX960 Router with Bidirectional Optics)

user@host> **show chassis pic fpc-slot 4 pic-slot 1**

```
FPC slot 4, PIC slot 1 information:
  Type                           10x 1GE(LAN)
  Account Layer2 Overhead        Enabled
  State                          Online
  PIC version                    0.0
  Uptime                         18 days, 5 hours, 41 minutes, 54 seconds

PIC port information:
                          Fiber                    Xcvr vendor
  Port  Cable type        type  Xcvr vendor        part number       Wavelength
  0     SFP-1000BASE-BX10-D SM  SumitomoElectric   SBP6H44-J3-BW-49  1490 nm
  1     SFP-1000BASE-BX10-D SM  SumitomoElectric   SBP6H44-J3-BW-49  1490 nm
  2     SFP-1000BASE-BX10-D SM  SumitomoElectric   SBP6H44-J3-BW-49  1490 nm
  3     SFP-1000BASE-BX10-D SM  OCP                TRXBG1LXDBVM2-JW  1490 nm
  4     SFP-1000BASE-BX10-D SM  OCP                TRXBG1LXDBVM2-JW  1490 nm
  5     SFP-1000BASE-BX10-U SM  SumitomoElectric   SBP6H44-J3-BW-31  1310 nm
  6     SFP-1000BASE-BX10-U SM  SumitomoElectric   SBP6H44-J3-BW-31  1310 nm
  7     SFP-1000BASE-BX10-U SM  OCP                TRXBG1LXDBBMH-J1  1310 nm
  8     SFP-1000BASE-BX10-U SM  OCP                TRXBG1LXDBBMH-J1  1310 nm
  9     SFP-1000BASE-BX10-U SM  SumitomoElectric   SBP6H44-J3-BW-31  1310 nm
```

show chassis pic fpc-slot pic-slot (MX480 Router with 100-Gigabit Ethernet MIC)

user@host> **show chassis pic fpc-slot 1 pic-slot 2**

```
FPC slot 1, PIC slot 2 information:
  Type                        1X100GE CFP
  State                       Online
  PIC version                 2.10
  Uptime                      4 minutes, 48 seconds

PIC port information:
        Fiber                    Xcvr vendor
  Port  Cable type        type  Xcvr vendor        part number       Wavelength
  0     100GBASE LR4      SM    FINISAR CORP.      FTLC1181RDNS-J3   1310 nm

        Xcvr vendor
        firmware version
        1.8
```

show chassis pic fpc-slot pic-slot (MX240, MX480, MX960 Routers with Application Services Modular Line Card)

user@host>**show chassis pic fpc-slot 1 pic-slot 2**

```
FPC slot 1, PIC slot 2 information:
  Type                            AS-MXC
  State                           Online
  PIC version                  1.0
  Uptime                          11 hours, 18 minutes, 3 seconds
```

show chassis pic fpc-slot pic-slot (MX960 Router with MPC5EQ)

user@host> **show chassis pic fpc-slot 0 pic-slot 3**

```
FPC slot 0, PIC slot 3 information:
  Type                            1X100GE CFP2 OTN
  State                           Online
  PIC version                  0.0
  Uptime                          1 hour, 22 minutes, 42 seconds

PIC port information:
                         Fiber                    Xcvr vendor       Wave-    Xcvr

  Port Cable type        type  Xcvr vendor        part number       length
Firmware
  0    100GBASE LR4      n/a   Oclaro Inc.        TRB5E20FNF-LF150  1309 nm  1.0
```

show chassis pic fpc-slot pic-slot (MX960 Router with MPC3E and 100-Gigabit DWDM OTN MIC)

user@host> **show chassis pic fpc-slot 3 pic-slot 0**

```
FPC slot 3, PIC slot 0 information:
  Type                            1X100GE DWDM CFP2-ACO
  State                           Online
  PIC version                  1.3
  Uptime                         9 hours, 4 minutes, 43 seconds

PIC port information:
                         Fiber                    Xcvr vendor       Wave-    Xcvr

  Port Cable type        type  Xcvr vendor        part number       length
Firmware
  0    100G LH           SM    OCLARO             TRB100AJ-01       1528.77 nm -
1568.36 nm 20.10
```

show chassis pic fpc-slot pic-slot (MX10003 Routers)

user@host > **show chassis pic fpc-slot 0 pic-slot 0**

```
FPC slot 0, PIC slot 1 information:
  Type                            MIC1
  State                           Online
  PIC version                  1.5
  Uptime                         13 hours, 54 minutes, 33 seconds

PIC port information:
                         Fiber                    Xcvr vendor       Wave-    Xcvr

  Port Cable type        type  Xcvr vendor        part number       length
Firmware
  0    40GBASE SR4       MM    AVAGO              AFBR-79EQDZ-JU2   850 nm   0.0
  11   40GBASE SR4       MM    AVAGO              AFBR-79EQDZ-JU2   850 nm   0.0

Port speed information:

  Port  PFE      Capable Port Speeds
  0      0       4x10GE, 40GE, 100GE
  1      0       4x10GE, 40GE, 100GE
  2      0       4x10GE, 40GE, 100GE
  3      0       4x10GE, 40GE, 100GE
  4      1       4x10GE, 40GE, 100GE
```

```
  5      1       4x10GE, 40GE, 100GE
  6      1       4x10GE, 40GE, 100GE
  7      1       4x10GE, 40GE, 100GE
  8      2       4x10GE, 40GE, 100GE
  9      2       4x10GE, 40GE, 100GE
  10     2       4x10GE, 40GE, 100GE
  11     2       4x10GE, 40GE, 100GE
```

show chassis pic fpc-slot pic-slot (PTX3000 Router with 5-port 100-Gigabit DWDM OTN PIC

`user@host >` **show chassis pic fpc-slot 4 pic-slot 0**

```
FPC slot 4, PIC slot 0 information:
  Type                            5X100GE DWDM CFP2-ACO
  State                           Online
  PIC version                 1.17
  Uptime                        1 day, 5 hours, 15 minutes, 17 seconds

PIC port information:
                         Fiber                    Xcvr vendor       Wave-    Xcvr

  Port Cable type        type  Xcvr vendor        part number       length
Firmware
  0    100G LH           SM    MULTILANE SAL      ML4030-ACO-2      1528.77 nm -
1568.36 nm 1.0
  1    100G LH           SM    MULTILANE SAL      ML4030-ACO-2      1528.77 nm -
1568.36 nm 1.0
  2    100G LH           SM    JUNIPER-FUJITSU    FIM38500/222      1528.77 nm -
1568.36 nm 1.16
  3    100G LH           SM    FUJITSU            FIM38500/222      1528.77 nm -
1568.36 nm 1.16
  4    100G LH           SM    FUJITSU            FIM38500/222      1528.77 nm -
1568.36 nm 1.16
```

show chassis pic fpc-slot pic-slot (MX480 Router with MPC4E)

`user@host>` **show chassis pic fpc-slot 3 pic-slot 0**

```
FPC slot 3, PIC slot 0 information:
  Type                            4x10GE SFPP
  State                           Online
  PIC version                   0.0
  Uptime                          41 seconds
```

```
PIC port information:
                         Fiber                    Xcvr vendor       Wave-    Xcvr

  Port Cable type        type  Xcvr vendor        part number       length
Firmware
  0    10GBASE SR        MM    OPNEXT, INC.       TRS2001EM-0014    850 nm   0.0

  1    10GBASE SR        MM    OPNEXT, INC.       TRS2001EM-0014    850 nm   0.0
```

show chassis pic fpc-slot pic-slot (MX480 router with OTN Interface)

`user@host>` **show chassis pci fpc-slot 4 pic-slot 0**

```
FPC slot 4, PIC slot 0 information:
  Type                            12X10GE SFPP OTN
  State                           Online
  PIC version                  0.0
  Uptime                         5 hours, 28 minutes, 23 seconds

PIC port information:
                         Fiber                    Xcvr vendor       Wave-    Xcvr

  Port Cable type        type  Xcvr vendor        part number       length
Firmware
  0    10GBASE SR        MM    FINISAR CORP.      FTLX8571D3BNL-J1  850 nm   0.0

  1    10GBASE SR        MM    FINISAR CORP.      FTLX8571D3BCL-J1  850 nm   0.0

  2    10GBASE SR        MM    OPNEXT, INC.       TRS2001EM-0014    850 nm   0.0
```

show chassis pic fpc-slot pic-slot (MX2010 Router with OTN Interfaces)

`user@host>` **show chassis pic fpc-slot 9 pic-slot 0**

```
FPC slot 9, PIC slot 0 information:
  Type                            2X100GE CFP2 OTN
  State                           Online
  PIC version                  1.9
  Uptime                         3 hours, 56 minutes, 16 seconds
```

```
PIC port information:
                         Fiber                    Xcvr vendor       Wave-    Xcvr

  Port Cable type        type  Xcvr vendor        part number       length
Firmware
  0    100GBASE LR4-D    SM    FUJITSU            FIM37300/222      1310 nm  1.3

  1    100GBASE SR10     MM    AVAGO              AFBR-8420Z        n/a      1.0
```

show chassis pic fpc-slot pic-slot (MX2010 Router)

user@host> **show chassis pic fpc-slot 9 pic-slot 3**

```
FPC slot 9, PIC slot 3 information:
  Type                            1X100GE CFP
  Account Layer2 Overhead         Enabled
  State                           Online
  PIC version                     0.0
  Uptime                          14 hours, 51 seconds
```

show chassis pic fpc-slot pic-slot (MX2020 Router)

user@host> **show chassis pic fpc-slot 19 pic-slot 3**

```
FPC slot 19, PIC slot 3 information:
  Type                            4x 10GE(LAN) SFP+
  Account Layer2 Overhead         Enabled
  State                           Online
  PIC version                  0.0
  Uptime                         1 day, 11 hours, 26 minutes, 36 seconds

PIC port information:
                         Fiber                    Xcvr vendor       Wave-    Xcvr

  Port Cable type        type  Xcvr vendor        part number       length
Firmware
  0    10GBASE SR        MM    SumitomoElectric   SPP5200SR-J6-M    850 nm   0.0

  1    10GBASE SR        MM    SumitomoElectric   SPP5200SR-J6-M    850 nm   0.0

  2    10GBASE SR        MM    SumitomoElectric   SPP5200SR-J6-M    850 nm   0.0
```

```
  3    10GBASE SR        MM    SumitomoElectric   SPP5200SR-J6-M    850 nm   0.0
```

show chassis pic fpc-slot pic-slot (MX2020 Router with MPC5EQ and MPC6E)

```
user@host> show chassis pic fpc-slot 18 pic-slot 2
```

```
FPC slot 18, PIC slot 2 information:
  Type                            3X40GE QSFPP
  State                           Online
  PIC version                 0.0
  Uptime                        6 minutes, 31 seconds

PIC port information:
                         Fiber                    Xcvr vendor       Wave-    Xcvr

  Port Cable type        type  Xcvr vendor        part number       length
Firmware
  0    40GBASE SR4       MM    AVAGO              AFBR-79E4Z-D-JU2  850 nm   0.0

  1    40GBASE SR4       MM    AVAGO              AFBR-79E4Z-D-JU2  850 nm   0.0

  2    40GBASE SR4       MM    AVAGO              AFBR-79E4Z-D-JU2  850 nm   0.0
```

show chassis pic fpc-slot pic-slot (MX2020 Router with MPC6E and OTN MIC)

```
user@host> show chassis pic fpc-slot 3 pic-slot 0
```

```
FPC slot 0, PIC slot 1 information:
  Type                            24X10GE SFPP OTN
  State                           Online
  PIC version                 1.1
  Uptime                        1 hour, 33 minutes, 59 seconds

PIC port information:
                         Fiber                    Xcvr vendor       Wave-    Xcvr

  Port Cable type        type  Xcvr vendor        part number       length
Firmware
  7    10GBASE SR        MM    SumitomoElectric   SPP5200SR-J6-M    850 nm   0.0

  9    10GBASE SR        MM    FINISAR CORP.      FTLX8571D3BNL-J1  850 nm   0.0
```

```
  12   10GBASE LR        SM    FINISAR CORP.      FTLX1472M3BNL-J3  1310 nm  0.0

  20   10GBASE ZR        SM    FINISAR CORP.      FTLX1871M3BNL-J3  1550 nm  0.0

  21   10GBASE ER        SM    FINISAR CORP.      FTLX1671D3BTL-J4  1550 nm  0.0

  22   10GBASE LR        SM    SOURCEPHOTONICS    SPP10SLREDFCJNP   1310 nm  0.0

  23   10GBASE LR        SM    FINISAR CORP.      FTLX1471D3BNL-J1  1310 nm  0.0
```

show chassis pic fpc-slot pic-slot (MX2020 Router with MPC4E)

user@host> **show chassis pic fpc-slot 14 pic-slot 0**

```
FPC slot 14, PIC slot 2 information:
  Type                            4x10GE SFPP
  State                           Online
  PIC version                  0.0
  Uptime                         1 day, 14 hours, 49 minutes, 9 seconds

PIC port information:
                         Fiber                    Xcvr vendor       Wave-    Xcvr

  Port Cable type        type  Xcvr vendor        part number       length
Firmware
  0    10GBASE SR        MM    SumitomoElectric   SPP5100SR-J3      850 nm   0.0

  1    10GBASE SR        MM    SumitomoElectric   SPP5100SR-J3      850 nm   0.0

  3    10GBASE SR        MM    SumitomoElectric   SPP5100SR-J3      850 nm   0.0
```

show chassis pic fpc-slot pic-slot (MX2010 Router)

user@host> **show chassis pic fpc-slot 9 pic-slot 3**

```
FPC slot 9, PIC slot 3 information:
  Type                            1X100GE CFP
  Account Layer2 Overhead         Enabled
  State                           Online
  PIC version                     0.0
  Uptime                          14 hours, 51 seconds
```

show chassis pic fpc-slot pic-slot (T1600 Router with 100-Gigabit Ethernet PIC)

```
user@host> run show chassis pic fpc-slot 3 pic-slot 1
```

```
FPC slot 3, PIC slot 1 information:
  Type                            100GE SLOT1
  ASIC type                       Brooklyn 100GE FPGA
  State                           Online
  PIC version                  1.3
  Uptime                         10 minutes, 44 seconds

PIC port information:
                          Fiber                    Xcvr vendor
  Port  Cable type        type  Xcvr vendor        part number       Wavelength
  0     100GBASE LR4      SM    Opnext Inc.        TRC5E20ENFSF000F  1310 nm
```

show chassis pic fpc-slot pic-slot lcc (TX Matrix Router)

```
user@host> show chassis pic fpc-slot 1 pic-slot 1 lcc 0
```

```
lcc0-re0:
--------------------------------------------------------------------------
PIC fpc slot 1 pic slot 1 information:
  Type                            4x OC-3 SONET, SMIR
  ASIC type                       D chip
  State                           Online
  PIC version                  1.2
  Uptime                          5 days, 2 hours, 12 minutes, 8 seconds
```

show chassis pic fpc-slot pic-slot lcc (TX Matrix Plus Router)

```
user@host> show chassis pic pic-slot 0 fpc-slot 8
```

```
lcc0-re0:
--------------------------------------------------------------------------
FPC slot 8, PIC slot 0 information:
  Type                            1x 10GE(LAN/WAN)
  State                           Online
  Uptime                        2 hours, 46 minutes, 23 seconds

PIC port information:
                          Fiber
  Port  Cable type        type  Xcvr vendor         part number       Wavelength
```

```
  0     10GBASE ZR        SM    Opnext Inc.         TRF7061BN-LF150   1550 nm
  0     10GBASE ZR        SM    FINISAR CORP.       FTRX-1811-3-J2    1550 nm
```

show chassis pic fpc-slot pic-slot (Next-Generation SONET/SDH SFP)

```
user@host> show chassis pic fpc-slot 4 pic-slot 0
```

```
FPC slot 4, PIC slot 0 information:
   Type                            4x OC-3 1x OC-12 SFP
   ASIC type                       D FPGA
   State                           Online
   PIC version                  1.3
   Uptime                          1 day, 50 minutes, 4 seconds

 PIC port information:
                          Fiber                    Xcvr vendor
   Port  Cable type       type  Xcvr vendor        part number       Wavelength
   0     OC48 short reach SM    FINISAR CORP.      FTRJ1321P1BTL-J2  1310 nm
   1     OC3 short reach  MM    OCP                TRPA03MM3BAS-JE   1310 nm
   2     OC3 short reach  MM    OCP                TRXA03MM3BAS-JW   1310 nm
   3     OC12 inter reach SM    FINISAR CORP.      FTLF1322P1BTR     1310 nm
```

show chassis pic fpc-slot pic-slot (12-Port T1/E1)

```
user@host> show chassis pic fpc-slot 0 pic-slot 3
```

```
FPC slot 0, PIC slot 3 information:
  Type                            12x T1/E1 CE
  State                           Online
  PIC version                  1.1
  CPU load average                1 percent
  Interrupt load average          0 percent
  Total DRAM size               128 MB
  Memory buffer utilization     100 percent
  Memory heap utilization         4 percent
  Uptime                          1 day, 22 hours, 28 minutes, 12 seconds
  Internal Clock Synchronization  Normal
```

show chassis pic fpc-slot 0 pic-slot 1 (4x CHOC3 SONET CE SFP)

```
user@host> show chassis pic fpc-slot 0 pic-slot 1
```

```
FPC slot 0, PIC slot 1 information:
  Type                            4x CHOC3 SONET CE SFP
  State                           Online
  PIC version                  1.3
  CPU load average               1 percent
  Interrupt load average         0 percent
  Total DRAM size              128 MB
  Memory buffer utilization     99 percent
  Memory heap utilization        4 percent
  Uptime                         1 day, 22 hours, 55 minutes, 37 seconds
  Internal Clock Synchronization   Normal

PIC port information:
                          Fiber                    Xcvr vendor
  Port  Cable type        type  Xcvr vendor        part number       Wavelength
  0     OC3 short reach   MM    AVAGO              HFBR-57E0P-JU2    n/a
  1     OC3 short reach   MM    AVAGO              HFBR-57E0P-JU2    n/a
  3     OC3 long reach    SM    OPNEXT INC         TRF5456AVLB314    1310 nm
```

show chassis pic fpc-slot 0 pic-slot 0 (SONET/SDH OC3/STM1 [Multi-Rate] MIC with SFP)

user@host> **show chassis pic fpc-slot 0 pic-slot 0**

```
FPC slot 0, PIC slot 0 information:
  Type                            MIC-3D-8OC3OC12-4OC48
  State                           Online
  PIC version                  1.8
  Uptime                         3 days, 22 hours, 3 minutes, 50 seconds

PIC port information:
                          Fiber                    Xcvr vendor
  Port  Cable type        type  Xcvr vendor        part number       Wavelength
  1     OC12 inter reach   SM   FINISAR CORP       FTRJ1322P1BTR-J3  1310 nm
  7     OC12 inter reach   SM   FINISAR CORP       FTRJ1322P1BTR-J3  1310 nm
Multirate Mode                    Enabled
```

show chassis pic fpc-slot 3 pic-slot 0 (8-port Channelized SONET/SDH OC3/STM1 [Multi-Rate] MIC with SFP)

user@host> **show chassis pic fpc-slot 3 pic-slot 0**

```
FPC slot 3, PIC slot 0 information:
  Type                            MIC-3D-8CHOC3-4CHOC12
```

```
  State                            Online
  PIC version                     1.9
  Uptime                            1 hour, 21 minutes, 24 seconds

PIC port information:
                          Fiber                    Xcvr vendor
  Port  Cable type        type  Xcvr vendor        part number       Wavelength
  0     OC12 short reach  SM    FINISAR CORP.      FTRJ1322P1BTR-J3  1310 nm
  1     OC12 short reach  SM    FINISAR CORP.      FTRJ1322P1BTR-J3  1310 nm
  2     OC12 inter reach  SM    FINISAR CORP.      FTRJ1322P1BTR-J2  1310 nm
  4     OC12 short reach  SM    FINISAR CORP.      FTRJ1322P1BTR-J3  1310 nm
  5     OC12 short reach  SM    FINISAR CORP.      FTRJ1322P1BTR-J3  1310 nm
  6     OC12 short reach  SM    FINISAR CORP.      FTRJ1322P1BTR-J3  1310 nm
  7     OC12 short reach  SM    FINISAR CORP.      FTRJ1322P1BTR-J3  1310 nm
```

show chassis pic fpc-slot 5 pic-slot 0 (4-port Channelized SONET/SDH OC3/STM1 [Multi-Rate] MIC with SFP)

```
user@host> show chassis pic fpc-slot 5 pic-slot 0
```

```
FPC slot 5, PIC slot 0 information:
  Type                         MIC-3D-4CHOC3-2CHOC12
  State                        Online
  PIC version                  1.9
  Uptime                       1 hour, 21 minutes

PIC port information:
                          Fiber                    Xcvr vendor
  Port  Cable type        type  Xcvr vendor        part number       Wavelength
  1     OC12 inter reach  SM    FINISAR CORP.      FTRJ1322P1BTR-J3  1310 nm
  2     OC12 inter reach  SM    FINISAR CORP.      FTRJ1322P1BTR-J3  1310 nm
  3     OC12 short reach  SM    FINISAR CORP.      FTRJ1322P1BTR-J3  1310 nm
```

show chassis pic fpc-slot 1 pic-slot 0 (1-port OC192/STM64 MIC with XFP)

```
user@host> show chassis pic fpc-slot 1 pic-slot 0
```

```
FPC slot 1, PIC slot 0 information:
  Type                            MIC-3D-1OC192-XFP
  State                           Online
  PIC version                     1.2
  Uptime                          1 day, 11 hours, 4 minutes, 6 seconds
```

```
PIC port information:
                          Fiber                    Xcvr vendor
  Port  Cable type        type  Xcvr vendor        part number       Wavelength
  0     OC192 short reach n/a   FINISAR CORP.      FTLX1412M3BCL-J3  1310 nm
```

show chassis pic fpc-slot 1 pic-slot 2 (8-port DS3/E3 MIC)

`user@host>` **show chassis pic fpc-slot 1 pic-slot 2**

```
FPC slot 1, PIC slot 2 information:
  Type                            MIC-3D-8DS3-E3
  State                           Online
  PIC version                     1.10
  Uptime                          4 days, 1 hour, 29 minutes, 19 seconds
  Channelization Mode             Disabled
```

show chassis pic fpc-slot pic-slot (OTN)

`user@host>` **show chassis pic fpc-slot 5 pic-slot 0**

```
PIC fpc slot 5 pic slot 0 information:
     Type                            1x10GE(LAN),OTN
     ASIC type                       H chip
     State                           Online
     PIC version                   1.0
     Uptime                        5 minutes, 50 seconds
```

show chassis pic fpc-slot pic-slot (QFX3500 Switch)

`user@switch>` **show chassis pic fpc-slot 0 pic-slot 0**

```
FPC slot 0, PIC slot 0 information:
Type 48x 10G-SFP+ Builtin
State Online
Uptime 3 days, 3 hours, 5 minutes, 20 seconds
```

show chassis pic fpc-slot pic-slot (QFX5100 Switches and OCX Series)

`user@switch>` **show chassis pic fpc-slot 0 pic-slot 0**

```
FPC slot 0, PIC slot 0 information:
  Type                            Unknown Builtin
  State                           Online
  Uptime                        1 day, 17 hours, 5 minutes, 9 seconds
```

show chassis pic interconnect-device fpc-slot pic-slot (QFabric Systems)

`user@switch>` **show chassis pic interconnect-device interconnect1 fpc-slot 9 pic-slot 0**

```
FPC slot 9, PIC slot 0 information:
  Type                            16x 40G-GEBuiltin
  State                           Online
  Uptime                        2 hours, 47 minutes, 40 seconds
```

show chassis pic node-device fpc-slot pic-slot (QFabric System)

`user@switch>` **show chassis pic node-device node1 pic-slot 0**

```
FPC slot node1, PIC slot 0 information:
  Type                            48x 10G-SFP+Builtin
  State                           Online
  Uptime                        2 hours, 52 minutes, 37 seconds

PIC port information:
                         Fiber                    Xcvr vendor
  Port  Cable type       type  Xcvr vendor        part number       Wavelength
  0     10GBASE SR       MM    SumitomoElectric   SPP5101SR-J3      850 nm
  1     10GBASE SR       MM    SumitomoElectric   SPP5101SR-J3      850 nm
  2     10GBASE SR       MM    SumitomoElectric   SPP5101SR-J3      850 nm
  3     10GBASE SR       MM    SumitomoElectric   SPP5101SR-J3      850 nm
  4     10GBASE SR       MM    SumitomoElectric   SPP5101SR-J3      850 nm
  5     10GBASE SR       MM    SumitomoElectric   SPP5101SR-J3      850 nm
  6     10GBASE SR       MM    SumitomoElectric   SPP5101SR-J3      850 nm
  7     10GBASE SR       MM    SumitomoElectric   SPP5101SR-J3      850 nm
  8     10GBASE SR       MM    SumitomoElectric   SPP5101SR-J3      850 nm
  9     10GBASE SR       MM    SumitomoElectric   SPP5101SR-J3      850 nm
  10    10GBASE SR       MM    SumitomoElectric   SPP5101SR-J3      850 nm
  11    10GBASE SR       MM    SumitomoElectric   SPP5101SR-J3      850 nm
  12    10GBASE SR       MM    SumitomoElectric   SPP5101SR-J3      850 nm
  13    10GBASE SR       MM    SumitomoElectric   SPP5101SR-J3      850 nm
  14    10GBASE SR       MM    SumitomoElectric   SPP5101SR-J3      850 nm
  15    10GBASE SR       MM    SumitomoElectric   SPP5101SR-J3      850 nm
  16    10GBASE SR       MM    SumitomoElectric   SPP5101SR-J3      850 nm
```

```
  17    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
  18    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
  19    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
  20    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
  21    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
  22    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
  23    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
  24    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
  25    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
  26    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
  27    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
  28    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
  29    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
  30    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
  31    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
  32    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
  33    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
  34    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
  35    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
  36    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
  37    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
  38    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
  39    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
  40    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
  41    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
  42    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
  43    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
  44    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
  45    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
  46    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
  47    10GBASE SR        MM    SumitomoElectric   SPP5101SR-J3      850 nm
```

show chassis pic fpc-slot 0 pic-slot 1 (ACX2000 Universal Access Router)

`user@host>` **show chassis pic fpc-slot 0 pic-slot 1**

```
FPC slot 0, PIC slot 1 information:
  Type                            8x 1GE(LAN) RJ45 Builtin
  State                           Online
  Uptime                         6 days, 2 hours, 51 minutes, 11 seconds
```

show chassis pic FPC-slot 1 PIC-slot 0 (MX Routers with Media Services Blade [MSB])

`user@switch>` **show chassis pic fpc-slot 1 pic-slot 0**

```
FPC slot 1, PIC slot 0 information:
  Type                            AS-MSC
  State                           Online
  PIC version                  1.6
  Uptime                          11 hours, 17 minutes, 56 seconds
```

show chassis pic FPC slot 1, PIC slot 2 (MX Routers with Media Services Blade [MSB])

```
user@switch> show chassis pic fpc-slot 1 pic-slot 2
```

```
Type                            AS-MXC
  State                           Online
  PIC version                  1.0
  Uptime                          11 hours, 18 minutes, 3 seconds
```

show chassis pic transport fpc-slot pic-slot (PTX Series Packet Transport Routers)

```
user@host> show chassis pic transport fpc-slot 2 pic-slot 0
```

```
Administrative State:      In Service
Operational    State:      Normal
```

show chassis pic transport fpc-slot pic-slot (MX960 Router with MPC3E and 100-Gigabit DWDM OTN MIC)

```
user@host> show chassis pic transport fpc-slot 3 pic-slot 0
```

```
Administrative State:      In Service
Operational    State:      Normal
```

show chassis pic fpc-slot 0 pic-slot 0 (ACX5096 Router)

```
user@host> show chassis pic fpc-slot 0 pic-slot 0
```

```
FPC slot 0, PIC slot 0 information:
  Type                            96x10G-8x40G
  State                           Online
  PIC version                  2.9
  Uptime                          21 hours, 28 minutes, 13 seconds
```

```
PIC port information:
                        Fiber                   Xcvr vendor       Wave-    Xcvr

  Port Cable type       type  Xcvr vendor       part number       length
Firmware
  0    10GBASE SR       MM    FINISAR CORP.     FTLX8571D3BCL-J1  850 nm   0.0

  1    10GBASE LR       SM    FINISAR CORP.     FTLX1471D3BCL-J1  1310 nm  0.0

  3    10GBASE SR       MM    FINISAR CORP.     FTLX8571D3BNL-J1  850 nm   0.0

  4    10GBASE SR       MM    SumitomoElectric  SPP5100SR-J3      850 nm   0.0

  5    10GBASE SR       MM    FINISAR CORP.     FTLX8571D3BNL-J1  850 nm   0.0

  6    10GBASE SR       MM    FINISAR CORP.     FTLX8571D3BNL-J1  850 nm   0.0

  7    10GBASE SR       MM    FINISAR CORP.     FTLX8571D3BNL-J1  850 nm   0.0

  8    10GBASE SR       MM    FINISAR CORP.     FTLX8571D3BNL-J1  850 nm   0.0

  9    10GBASE SR       MM    FINISAR CORP.     FTLX8571D3BNL-J1  850 nm   0.0

  10   10GBASE SR       MM    OPNEXT, INC.      TRS2001EN-0014    850 nm   0.0

  11   10GBASE SR       MM    SumitomoElectric  SPP5100SR-J3      850 nm   0.0

  12   10GBASE SR       MM    FINISAR CORP.     FTLX8571D3BNL-J1  850 nm   0.0

  13   10GBASE SR       MM    FINISAR CORP.     FTLX8571D3BCL-J1  850 nm   0.0

  14   10GBASE SR       MM    SumitomoElectric  SPP5100SR-J3      850 nm   0.0

  15   10GBASE SR       MM    FINISAR CORP.     FTLX8571D3BNL-J1  850 nm   0.0

  16   10GBASE SR       MM    FINISAR CORP.     FTLX8571D3BNL-J1  850 nm   0.0

  17   10GBASE SR       MM    FINISAR CORP.     FTLX8571D3BNL-J1  850 nm   0.0

  18   10GBASE SR       MM    FINISAR CORP.     FTLX8571D3BCL-J1  850 nm   0.0

  19   10GBASE LR       SM    FINISAR CORP.     FTLX1471D3BCL-J1  1310 nm  0.0

  20   10GBASE LR       SM    FINISAR CORP.     FTLX1471D3BNL-J1  1310 nm  0.0
```

```
21   10GBASE SR        MM    SumitomoElectric   SPP5100SR-J3      850 nm   0.0
22   10GBASE SR        MM    FINISAR CORP.      FTLX8571D3BNL-J1  850 nm   0.0
23   10GBASE SR        MM    SumitomoElectric   SPP5100SR-J3      850 nm   0.0
24   10GBASE SR        MM    FINISAR CORP.      FTLX8571D3BCL-J1  850 nm   0.0
25   10GBASE USR       MM    FINISAR CORP.      FTLX8570D3BCL-J1  850 nm   0.0
26   10GBASE SR        MM    FINISAR CORP.      FTLX8571D3BNL-J1  850 nm   0.0
27   10GBASE SR        MM    FINISAR CORP.      FTLX8571D3BCL-J1  850 nm   0.0
28   10GBASE SR        MM    FINISAR CORP.      FTLX8571D3BNL-J1  850 nm   0.0
29   GIGE 1000SX       MM    FINISAR CORP.      FTLF8519P3BNL-J1  850 nm   0.0
31   10GBASE SR        MM    FINISAR CORP.      FTLX8571D3BNL-J1  850 nm   0.0
32   10GBASE SR        MM    SumitomoElectric   SPP5100SR-J3      850 nm   0.0
33   10GBASE SR        MM    FINISAR CORP.      FTLX8571D3BCL-J1  850 nm   0.0
34   10GBASE SR        MM    SumitomoElectric   SPP5100SR-J3      850 nm   0.0
35   10GBASE USR       MM    FINISAR CORP.      FTLX8570D3BCL-J1  850 nm   0.0
36   10GBASE USR       MM    FINISAR CORP.      FTLX8570D3BCL-J1  850 nm   0.0
37   10GBASE SR        MM    FINISAR CORP.      FTLX8571D3BNL-J1  850 nm   0.0
38   10GBASE SR        MM    FINISAR CORP.      FTLX8571D3BCL-J1  850 nm   0.0
40   GIGE 1000LX10     SM    FINISAR CORP.      FTLF1318P2BTL-J1  1310 nm  0.0
41   10GBASE LR        SM    OPNEXT,INC         TRS5021EN-S201    1310 nm  0.0
42   10GBASE LR        SM    FINISAR CORP.      FTLX1471D3BCL-J1  1310 nm  0.0
43   10GBASE LR        SM    SumitomoElectric   SPP5100LR-J3      1310 nm  0.0
44   10GBASE LR        SM    SumitomoElectric   SPP5100LR-J3      1310 nm  0.0
```

```
45   10GBASE LR       SM    FINISAR CORP.      FTLX1471D3BCL-J1  1310 nm  0.0
46   10GBASE LR       SM    FINISAR CORP.      FTLX1471D3BCL-J1  1310 nm  0.0
47   10GBASE SR       MM    FINISAR CORP.      FTLX8571D3BNL-J1  850 nm   0.0
48   10GBASE SR       MM    SumitomoElectric   SPP5100SR-J3      850 nm   0.0
49   10GBASE SR       MM    FINISAR CORP.      FTLX8571D3BNL-J1  850 nm   0.0
50   10GBASE SR       MM    FINISAR CORP.      FTLX8571D3BNL-J1  850 nm   0.0
51   10GBASE SR       MM    FINISAR CORP.      FTLX8571D3BCL-J1  850 nm   0.0
52   10GBASE SR       MM    FINISAR CORP.      FTLX8571D3BCL-J1  850 nm   0.0
53   10GBASE SR       MM    FINISAR CORP.      FTLX8571D3BCL-J1  850 nm   0.0
54   10GBASE SR       MM    FINISAR CORP.      FTLX8571D3BCL-J1  850 nm   0.0
55   10GBASE SR       MM    FINISAR CORP.      FTLX8571D3BCL-J1  850 nm   0.0
56   10GBASE SR       MM    FINISAR CORP.      FTLX8571D3BCL-J1  850 nm   0.0
57   10GBASE SR       MM    FINISAR CORP.      FTLX8571D3BCL-J1  850 nm   0.0
58   10GBASE SR       MM    FINISAR CORP.      FTLX8571D3BCL-J1  850 nm   0.0
59   10GBASE SR       MM    FINISAR CORP.      FTLX8571D3BCL-J1  850 nm   0.0
60   10GBASE SR       MM    FINISAR CORP.      FTLX8571D3BCL-J1  850 nm   0.0
61   10GBASE SR       MM    FINISAR CORP.      FTLX8571D3BCL-J1  850 nm   0.0
62   10GBASE SR       MM    FINISAR CORP.      FTLX8571D3BCL-J1  850 nm   0.0
63   10GBASE SR       MM    FINISAR CORP.      FTLX8571D3BCL-J1  850 nm   0.0
64   10GBASE SR       MM    FINISAR CORP.      FTLX8571D3BCL-J1  850 nm   0.0
65   10GBASE SR       MM    FINISAR CORP.      FTLX8571D3BCL-J1  850 nm   0.0
66   10GBASE SR       MM    SumitomoElectric   SPP5200SR-J6-M    850 nm   0.0
```

```
67   10GBASE SR       MM    FINISAR CORP.      FTLX8571D3BCL-J1  850 nm   0.0
68   10GBASE SR       MM    FINISAR CORP.      FTLX8571D3BCL-J1  850 nm   0.0
69   10GBASE SR       MM    FINISAR CORP.      FTLX8571D3BCL-J1  850 nm   0.0
70   10GBASE SR       MM    FINISAR CORP.      FTLX8571D3BCL-J1  850 nm   0.0
71   10GBASE LR       SM    FINISAR CORP.      FTLX1471D3BNL-J1  1310 nm  0.0
72   10GBASE LR       SM    FINISAR CORP.      FTLX1471D3BCL-J1  1310 nm  0.0
73   10GBASE SR       MM    FINISAR CORP.      FTLX8571D3BCL-J1  850 nm   0.0
74   10GBASE SR       MM    FINISAR CORP.      FTLX8571D3BCL-J1  850 nm   0.0
75   10GBASE SR       MM    FINISAR CORP.      FTLX8571D3BCL-J1  850 nm   0.0
76   10GBASE SR       MM    SumitomoElectric   SPP5100SR-J3      850 nm   0.0
77   10GBASE USR      MM    OPNEXT, INC.       TRS20A0EN-0014    850 nm   0.0
78   10GBASE USR      MM    OPNEXT, INC.       TRS20A0EN-0014    850 nm   0.0
79   10GBASE LRM      MM    OPNEXT INC         TRS5001EN-0014    1310 nm  0.0
80   10GBASE LRM      MM    OPNEXT INC         TRS5001EN-0014    1310 nm  0.0
81   10GBASE USR      MM    OPNEXT, INC.       TRS20A0EN-0014    850 nm   0.0
82   10GBASE USR      MM    OPNEXT, INC.       TRS20A0EN-0014    850 nm   0.0
83   10GBASE USR      MM    OPNEXT, INC.       TRS20A0EN-0014    850 nm   0.0
84   10GBASE USR      MM    OPNEXT, INC.       TRS20A0EN-0014    850 nm   0.0
85   10GBASE LR       SM    OPNEXT,INC         TRS5021EN-S201    1310 nm  0.0
86   10GBASE ER       SM    OPNEXT,INC         TRS7050EN-S201    1550 nm  0.0
87   10GBASE LRM      MM    OPNEXT INC         TRS5001EN-0014    1310 nm  0.0
88   10GBASE LRM      MM    OPNEXT INC         TRS5001EN-0014    1310 nm  0.0
```

```
  89   10GBASE LRM       MM    OPNEXT INC         TRS5001EN-0014    1310 nm  0.0

  90   10GBASE LRM       MM    OPNEXT INC         TRS5001EN-0014    1310 nm  0.0

  91   10GBASE USR       MM    FINISAR CORP.      FTLX8570D3BCL-J1  850 nm   0.0

  92   10GBASE USR       MM    FINISAR CORP.      FTLX8570D3BCL-J1  850 nm   0.0

  93   10GBASE LR        SM    SumitomoElectric   SPP5100LR-J3      1310 nm  0.0

  94   10GBASE LR        SM    FINISAR CORP.      FTLX1471D3BNL-J1  1310 nm  0.0

  95   10GBASE SR        MM    FINISAR CORP.      FTLX8571D3BNL-J1  850 nm   0.0

  96   40GBASE SR4       MM    AVAGO              AFBR-79E4Z-D-JU1  850 nm   0.0

  97   40GBASE SR4       MM    AVAGO              AFBR-79E4Z-D-JU1  850 nm   0.0

  98   40GBASE SR4       MM    AVAGO              AFBR-79EQDZ-JU1   850 nm   0.0

  99   40GBASE SR4       MM    AVAGO              AFBR-79EQDZ-JU1   850 nm   0.0

  100  40GBASE CU 1M     n/a   Molex Inc.         1110409055        n/a      0.0

  101  40GBASE CU 1M     n/a   Molex Inc.         1110409055        n/a      0.0

  102  40GBASE CU 1M     n/a   Molex Inc.         1110409055        n/a      0.0

  103  40GBASE CU 1M     n/a   Molex Inc.         1110409055        n/a      0.0
```

show chassis pic fpc-slot 0 pic-slot 0 (ACX5048 Router)

user@host> **show chassis pic fpc-slot 0 pic-slot 0**

```
FPC slot 0, PIC slot 0 information:
  Type                            96x10G-8x40G
  State                           Online
  PIC version                  2.9
  Uptime                         1 day, 5 hours, 27 minutes, 25 seconds

PIC port information:
```

```
                        Fiber                    Xcvr vendor       Wave-    Xcvr

  Port Cable type        type  Xcvr vendor        part number       length
Firmware
  0    10GBASE SR        MM    FINISAR CORP.      FTLX8571D3BCL-J1  850 nm   0.0
  10   GIGE 1000SX       MM    FINISAR CORP.      FTLF8519P3BNL-J1  850 nm   0.0
  14   10GBASE SR        MM    FINISAR CORP.      FTLX8571D3BNL-J1  850 nm   0.0
  20   10GBASE SR        MM    FINISAR CORP.      FTLX8571D3BCL-J1  850 nm   0.0
  30   GIGE 1000SX       MM    FINISAR CORP.      FTLF8519P2BNL-J1  850 nm   0.0
  41   10GBASE SR        MM    OPNEXT, INC.       TRS2001EN-0014    850 nm   0.0
  46   GIGE 1000SX       MM    FINISAR CORP.      FTLF8519P2BNL-J1  850 nm   0.0
  64   10GBASE SR        MM    FINISAR CORP.      FTLX8571D3BNL-J1  850 nm   0.0
  78   GIGE 1000SX       MM    AVAGO              AFBR-5715PZ-JU2   850 nm   0.0
  96   40GBASE SR4       MM    AVAGO              AFBR-79EQDZ-JU1   850 nm   0.0
  99   40GBASE SR4       MM    AVAGO              AFBR-79EQDZ-JU1   850 nm   0.0
  100  40GBASE SR4       MM    AVAGO              AFBR-79EQDZ-JU1   850 nm   0.0
```

show chassis pic fpc-slot 0 pic-slot 0 (ACX500 Router)

user@host> **show chassis pic fpc-slot 0 pic-slot 0**

```
FPC slot 0, PIC slot 0 information:
  Type                            2x 1GE(LAN) SFP Builtin
  State                           Online
  Uptime                         17 hours, 54 minutes, 45 seconds
```

show chassis pic fpc-slot 0 pic-slot 1 (ACX500 Router)

user@host> **show chassis pic fpc-slot 0 pic-slot 1**

```
FPC slot 0, PIC slot 1 information:
  Type                            4x 1GE(LAN) RJ45, SFP Builtin
  State                           Online
  Uptime                         17 hours, 54 minutes, 45 seconds
```

show chassis pic transport fpc-slot pic-slot (PTX Series Packet Transport Routers)

```
user@host> show chassis pic transport fpc-slot 2 pic-slot 0
```

```
Administrative State:      In Service
Operational    State:      Normal
```

show chassis pic transport fpc-slot pic-slot (MX960 Router with MPC3E and 100-Gigabit DWDM OTN MIC)

```
user@host> show chassis pic transport fpc-slot 3 pic-slot 0
```

```
Administrative State:      In Service
Operational    State:      Normal
```

show chassis pic fpc-slot 7 pic-slot 1 (MX960 Router MPC10E-15C-MRATE Line Card)

```
user@router> show chassis pic fpc-slot 7 pic-slot 1
```

```
FPC slot 7, PIC slot 1 information:
  Type                            MRATE-5xQSFPP
  State                           Online
  PIC version                  0.0
  Uptime                         3 hours, 33 minutes, 21 seconds

PIC port information:
                         Fiber                    Xcvr vendor       Wave-    Xcvr
         JNPR
  Port Cable type        type  Xcvr vendor        part number       length
Firmware     Rev
  0    100GBASE LR4      SM    JUNIPER-FINISAR    FTLC1151RDPL-J3   1302 nm  0.0
         REV 01

Port speed information:

  Port  PFE      Capable Port Speeds
  0      1       4x10GE, 40GE, 100GE
  1      1       4x10GE, 40GE, 100GE
  2      1       4x10GE, 40GE, 100GE
  3      1       4x10GE, 40GE, 100GE
  4      1       4x10GE, 40GE, 100GE
```

show chassis power

List of Syntax

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Syntax (MX Series Router) on page 1651
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Syntax

```
show chassis power
```

Syntax (MX Series Router)

```
show chassis power
<all-members>
<local>
<member member-id>
<detail>
```

Syntax (MX2010, MX2020, MX10003, MX2008, and PTX Series routers; EX9200 and EX9253 Switches)

```
show chassis power
<detail>
```

Syntax (MX10008 Universal Routing Platforms)

```
show chassis power
<detail>
<sequence>
```

Release Information

Command introduced in Junos OS Release 10.0.
Command introduced in Junos OS Release 12.1 for PTX Series Packet Transport Routers.
Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 Universal Routing Platforms.
Command introduced in Junos OS Release 12.3 for EX9200 switches, with **detail** option added in Junos OS Release 15.2.
Command introduced in Junos OS Release 17.2 for PTX10008 Routers and MX2008 Universal Routing Platforms.
Command introduced in Junos OS Release 17.3 for MX10003 Universal Routing Platforms.

Command introduced in Junos OS Release 18.2 for EX9253 Switches and MX10008 Universal Routing Platforms.

Description

(EX9200 switches, MX Series 5G Universal Routing Platforms and PTX Series Packet Transport Routers only) Display power limits and usage information for the AC or DC power sources.

- On EX9200 switches and the MX Series 5G Universal Routing Platforms, power is supplied by Power Entry Modules (PEMs).

  NOTE: The new high-capacity (4100 W) enhanced DC PEM on MX960 routers includes a new design that can condition the input voltage. This results in the output voltage differing from the input voltage. The earlier generation of DC PEMs coupled the input power directly to the output, thereby making it safe to assume that the output voltage was equal to the input voltage.

- On the MX2020 Universal Routing Platforms, the power system consists of three components: the power supply modules (PSMs), the power distribution module (PDM), and the power midplane. The power feed is connected to the PDM. The PDM delivers power to the power midplane. The power midplane supplies power to the PSMs. The MX2020 router chassis provides 3+3 (2500W/80A) or 4+4 (2100W/60A) PSM redundancy for the critical FRUs with two power zones.
- On the MX2010 and MX2008 Universal Routing Platforms, the power system consists of three components: the power supply modules (PSMs), the power distribution module (PDM), and the power midplane. The power feed is connected to the PDM. The PDM delivers power to the power midplane. The power midplane supplies power to the PSMs. Unlike the MX2020 router chassis, the MX2010 and MX2008 router chassis does not provide redundancy for the critical FRUs because there is only one power zone.

  Starting from Junos OS Release 17.3, MX10003 routers support DC (1100W), AC High (1600W), and AC Low (800W) power supply units.
- On the PTX Series Packet Transport Routers, power is supplied by power supply modules (PSMs). On PTX5000 routers, the power feeds connect to the power distribution units (PDUs).
- Starting with Junos OS Release 14.1, the **show chassis power <detail>** operational mode command output displays power usage information for the new DC power supply module (PSM) and power distribution unit (PDU) that are added to provide power to the high-density FPC (FPC2-PTX-P1A) and other components in a PTX5000 Packet Transport Router. The output also displays power usage information for each PIC that is connected to the router. This command also displays power usage information for MX Series routers that have a MPC5EQ MPC installed.
- Starting in Junos OS Release 18.4R1, on MX240 routers and EX9204 switches, the enhanced AC PEM in high-line power configuration supplies a power output of 2400 W. On Junos OS versions prior to 18.4R1, this PEM supplied only 2050 W of power.

Options

none—Display basic power usage information for the AC and DC power sources.

all-members—(MX Series routers only) (Optional) Display power usage information for all members of the Virtual Chassis configuration.

detail—(Optional) Include power usage for specific FRUs.

local—(MX Series routers only) (Optional) Display power usage information for the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display power usage information for the specified member of the Virtual Chassis configuration. For an MX Series Virtual Chassis, replace *member-id* with a value of 0 or 1.

Required Privilege Level

view

RELATED DOCUMENTATION

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Checklist for Monitoring Power Supplies

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show chassis power detail (Junos OS Evolved) on page 1681

Output Fields

Table 91 on page 1655 lists the output fields for the **show chassis power** command. Output fields are listed in the approximate order in which they appear.

Table 91: show chassis power Output Fields:

Field Name	Field Description	Level of Output
PEM *number*		All levels

Table 91: show chassis power Output Fields: *(continued)*

Field Name	Field Description	Level of Output

	(EX9200 switches and MX Series routers only) AC or DC PEM number on the chassis. The following output fields are displayed for the PEM:
	• **State**—State of the PEM:
	  ◦ **Online**—PEM is present in the slot and online.
	  ◦ **Empty**—PEM is not present in the slot.
	  ◦ **Present**—PEM is present in the slot, but not online.
	• ***AC/DC* Input**—**OK** or **Check**—State of the AC or DC input power feed with the number of active and expected feeds (one or two).
	For a DC input power feed, this output field also displays the reference voltage input with maximum input voltage displayed in mV (in parentheses) for the AC or DC PEM.
	• **Capacity**—Actual power input capacity with maximum capacity displayed (in parentheses) in watts.
	NOTE: The maximum actual power capacity for AC and DC PEMs is:
	  ◦ MX960 AC PEM—4100 W if two feeds are connected. 1700 W if one feed is connected.
	  ◦ MX960 DC PEM—4100 W if two feeds are connected. 1700 W if one feed is connected.
	  ◦ MX480 AC PEM—2520 W if it is high-line. 1450 W if it is low-line.
	  ◦ MX480 DC PEM—2240 W if the DIP switch is off. 2440 W if the DIP switch is on.
	  ◦ MX240 AC PEM—2240 W if it is high-line. 2440 W if it is low-line.
	  ◦ MX240 DC PEM—2240 W if the DIP switch is off. 2440 W if the DIP switch is on.
	  ◦ EX9204 AC PEM—2050 W if it is high-line. 1167 W if it is low-line.
	  ◦ EX9204 DC PEM—2400 W if the DIP switch is off. 2600 W if the DIP switch is on.
	  ◦ EX9208 AC PEM—2050 W if it is high-line. 1167 W if it is low-line.
	  ◦ EX9208 DC PEM—2400 W if the DIP switch is off. 2600 W if the DIP switch is on.
	  ◦ EX9214 AC PEM—4100 W if two feeds are connected. 1700 W if one feed is connected.
	  ◦ EX9214 DC PEM—4100 W if two feeds are connected. 1700 W if one feed is connected.
	• **DC Output**—DC power output in Watts for the specified zone, at the specified amps and voltage (*A* @ *V*), and load and percentage utilization of the maximum	

Table 91: show chassis power Output Fields: *(continued)*

Field Name	Field Description	Level of Output
	capacity) for the zone.	

System	(EX9200 switches, MX Series, MX2020 routers, MX2010 routers, and MX2008 routers only) Overall power statistics for the system zone.
	
	The following output fields are displayed for MX Series routers:
	
	• Zone *number*:
	  ◦ **Capacity**—Maximum power capacity applicable for the zone, in watts.
	  ◦ **Allocated power**—Actual capacity allocated for the zone, in watts, with remaining power displayed in parentheses.
	  ◦ **Actual usage**—Actual power usage for the zone, in watts.
	• **Total system capacity**—Cumulative power capacity of all the zones, in watts.
	• **Total remaining capacity**—Difference between the **Total system capacity** and cumulative **Allocated power** of all the zones, in watts.
	
	The following output fields are displayed for MX2010, MX2020, and MX2008 routers:
	
	• **Capacity**—Maximum power capacity applicable for the zone, in watts.
	• **Allocated power**—Actual capacity allocated for the zone, in watts, with remaining power displayed in parentheses.
	• **Actual usage**—Actual power usage for the zone, in watts.
	
	NOTE: For MX2020 routers, there are two power subsystems (Lower Zone and Upper Zone) and the listed output fields are displayed for each zone.
		All levels

Total Power	(PTX Series only) Total power used by the switch (displayed in watts).	All levels
PDU *number*	(PTX5000 only) ID number of the power distribution unit (PDU) on the chassis.	All levels

Table 91: show chassis power Output Fields: *(continued)*

Field Name	Field Description	Level of Output

PSM *number*	(PTX Series, MX2020 routers, MX2010 routers, and MX2008 routers only) ID number of the power supply module..
	
	(PTX Series) The following output fields are displayed for each PSM:
	
	• **Input (V)**—Voltage supplied to the PSM.
	• **Used (W)**—Actual power usage for the PSM (measured in watts).
	
	NOTE: Starting with Junos OS Release 14.1, no output is displayed for **Input (v)** and **Used (W)** fields for missing PSMs; unlike in earlier releases where 0 was displayed for missing PSMs.
	
	(MX2010, MX2020, and MX2008 routers) The following output fields are displayed for each PSM:
	
	• **State**—State of the PSM:
	  ◦ **Online**—PSM is present in the slot and online.
	  ◦ **Empty**—PSM is not present in the slot.
	  ◦ **Present**—PSM is present in the slot but not online.
	• **DC Input**—State of the DC input power feed with the number of active or expected feeds (in parantheses).
	• **Capacity**—Actual power input capacity and maximum capacity (in parantheses) displayed in watts.
	
	NOTE: The maximum capacity for AC and DC PSMs is:
	
	  ◦ MX2010/MX2020/MX2008 AC PSM—2500 W.
	  ◦ MX2010/MX2020/MX2008 DC PSM—2100 W if the DIP switch is at 60A settings. 2500 W if the DIP switch is at 80A settings.
	
	• **DC Output**—DC power output in watts for the specified zone at the specified amperes and voltage (A at V), and load and percentage utilization of the maximum capacity for the zone.
		All levels

Item	Actual power usage (measured in watts) for the following FRUs: • **Fan Tray *n***—Power usage for the specified fan tray. • **RE*n*/CB*n***—Power usage for the specified Routing Engines and Control Boards • **SIB/CCG/FPD**—Power usage for the Switch Interface Board, Centralized Clock Generator (PTX5000 only), and Front Panel Display (craft interface). • **FPC *n***—Power usage for the FPC in the slot specified. **NOTE:** MX Series routers must have a MPC5EQ MPC installed to view FRU power usage with the **detail** command.	**detail**

Sample Output

show chassis power (MX960 Router with DC PEM)

```
user@host> show chassis power
```

```
PEM 0:
  State:     Online
  DC input:  OK (2 feed expected, 2 feed connected)
  DC input:  48.0 V input (57000 mV)
  Capacity:  4100 W (maximum 4100 W)
  DC output: 513 W (zone 0, 9 A at 57 V, 12% of capacity)

PEM 1:
  State:     Online
  DC input:  OK (2 feed expected, 2 feed connected)
  DC input:  48.0 V input (57000 mV)
  Capacity:  4100 W (maximum 4100 W)
  DC output: 228 W (zone 1, 4 A at 57 V, 5% of capacity)

PEM 2:
  State:     Online
  DC input:  OK (2 feed expected, 2 feed connected)
  DC input:  48.0 V input (57000 mV)
  Capacity:  4100 W (maximum 4100 W)
  DC output: 513 W (zone 0, 9 A at 57 V, 12% of capacity)

PEM 3:
  State:     Online
  DC input:  OK (2 feed expected, 2 feed connected)
  DC input:  48.0 V input (57000 mV)
  Capacity:  4100 W (maximum 4100 W)
  DC output: 342 W (zone 1, 6 A at 57 V, 8% of capacity)

System:
  Zone 0:
      Capacity:          4100 W (maximum 4100 W)
      Allocated power:   1680 W (2420 W remaining)
      Actual usage:      1026 W
  Zone 1:
      Capacity:          4100 W (maximum 4100 W)
      Allocated power:   1263 W (2837 W remaining)
      Actual usage:      570 W
  Total system capacity: 8200 W (maximum 8200 W)
  Total remaining power: 5257 W
```

show chassis power (MX960 Router with AC PEM)

user@host> **show chassis power**

```
PEM 0:
  State:     Online
  AC input:  OK (2 feed expected, 2 feed connected)
  Capacity:  4100 W (maximum 4100 W)
  DC output: 0 W (zone 0, 0 A at 56 V, 0% of capacity)

PEM 1:
  State:     Present
  AC input:  Check (2 feed expected, 1 feed connected)
  Capacity:  1700 W (maximum 4100 W)

PEM 2:
  State:     Empty
  Input:     Absent

PEM 3:
  State:     Online
  AC input:  OK (1 feed expected, 1 feed connected)
  Capacity:  1700 W (maximum 1700 W)

System:
  Zone 0:
      Capacity:          4100 W (maximum 4100 W)
      Allocated power:   540 W (3560 W remaining)
      Actual usage:      0 W
  Zone 1:
      Capacity:          0 W (maximum 0 W)
      Allocated power:   0 W (0 W remaining)
      Actual usage:      0 W
  Total system capacity: 4100 W (maximum 4100 W)
  Total remaining power: 3560 W
```

show chassis power detail (MX960 Router with MPC5EQ)

user@host> **show chassis power detail**

```
PEM 0:
  State:     Online
  DC input:  OK (2 feed expected, 2 feed connected)
  DC input:  48.0 V input (57500 mV)
  Capacity:  4100 W (maximum 4100 W)
```

```
  DC output: 798 W (zone 0, 14 A at 57 V, 19% of capacity)

PEM 1:
  State:     Online
  DC input:  OK (2 feed expected, 2 feed connected)
  DC input:  48.0 V input (57500 mV)
  Capacity:  4100 W (maximum 4100 W)
  DC output: 1311 W (zone 1, 23 A at 57 V, 31% of capacity)

PEM 2:
  State:     Online
  DC input:  OK (2 feed expected, 2 feed connected)
  DC input:  48.0 V input (57500 mV)
  Capacity:  4100 W (maximum 4100 W)
  DC output: 855 W (zone 0, 15 A at 57 V, 20% of capacity)

PEM 3:
  State:     Online
  DC input:  OK (2 feed expected, 2 feed connected)
  DC input:  48.0 V input (57500 mV)
  Capacity:  4100 W (maximum 4100 W)
  DC output: 912 W (zone 1, 16 A at 57 V, 22% of capacity)

System:
  Zone 0:
      Capacity:          4100 W (maximum 4100 W)
      Allocated power:   2497 W (1603 W remaining)
      Actual usage:      1653 W
  Zone 1:
      Capacity:          4100 W (maximum 4100 W)
      Allocated power:   3336 W (764 W remaining)
      Actual usage:      2223 W
  Total system capacity: 8200 W (maximum 8200 W)
  Total remaining power: 2367 W

Item                Used(W)
  FPC 0                255
  FPC 10               341
```

show chassis power (MX480 Router with AC PEM)

`user@host>` **show chassis power**

```
PEM 0:
  State:     Online
  AC input:  OK (1 feed expected, 1 feed connected)
  Capacity:  2520 W (maximum 2520 W)
  DC output: 472 W (zone 0, 8 A at 59 V, 18% of capacity)

PEM 1:
  State:     Online
  AC input:  OK (1 feed expected, 1 feed connected)
  Capacity:  2520 W (maximum 2520 W)
  DC output: 472 W (zone 0, 8 A at 59 V, 18% of capacity)

PEM 2:
  State:     Online
  AC input:  OK (1 feed expected, 1 feed connected)
  Capacity:  2520 W (maximum 2520 W)
  DC output: 118 W (zone 0, 2 A at 59 V, 4% of capacity)

PEM 3:
  State:     Empty
  Input:     Absent

System:
  Maximum capacity:   5040 W
  Allocated capacity: 1675 W (33% of maximum)
  Remaining capacity: 3365 W
  Actual usage:       1062 W
```

show chassis power (MX2020 Router)

`user@host >` **show chassis power**

```
PSM 0:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2500 W (maximum 2500 W)
  DC output: 858.44 W (Lower Zone, 16.75 A at 51.25 V, 34.34% of capacity)

PSM 1:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2500 W (maximum 2500 W)
  DC output: 854.25 W (Lower Zone, 16.75 A at 51.00 V, 34.17% of capacity)
```

```
PSM 2:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2500 W (maximum 2500 W)
  DC output: 858.44 W (Lower Zone, 16.75 A at 51.25 V, 34.34% of capacity)

PSM 3:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2500 W (maximum 2500 W)
  DC output: 867.00 W (Lower Zone, 17.00 A at 51.00 V, 34.68% of capacity)

PSM 4:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2500 W (maximum 2500 W)
  DC output: 871.25 W (Lower Zone, 17.00 A at 51.25 V, 34.85% of capacity)

PSM 5:
  State:     Empty
  Input:     Absent

PSM 6:
  State:     Empty
  Input:     Absent

PSM 7:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2500 W (maximum 2500 W)
  DC output: 867.00 W (Lower Zone, 17.00 A at 51.00 V, 34.68% of capacity)

PSM 8:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2500 W (maximum 2500 W)
  DC output: 879.75 W (Lower Zone, 17.25 A at 51.00 V, 35.19% of capacity)

PSM 9:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2100 W (maximum 2500 W)
  DC output: 624.75 W (Upper Zone, 12.25 A at 51.00 V, 29.75% of capacity)
```

```
PSM 10:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2100 W (maximum 2500 W)
  DC output: 615.00 W (Upper Zone, 12.00 A at 51.25 V, 29.29% of capacity)

PSM 11:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2100 W (maximum 2500 W)
  DC output: 624.75 W (Upper Zone, 12.25 A at 51.00 V, 29.75% of capacity)

PSM 12:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2100 W (maximum 2500 W)
  DC output: 624.75 W (Upper Zone, 12.25 A at 51.00 V, 29.75% of capacity)

PSM 13:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2100 W (maximum 2500 W)
  DC output: 612.00 W (Upper Zone, 12.00 A at 51.00 V, 29.14% of capacity)

PSM 14:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2100 W (maximum 2500 W)
  DC output: 627.81 W (Upper Zone, 12.25 A at 51.25 V, 29.90% of capacity)

PSM 15:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2100 W (maximum 2500 W)
  DC output: 627.81 W (Upper Zone, 12.25 A at 51.25 V, 29.90% of capacity)

PSM 16:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2100 W (maximum 2500 W)
  DC output: 615.00 W (Upper Zone, 12.00 A at 51.25 V, 29.29% of capacity)

PSM 17:
  State:     Online
```

```
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2100 W (maximum 2500 W)
  DC output: 624.75 W (Upper Zone, 12.25 A at 51.00 V, 29.75% of capacity)

System:
  Upper Zone:
      Capacity:          18900 W (maximum 22500 W)
      Allocated power:   12900 W (6000 W remaining)
      Actual usage:      5596.62 W
  Lower Zone:
      Capacity:          17500 W (maximum 17500 W)
      Allocated power:   12900 W (4600 W remaining)
      Actual usage:      6056.12 W
  Total system capacity: 36400 W (maximum 40000 W)
  Total remaining power: 10600 W
```

show chassis power detail (MX2020 Router with MPC5EQ and MPC6E)

user@host> **show chassis power detail**

```
PSM 0:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2100 W (maximum 2500 W)
  DC output: 540.75 W (Lower Zone, 10.50 A at 51.50 V, 25.75% of capacity)

PSM 1:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2100 W (maximum 2500 W)
  DC output: 538.12 W (Lower Zone, 10.50 A at 51.25 V, 25.62% of capacity)

PSM 2:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2100 W (maximum 2500 W)
  DC output: 538.12 W (Lower Zone, 10.50 A at 51.25 V, 25.62% of capacity)

PSM 3:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2100 W (maximum 2500 W)
  DC output: 540.75 W (Lower Zone, 10.50 A at 51.50 V, 25.75% of capacity)
```

```
PSM 4:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2100 W (maximum 2500 W)
  DC output: 515.00 W (Lower Zone, 10.00 A at 51.50 V, 24.52% of capacity)

PSM 5:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2100 W (maximum 2500 W)
  DC output: 527.88 W (Lower Zone, 10.25 A at 51.50 V, 25.14% of capacity)

PSM 6:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2100 W (maximum 2500 W)
  DC output: 540.75 W (Lower Zone, 10.50 A at 51.50 V, 25.75% of capacity)

PSM 7:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2100 W (maximum 2500 W)
  DC output: 527.88 W (Lower Zone, 10.25 A at 51.50 V, 25.14% of capacity)

PSM 8:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2100 W (maximum 2500 W)
  DC output: 530.44 W (Lower Zone, 10.25 A at 51.75 V, 25.26% of capacity)

PSM 9:
  State:     Empty
  Input:     Absent

PSM 10:
  State:     Empty
  Input:     Absent

PSM 11:
  State:     Empty
  Input:     Absent

PSM 12:
  State:     Online
```

```
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2100 W (maximum 2500 W)
  DC output: 517.50 W (Upper Zone, 10.00 A at 51.75 V, 24.64% of capacity)

PSM 13:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2100 W (maximum 2500 W)
  DC output: 517.50 W (Upper Zone, 10.00 A at 51.75 V, 24.64% of capacity)

PSM 14:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2100 W (maximum 2500 W)
  DC output: 515.00 W (Upper Zone, 10.00 A at 51.50 V, 24.52% of capacity)

PSM 15:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2100 W (maximum 2500 W)
  DC output: 527.88 W (Upper Zone, 10.25 A at 51.50 V, 25.14% of capacity)

PSM 16:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2100 W (maximum 2500 W)
  DC output: 517.50 W (Upper Zone, 10.00 A at 51.75 V, 24.64% of capacity)

PSM 17:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2100 W (maximum 2500 W)
  DC output: 515.00 W (Upper Zone, 10.00 A at 51.50 V, 24.52% of capacity)

System:
  Upper Zone:
      Capacity:          12600 W (maximum 15000 W)
      Allocated power:   9436 W (3164 W remaining)
      Actual usage:      3110.38 W
  Lower Zone:
      Capacity:          18900 W (maximum 22500 W)
      Allocated power:   10842 W (8058 W remaining)
Actual usage:      4799.69 W
  Total system capacity: 31500 W (maximum 37500 W)
```

```
  Total remaining power: 11222 W

Item                 Used(W)
  FPC 0                   0
  FPC 4                   0
  FPC 9                 719
  FPC 10                681
  FPC 17                656
  FPC 18                  0
  FPC 19                  0
```

show chassis power (MX2020 Router with 240-V high-voltage DC PSMs and PDMs)

`user@host>` **show chassis power**

```
PSM 0:
  State:     Online
  DC input:  OK (INP1 feed expected, INP1 feed connected)
  Capacity:  2500 W (maximum 2500 W)
  DC output: 197.81 W (Lower Zone, 3.75 A at 52.75 V, 7.91% of capacity)

PSM 1:
  State:     Online
  DC input:  OK (INP1 feed expected, INP1 feed connected)
  Capacity:  2500 W (maximum 2500 W)
  DC output: 171.44 W (Lower Zone, 3.25 A at 52.75 V, 6.86% of capacity)

PSM 2:
  State:     Online
  DC input:  OK (INP1 feed expected, INP1 feed connected)
  Capacity:  2500 W (maximum 2500 W)
  DC output: 184.62 W (Lower Zone, 3.50 A at 52.75 V, 7.38% of capacity)

PSM 3:
  State:     Online
  DC input:  OK (INP1 feed expected, INP1 feed connected)
  Capacity:  2500 W (maximum 2500 W)
  DC output: 184.62 W (Lower Zone, 3.50 A at 52.75 V, 7.38% of capacity)

PSM 4:
  State:     Online
  DC input:  OK (INP1 feed expected, INP1 feed connected)
```

```
  Capacity:  2500 W (maximum 2500 W)
  DC output: 183.75 W (Lower Zone, 3.50 A at 52.50 V, 7.35% of capacity)

PSM 5:
  State:     Online
  DC input:  OK (INP1 feed expected, INP1 feed connected)
  Capacity:  2500 W (maximum 2500 W)
  DC output: 196.88 W (Lower Zone, 3.75 A at 52.50 V, 7.88% of capacity)

PSM 6:
  State:     Online
  DC input:  OK (INP1 feed expected, INP1 feed connected)
  Capacity:  2500 W (maximum 2500 W)
  DC output: 183.75 W (Lower Zone, 3.50 A at 52.50 V, 7.35% of capacity)

PSM 7:
  State:     Online
  DC input:  OK (INP1 feed expected, INP1 feed connected)
  Capacity:  2500 W (maximum 2500 W)
  DC output: 196.88 W (Lower Zone, 3.75 A at 52.50 V, 7.88% of capacity)

PSM 8:
  State:     Online
  DC input:  OK (INP1 feed expected, INP1 feed connected)
  Capacity:  2500 W (maximum 2500 W)
  DC output: 196.88 W (Lower Zone, 3.75 A at 52.50 V, 7.88% of capacity)

PSM 9:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2500 W (maximum 2500 W)
  DC output: 144.38 W (Upper Zone, 2.75 A at 52.50 V, 5.78% of capacity)

PSM 10:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2500 W (maximum 2500 W)
  DC output: 145.06 W (Upper Zone, 2.75 A at 52.75 V, 5.80% of capacity)

PSM 11:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2500 W (maximum 2500 W)
  DC output: 131.88 W (Upper Zone, 2.50 A at 52.75 V, 5.28% of capacity)
```

```
PSM 12:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2500 W (maximum 2500 W)
  DC output: 143.69 W (Upper Zone, 2.75 A at 52.25 V, 5.75% of capacity)

PSM 13:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2500 W (maximum 2500 W)
  DC output: 143.69 W (Upper Zone, 2.75 A at 52.25 V, 5.75% of capacity)

PSM 14:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2500 W (maximum 2500 W)
  DC output: 145.06 W (Upper Zone, 2.75 A at 52.75 V, 5.80% of capacity)

PSM 15:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2500 W (maximum 2500 W)
  DC output: 144.38 W (Upper Zone, 2.75 A at 52.50 V, 5.78% of capacity)

PSM 16:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2500 W (maximum 2500 W)
  DC output: 130.62 W (Upper Zone, 2.50 A at 52.25 V, 5.22% of capacity)

PSM 17:
  State:     Online
  DC input:  OK (INP0 feed expected, INP0 feed connected)
  Capacity:  2500 W (maximum 2500 W)
  DC output: 157.50 W (Upper Zone, 3.00 A at 52.50 V, 6.30% of capacity)

System:
  Upper Zone:
      Capacity:          22500 W (maximum 22500 W)
      Allocated power:   6757 W (15743 W remaining)
      Actual usage:      1286.25 W
  Lower Zone:
      Capacity:          22500 W (maximum 22500 W)
```

```
      Allocated power:   7240 W (15260 W remaining)
      Actual usage:      1696.62 W
  Total system capacity: 45000 W (maximum 45000 W)
  Total remaining power: 31003 W
```

show chassis power (MX10008)

user@host> **show chassis power**

```
PEM 0:
  State:     Online
  Capacity:  2700 W (maximum 2700 W)
  AC input:  OK (Both feed expected, Both feed connected)
  DC output: 1248 W (zone 0, 104 A at 12 V, 46% of capacity)

PEM 1:
  State:     Online
  Capacity:  2700 W (maximum 2700 W)
  AC input:  OK (Both feed expected, Both feed connected)
  DC output: 1248 W (zone 0, 104 A at 12 V, 46% of capacity)

PEM 2:
  State:     Online
  Capacity:  2700 W (maximum 2700 W)
  AC input:  OK (Both feed expected, Both feed connected)
  DC output: 1260 W (zone 0, 105 A at 12 V, 46% of capacity)

PEM 3:
  State:     Present
  Capacity:  2700 W (maximum 2700 W)
  AC input:  Not ready

PEM 4:
  State:     Present
  Capacity:  2700 W (maximum 2700 W)
  AC input:  Not ready

PEM 5:
  State:     Present
  Capacity:  2700 W (maximum 2700 W)
  AC input:  Not ready

System:
  Zone 0:
```

```
      Capacity:          8100 W (maximum 8100 W)
      Allocated power:   7105 W (995 W remaining)
      Actual usage:      3756 W
  Total system capacity: 8100 W (maximum 8100 W)
  Total remaining power: 995 W
```

show chassis power (PTX5000 Packet Transport Router)

`user@host>` **show chassis power**

```
Chassis Power        Input(V)      Used(W)

Total Power                         4006

  PDU 0                             1986
    PSM 0
      Input 1            54          149
    PSM 1
      Input 1            54          377
    PSM 2
      Input 1            54          745
    PSM 3
      Input 1            54          715

  PDU 1                             2020
    PSM 0
      Input 1            54          246
    PSM 1
      Input 1            54          332
    PSM 2
      Input 1            54          721
    PSM 3
      Input 1            54          721
```

show chassis power (PTX5000 Packet Transport Router with FPC2-PTX-P1A)

`user@host>` **show chassis power**

```
Chassis Power        Input(V)      Used(W)

Total Power                         4402
```

```
  PDU 0                            2104
    PSM 0
      Input 1             53          229
      Input 2             53          375
    PSM 1
    PSM 2
      Input 1             53          248
      Input 2             53          323
    PSM 3
    PSM 4
      Input 1             53          206
      Input 2             53          255
    PSM 5
    PSM 6
      Input 1             53          206
      Input 2             53          262
    PSM 7

  PDU 1                            2298
    PSM 0
    PSM 1
      Input 1             53          289
      Input 2             53          267
    PSM 2
    PSM 3
      Input 1             53          309
      Input 2             53          315
    PSM 4
    PSM 5
      Input 1             53          335
      Input 2             53          220
    PSM 6
    PSM 7
      Input 1             53          308
      Input 2             53          255
```

show chassis power detail (PTX5000 Packet Transport Router)

`user@host>` **show chassis power detail**

```
Chassis Power        Input(V)      Used(W)

Total Power                         3997
```

```
  PDU 0                           1975
    PSM 0
      Input 1            54          136
    PSM 1
      Input 1            54          377
    PSM 2
      Input 1            54          741
    PSM 3
      Input 1            54          721

  PDU 1                           2022
    PSM 0
      Input 1            54          235
    PSM 1
      Input 1            54          332
    PSM 2
      Input 1            54          726
    PSM 3
      Input 1            54          729

Item                 Used(W)
  Fan Tray 0             49
  Fan Tray 1            127
  Fan Tray 2            117
  RE0/CB0               109
  RE1/CB1               100
  SIB/CCG/FPD           375
  FPC 0                 381
  FPC 1                   0
  FPC 2                 447
  FPC 3                 560
  FPC 4                   0
  FPC 5                 448
  FPC 6                 379
  FPC 7                 388
```

show chassis power detail (PTX5000 Packet Transport Router with FPC2-PTX-P1A)

`user@host>` **show chassis power detail**

```
Chassis Power        Input(V)      Used(W)

Total Power                         4394
```

```
  PDU 0                          2095
    PSM 0
      Input 1            53          222
      Input 2            53          368
    PSM 1
    PSM 2
      Input 1            53          248
      Input 2            53          329
    PSM 3
    PSM 4
      Input 1            53          212
      Input 2            53          248
    PSM 5
    PSM 6
      Input 1            53          206
      Input 2            53          262
    PSM 7

  PDU 1                          2299
    PSM 0
    PSM 1
      Input 1            53          296
      Input 2            53          260
    PSM 2
    PSM 3
      Input 1            53          309
      Input 2            53          315
    PSM 4
    PSM 5
      Input 1            53          342
      Input 2            53          214
    PSM 6
    PSM 7
      Input 1            53          308
      Input 2            53          255

Item                 Used(W)
  Fan Trays             252
  RE0/CB0                93
  RE1/CB1                92
  SIB                   360
  FPC 0                 369
      PIC 0              16
      PIC 1               0
```

```
  FPC 1                  0
  FPC 2                437
      PIC 0             44
      PIC 1             38
  FPC 3                740
      PIC 0             41
      PIC 1             46
  FPC 4                732
      PIC 0             74
      PIC 1             37
  FPC 5                  0
  FPC 6                  0
  FPC 7                  0
```

show chassis power detail (PTX10008 Router)

`user@host>` **show chassis power detail**

```
PEM 0:
  State:     Online
  Capacity:  2700 W (maximum 2700 W)
  AC input:  OK (No feed expected, Both feed connected)
  DC output: 1164 W (zone 0, 97 A at 12 V, 43% of capacity)

PEM 1:
  State:     Online
  Capacity:  2700 W (maximum 2700 W)
  AC input:  OK (Both feed expected, Both feed connected)
  DC output: 1188 W (zone 0, 99 A at 12 V, 44% of capacity)

PEM 2:
  State:     Online
  Capacity:  2700 W (maximum 2700 W)
  AC input:  OK (No feed expected, Both feed connected)
  DC output: 1188 W (zone 0, 99 A at 12 V, 44% of capacity)

PEM 3:
  State:     Empty
  Input:     Absent

PEM 4:
  State:     Empty
  Input:     Absent
```

```
PEM 5:
  State:     Empty
  Input:     Absent

System:
  Zone 0:
      Capacity:          8100 W (maximum 8100 W)
      Allocated power:   7160 W (940 W remaining)
      Actual usage:      3540 W
  Total system capacity: 8100 W (maximum 8100 W)
  Total remaining power: 940 W

Item                 Used(W)
  Fan Tray 0            475
  Fan Tray 1            475
  RE0/CB0                42
  RE1/CB1                46
```

show chassis power detail (PTX10016 Router)

`user@host>` **show chassis power detail**

```
PEM 0:
  State:     Online
  Capacity:  2500 W (maximum 2500 W)
  DC input:  OK (Both feed expected, Both feed connected)
  DC output: 432 W (zone 0, 36 A at 12 V, 17% of capacity)

PEM 1:
  State:     Online
  Capacity:  2500 W (maximum 2500 W)
  DC input:  OK (Both feed expected, Both feed connected)
  DC output: 456 W (zone 0, 38 A at 12 V, 18% of capacity)

PEM 2:
  State:     Online
  Capacity:  2500 W (maximum 2500 W)
  DC input:  OK (Both feed expected, Both feed connected)
  DC output: 432 W (zone 0, 36 A at 12 V, 17% of capacity)

PEM 3:
```

```
  State:     Online
  Capacity:  2500 W (maximum 2500 W)
  DC input:  OK (Both feed expected, Both feed connected)
  DC output: 432 W (zone 0, 36 A at 12 V, 17% of capacity)

PEM 4:
  State:     Online
  Capacity:  2500 W (maximum 2500 W)
  DC input:  OK (INP2 feed expected, INP2 feed connected)
  DC output: 432 W (zone 0, 36 A at 12 V, 17% of capacity)

PEM 5:
  State:     Online
  Capacity:  2500 W (maximum 2500 W)
  DC input:  OK (INP2 feed expected, INP2 feed connected)
  DC output: 432 W (zone 0, 36 A at 12 V, 17% of capacity)

PEM 6:
  State:     Online
  Capacity:  2500 W (maximum 2500 W)
  DC input:  OK (INP2 feed expected, INP2 feed connected)
  DC output: 420 W (zone 0, 35 A at 12 V, 16% of capacity)

PEM 7:
  State:     Online
  Capacity:  2500 W (maximum 2500 W)
  DC input:  OK (INP2 feed expected, INP2 feed connected)
  DC output: 432 W (zone 0, 36 A at 12 V, 17% of capacity)

PEM 8:
  State:     Online
  Capacity:  2500 W (maximum 2500 W)
  DC input:  OK (INP2 feed expected, INP2 feed connected)
  DC output: 432 W (zone 0, 36 A at 12 V, 17% of capacity)

PEM 9:
  State:     Online
  Capacity:  2500 W (maximum 2500 W)
  DC input:  OK (INP2 feed expected, INP2 feed connected)
  DC output: 420 W (zone 0, 35 A at 12 V, 16% of capacity)

System:
  Zone 0:
      Capacity:          25000 W (maximum 25000 W)
```

```
      Allocated power:   9550 W (15450 W remaining)
      Actual usage:      4320 W
  Total system capacity: 25000 W (maximum 25000 W)
  Total remaining power: 15450 W

Item                 Used(W)
  Fan Tray 0            975
  Fan Tray 1            975
  RE0/CB0                42
  RE1/CB1                46
```

show chassis power detail (EX9208 Switch)

`user@host>` **show chassis power detail**

```
PEM 0:
  State:     Present
  AC input:  Out of range (1 feed expected, 1 feed connected)
  Capacity:  2050 W (maximum 2050 W)
  DC output: 0 W (zone 0, 0 A at 0 V, 0% of capacity)

PEM 1:
  State:     Present
  AC input:  Out of range (1 feed expected, 1 feed connected)
  Capacity:  2050 W (maximum 2050 W)
  DC output: 0 W (zone 0, 0 A at 0 V, 0% of capacity)

PEM 2:
  State:     Present
  AC input:  Out of range (1 feed expected, 1 feed connected)
  Capacity:  2050 W (maximum 2050 W)
  DC output: 0 W (zone 0, 0 A at 0 V, 0% of capacity)

PEM 3:
  State:     Online
  AC input:  OK (1 feed expected, 1 feed connected)
  Capacity:  2050 W (maximum 2050 W)
  DC output: 754 W (zone 0, 13 A at 58 V, 36% of capacity)

System:
  Zone 0:
      Capacity:          2050 W (maximum 2050 W)
      Allocated power:   1478 W (572 W remaining)
      Actual usage:      754 W
```

```
  Total system capacity: 2050 W (maximum 2050 W)
  Total remaining power: 572 W
```

show chassis power detail (EX9253 Switch)

`user@switch>` **show chassis power detail**

```
PEM 0:
  State:     Online
  Capacity:  1600 W (maximum 1600 W)
  AC input:  OK (1 feed expected, 1 feed connected)
  DC output: 564 W (zone 0, 47 A at 12 V, 35% of capacity)

PEM 1:
  State:     Present
  Input:     Absent

PEM 2:
  State:     Empty
  Input:     Absent

PEM 3:
  State:     Empty
  Input:     Absent

PEM 4:
  State:     Present
  Input:     Absent

PEM 5:
  State:     Online
  Capacity:  1600 W (maximum 1600 W)
  AC input:  OK (1 feed expected, 1 feed connected)
  DC output: 612 W (zone 0, 51 A at 12 V, 38% of capacity)

System:
  Zone 0:
      Capacity:          3200 W (maximum 3200 W)
      Allocated power:   2157 W (1043 W remaining)
      Actual usage:      1176 W
  Total system capacity: 3200 W (maximum 3200 W)
  Total remaining power: 1043 W

Item                Used(W)
```

```
  FPC 0                555
  FPC 1                543
  Fan Tray 0            12
  Fan Tray 1            13
  Fan Tray 2            12
  Fan Tray 3            12
  RE0/CB0               55
```

show chassis power (Junos OS Evolved)

`user@router>` **show chassis power**

```
Chassis Power        Input(V)      Used(W)

Total Power                         1444

  PDU 0                             1444
    PSM 1
      Input 1           202          703
      Capacity:          3000 W (maximum 3000 W)
    PSM 2
      Input 1           202          741
      Capacity:          3000 W (maximum 3000 W)
```

Starting in Junos OS Evolved Release 19.1R1, the **show chassis power** output does not display the PSM state and the system summary information. The PSM state information is available in the **show chassis environment pdu** output and the system summary information is available in the **show chassis power detail** output.

show chassis power detail (Junos OS Evolved)

`user@router>` **show chassis power detail**

```
Chassis Power        Input(V)      Used(W)

Total Power                         1461

  PDU 0                             1461
    PSM 1
      Input 1           203          700
      Capacity:          3000 W (maximum 3000 W)
```

```
    PSM 2
      Input 1           202          761
      Capacity:          3000 W (maximum 3000 W)

Item                 Used(W)
  Routing Engine 0      122
  CB 0                  266
  FPC 0                 428
  FPC 1                 370
  Fan Tray 1             22
  Fan Tray 2             21
  Fan Tray 3             27

System:
  Zone 0:
      Capacity:          6000 W (maximum 6000 W)
      Allocated power:   2700 W (3300 W remaining)
      Actual usage:      1455 W
  Total system capacity: 6000 W (maximum 6000 W)
  Total remaining power: 3300 W
```

Starting in Junos OS Evolved Release 19.1R1, the **show chassis power detail** output does not display the PSM state. The PSM state information is available in the **show chassis environment pdu** output.

show chassis power sequence

Syntax

```
show chassis power sequence
```

Release Information

Command introduced in Junos OS Release 10.0.
Command introduces in Junos OS Release 12.1 for PTX Series Packet Transport Routers.
Command introduced in Junos OS Release 12.3 for MX2020 Universal Routing Platforms.
Command introduced in Junos OS Release 12.3 for MX2010 Universal Routing Platforms.

Description

(MX Series 5G Universal Routing Platforms only) Show power-on sequence for the chassis Dense Port Concentrators (DPCs).

(PTX Series Packet Transport Routers, MX2010 and MX2020 routers only) Show power-on sequence for FPCs installed in the chassis.

Options

This command has no options.

Required Privilege Level

view

RELATED DOCUMENTATION

show chassis power | 1651

List of Sample Output

show chassis power sequence (MX Series) on page 1684
show chassis power sequence (MX2010 Routers) on page 1684
show chassis power sequence (MX2020 Routers) on page 1684
show chassis power sequence (PTX5000 Packet Transport Router) on page 1684

Output Fields

Table 92 on page 1684 lists the output fields for the **show chassis power sequence** command. Output fields are listed in the approximate order in which they appear.

Table 92: show chassis power sequence Output Fields

Field Name	Field Description
Chassis FRU Power Sequence	(MX Series) Power-on sequence for the DPCs in the chassis. The numbers indicate the slot number of the DPCs. (PTX Series, MX2010 and MX2020 routers only) Power-on sequence for the FPCs in the chassis. The numbers indicate the slot number of the FPC.

Sample Output

show chassis power sequence (MX Series)

```
user@host> show chassis power sequence
```

```
Chassis FRU Power Sequence: 3 4 5 6 7 8 9 10 11 0 1 2
```

show chassis power sequence (MX2010 Routers)

```
user@host > show chassis power sequence
```

```
Chassis FRU Power On Sequence: 0 1 2 3 4 5 6 7 8 9
```

show chassis power sequence (MX2020 Routers)

```
user@host > show chassis power sequence
```

```
Chassis FRU Power On Sequence: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
```

show chassis power sequence (PTX5000 Packet Transport Router)

```
user@host> show chassis power sequence
```

```
Chassis FRU Power On Sequence: 0 1 2 3 4 5 6 7
```

show chassis psd

Syntax

```
show chassis psd
```

Release Information

Command introduced in Junos OS Release 9.1.

Description

(Root System Domain [RSD] only) Display information about Protected System Domains (PSDs). A PSD is initially created by the RSD configuration. An RSD and PSDs are supported on a T320 or T640 router, or a T1600 routing node, or a TX Matrix Plus Platform that is interconnected with the JCS1200 platform.

NOTE: RSD configuration is not supported on a routing matrix based on TX Matrix Plus router with 3D SIBs.

Options

This command has no options.

Additional Information

For more information about PSDs, RSDs, and the JCS1200 platform, see the *Junos OS Protected System Domain Feature Guide for Routing Devices*.

Required Privilege Level

view

List of Sample Output

show chassis psd on page 1686

Output Fields

Table 93 on page 1685 lists the output fields for the **show chassis psd** command. Output fields are listed in the approximate order in which they appear.

Table 93: show chassis psd Output Fields

Field Name	Field Description
Slot Description	PSD identification.

Table 93: show chassis psd Output Fields *(continued)*

Field Name	Field Description
State	PSD status: • **Online**—PSD is online and running. • **Offline**—PSD is powered down.
Uptime	Length of time that the PSD has been up and running.

Sample Output

show chassis psd

```
{master}
```

```
user@host> show chassis psd
```

```
Slot Description         State               Uptime
 1                       Online              12 hours, 19 minutes, 51 seconds
 2                       Online              2 hours, 18 minutes, 17 seconds
 3                       Online              12 hours, 19 minutes, 51 seconds
```

show chassis redundancy feb

Syntax

```
show chassis redundancy feb
<errors>
<redundancy-group group-name>
```

Release Information

Command introduced in Junos OS Release 8.2.

Description

(M120 routers only) Display information about the status of configured Forwarding Engine Board (FEB) redundancy groups.

Options

none—Display information about the status of all configured FEB redundancy groups.

redundancy-group *group-name*—(Optional) Display information about the specified configured redundancy group.

errors—(Optional) Display information about any errors encountered on the components in configured redundancy groups or on links between a FEB and a Flexible PIC Concentrator (FPC).

Required Privilege Level

view

RELATED DOCUMENTATION

request chassis redundancy feb slot | 653

Configuring FEB Redundancy on the M120 Router

Understanding Switching Control Board Redundancy

List of Sample Output

show chassis redundancy feb on page 1688
show chassis redundancy feb redundancy-group grp1 on page 1689
show chassis redundancy feb redundancy-group grp0 errors on page 1689

Output Fields

Table 94 on page 1688 lists the output fields for the **show chassis redundancy feb** command. Output fields are listed in the approximate order in which they appear.

Table 94: show chassis redundancy feb Output Fields

Field name	Field Description
Group	Name of configured redundancy group.
FEB	Slot number of each FEB included in redundancy groups.
State	State of each FEB: • **Online**—FEB is online and running. • **Offline**—FEB is powered down.
Priority	(Standard and **redundancy-group** option) Status of FEB in the redundancy group: **Backup**, **Primary**, **Other**, or null.
Connected FPCs	(Standard and **redundancy-group** option) Slot number of each FPC connected to the FEB. The status **Check** is displayed when an error might have occurred.
Redundancy State	(Standard and **redundancy-group** option) Status of the FEB: • **Active**—FEB is currently active. • **Ready**—Backup FEB is ready for a switchover • **Not Ready**—Backup FEB is not ready for a switchover.
Auto-failover	(Standard and **redundancy-group** option) Automatic failover status of redundancy group: **Enabled** or **Disabled**.
Switch-reason	(Standard and **redundancy-group** option) Reason a switchover occurred to the backup FEB in the redundancy group.
Hard error: Yes	(**errors** option only) Displayed when a hard error occurs on a FEB.
FPC	(**errors** option only) Slot number and status of FPC: **link ok** or **link error**.
Fabric plane	(**errors** option only) Slot number and status of fabric plane.

Sample Output

show chassis redundancy feb

```
user@host> show chassis redundancy feb
```

```
Group:        cfpc
  FEB  State             Priority  Connected FPCs  Redundancy state
  0    Offline           Backup                    Not ready
  1    Online                      5               Active
  Auto-failover:  Enabled
 Group:        grp0
  FEB  State             Priority  Connected FPCs  Redundancy state
  3    Offline           Backup                    Not ready
  5    Online            Primary   0               Active
  Auto-failover:  Enabled
```

show chassis redundancy feb redundancy-group grp1

`user@host>` **show chassis redundancy feb redundancy-group grp1**

```
Group:        grp1
  FEB  State             Priority  Connected FPCs  Redundancy state
  0    Online            Other     0               Active
  1    Online            Other     1               Active
  4    Online            Primary   4               Active
  5    Online            Backup                    Ready
  Autofailover:  Enabled
  Switch-reason: Switchover from CLI
```

show chassis redundancy feb redundancy-group grp0 errors

`user@host>` **show chassis redundancy feb redundancy-group grp0 errors**

```
Group: grp0
    FEB: 0    State: Online
        FPC 0 link OK
        Fabric plane 0 OK
        Fabric plane 1 OK
        Fabric plane 2 OK
        Fabric plane 3 OK
    FEB: 1    State: Online
        FPC 0 link OK
        Fabric plane 0 OK
        Fabric plane 1 OK
        Fabric plane 2 OK
        Fabric plane 3 OK
    FEB: 2    State: Online
        FPC 2 link OK
```

```
        Fabric plane 0 OK
        Fabric plane 1 OK
        Fabric plane 2 OK
        Fabric plane 3 OK
    FEB: 3    State: Online
        FPC 3 link OK
        Fabric plane 0 OK
        Fabric plane 1 OK
        Fabric plane 2 OK
        Fabric plane 3 OK
    FEB: 4    State: Online
        FPC 4 link OK
        Fabric plane 0 OK
        Fabric plane 1 OK
        Fabric plane 2 OK
        Fabric plane 3 OK
    FEB: 5    State: Online
        FPC 5 link OK
        Fabric plane 0 OK
        Fabric plane 1 OK
        Fabric plane 2 OK
        Fabric plane 3 OK
```

show chassis routing-engine

List of Syntax

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Syntax

```
show chassis routing-engine
<bios | slot>
```

Syntax (ACX Series, PTX Series, and MX104 Universal Routing Platforms.)

```
show chassis routing-engine
```

Syntax (EX Series Switches)

```
show chassis routing-engine
<slot>
<satellite [slot-id slot-id |device-alias alias-name>
```

Syntax (QFX Series)

```
show chassis routing-engine
<interconnect-device name>
<node-device name>
<slot>
<bios>
<errors>
```

Syntax (MX Series Routers)

```
show chassis routing-engine
<all-members>
<bios | slot>
<local>
<member member-id>
<satellite [slot-id slot-id |device-alias alias-name>
```

Syntax (MX204 and MX10003 Universal Routing Platforms)

```
show chassis routing-engine
<slot>
<bios>
<errors>
```

Syntax (PTX Series Packet Transport Routers)

```
show chassis routing-engine
```

Syntax (T Series Routers)

```
show chassis routing-engine
<bios | slot>
```

Syntax (TX Matrix Routers)

```
show chassis routing-engine
<bios | slot>
<lcc number  | scc>
```

Syntax (TX Matrix Plus Routers)

```
show chassis routing-engine
<bios | slot>
<lcc number  | sfc number>
```

Syntax (Junos OS Evolved)

```
show chassis routing-engine
<slot>
<bios>
```

```
<hard-disk-test>
```

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced in Junos OS Release in 9.6 for the TX Matrix Plus router.
Command introduced in Junos OS Release 11.1 for QFX Series.
5 sec CPU Utilization, **1 min CPU Utilization**, **5 min CPU Utilization**, and **15 min CPU Utilization** output fields introduced in Junos OS Release 11.3R1.
Command introduced in Junos OS Release 12.2 for ACX Series Universal Metro Routers.
Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 Universal Routing Platforms.
Command introduced in Junos OS Release 13.2 for MX104 Universal Routing Platforms.
Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.
satellite option introduced in Junos OS Release 14.2R3.
Command introduced in Junos OS Release 17.2 for PTX10008 Routers.
Command introduced in Junos OS Release 17.3 for MX10003 Universal Routing Platforms.
Command introduced in Junos OS Release 17.4 for MX204 Universal Routing Platforms.
Command introduced in Junos OS Release 18.1R1 for EX9251 switches.

Description

Display the status of the Routing Engine.

Options

none—Display information about one or more Routing Engines. On a TX Matrix router, display information about all Routing Engines on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display information about all Routing Engines on the TX Matrix Plus router and its attached routers.

all-members—(MX Series routers only) (Optional) Display Routing Engine information for all members of the Virtual Chassis configuration.

bios—(Optional) Display the (BIOS) firmware version.

errors—(Optional) Display routing engine errors.

interconnect-device *number*—(QFabric systems only) (Optional) Display Routing Engine information for a specified Interconnect device.

lcc *number*—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display Routing Engine information for a specified T640 router (line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display Routing Engine information for a specified router (line-card chassis) that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

local—(MX Series routers only) (Optional) Display Routing Engine information for the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display Routing Engine information for the specified member of the Virtual Chassis configuration. For an MX Series Virtual Chassis, replace *member-id* with a value of 0 or 1.

node-device *number*—(QFabric systems only) (Optional) Display Routing Engine information for a specified Node device.

satellite [slot-id *slot-id* |device-alias *alias-name*]—(Junos Fusion only) (Optional) Display Routing Engine information for the specified satellite device in a Junos Fusion, or for all satellite devices in the Junos Fusion if no satellite devices are specified.

scc—(TX Matrix routers only) (Optional) Display Routing Engine information for the TX Matrix router (switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) Display Routing Engine information for the TX Matrix Plus router (or switch-fabric chassis). Replace ***number*** with 0.

slot—(Systems with multiple Routing Engines) (Optional) Display information for an individual Routing Engine. Replace ***slot*** with 0 or 1. For QFX3500 switches, there is only one Routing Engine, so you do not need to specify the slot number.

Required Privilege Level
view

RELATED DOCUMENTATION

request chassis routing-engine master | 655

Configuring Routing Engine Redundancy

Switching the Global Master and Backup Roles in a Virtual Chassis Configuration

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show chassis routing-engine (MX480 Router) on page 1702
show chassis routing-engine (MX960 Router) on page 1703
show chassis routing-engine (T320 Router) on page 1705
show chassis routing-engine (T4000 Router) on page 1706
show chassis routing-engine (TX Matrix Router) on page 1707
show chassis routing-engine lcc (TX Matrix Router) on page 1708
show chassis routing-engine bios (TX Matrix Router) on page 1709
show chassis routing-engine (TX Matrix Plus Router) on page 1709
show chassis routing-engine lcc (TX Matrix Plus Router) on page 1711
show chassis routing-engine bios (TX Matrix Plus Router) on page 1713
show chassis routing-engine (QFX Series) on page 1713
show chassis routing-engine (OCX Series) on page 1713
show chassis routing engine interconnect-device (QFabric Systems) on page 1714
show chassis routing-engine (PTX Series Packet Transport Router) on page 1715
show chassis routing-engine (EX9200 Switch) on page 1716
show chassis routing-engine (EX9251 Switch) on page 1717
show chassis routing-engine (ACX2000 Universal Metro Router) on page 1718
show chassis routing-engine (ACX1000 Universal Metro Router) on page 1718
show chassis routing-engine (Displaying the guest reboot reason on PTX5000, MX240, MX480, MX960< MX2010, and MX2020) on page 1719

Output Fields

Table 95 on page 1695 lists the output fields for the **show chassis routing-engine** command. Output fields are listed in the approximate order in which they appear.

Table 95: show chassis routing-engine Output Fields

Field Name	Field Description
Slot	(Systems with single and multiple Routing Engines) Slot number.
Current state	(Systems with multiple Routing Engines) Current state of the Routing Engine: **Master**, **Backup**, or **Disabled**.
Election priority	(Systems with multiple Routing Engines) Election priority for the Routing Engine: **Master** or **Backup**.
Temperature	Temperature of the air flowing past the Routing Engine.

Table 95: show chassis routing-engine Output Fields *(continued)*

Field Name	Field Description
CPU Temperature	Temperature of the CPU.
DRAM	Total DRAM available to the Routing Engine's processor. **NOTE:** When the chassis has two Routing Engines, the amount of DRAM should be the same on both. A DRAM size mismatch error can result when the Routing Engines have different amounts of DRAM. Starting with Junos OS Release 12.3R1, the DRAM field displays both available memory and installed memory.
Memory utilization	Percentage of Routing Engine memory being used. **NOTE:** For platforms running Junos OS with upgraded FreeBSD, the way memory utilization is calculated has changed. Starting in Junos OS Release 15.1R1, inactive memory is no longer included in the calculation for memory utilization. Inactive memory is now considered as free. That is, the value for used memory decreases and results in more memory to be available for other processes. For platforms that run Junos OS with upgraded FreeBSD, see *Release Information for Junos OS with Upgraded FreeBSD*.
CPU utilization	Information about the Routing Engine's CPU utilization: • **User**—Percentage of CPU time being used by user processes. • **Background**—Percentage of CPU time being used by background processes. • **Kernel**—Percentage of CPU time being used by kernel processes. • **Interrupt**—Percentage of CPU time being used by interrupts. • **Idle**—Percentage of CPU time that is idle.
5 sec CPU Utilization	Information about the Routing Engine's CPU utilization in the past 5 seconds: • **User**—Percentage of CPU time being used by user processes. • **Background**—Percentage of CPU time being used by background processes. • **Kernel**—Percentage of CPU time being used by kernel processes. • **Interrupt**—Percentage of CPU time being used by interrupts. • **Idle**—Percentage of CPU time that is idle.

Table 95: show chassis routing-engine Output Fields *(continued)*

Field Name	Field Description
1 min CPU Utilization	Information about the Routing Engine's CPU utilization in the past 1 minute: • **User**—Percentage of CPU time being used by user processes. • **Background**—Percentage of CPU time being used by background processes. • **Kernel**—Percentage of CPU time being used by kernel processes. • **Interrupt**—Percentage of CPU time being used by interrupts. • **Idle**—Percentage of CPU time that is idle.
5 min CPU Utilization	Information about the Routing Engine's CPU utilization in the past 5 minutes: • **User**—Percentage of CPU time being used by user processes. • **Background**—Percentage of CPU time being used by background processes. • **Kernel**—Percentage of CPU time being used by kernel processes. • **Interrupt**—Percentage of CPU time being used by interrupts. • **Idle**—Percentage of CPU time that is idle.
15 min CPU Utilization	Information about the Routing Engine's CPU utilization in the past 15 minutes: • **User**—Percentage of CPU time being used by user processes. • **Background**—Percentage of CPU time being used by background processes. • **Kernel**—Percentage of CPU time being used by kernel processes. • **Interrupt**—Percentage of CPU time being used by interrupts. • **Idle**—Percentage of CPU time that is idle.
Model	Routing Engine model number.
Serial ID	(Systems with multiple Routing Engines) Identification number of the Routing Engine in this slot.
Start time	Time at which the Routing Engine started running.
Uptime	How long the Routing Engine has been running.
Routing Engine BIOS Version	BIOS version being run by the Routing Engine.

Table 95: show chassis routing-engine Output Fields *(continued)*

Field Name	Field Description
Last reboot reason	Reason for last reboot, including: • **power cycle/failure**—Halt of the Routing Engine using the **halt** command, powering down using the power button on the chassis or any other method (such as removal of the control board or Routing Engine), and then powering back the Routing Engine. A halt of the operating system also occurs if you enter the **request system halt** command. You can enter this command to halt the system operations on the chassis or specific Routing Engines. To restart the software, press any key on the keyboard. • **watchdog**—Reboot due to a hardware watchdog. A watchdog is a hardware monitoring process that examines the health and performance of the router to enable the device to recover from failures. A watchdog checks for problems at certain intervals, and reboots the routing engine if a problem is encountered. • **reset-button reset**—(Not available on the EX Series switch) Reboot due to pressing of the reset button on the Routing Engine. • **power-button hard power off**—Reboot due to pressing of the power button on the chassis. A powering down of the software also occurs if you enter the **request system power-off** command. You can enter this command to power down the chassis or specific Routing Engines; you can then restart the software. • **misc hardware reason**—Reboot due to miscellaneous hardware reasons. • **thermal shutdown**—Reboot due to the router or switch reaching a critical temperature at which point it is unsafe to continue operations. • **hard disk failure**—Reboot due to a hard disk or solid-state drive (SSD) failure. • **reset from debugger**—Reboot due to reset from the debugger. • **chassis control reset**—Restart the chassis process that manages PICs, FPCs, and other hardware components. The chassis control module that runs the Routing Engine performs management and monitoring functions, and it provides a single access point for operational and maintenance functions. A reset of the chassis management process occurs when you enter the **restart chassis-control** command. • **bios auto recovery reset**—Reboot due to a BIOS auto-recovery reset. • **could not be determined**—Reboot due to an undetermined reason. • **Router rebooted after a normal shutdown**—Reboot due to a normal shutdown. This reason is displayed if the Routing Engine is powered down by pushing and holding the online/offline button on the Routing Engine faceplate for 30 seconds, and then powered back. A reboot of the software also occurs if you enter the **request system reboot** command. You can enter this command to reboot the chassis or specific Routing Engines. • **Hypervisor reboot**—When both Linux host and Junos OS is rebooted using the **request vmhost reboot** command. • **VJUNOS Reboot**—When Junos OS is rebooted using the **request system reboot** command.
Load averages	Routing Engine load averages for the last 1, 5, and 15 minutes.

Sample Output

show chassis routing-engine (M5 Router)

`user@host>` **show chassis routing-engine**

```
Routing Engine status:
    Temperature                 25 degrees C / 77 degrees F
    DRAM                       768 MB
    Memory utilization          21 percent
    CPU utilization:
      User                       0 percent
      Background                 0 percent
      Kernel                     0 percent
      Interrupt                  0 percent
      Idle                     100 percent
    Model                        RE-2.0
    Serial ID                    31000007349bf701
    Start time                   2003-12-04 09:42:17 PST
    Uptime                       26 days, 1 hour, 12 minutes, 27 seconds
    Last reboot reason           Router rebooted after a normal shutdown
    Load averages:               1 minute   5 minute  15 minute
                                     0.00       0.01       0.00
```

show chassis routing-engine (M20 Router)

`user@host>` **show chassis routing-engine**

```
Routing Engine status:
  Slot 0:
    Current state                Master
    Election priority            Master (default)
    Temperature                 29 degrees C / 84 degrees F
    DRAM                       768 MB
    Memory utilization          20 percent
    CPU utilization:
      User                       1 percent
      Background                 0 percent
      Kernel                     2 percent
      Interrupt                  0 percent
      Idle                      97 percent
    Model                        RE-2.0
    Serial ID                    58000007348d9a01
    Start time                   2003-12-30 07:05:47 PST
```

```
    Uptime                        3 hours, 41 minutes, 14 seconds
    Last reboot reason             Router rebooted after a normal shutdown
    Load averages:                 1 minute   5 minute  15 minute
                                       0.00       0.02       0.00
Routing Engine status:
  Slot 1:
    Current state                  Backup
    Election priority              Backup (default)
    Temperature                 29 degrees C / 84 degrees F
    DRAM                       768 MB
    Memory utilization           0 percent
    CPU utilization:
      User                       0 percent
      Background                 0 percent
      Kernel                     1 percent
      Interrupt                  0 percent
      Idle                      99 percent
    Model                        RE-2.0
    Serial ID                    d800000734745701
    Start time                   2003-06-17 16:37:33 PDT
    Uptime                      195 days, 18 hours, 47 minutes, 9 seconds
    Last reboot reason           Router rebooted after a normal shutdown
```

show chassis routing-engine (MX104 Router)

```
user@host> show chassis routing-engine
```

```
Routing Engine status:
  Slot 0:
    Current state                  Master
    Election priority              Master (default)
    Temperature                 32 degrees C / 89 degrees F
    CPU temperature             42 degrees C / 107 degrees F
    DRAM                      3840 MB (3840 MB installed)
    Memory utilization          18 percent
    CPU utilization:
      User                       0 percent
      Background                 0 percent
      Kernel                     3 percent
      Interrupt                  2 percent
      Idle                      94 percent
    Model                        RE-MX-104
    Serial ID                    CAAR5925
    Start time                   2013-06-05 13:17:08 IST
```

```
    Uptime                          1 hour, 15 minutes, 8 seconds
    Last reboot reason              0x200:normal shutdown
    Load averages:                  1 minute   5 minute  15 minute
                                        0.87       0.90       0.41
Routing Engine status:
  Slot 1:
    Current state                   Backup
    Election priority               Backup (default)
    Temperature                32 degrees C / 89 degrees F
    CPU temperature            38 degrees C / 100 degrees F
    DRAM                     3840 MB (3840 MB installed)
    Memory utilization         13 percent
    CPU utilization:
      User                      0 percent
      Background                0 percent
      Kernel                    1 percent
      Interrupt                 2 percent
      Idle                     97 percent
    Model                       RE-MX-104
    Serial ID                   CAAM6369
    Start time                  2013-06-05 13:07:37 IST
    Uptime                      1 hour, 24 minutes, 34 seconds
    Last reboot reason          0x200:normal shutdown
    Load averages:              1 minute   5 minute  15 minute
                                        0.19       0.15       0.06
```

show chassis routing-engine (MX240 Router)

user@host> **show chassis routing-engine**

```
Routing Engine status:
  Slot 0:
    Current state                   Master
    Election priority               Master (default)
    Temperature                36 degrees C / 96 degrees F
    CPU temperature            35 degrees C / 95 degrees F
    DRAM                     3314 MB (8192 MB installed)
    Memory utilization         37 percent
    5 sec CPU utilization:
      User                      0 percent
      Background                0 percent
      Kernel                    1 percent
      Interrupt                 0 percent
      Idle                     99 percent
```

```
    1 min CPU utilization:
      User                      0 percent
      Background                0 percent
      Kernel                    1 percent
      Interrupt                 0 percent
      Idle                     99 percent
    5 min CPU utilization:
      User                      0 percent
      Background                0 percent
      Kernel                    1 percent
      Interrupt                 0 percent
      Idle                     99 percent
    15 min CPU utilization:
      User                      0 percent
      Background                0 percent
      Kernel                    1 percent
      Interrupt                 0 percent
      Idle                     99 percent
    Model                       RE-S-1800x4
    Serial ID                   9009074155
    Start time                  2014-10-13 00:35:41 PDT
    Uptime                      98 days, 2 hours, 6 minutes, 35 seconds
    Last reboot reason          Router rebooted after a normal shutdown.
    Load averages:              1 minute   5 minute  15 minute
                                    0.12       0.12       0.13
Routing Engine status:
  Slot 1:
    Current state               Present
```

show chassis routing-engine (MX480 Router)

`user@host>` **show chassis routing-engine**

```
Routing Engine status:
  Slot 0:
    Current state               Master
    Election priority           Master (default)
    Temperature                33 degrees C / 91 degrees F
    CPU temperature            32 degrees C / 89 degrees F
    DRAM                    16323 MB (16384 MB installed)
    Memory utilization          7 percent
    5 sec CPU utilization:
      User                      1 percent
```

```
      Background                 0 percent
      Kernel                     1 percent
      Interrupt                  0 percent
      Idle                      98 percent
    1 min CPU utilization:
      User                       2 percent
      Background                 0 percent
      Kernel                     1 percent
      Interrupt                  0 percent
      Idle                      97 percent
    5 min CPU utilization:
      User                       1 percent
      Background                 0 percent
      Kernel                     1 percent
      Interrupt                  0 percent
      Idle                      97 percent
    15 min CPU utilization:
      User                       1 percent
      Background                 0 percent
      Kernel                     1 percent
      Interrupt                  0 percent
      Idle                      97 percent
    Model                        RE-S-1800x4
    Serial ID                    9009122628
    Start time                   2019-05-29 21:58:46 PDT
    Uptime                       11 days, 5 hours, 8 minutes, 55 seconds
    Last reboot reason           Router rebooted after a normal shutdown.
    Load averages:               1 minute   5 minute  15 minute
                                     0.28       0.22       0.22
```

show chassis routing-engine (MX960 Router)

`user@host>` **show chassis routing-engine**

```
Routing Engine status:
  Slot 0:
    Current state                Master
    Election priority            Master (default)
    Temperature                 34 degrees C / 93 degrees F
    CPU temperature             33 degrees C / 91 degrees F
    DRAM                     16325 MB (16384 MB installed)
    Memory utilization           7 percent
    5 sec CPU utilization:
```

```
      User                        1 percent
      Background                  0 percent
      Kernel                      3 percent
      Interrupt                   1 percent
      Idle                       95 percent
    1 min CPU utilization:
      User                        0 percent
      Background                  0 percent
      Kernel                      3 percent
      Interrupt                   0 percent
      Idle                       97 percent
    5 min CPU utilization:
      User                        0 percent
      Background                  0 percent
      Kernel                      3 percent
      Interrupt                   0 percent
      Idle                       97 percent
    15 min CPU utilization:
      User                        0 percent
      Background                  0 percent
      Kernel                      2 percent
      Interrupt                   0 percent
      Idle                       97 percent
    Model                        RE-S-1800x4
    Serial ID                    9013043129
    Start time                   2019-04-29 13:07:15 CEST
    Uptime                       15 days, 22 hours, 42 minutes, 57 seconds
    Last reboot reason           Router rebooted after a normal shutdown.
    Load averages:               1 minute   5 minute  15 minute
                                     0.17       0.20       0.22
Routing Engine status:
  Slot 1:
    Current state                Backup
    Election priority            Backup (default)
    Temperature                 33 degrees C / 91 degrees F
    CPU temperature             32 degrees C / 89 degrees F
    DRAM                     16330 MB (16384 MB installed)
    Memory utilization           9 percent
    5 sec CPU utilization:
      User                       0 percent
      Background                 0 percent
      Kernel                     0 percent
      Interrupt                  0 percent
      Idle                     100 percent
```

```
    Model                           RE-S-1800x4
    Serial ID                       9013043081
    Start time                      2019-04-29 13:05:17 CEST
    Uptime                          15 days, 22 hours, 44 minutes, 52 seconds
    Last reboot reason              0x1:power cycle/failure
    Load averages:                  1 minute   5 minute  15 minute
                                        0.17       0.17       0.12
```

show chassis routing-engine (T320 Router)

`user@host>` **show chassis routing-engine**

```
Slot 0:
    Current state                   Master
    Election priority               Master (default)
    Temperature                  51 degrees C / 123 degrees F
    CPU temperature              55 degrees C / 131 degrees F
    DRAM                       3584 MB
    Memory utilization           11 percent
    CPU utilization:
      User                        0 percent
      Background                  0 percent
      Kernel                      2 percent
      Interrupt                   0 percent
      Idle                       97 percent
    Model                          RE-A-2000
    Serial ID                      9009010618
    Start time                     2012-10-10 01:24:05 PDT
    Uptime                         5 days, 10 hours, 49 minutes, 23 seconds
    Last reboot reason             0x1:power cycle/failure
    Load averages:                 1 minute   5 minute  15 minute
                                       0.00       0.05       0.04
Routing Engine status:
  Slot 1:
    Current state                  Backup
    Election priority              Backup (default)
    Temperature                  45 degrees C / 113 degrees F
    CPU temperature              48 degrees C / 118 degrees F
    DRAM                       3584 MB
    Memory utilization            9 percent
    CPU utilization:
      User                        0 percent
      Background                  0 percent
      Kernel                      0 percent
```

```
      Interrupt                0 percent
      Idle                   100 percent
    Model                      RE-A-2000
    Serial ID                  9009003642
    Start time                 2012-10-10 01:24:04 PDT
    Uptime                     5 days, 10 hours, 49 minutes, 28 seconds
    Last reboot reason         0x1:power cycle/failure
```

show chassis routing-engine (T4000 Router)

user@host> **show chassis routing-engine**

```
Routing Engine status:
  Slot 0:
    Current state              Master
    Election priority          Master (default)
    Temperature               33 degrees C / 91 degrees F
    CPU temperature           50 degrees C / 122 degrees F
    DRAM                    8960 MB
    Memory utilization        18 percent
    CPU utilization:
      User                     0 percent
      Background               0 percent
      Kernel                   4 percent
      Interrupt                1 percent
      Idle                    95 percent
    Model                      RE-DUO-1800
    Serial ID                  P737F-002248
    Start time                 2012-02-09 22:49:53 PST
    Uptime                     2 hours, 21 minutes, 35 seconds
    Last reboot reason         Router rebooted after a normal shutdown.
    Load averages:             1 minute   5 minute  15 minute
                                   0.00       0.04       0.00
Routing Engine status:
  Slot 1:
    Current state              Backup
    Election priority          Backup (default)
    Temperature               32 degrees C / 89 degrees F
    CPU temperature           46 degrees C / 114 degrees F
    DRAM                    8960 MB
    Memory utilization        24 percent
    CPU utilization:
      User                     0 percent
      Background               0 percent
```

```
      Kernel                     0 percent
      Interrupt                  0 percent
      Idle                      99 percent
    Model                          RE-DUO-1800
    Serial ID                      P737F-002653
    Start time                     2012-02-08 20:12:51 PST
    Uptime                         1 day, 4 hours, 58 minutes, 28 seconds
    Last reboot reason             Router rebooted after a normal shutdown.
```

show chassis routing-engine (TX Matrix Router)

user@host> **show chassis routing-engine**

```
scc-re0:
--------------------------------------------------------------------------
Routing Engine status:
  Slot 0:
    Current state                  Master
    Election priority              Master (default)
    Temperature                 34 degrees C / 93 degrees F
    CPU temperature             33 degrees C / 91 degrees F
    DRAM                      2048 MB
    Memory utilization          12 percent
    CPU utilization:
      User                       0 percent
      Background                 0 percent
      Kernel                     2 percent
      Interrupt                  0 percent
      Idle                      98 percent
    Model                          RE-4.0
    Serial ID                      P11123900153
    Start time                     2004-08-05 18:42:05 PDT
    Uptime                       9 days, 22 hours, 49 minutes, 50 seconds
    Last reboot reason             Router rebooted after a normal shutdown
    Load averages:                 1 minute   5 minute  15 minute
                                       0.00       0.08       0.07

lcc0-re0:
--------------------------------------------------------------------------
Routing Engine status:
  Slot 0:
    Current state                  Master
    Election priority              Master (default)
    Temperature                 33 degrees C / 91 degrees F
```

```
    CPU temperature             30 degrees C / 86 degrees F
    DRAM                      2048 MB
    Memory utilization          12 percent
    CPU utilization:
      User                       0 percent
      Background                 0 percent
      Kernel                     1 percent
      Interrupt                  0 percent
      Idle                      98 percent
    Model                        RE-3.0
    Serial ID                    210865700363
    Start time                   2004-08-05 18:42:05 PDT
    Uptime                      9 days, 22 hours, 48 minutes, 20 seconds
    Last reboot reason           Router rebooted after a normal shutdown
    Load averages:               1 minute   5 minute  15 minute
                                     0.00       0.02       0.00

lcc2-re0:
--------------------------------------------------------------------------
Routing Engine status:
  Slot 0:
    Current state                Master
    Election priority            Master (default)
    Temperature                 34 degrees C / 93 degrees F
    CPU temperature             35 degrees C / 95 degrees F
    DRAM                      2048 MB
    Memory utilization          12 percent
    CPU utilization:
      User                       0 percent
      Background                 0 percent
      Kernel                     2 percent
      Interrupt                  0 percent
      Idle                      98 percent
    Model                        RE-4.0
    Serial ID                    P11123900126
    Start time                   2004-08-05 18:42:05 PDT
    Uptime                      9 days, 22 hours, 49 minutes, 4 seconds
    Last reboot reason           Router rebooted after a normal shutdown
    Load averages:               1 minute   5 minute  15 minute
                                     0.01       0.01       0.0
```

show chassis routing-engine lcc (TX Matrix Router)

`user@host>` **show chassis routing-engine 0 lcc 0**

```
lcc0-re0:
--------------------------------------------------------------------------
Routing Engine status:
  Slot 0:
    Current state                  Master
    Election priority              Master (default)
    Temperature                 33 degrees C / 91 degrees F
    CPU temperature             30 degrees C / 86 degrees F
    DRAM                      2048 MB
    Memory utilization          12 percent
    CPU utilization:
      User                       0 percent
      Background                 0 percent
      Kernel                     1 percent
      Interrupt                  0 percent
      Idle                      98 percent
    Model                        RE-3.0
    Serial ID                    210865700363
    Start time                   2004-08-05 18:42:05 PDT
    Uptime                      7 days, 22 hours, 49 minutes, 6 seconds
    Last reboot reason           Router rebooted after a normal shutdown
    Load averages:               1 minute   5 minute  15 minute
                                     0.00       0.00       0.00
```

show chassis routing-engine bios (TX Matrix Router)

user@host> **show chassis routing-engine bios**

```
scc-re0:
--------------------------------------------------------------------------
Routing Engine BIOS Version: V1.0.0
lcc0-re0:
--------------------------------------------------------------------------
Routing Engine BIOS Version: V1.0.17
lcc2-re0:
--------------------------------------------------------------------------
Routing Engine BIOS Version: V1.0.0
```

show chassis routing-engine (TX Matrix Plus Router)

user@host> **show chassis routing-engine**

```
sfc0-re0:
--------------------------------------------------------------------------
Routing Engine status:
  Slot 0:
    Current state                  Master
    Election priority              Master (default)
    Temperature                 27 degrees C / 80 degrees F
    CPU temperature             42 degrees C / 107 degrees F
    DRAM                      3327 MB
    Memory utilization          12 percent
    CPU utilization:
      User                       0 percent
      Background                 0 percent
      Kernel                     2 percent
      Interrupt                  0 percent
      Idle                      98 percent
    Model                        RE-TXP-SFC
    Serial ID                    737A-1024
    Start time                   2009-05-11 17:39:49 PDT
    Uptime                       3 hours, 45 minutes, 25 seconds
    Last reboot reason           Router rebooted after a normal shutdown.
    Load averages:               1 minute   5 minute  15 minute
                                     0.00       0.00       0.00
Routing Engine status:
  Slot 1:
    Current state                  Backup
    Election priority              Backup (default)
    Temperature                 29 degrees C / 84 degrees F
    CPU temperature             43 degrees C / 109 degrees F
    DRAM                      3327 MB
    Memory utilization          11 percent
    CPU utilization:
      User                       0 percent
      Background                 0 percent
      Kernel                     0 percent
      Interrupt                  0 percent
      Idle                     100 percent
    Model                        RE-TXP-SFC
    Serial ID                    737A-1024
    Start time                   2009-05-11 17:08:54 PDT
    Uptime                       4 hours, 16 minutes, 52 seconds
    Last reboot reason           0x1:power cycle/failure

lcc0-re0:
```

```
---------------------------------------------------------------------------
Routing Engine status:
  Slot 0:
    Current state                  Master
    Election priority              Master (default)
    Temperature                 30 degrees C / 86 degrees F
    CPU temperature             43 degrees C / 109 degrees F
    DRAM                      3327 MB
    Memory utilization           9 percent
    CPU utilization:
      User                       0 percent
      Background                 0 percent
      Kernel                     2 percent
      Interrupt                  0 percent
      Idle                      98 percent
    Model                        RE-TXP-LCC
    Serial ID                    737F-1024
    Start time                   2009-05-11 17:40:32 PDT
    Uptime                       3 hours, 44 minutes, 51 seconds
    Last reboot reason           Router rebooted after a normal shutdown.
    Load averages:               1 minute   5 minute  15 minute
                                     0.00       0.00       0.00
Routing Engine status:
  Slot 1:
    Current state                  Backup
    Election priority              Backup (default)
    Temperature                 30 degrees C / 86 degrees F
    CPU temperature             43 degrees C / 109 degrees F
    DRAM                      3327 MB
    Memory utilization           9 percent
    CPU utilization:
      User                       0 percent
      Background                 0 percent
      Kernel                     0 percent
      Interrupt                  0 percent
      Idle                     100 percent
    Model                        RE-TXP-LCC
    Serial ID                    737F-1024
    Start time                   2009-05-06 17:31:32 PDT
    Uptime                       5 days, 3 hours, 54 minutes, 19 seconds
    Last reboot reason           Router rebooted after a normal shutdown.
```

show chassis routing-engine lcc (TX Matrix Plus Router)

`user@host>` **show chassis routing-engine 0 lcc 0**

```
lcc0-re0:
--------------------------------------------------------------------------
Routing Engine status:
  Slot 0:
    Current state                  Master
    Election priority              Master (default)
    Temperature                 30 degrees C / 86 degrees F
    CPU temperature             43 degrees C / 109 degrees F
    DRAM                      3327 MB
    Memory utilization           9 percent
    CPU utilization:
      User                       0 percent
      Background                 0 percent
      Kernel                     2 percent
      Interrupt                  0 percent
      Idle                      98 percent
    Model                        RE-TXP-LCC
    Serial ID                    737F-1024
    Start time                   2009-05-11 17:40:32 PDT
    Uptime                       3 hours, 45 minutes, 26 seconds
    Last reboot reason           Router rebooted after a normal shutdown.
    Load averages:               1 minute   5 minute  15 minute
                                     0.00       0.00       0.00
Routing Engine status:
  Slot 1:
    Current state                  Backup
    Election priority              Backup (default)
    Temperature                 30 degrees C / 86 degrees F
    CPU temperature             43 degrees C / 109 degrees F
    DRAM                      3327 MB
    Memory utilization           9 percent
    CPU utilization:
      User                       0 percent
      Background                 0 percent
      Kernel                     0 percent
      Interrupt                  0 percent
      Idle                     100 percent
    Model                        RE-TXP-LCC
    Serial ID                    737F-1024
    Start time                   2009-05-06 17:31:32 PDT
    Uptime                       5 days, 3 hours, 54 minutes, 59 seconds
    Last reboot reason           Router rebooted after a normal shutdown.
```

show chassis routing-engine bios (TX Matrix Plus Router)

```
user@host> show chassis routing-engine bios
```

```
sfc0-re0:
--------------------------------------------------------------------------
    Routing Engine BIOS Version: V0.0.Z

lcc0-re0:
--------------------------------------------------------------------------
    Routing Engine BIOS Version: V0.0.N
```

show chassis routing-engine (QFX Series)

```
user@switch> show chassis routing-engine
```

```
Routing Engine status:
Slot 0:
Current state Master
Election priority Master (default)
DRAM 2820 MB
Memory utilization 49 percent
CPU utilization:
User 1 percent
Background 0 percent
Kernel 1 percent
Interrupt 0 percent
Idle 97 percent
Model QFX3500-48S4Q
Serial ID S/N ED3709
Uptime 3 days, 4 hours, 29 minutes, 42 seconds
Last reboot reason 0x200:chassis control reset
Load averages: 1 minute 5 minute 15 minute
0.37 0.26 0.19
```

show chassis routing-engine (OCX Series)

```
user@switch> show chassis routing-engine
```

```
Routing Engine status:
Slot 0:
Current state Master
Election priority Master (default)
DRAM 2820 MB
```

```
Memory utilization 49 percent
CPU utilization:
User 1 percent
Background 0 percent
Kernel 1 percent
Interrupt 0 percent
Idle 97 percent
Model OCX-1100-48SX-AFI
Serial ID S/N ED3709
Uptime 3 days, 4 hours, 29 minutes, 42 seconds
Last reboot reason 0x200:chassis control reset
Load averages: 1 minute 5 minute 15 minute
0.37 0.26 0.19
```

show chassis routing engine interconnect-device (QFabric Systems)

`user@switch>` **show chassis routing-engine**

```
Routing Engine status:
  Slot 0:
    Current state                  Master
    Election priority              Master (default)
    Temperature                 48 degrees C / 118 degrees F
    DRAM                      3312 MB
    Memory utilization          63 percent
    CPU utilization:
      User                      14 percent
      Background                 0 percent
      Kernel                     5 percent
      Interrupt                  0 percent
      Idle                      81 percent
    Model                          RE-QFXC08-CB4S
    Serial ID                      BUILTIN
    Start time                     2011-07-06 13:26:15 UTC
    Uptime                         11 hours, 24 minutes, 57 seconds
    Last reboot reason             0x4:reset-button reset
    Load averages:                 1 minute   5 minute  15 minute
                                       2.62       2.31       2.28
Routing Engine status:
  Slot 1:
    Current state                  Backup
    Election priority              Backup (default)
    Temperature                 39 degrees C / 102 degrees F
    DRAM                      3312 MB
```

```
    Memory utilization          59 percent
    CPU utilization:
      User                       9 percent
      Background                 0 percent
      Kernel                     1 percent
      Interrupt                  0 percent
      Idle                      91 percent
    Model                          RE-QFXC08-CB4S
    Serial ID                      BUILTIN
    Start time                     2011-07-06 13:24:58 UTC
    Uptime                         11 hours, 26 minutes, 18 seconds
    Last reboot reason             0x4:reset-button reset
```

show chassis routing-engine (PTX Series Packet Transport Router)

user@switch> **show chassis routing-engine**

```
Routing Engine status:
  Slot 0:
    Current state                  Master
    Election priority              Master (default)
    Temperature                 60 degrees C / 140 degrees F
    CPU temperature             76 degrees C / 168 degrees F
    DRAM                     17152 MB
    Memory utilization          11 percent
    CPU utilization:
      User                       0 percent
      Background                 0 percent
      Kernel                     4 percent
      Interrupt                  0 percent
      Idle                      95 percent
    Model                          RE-DUO-2600
    Serial ID                      P737A-002231
    Start time                     2011-12-21 16:54:37 PST
    Uptime                         25 minutes, 44 seconds
    Last reboot reason             Router rebooted after a normal shutdown.
    Load averages:                 1 minute   5 minute  15 minute
                                       0.01       0.02       0.06
Routing Engine status:
  Slot 1:
    Current state                  Backup
    Election priority              Backup (default)
    Temperature                 50 degrees C / 122 degrees F
```

```
    CPU temperature            64 degrees C / 147 degrees F
    DRAM                    17152 MB
    Memory utilization         10 percent
    CPU utilization:
      User                      0 percent
      Background                0 percent
      Kernel                    0 percent
      Interrupt                 0 percent
      Idle                     99 percent
    Model                       RE-DUO-2600
    Serial ID                   P737A-002438
    Start time                  2011-12-21 16:52:26 PST
    Uptime                      27 minutes, 49 seconds
    Last reboot reason          Router rebooted after a normal shutdown.
```

show chassis routing-engine (EX9200 Switch)

user@switch> **show chassis routing-engine**

```
Routing Engine status:
Slot 0:
  Current state                  Master
  Election priority              Master (default)
  Temperature                 35 degrees C / 95 degrees F
  CPU temperature             33 degrees C / 91 degrees F
  DRAM                      8157 MB
    Installed Memory        8192 MB
  Memory utilization          18 percent
CPU utilization:
  User                       1 percent
  Background                 0 percent
  Kernel                     4 percent
  Interrupt                  1 percent
  Idle                      94 percent
Model                        RE-S-EX9200-1800X4
Serial ID                    9009119555
Start time                   2014-03-12 14:58:05 UTC
Uptime                       1 hour, 41 minutes, 51 seconds
Last reboot reason           Router rebooted after a normal shutdown.
Load averages:               1 minute   5 minute  15 minute
                             0.02       0.02       0.00
Routing Engine status:
Slot 1:
  Current state                  Backup
```

```
  Election priority             Backup (default)

[...Output truncasted...]
```

show chassis routing-engine (EX9251 Switch)

`user@switch>` **show chassis routing-engine**

```
Routing Engine status:
    Temperature                 50 degrees C / 122 degrees F
    CPU temperature             50 degrees C / 122 degrees F
    DRAM                     16340 MB (16384 MB installed)
    Memory utilization           6 percent
    5 sec CPU utilization:
      User                       2 percent
      Background                 0 percent
      Kernel                    19 percent
      Interrupt                  0 percent
      Idle                      79 percent
    1 min CPU utilization:
      User                       2 percent
      Background                 0 percent
      Kernel                    19 percent
      Interrupt                  0 percent
      Idle                      79 percent
    5 min CPU utilization:
      User                       2 percent
      Background                 0 percent
      Kernel                    19 percent
      Interrupt                  0 percent
      Idle                      79 percent
    15 min CPU utilization:
      User                       2 percent
      Background                 0 percent
      Kernel                    19 percent
      Interrupt                  0 percent
      Idle                      79 percent
    Model                        RE-S-2X00x6
    Start time                   2018-03-08 05:11:33 PST
    Uptime                       10 days, 18 hours, 59 minutes, 15 seconds
    Last reboot reason           0x4000:VJUNOS reboot
    Load averages:               1 minute   5 minute  15 minute
                                     1.06       1.09       1.08
```

show chassis routing-engine (ACX2000 Universal Metro Router)

```
user@host> show chassis routing-engine
```

```
Routing Engine status:
    Temperature                53 degrees C / 127 degrees F
    DRAM                     1536 MB
    Memory utilization         25 percent
    CPU utilization:
      User                      0 percent
      Background                0 percent
      Kernel                    0 percent
      Interrupt                 1 percent
      Idle                     99 percent
    Model                       RE-ACX-2000
    Start time                  2012-05-09 00:57:07 PDT
    Uptime                      5 days, 3 hours, 16 minutes, 15 seconds
    Last reboot reason          Router rebooted after a normal shutdown.
    Load averages:              1 minute   5 minute  15 minute
                                    0.00       0.03       0.05
```

show chassis routing-engine (ACX1000 Universal Metro Router)

```
user@host> show chassis routing-engine
```

```
Routing Engine status:
    Temperature                36 degrees C / 96 degrees F
    DRAM                      768 MB
    Memory utilization         50 percent
    CPU utilization:
      User                      3 percent
      Background                0 percent
      Kernel                    6 percent
      Interrupt                 0 percent
      Idle                     91 percent
    Model                       RE-ACX-1000
    Start time                  2012-05-10 07:12:23 PDT
    Uptime                      4 days, 10 hours, 46 minutes, 53 seconds
    Last reboot reason          Router rebooted after a normal shutdown.
    Load averages:              1 minute   5 minute  15 minute
                                    0.00       0.00       0.00
```

show chassis routing-engine (Displaying the guest reboot reason on PTX5000, MX240, MX480, MX960< MX2010, and MX2020)

```
user@host> show chassis routing-engine re0 | match "Last reboot reason"
```

```
Last reboot reason 0x4000:VJUNOS reboot
```

show chassis scb

Syntax

```
show chassis scb
```

Release Information

Command introduced before Junos OS Release 7.4.

Description

(M40 router only) Display System Control Board (SCB) status information.

Options

This command has no options.

Required Privilege Level

view

RELATED DOCUMENTATION

Checklist for Monitoring the SCB

List of Sample Output

show chassis scb on page 1721

Output Fields

Table 96 on page 1720 lists the output fields for the **show chassis scb** command. Output fields are listed in the approximate order in which they appear.

Table 96: show chassis scb Output Fields

Field Name	Field Description
Temperature	Temperature of the air passing by the SCB, in degrees Celsius.
CPU utilization	Total percentage of CPU being used by the SCB's processor.
Interrupt utilization	Of the total CPU being used by the SCB's processor, the percentage being used for interrupts.
Heap utilization	Percentage of heap space being used by the SCB's processor.
Buffer utilization	Percentage of buffer space being used by the SCB's processor.

Table 96: show chassis scb Output Fields *(continued)*

Field Name	Field Description
DRAM	Total DRAM available to the SCB's processor.
Start time	Time when the SCB started running.
Uptime	How long the SCB has been running.
Internet Processor memory	Information about the memory of the Internet Processor ASIC on the SCB: • **IP routes**—Number of IP routes known to the Internet Processor. • **MPLS routes**—Number of MPLS routes known to the Internet Processor. • **SRAM banks enabled**—Which SRAM banks are enabled. • **SRAM size**—Size of SCB SRAM, in bytes. • **SRAM used**—Amount of SRAM used, in bytes. • **SRAM utilization**—Percentage of SRAM used.

Sample Output

show chassis scb

`user@host>` **show chassis scb**

```
SCB status:
  Temperature:                30 Centigrade
  CPU utilization:             5 percent
  Interrupt utilization:       0 percent
  Heap utilization:            0 percent
  Buffer utilization:          2 percent
  DRAM:                       64 Mbytes
  Start time:                    1998-10-28 18:35:46 UTC
  Uptime:                        6 minutes, 16 seconds
  Internet Processor memory:
    IP routes:                16
    MPLS routes:               1
    SRAM banks enabled:      [ 1 1 1 1 ]
    SRAM size:                 4 Mbytes
    SRAM used:               256 bytes
    SRAM utilization:          0 percent
```

show chassis sfb

List of Syntax

Syntax on page 1722
Syntax (MX10008 Universal Edge Routers) on page 1722

Syntax

```
show chassis sfb
<all-members>
<local>
<member member-id>
< slot sfb-slot-number>
```

Syntax (MX10008 Universal Edge Routers)

```
show chassis sfb
errors
< slot sfb-slot-number>
```

Release Information

Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 Universal Routing Platforms.
all-members, **local**, and **member *member-id*** options introduced in Junos OS Release 15.1 for MX2020 and MX2010 routers.
Command introduced in Junos OS Release 17.2 for MX2008 Universal Routing Platforms.
Command introduced in Junos OS Release 18.2 for MX10008 Universal Routing Platforms.

Description

Display chassis information about the Switch Fabric Board (SFB).

Options

none—Display chassis information about all Switch Fabric Boards.

all-members—(Optional) Display chassis information about the SFB in all members of the Virtual Chassis configuration.

local—(Optional) Display chassis information about the SFB in the local member of the Virtual Chassis.

member *member-id*—(Optional) Display chassis information about the SFB in the specified member of the Virtual Chassis. Replace ***member-id*** with the value 0 or 1.

sfb-slot-number—(Optional) Display chassis information about the specified Switch Fabric Board. For MX2020, MX2010, and MX2008 routers, replace ***sfb-slot-number*** with a value from 0 through 7.

Required Privilege Level
view

RELATED DOCUMENTATION

request chassis sfb | 664

List of Sample Output
show chassis sfb (MX2020 Router) on page 1723
show chassis sfb (MX2010 Router) on page 1724
show chassis sfb (MX2008 Router) on page 1724
show chassis sfb (MX10008 Router) on page 1724

Output Fields
Table 97 on page 1723 lists the output fields for the **show chassis sfb** command. Output fields are listed in the approximate order in which they appear.

Table 97: show chassis sfb Output Fields

Field Name	Field Description
Slot	Slot number.
State	Status of the SFB. • **Online**—The SFB is online and running. • **Offline**— SFB is powered down.
Uptime	How long the Routing Engine has been connected to the SFB and, therefore, how long the SFB has been up and running.

Sample Output

show chassis sfb (MX2020 Router)

```
user@host> show chassis sfb
```

```
Slot  State             Uptime
 0    Online             6 hours, 11 minutes, 33 seconds
 1    Online             6 hours, 11 minutes, 27 seconds
 2    Online             6 hours, 11 minutes, 21 seconds
 3    Online             6 hours, 11 minutes, 15 seconds
```

```
 4    Online              6 hours, 11 minutes, 8 seconds
 5    Online              6 hours, 11 minutes, 2 seconds
 6    Online              6 hours, 10 minutes, 57 seconds
 7    Online              6 hours, 10 minutes, 51 seconds
```

show chassis sfb (MX2010 Router)

user@host> **show chassis sfb**

```
Slot  State              Uptime
 0    Online              6 hours, 48 minutes, 28 seconds
 1    Online              6 hours, 48 minutes, 23 seconds
 2    Online              6 hours, 48 minutes, 17 seconds
 3    Offline              --- Restarting unresponsive board ---
 4    Online              6 hours, 48 minutes, 12 seconds
 5    Online              6 hours, 48 minutes, 6 seconds
 6    Online              6 hours, 48 minutes
 7    Online              6 hours, 47 minutes, 55 seconds
```

show chassis sfb (MX2008 Router)

user@host> **show chassis sfb**

```
Slot  State              Uptime
 0    Online              10 days, 6 hours, 52 minutes, 38 seconds
 1    Online              10 days, 6 hours, 52 minutes, 32 seconds
 2    Online              10 days, 6 hours, 52 minutes, 26 seconds
 3    Online              10 days, 6 hours, 52 minutes, 20 seconds
 4    Online              10 days, 6 hours, 52 minutes, 15 seconds
 5    Online              10 days, 6 hours, 52 minutes, 9 seconds
 6    Online              10 days, 6 hours, 52 minutes, 3 seconds
 7    Online              10 days, 6 hours, 51 minutes, 58 seconds
```

show chassis sfb (MX10008 Router)

user@host> **show chassis sfb**

```
Slot  State              Uptime
 0    Online              21 hours, 25 minutes, 50 seconds
 1    Online              21 hours, 25 minutes, 22 seconds
 2    Online              21 hours, 24 minutes, 55 seconds
 3    Online              21 hours, 24 minutes, 27 seconds
```

```
4    Online              21 hours, 23 minutes, 56 seconds
5    Online              21 hours, 23 minutes, 23 seconds
```

show chassis sfb errors

Syntax

```
show chassis sfb errors
< slot sfb-slot-number>
```

Release Information

Command introduced in Junos OS Release 18.2 for MX10008 Universal Routing Platform.

Description

Display information about errors pertaining to Switch Fabric Boards (SFBs).

Options

none—Display information about the errors pertaining to all the SFBs in the router.

sfb-slot-number—(Optional) Display information about error for the specified Switch Fabric Board.

Range: 0–5

Required Privilege Level

view

RELATED DOCUMENTATION

request chassis sfb | **664**

List of Sample Output

show chassis sfb errors slot 1(MX10008 Router) on page 1727

Output Fields

Table 97 on page 1723 lists the output fields for the **show chassis sfb errors** command. Output fields are listed in the approximate order in which they appear.

Table 98: show chassis sfb errors Output Fields

Field Name	Field Description
Slot	Displays the SFB slot number.
Name	Displays the name of the SFB. In MX10008 routers, SFB is identified as SIB.
DeviceID	Displays device ID.

Table 98: show chassis sfb errors Output Fields *(continued)*

Field Name	Field Description
Threshold	Displays the error threshold.
Active	Displays the number of active error instances.
Occurred	Displays the number of error instances occurred.
Cleared	Displays the number of error instances cleared.
Description	Displays error description.

Sample Output

show chassis sfb errors slot 1(MX10008 Router)

```
user@host> show chassis sfb errors slot 1
```

```
Slot Name            DeviceId    Threshold  Active  Occured  Cleared  Description
1    SIB 1_LTC3880_0   09204F8B00  1          0       0        0        PF0 Core
0.9V, voltage
                       09204FFFFF  1          0       0        0        PF0 Core
0.9V, I2C Access
     SIB 1_LTC3880_1   09204D8B00  1          0       0        0        PF0 AVDD
1V, voltage
                       09204DFFFF  1          0       0        0        PF0 AVDD
1V, I2C Access
     SIB 1_LTC3880_2   09204B8B00  1          0       0        0        PF1 Core
0.9V, voltage
                       09204BFFFF  1          0       0        0        PF1 Core
0.9V, I2C Access
     SIB 1_LTC3880_3   0920498B00  1          0       0        0        PF1 AVDD
1V, voltage
                       092049FFFF  1          0       0        0        PF1 AVDD
1V, I2C Access
     SIB 1_VT7505_0    0910408800  1          0       0        0        HOTSWAP
12V, voltage
                       091040FFFF  1          0       0        0        HOTSWAP
12V, I2C Access
     SIB 1_TEMP_0      0901000000  1          0       0        0        Intake-A
```

```
Temp Sensor
                      0901000100  1         0       0       0        Intake-B
Temp Sensor
                      0901002300  1         0       0       0        PF0 Temp
Sensor
     SIB 1_TEMP_1     0902000000  1         0       0       0        Exhaust-A
 Temp Sensor
                      0902000100  1         0       0       0        Exhaust-B
 Temp Sensor
                      0902002300  1         0       0       0        PF1 Temp
Sensor
```

show chassis sfm

Syntax

```
show chassis sfm
<detail <sfm-slot>>
```

Release Information

Command introduced before Junos OS Release 7.4.

Description

(M40e and M160 routers only) Display Switching and Forwarding Module (SFM) status information.

Options

none—Display standard status information about all SFMs.

detail—(Optional) Display detailed SFM status information.

sfm-slot—(Optional) Display status information about the SFM in the specified slot only. For the M40e router, replace ***sfm-slot*** with **0** or **1**. For the M160 router, replace ***sfm-slot*** with a value from **0** through **3**.

Required Privilege Level

view

RELATED DOCUMENTATION

- request chassis sfm | 668
- request chassis sfm master switch | 666
- *Switching the Global Master and Backup Roles in a Virtual Chassis Configuration*

List of Sample Output

show chassis sfm (M160 Router) on page 1731
show chassis sfm detail (M40e Router) on page 1731
show chassis sfm detail (M160 Router) on page 1732

Output Fields

Table 99 on page 1730 lists the output fields for the **show chassis sfm** command. Output fields are listed in the approximate order in which they appear.

Table 99: show chassis sfm Output Fields

Field Name	Field Description	Level of Output
Slot	Slot number.	All levels
State	Status of the SFM. State can be any of the following: • **Online**—SFM is online and running. • **Online-Standby** (M40e router only)—SFM is online, operating as Standby. • **Offline**—SFM is powered down. • **Empty**—No SFM is present.	All levels
Reason	If the status is **Offline**, reason for this state.	All levels
Temp	Temperature of air passing by the SFM, in degrees Celsius.	none specified
CPU Utilization (%)	Information about CPU usage.	none specified
Total	Total percentage of the CPU being used by the SFM's processor.	All levels
Interrupt	Of the total CPU being used by the SFM's processor, the percentage being used for interrupts.	All levels
Memory Utilization	Information about memory usage.	none specified
DRAM	Total DRAM available to the SFM's processor, in megabytes (MB).	All levels
Heap	Percentage of heap space (dynamic memory) being used by the SFM's processor. If this number exceeds 80 percent, it might indicate a software problem (memory leak).	All levels
Buffer	Percentage of buffer space being used by the SFM's processor for buffering internal messages.	All levels
SPP Temperature	Temperature of air passing by the Switch Plane Processor card, in degrees Celsius and Fahrenheit	**detail**
SPR Temperature	Temperature of air passing by the Switch Plane Router card, in degrees Celsius and Fahrenheit.	**detail**
Total CPU DRAM	Total amount of CPU DRAM being used by the SFM's processor.	**detail**

Table 99: show chassis sfm Output Fields *(continued)*

Field Name	Field Description	Level of Output
Total SSRAM	Total amount of SSRAM being used by the SFM's processor.	**detail**
Internet processor II	(M160 router only) Processor type.	**detail**
Start time	Time this SFM became active.	**detail**
Uptime	How long the SFM has been up and running.	**detail**
Packet scheduling mode	(M160 router only) Enabled or disabled.	**detail**

Sample Output

show chassis sfm (M160 Router)

```
user@host> show chassis sfm
```

```
SFM status:
                Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State       (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Online       39      0          0        64         0          6
  1  Online       43      0          0        64         0          6
  2  Empty         0      0          0         0         0          0
  3  Empty         0      0          0         0         0          0
```

show chassis sfm detail (M40e Router)

```
user@host> show chassis sfm detail
```

```
Slot 0 information:
  State                               Offline
  Reason:                             - power configured off
Slot 1 information:
  State                               Present
  SPP temperature                   0 degrees C / 32 degrees F
  SPR temperature                   0 degrees C / 32 degrees F
```

```
  Total CPU DRAM                    0 MB
  Total SSRAM                       0 MB
```

show chassis sfm detail (M160 Router)

`user@host>` **show chassis sfm detail**

```
Slot 0 information:
  State                               Online
  SPP temperature                   37 degrees C / 98 degrees F
  SPR temperature                   39 degrees C / 102 degrees F
  Total CPU DRAM                    64 MB
  Total SSRAM                        8 MB
  Internet Processor II               Version 1, Foundry IBM, Part number 9
  Start time:                         2004-08-17 09:23:08 PDT
  Uptime:                            72 days, 1 hour, 15 minutes, 57 seconds
Slot 1 information:
  State                               Online
  SPP temperature                   36 degrees C / 96 degrees F
  SPR temperature                   37 degrees C / 98 degrees F
  Total CPU DRAM                    64 MB
  Total SSRAM                        8 MB
  Internet Processor II               Version 1, Foundry IBM, Part number 9
  Start time:                         2004-08-17 09:23:08 PDT
  Uptime:                            72 days, 1 hour, 15 minutes, 57 seconds
Slot 2 information:
....
Packet scheduling mode : Disabled
```

show chassis sibs

List of Syntax

Syntax on page 1733
Syntax (TX Matrix Router) on page 1733
Syntax (TX Matrix Plus Router) on page 1733
Syntax (PTX Series Packet Transport Routers) on page 1733

Syntax

```
show chassis sibs
```

Syntax (TX Matrix Router)

```
show chassis sibs
<lcc number | scc>
```

Syntax (TX Matrix Plus Router)

```
show chassis sibs
<lcc number | sfc number>
```

Syntax (PTX Series Packet Transport Routers)

```
show chassis sibs
<detail>
<slot>
```

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 12.1 for the PTX Series Packet Transport Routers.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
detail and ***sib-slot*** options introduced for the PTX Packet Transport Router in Junos OS Release 12.1
Command introduced in Junos OS Release 17.2 for PTX10008 Routers.

Description

(M320,T Series routers, TX Matrix routers, TX Matrix Plus routers, and PTX Series routers only) Display Switch Interface Boards (SIBs) status information.

Options

none—(TX Matrix routers and TX Matrix Plus routers only) On a TX Matrix router, display the SIB status for the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display the SIB status for the TX Matrix Plus router and its attached routers.

detail—(PTX Series) (Optional) Display detailed SIB status information.

lcc *number*—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display SIB status information for a specified T640 router (line-card chassis or LCC) that is connected to the TX Matrix router. On a TX Matrix Plus router, display SIB status information for a specified T1600 or T4000 router (LCC) that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

scc—(TX Matrix routers only) (Optional) Display SIB status information for the TX Matrix router (switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) Display SIB status information for the TX Matrix Plus router (switch-fabric chassis or SFC). Replace ***number*** with **0**.

slot—(PTX Series) (Optional) Display status information about the SIB in the specified slot only. The range of values is 0 through 8.

Required Privilege Level
view

RELATED DOCUMENTATION

request chassis sib | **670**

show chassis spmb sibs | **1763**

show chassis environment sib | **1136**

Monitoring the SIBs

M320 SIB Description

Routing Matrix with a TX Matrix Plus Router Solutions Page

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show chassis sibs (T4000 Router) on page 1739
show chassis sibs (TX Matrix Router) on page 1740
show chassis sibs (T1600 Router) on page 1740
show chassis sibs (TX Matrix Plus Router) on page 1740
show chassis sibs (TX Matrix Plus Router with 3D SIBs) on page 1742
show chassis sibs sfc (TX Matrix Plus Router)) on page 1745
show chassis sibs lcc (TX Matrix Plus Router) on page 1746
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show chassis sibs (M320 Router) on page 1747
show chassis sibs (PTX Series) on page 1747
show chassis sibs (PTX Series) on page 1748
show chassis sibs (PTX5000) on page 1748

Output Fields

Table 100 on page 1735 lists the output fields for the **show chassis sibs** command. Output fields are listed in the approximate order in which they appear.

Table 100: show chassis sibs Output Fields

Field Name	Field Description
Slot	SIB slot number.
Type	(TX Matrix Plus router only) SIB type.
Uptime	How long the SIB has been up and running.
State	SIB status: • **Activating**—SIB is coming online; this is a transitional state. • **Deactivating**—SIB is going offline; this is a transitional state. • **Connected**—SIBs on a T1600 router are connected and trained but are either not online or are spare, because the plane on the TX Matrix Plus router (or switch-fabric chassis) is still offline. • **Disconnected**—SIBs on all T640 routers on the TX Matrix router (switch-card chassis) are in the **Disconnected** state, because a SIB on the SCC has gone offline. Likewise, SIBs on all T1600 routers on the TX Matrix Plus router (or switch-fabric chassis) are in the **Disconnected** state, because a SIB on the SFC has gone offline.

Table 100: show chassis sibs Output Fields *(continued)*

Field Name	Field Description
	On the TX Matrix Plus router with 3D SIBs, the LCC SIB is also disconnected if the F13 SIB is online, but none of the cables are connected or trained. • **Onlining**—SIB is in the process of going online. ASICs , retimers and the rest of the hardware is initializing. • **Online**—SIB is operational and running. • **Offlining**—SIB is in the process of going offline. ASICs , retimers and rest of the hardware is being shutdown down to take the offline gracefully. • **Offline**—SIB is powered down. **NOTE:** If a SIB transitions to the **Offline** state, the command displays an appropriate reason in the output. For instance, if the SIB is taken offline using the **request chassis sib** command, the **show chassis sibs** command displays **--- Offlined by cli command ---** in the output. • **Spare**—SIB is redundant and will move to active state if one of the working SIBs fails to pass traffic. **NOTE:** **Spare** does not apply to PTX Series Packet Transport Routers, as there are no spare SIBs. • **Empty**—No SIB is present. • **Fault**—SIB is in an alarmed state in which none of the SIB's planes are operational for one of the following reasons: ◦ All onboard fabric ASICs are not operational. ◦ Fiber-optic connector faults. ◦ FPC connector faults. ◦ SIB midplane connector faults. • **Fault-off**—SIB is powered off due to a fault in SIB. • **Check**—SIB is in an alarmed state due to link errors or destination errors. A SIB can transition to the **Check** state from the online or spare state. The **Check** state can be caused by the following reasons: ◦ Unsupported FPC installed on a router. ◦ SIB not inserted properly (such as bent pins). ◦ Destination errors are detected on the SIB. In this case, the Packet Forwarding Engine stops using the SIB to send

Table 100: show chassis sibs Output Fields *(continued)*

Field Name	Field Description
	traffic to the affected destination Packet Forwarding Engine. When a Packet Forwarding Engine cannot be reached on that plane or SIB, a destination error is reported against that SIB. **NOTE:** For SIBs in the **Check** state, the output displays some additional information: • In Junos OS Release 9.6 and later, the **Check** state message shows the number of Packet Forwarding Engines in the plane having destination errors. For example, **Check (10 destination errors)** indicates 10 Packet Fowarding Engines cannot be reached on that particular SIB. If there are no destination errors, and if the SIB transitions to the **Check** state because of link errors only, the **Check** state message shows **Check (0 destination errors)**. • In Junos OS Release 9.5 and earlier, the **Check** state message shows **Check (destination errors)** if there are Packet Forwarding Engines with destination errors in this plane. However, it does not show the number of Packet Forwarding Engines having destination errors. If there are no destination errors and if the SIB transitions to the **Check** state because of link errors only, the **Check** state message shows **Check (no destination errors)**. If the SIB is in a **Check** state, because of destination errors, the CLI displays an additional line in the output, **use "show chassis fabric fpcs" and "show chassis fabric sibs" for more details**. • Link errors are detected on the channel between the SIB and a Packet Forwarding Engine. Link errors can be detected at initialization time or runtime: • Link errors caused by a link training failure at initialization time—The Packet Forwarding Engine does not use the SIB to send traffic. The **show chassis fabric fpcs** command shows **Plane disabled** as status for this link. • Link errors caused by CRC errors detected at runtime—The Packet Forwarding Engine continues to

Table 100: show chassis sibs Output Fields *(continued)*

Field Name	Field Description
	use the SIB to send traffic. The **show chassis fabric fpcs** command shows **Link error** as the status for this link. **NOTE:** The **Check** state does not apply to PTX Series Packet Transport Routers. • **SFC Error**—If an F13 SIB on the TX Matrix Plus router (SFC) transitions to the **Fault** state (for instance, because of link errors), and then if an LCC SIB (connected to the F13 SIB) comes online, the LCC SIB transitions to the **SFC Error** state. This state indicates that the F13 SIB to which the LCC SIB is connected has errors. **NOTE:** The **Connected**, **Disconnected**, and **SFC Error** states are only applicable to the SIBs on an LCC. • **Invalid**—The specific SIB slot is not valid for 4-LCC chassis configuration. See the *TX Matrix Plus Hardware Guide* for more information about the supported SIB slots. **NOTE:** The **Invalid** state is applicable to TX Matrix Plus routers only. • **Unknown**—SIB is present but the state is unknown. • **Present**—SIB is plugged in. The SIB is not powered on or operational.
Fabric links	Indicates status of fabric links on the SIB. • **Active**—All fabric links on SIB are active. Errors detected on the SIB's fabric links, if any, are reported in the Errors column. • **Unused**—All fabric links on the SIB are not used for fabric traffic.
Errors	Indicates if there is any error on the SIB. • **None**—No errors • **Link Errors**—Fabric link errors were found on SIB RX link. • **Cell drops**—Fabric cell drops were found on the SIB ASIC. • **Link Errors, Cell drops**—Both link errors and cell drops were detected on at least one of the SIB's fabric links.

Table 100: show chassis sibs Output Fields *(continued)*

Field Name	Field Description
	• **Asic Errors**—A fault affecting one of the ASICs on the SIB is detected. It can be an IO error or an internal error signaled by the ASIC.
Link Errors	indicate the number of links which are marked faulty because the errors on them have crossed threshold.
Cable Errors	Indicate the number of mandatory cables that are not connected, or in up state for that plane
Destination Errors	Indicate the number of destinations that are not reachable on this plane.

Sample Output

show chassis sibs (T640 Router)

`user@host>` **show chassis sibs**

```
Slot  State                       Uptime
 0    Empty
 1    Offline                          --- Offlined by cli command ---
 2    Check (21 destination errors)    1 day, 1 hour, 32 minutes, 55 seconds
 3    Check (0 destination errors)     1 day, 1 hour, 32 minutes, 45 seconds
 4    Empty

use "show chassis fabric fpcs" and "show chassis fabric sibs" for more details
```

show chassis sibs (T4000 Router)

`user@host>` **show chassis sibs**

```
Slot  State                           Uptime
 0    Spare
 1    Online                          3 hours, 48 minutes, 38 seconds
 2    Online                          3 hours, 48 minutes, 22 seconds
 3    Online                          3 hours, 48 minutes, 5 seconds
 4    Online                          3 hours, 47 minutes, 49 seconds
```

show chassis sibs (TX Matrix Router)

user@host> **show chassis sibs**

```
scc-re0:
--------------------------------------------------------------------------
Slot  State               Uptime
 0    Empty
 1    Empty
 2    Offline             --- Offlined by cli command ---
 3    Offline
 4    Online              7 days, 21 hours, 50 minutes, 4 seconds
lcc0-re0:
--------------------------------------------------------------------------
Slot  State                            Uptime
 0    Offline                          --- Offlined by cli command ---
 1    Empty
 2    Check (21 destination errors)    1 day, 1 hour, 32 minutes, 55 seconds
 3    Check (0 destination errors)     1 day, 1 hour, 32 minutes, 45 seconds
 4    Empty

use "show chassis fabric fpcs" and "show chassis fabric sibs" for more details
```

show chassis sibs (T1600 Router)

user@host> **show chassis sibs**

```
Slot
 Slot  State                           Uptime
  0    Check (destination errors)       2 hours, 23 minutes, 2 seconds
  1    Offline                          --- Offlined by cli command ---
  2    Check (destination errors)       2 hours, 23 minutes, 3 seconds
  3    Check (destination errors)       2 hours, 23 minutes, 3 seconds
  4    Check (destination errors)       2 hours, 23 minutes, 3 seconds

 use "show chassis fabric fpcs" and "show chassis fabric sibs" for more details
```

show chassis sibs (TX Matrix Plus Router)

user@host> **show chassis sibs**

```
sfc0-re0:
--------------------------------------------------------------------------
```

```
Slot  State               Type          Link errors  Destination errors  Uptime
 0    Spare               SIB F13          NONE             NONE
 1    Empty                                NONE             NONE
 2    Invalid                              NONE             NONE
 3    Online              SIB F13          NONE             NONE         1 hour,
53 minutes, 19 seconds
 4    Empty                                NONE             NONE
 5    Invalid                              NONE             NONE
 6    Online              SIB F13          NONE             NONE         1 hour,
53 minutes, 8 seconds
 7    Empty                                NONE             NONE
 8    Online              SIB F13          NONE             NONE         1 hour,
52 minutes, 57 seconds
 9    Empty                                NONE             NONE
10    Invalid                              NONE             NONE
11    Online              SIB F13          NONE             NONE         1 hour,
52 minutes, 46 seconds
12    Empty                                NONE             NONE
13    Invalid                              NONE             NONE
14    Invalid                              NONE             NONE
15    Invalid                              NONE             NONE
0/0   Spare               SIB F2S          NONE             NONE
0/2   Spare               SIB F2S          NONE             NONE
0/4   Spare               SIB F2S          NONE             NONE
0/6   Spare               SIB F2S          NONE             NONE
1/0   Online              SIB F2S          NONE             NONE         1 hour,
53 minutes, 29 seconds
1/2   Online              SIB F2S          NONE             NONE         1 hour,
53 minutes, 28 seconds
1/4   Online              SIB F2S          NONE             NONE         1 hour,
53 minutes, 27 seconds
1/6   Online              SIB F2S          NONE             NONE         1 hour,
53 minutes, 26 seconds
2/0   Online              SIB F2S          NONE             NONE         1 hour,
53 minutes, 18 seconds
2/2   Online              SIB F2S          NONE             NONE         1 hour,
53 minutes, 17 seconds
2/4   Online              SIB F2S          NONE             NONE         1 hour,
53 minutes, 16 seconds
2/6   Online              SIB F2S          NONE             NONE         1 hour,
53 minutes, 14 seconds
3/0   Online              SIB F2S          NONE             NONE         1 hour,
53 minutes, 7 seconds
3/2   Online              SIB F2S          NONE             NONE         1 hour,
```

```
53 minutes, 5 seconds
3/4   Online            SIB F2S          NONE             NONE         1 hour,
53 minutes, 4 seconds
3/6   Online            SIB F2S          NONE             NONE         1 hour,
53 minutes, 3 seconds
4/0   Online            SIB F2S          NONE             NONE         1 hour,
52 minutes, 56 seconds
4/2   Online            SIB F2S          NONE             NONE         1 hour,
52 minutes, 54 seconds
4/4   Online            SIB F2S          NONE             NONE         1 hour,
52 minutes, 53 seconds
4/6   Online            SIB F2S          NONE             NONE         1 hour,
52 minutes, 52 seconds

lcc0-re0:
--------------------------------------------------------------------------
Slot  State             Link errors  Destination errors  Uptime
 0    Spare                 NONE             NONE
 1    Online                NONE             NONE         1 hour, 53 minutes, 31
seconds
 2    Online                NONE             NONE         1 hour, 53 minutes, 27
seconds
 3    Online                NONE             NONE         1 hour, 53 minutes, 23
seconds
 4    Online                NONE             NONE         1 hour, 53 minutes, 19
seconds
```

show chassis sibs (TX Matrix Plus Router with 3D SIBs)

`user@host>` **show chassis sibs**

```
sfc0-re0:
--------------------------------------------------------------------------
Slot  State             Type          Cable errors  Link errors  Destination
errors  Uptime
 0    Online            SIB F13            6           NONE             NONE
     21 hours, 54 minutes, 28 seconds
 1    Online            SIB F13            8           NONE             NONE
     21 hours, 54 minutes, 12 seconds
 2    Invalid                             NONE         NONE             NONE
 3    Online            SIB F13            6           NONE             NONE
     21 hours, 57 minutes, 6 seconds
 4    Online            SIB F13            8            1               NONE
     21 hours, 56 minutes, 49 seconds
```

```
 5    Invalid                              NONE         NONE            NONE
 6    Online             SIB F13            6           NONE            NONE
     21 hours, 56 minutes, 25 seconds
 7    Online             SIB F13            8           NONE            NONE
     21 hours, 56 minutes, 8 seconds
 8    Online             SIB F13            6           NONE            NONE
     21 hours, 55 minutes, 43 seconds
 9    Online             SIB F13            8           NONE            NONE
     21 hours, 55 minutes, 26 seconds
10    Invalid                              NONE         NONE            NONE
11    Empty                                NONE         NONE            NONE
12    Empty                                NONE         NONE            NONE
13    Invalid                              NONE         NONE            NONE
14    Invalid                              NONE         NONE            NONE
15    Invalid                              NONE         NONE            NONE
0/0   Online             SIB F2S          -n/a-         NONE            NONE
     21 hours, 55 minutes, 16 seconds
0/2   Online             SIB F2S          -n/a-         NONE            NONE
     21 hours, 54 minutes, 49 seconds
0/4   Online             SIB F2S          -n/a-         NONE            NONE
     21 hours, 54 minutes, 47 seconds
0/6   Online             SIB F2S          -n/a-         NONE            NONE
     21 hours, 54 minutes, 45 seconds
1/0   Online             SIB F2S          -n/a-         NONE            NONE
     21 hours, 57 minutes, 29 seconds
1/2   Online             SIB F2S          -n/a-         NONE            NONE
     21 hours, 57 minutes, 27 seconds
1/4   Online             SIB F2S          -n/a-         NONE            NONE
     21 hours, 57 minutes, 25 seconds
1/6   Online             SIB F2S          -n/a-         NONE            NONE
     21 hours, 57 minutes, 23 seconds
2/0   Online             SIB F2S          -n/a-         NONE            NONE
     21 hours, 56 minutes, 48 seconds
2/2   Online             SIB F2S          -n/a-         NONE            NONE
     21 hours, 56 minutes, 46 seconds
2/4   Online             SIB F2S          -n/a-         NONE            NONE
     21 hours, 56 minutes, 43 seconds
2/6   Online             SIB F2S          -n/a-         NONE            NONE
     21 hours, 56 minutes, 41 seconds
3/0   Online             SIB F2S          -n/a-         NONE            NONE
     21 hours, 56 minutes, 6 seconds
3/2   Online             SIB F2S          -n/a-         NONE            NONE
     21 hours, 56 minutes, 4 seconds
3/4   Online             SIB F2S          -n/a-         NONE            NONE
```

```
     21 hours, 56 minutes, 2 seconds
3/6   Online             SIB F2S           -n/a-        NONE             NONE
     21 hours, 56 minutes
4/0   Online             SIB F2S           -n/a-        NONE             NONE
     21 hours, 55 minutes, 24 seconds
4/2   Online             SIB F2S           -n/a-        NONE             NONE
     21 hours, 55 minutes, 22 seconds
4/4   Online             SIB F2S           -n/a-        NONE             NONE
     21 hours, 55 minutes, 20 seconds
4/6   Online             SIB F2S           -n/a-        NONE             NONE
     21 hours, 55 minutes, 18 seconds

lcc0-re0:
--------------------------------------------------------------------------
Slot  State            Cable errors  Link errors  Destination errors  Uptime
 0    Online                 6           NONE             NONE         21 hours,
47 minutes, 29 seconds
 1    Online                 6           NONE             NONE         21 hours,
47 minutes, 50 seconds
 2    Online                 6           NONE             NONE         21 hours,
47 minutes, 43 seconds
 3    Online                 6           NONE             NONE         21 hours,
47 minutes, 36 seconds
 4    Empty                 NONE         NONE             NONE
use "show chassis fabric fpcs" and "show chassis fabric sibs" for more details

lcc4-re0:
--------------------------------------------------------------------------
Slot  State            Cable errors  Link errors  Destination errors  Uptime
 0    Online                 6           NONE             NONE         21 hours,
57 minutes, 1 second
 1    Online                 6           NONE             NONE         21 hours,
57 minutes, 21 seconds
 2    Online                 6           NONE             NONE         21 hours,
57 minutes, 14 seconds
 3    Online                 6           NONE             NONE         21 hours,
57 minutes, 7 seconds
 4    Empty                 NONE         NONE             NONE
use "show chassis fabric fpcs" and "show chassis fabric sibs" for more details

lcc7-re0:
--------------------------------------------------------------------------
Slot  State            Cable errors  Link errors  Destination errors  Uptime
 0    Online                 2           NONE             NONE         21 hours,
```

```
56 minutes, 54 seconds
 1    Online               2           NONE             NONE         21 hours,
57 minutes, 21 seconds
 2    Online               2           NONE             NONE         21 hours,
57 minutes, 12 seconds
 3    Online               2           NONE             NONE         21 hours,
57 minutes, 3 seconds
 4    Empty               NONE         NONE             NONE
use "show chassis fabric fpcs" and "show chassis fabric sibs" for more details
```

show chassis sibs sfc (TX Matrix Plus Router))

user@host> **show chassis sibs sfc 0**

```
sfc0-re0:
--------------------------------------------------------------------------
Slot  State              Type          Link errors  Destination errors  Uptime
 0    Spare              SIB F13          NONE             NONE
 1    Empty                               NONE             NONE
 2    Invalid                             NONE             NONE
 3    Online             SIB F13          NONE             NONE         12 hours,
 6 minutes, 22 seconds
 4    Empty                               NONE             NONE
 5    Invalid                             NONE             NONE
 6    Online             SIB F13          NONE             NONE         12 hours,
 6 minutes, 11 seconds
 7    Empty                               NONE             NONE
 8    Online             SIB F13          NONE             NONE         12 hours,
 6 minutes
 9    Empty                               NONE             NONE
10    Invalid                             NONE             NONE
11    Online             SIB F13          NONE             NONE         12 hours,
 5 minutes, 49 seconds
12    Empty                               NONE             NONE
13    Invalid                             NONE             NONE
14    Invalid                             NONE             NONE
15    Invalid                             NONE             NONE
0/0   Spare              SIB F2S          NONE             NONE
0/2   Spare              SIB F2S          NONE             NONE
0/4   Spare              SIB F2S          NONE             NONE
0/6   Spare              SIB F2S          NONE             NONE
1/0   Online             SIB F2S          NONE             NONE         12 hours,
 6 minutes, 32 seconds
1/2   Online             SIB F2S          NONE             NONE         12 hours,
```

```
 6 minutes, 31 seconds
1/4   Online            SIB F2S          NONE             NONE         12 hours,
 6 minutes, 30 seconds
1/6   Online            SIB F2S          NONE             NONE         12 hours,
 6 minutes, 29 seconds
2/0   Online            SIB F2S          NONE             NONE         12 hours,
 6 minutes, 21 seconds
2/2   Online            SIB F2S          NONE             NONE         12 hours,
 6 minutes, 20 seconds
2/4   Online            SIB F2S          NONE             NONE         12 hours,
 6 minutes, 19 seconds
2/6   Online            SIB F2S          NONE             NONE         12 hours,
 6 minutes, 17 seconds
3/0   Online            SIB F2S          NONE             NONE         12 hours,
 6 minutes, 10 seconds
3/2   Online            SIB F2S          NONE             NONE         12 hours,
 6 minutes, 9 seconds
3/4   Online            SIB F2S          NONE             NONE         12 hours,
 6 minutes, 7 seconds
3/6   Online            SIB F2S          NONE             NONE         12 hours,
 6 minutes, 6 seconds
4/0   Online            SIB F2S          NONE             NONE         12 hours,
 5 minutes, 59 seconds
4/2   Online            SIB F2S          NONE             NONE         12 hours,
 5 minutes, 57 seconds
4/4   Online            SIB F2S          NONE             NONE         12 hours,
 5 minutes, 56 seconds
4/6   Online            SIB F2S          NONE             NONE         12 hours,
 5 minutes, 55 seconds
```

show chassis sibs lcc (TX Matrix Plus Router)

`user@host>` **show chassis sibs lcc 0**

```
lcc0-re0:
--------------------------------------------------------------------------
Slot  State              Link errors  Destination errors  Uptime
 0    Online               NONE             NONE         20 hours, 14 minutes,
50 seconds
 1    Fault                NONE             NONE
 2    Online               NONE             NONE         20 hours, 15 minutes, 2
 seconds
 3    Online               NONE             NONE         20 hours, 14 minutes,
58 seconds
```

```
 4    Online               NONE            NONE        20 hours, 14 minutes,
54 seconds
```

show chassis sibs lcc (TX Matrix Plus Router with 3D SIBs)

```
user@host> show chassis sibs lcc 0
```

```
lcc0-re0:
--------------------------------------------------------------------------
Slot  State            Cable errors  Link errors  Destination errors  Uptime
 0    Disconnected         NONE         NONE             NONE         17 hours, 2
 minutes, 37 seconds
 1    Online               NONE         NONE             NONE         17 hours, 3
 minutes, 6 seconds
 2    Online               NONE         NONE             NONE         17 hours, 2
 minutes, 59 seconds
 3    Online               NONE         NONE             NONE         17 hours, 2
 minutes, 52 seconds
 4    Online               NONE         NONE             NONE         17 hours, 2
 minutes, 44 seconds
```

show chassis sibs (M320 Router)

```
user@host> show chassis sibs
```

```
 0    Online             1 hour, 18 minutes, 3 seconds
 1    Offline            --- Offlined by cli command ---
 2    Online             1 hour, 18 minutes, 18 seconds
 3    Online             1 hour, 18 minutes, 3 seconds
```

show chassis sibs (PTX Series)

```
user@host> show chassis sibs
```

```
Slot  State         Fabric links        Errors
0    Online             Active         Asic Errors
1    Online             Active         Link Errors
2    Online             Active         None
3    Online             Active         Cell drops
4    Offline            Unused         None
5    Online             Active         None
```

```
6    Online            Active         None
7    Online            Active         None
8    Online            Active         None
```

show chassis sibs (PTX Series)

```
user@host> show chassis sibs detail
```

```
Slot 4 information
  State                               Offline
  Reason                              Offlined by cli command
  Fabric links                        Unused
  Errors                              None
```

show chassis sibs (PTX5000)

The **show chassis sibs** command displays only the non-empty slots.

```
user@host> show chassis sibs
```

```
Slot  State         Fabric links Errors
 1    Online             Unused  None
 2    Online             Unused  None
 3    Online             Unused  None
 4    Online             Unused  None
 6    Fault              Unused  None
 7    Online             Unused  None
```

show chassis spmb

List of Syntax

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Syntax (T4000 Routers) on page 1749
Syntax (TX Matrix Routers) on page 1749
Syntax (TX Matrix Plus Routers) on page 1749

Syntax

```
show chassis spmb
```

Syntax (MX Series Routers)

```
show chassis spmb
<all-members>
<local>
<member member-id>
```

Syntax (T4000 Routers)

```
show chassis spmb
<sibs>
```

Syntax (TX Matrix Routers)

```
show chassis spmb
<sibs>
<lcc number | scc>
```

Syntax (TX Matrix Plus Routers)

```
show chassis spmb
<sibs>
<lcc number | sfc number>
```

Release Information

Command introduced before Junos OS Release 7.4.
sibs option introduced for the T1600 and TX Matrix Plus routers in Junos OS Release 9.6.
Command introduced in Junos OS Release 12.3 for MX2020 Universal Routing Platforms.

Command introduced in Junos OS Release 12.3 for MX2010 Universal Routing Platforms.
all-members, **local**, and **member** ***member-id*** options introduced in Junos OS Release 15.1 for MX2020 and MX2010 routers.
Command introduced in Junos OS Release 17.2 for MX2008 Universal Routing Platforms.

Description

(T Series routers, MX2010, MX2020, and MX2008 routers only) Display Switch Processor Mezzanine Board (SPMB) status information.

Options

none—(TX Matrix, TX Matrix Plus router, MX2010, MX2020, and MX2008 routers only) On a TX Matrix router, display SPMB status for the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display SPMB status for the TX Matrix Plus router and its attached routers. On MX2010, MX2020, and MX2008 routers, display the SPMB status for the routers.

all-members—(MX2010, MX2020, and MX2008 routers only) (Optional) Display status information for the SPMB in all members of the Virtual Chassis configuration.

lcc ***number***—(TX Matrix and TX Matrix Plus router only) (Optional) On a TX Matrix router, display information about the SPMB on a specified T640 router (line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display information about the SPMB on a specified router (line-card chassis) that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

local—(MX2010, MX2020, and MX2008 routers only) (Optional) Display status information for the SPMB in the local member of the Virtual Chassis.

member ***member-id***—(MX2010, MX2020 , and MX2008 routers only) (Optional) Display status information for the SPMB in the specified member of the Virtual Chassis. Replace ***member-id*** with the value 0 or 1.

scc—(TX Matrix routers only) (Optional) Display information about the SPMB on the TX Matrix router (switch-card chassis).

sfc ***number***—(TX Matrix Plus router only) (Optional) Display information about the SPMB on the TX Matrix Plus router (switch-fabric chassis). Replace ***number*** with **0**.

sibs—(TX Matrix and TX Matrix Plus router only) (Optional) On a TX Matrix Plus router, display information about the SIBs on the TX Matrix router (switch-card chassis). On a TX Matrix Plus router, display information about the SIBs on The TX Matrix Plus router (switch-fabric chassis). The **sibs** option has the following sub-options:

lcc *number* (TX Matrix, TX Matrix Plus router only) (Optional) On a TX Matrix router, display information about the SIBs on a specified T640 router (line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display information about the SIBs on a specified router (line-card chassis) that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

scc *number*—(TX Matrix routers only) (Optional) Display information about the SIBs on the TX Matrix router (switch-card chassis). Replace ***number*** variable with **0**.

sfc *number*—(TX Matrix Plus router only) (Optional) Display information about the SIBs on the TX Matrix Plus router (switch-fabric chassis). Replace ***number*** variable with **0**.

Required Privilege Level
view

RELATED DOCUMENTATION

request chassis sib | 670

request chassis spmb restart | 681

show chassis spmb sibs | 1763

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show chassis spmb (MX2010 Router) on page 1753
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show chassis spmb sibs (TX Matrix Plus Router) on page 1759
show chassis spmb lcc (TX Matrix Plus router with 3D SIBs) on page 1761
show chassis spmb sfc (TX Matrix Plus router with 3D SIBs) on page 1762

Output Fields

Table 101 on page 1752 lists the output fields for the **show chassis spmb** command. Output fields are listed in the approximate order in which they appear.

Table 101: show chassis spmb Output Fields

Field Name	Field Description
Slot	SPMB slot number: **0** or **1**.
State	SPMB status: • **Online**—SPMB is operational and running. • **Offline**—SPMB is powered down.
Total CPU Utilization (%)	Total percentage of CPU being used by the SPMB processor.
Interrupt CPU Utilization (%)	Of the total CPU being used by the SPMB processor, the percentage being used for interrupts.
Memory Heap Utilization (%)	Percentage of heap space (dynamic memory) being used by the FPC processor. If this number exceeds 80 percent, there may be a software problem (memory leak).
Buffer Utilization (%)	Percentage of buffer space being used by the SPMB processor for buffering internal messages.
Start time	Time at which the SPMB last came online.
Uptime	How long the SPMB has been up and running.

Sample Output

show chassis spmb

```
user@host> show chassis spmb
```

```
Slot 0 information:
  State                          Online
  Total CPU Utilization            1%
  Interrupt CPU Utilization        0%
  Memory Heap Utilization          0%
  Buffer Utilization              40%
  Start time:                    2001-08-27 14:05:04 PDT
  Uptime:                         46 minutes, 36 seconds
```

show chassis spmb (MX2010 Router)

```
user@host> show chassis spmb
```

```
Slot 0 information:
  State                          Online
  Total CPU Utilization            12%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           1%
  Buffer Utilization               22%
  Start time:                    2012-10-04 15:34:29 PDT
  Uptime:                        7 hours, 10 minutes, 15 seconds
Slot 1 information:
  State                          Online - Standby
  Total CPU Utilization            1%
  Interrupt CPU Utilization        0%
  Memory Heap Utilization          0%
  Buffer Utilization              22%
  Start time:                    2012-10-02 14:34:54 PDT
  Uptime:                        2 days, 8 hours, 9 minutes, 50 seconds
```

show chassis spmb (MX2020 Router)

```
user@host> show chassis spmb
```

```
Slot 0 information:
  State                          Online
  Total CPU Utilization           100%
  Interrupt CPU Utilization        0%
  Memory Heap Utilization          3%
  Buffer Utilization              22%
  Start time:                    2012-10-03 14:58:26 PDT
  Uptime:                        1 day, 12 hours, 16 minutes, 14 seconds
Slot 1 information:
```

```
  State                          Online - Standby
  Total CPU Utilization             0%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               22%
  Start time:                    2012-10-03 14:58:27 PDT
  Uptime:                        1 day, 12 hours, 16 minutes, 13 seconds
```

show chassis spmb (MX2008 Router)

user@host> **show chassis spmb**

```
Slot 0 information:
  State                          Online
  Start time:                    2017-05-04 02:53:36 PDT
  Uptime:                        10 days, 7 hours, 1 minute, 14 seconds
Slot 1 information:
  State                          Online - Standby
  Start time:                    2017-05-04 02:53:36 PDT
  Uptime:                        10 days, 7 hours, 1 minute, 14 seconds
```

show chassis spmb (T4000 Router)

user@host> **show chassis spmb**

```
Slot 0 information:
  State                          Online
  Total CPU Utilization            18%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               22%
  Start time:                    2012-02-09 22:51:09 PST
  Uptime:                        2 hours, 25 minutes, 45 seconds
Slot 1 information:
  State                          Online - Standby
  Total CPU Utilization             0%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               22%
  Start time:                    2012-02-09 22:51:10 PST
  Uptime:                        2 hours, 25 minutes, 44 seconds
```

show chassis spmb lcc (TX Matrix Router)

```
user@host> show chassis spmb lcc 0
```

```
lcc0-re0:
--------------------------------------------------------------------------
Slot 0 information:
  State                          Online
  Total CPU Utilization             0%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               42%
  Start time:                    2004-08-05 18:43:38 PDT
  Uptime:                        8 days, 55 minutes, 52 seconds
```

show chassis spmb scc (TX Matrix Router)

```
user@host> show chassis spmb scc
```

```
scc-re0:
--------------------------------------------------------------------------
Slot 0 information:
  State                          Online
  Total CPU Utilization             1%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               42%
  Start time:                    2004-08-05 18:43:37 PDT
  Uptime:                        8 days, 1 hour, 6 minutes, 51 seconds
```

show chassis spmb (T1600 Router)

```
user@host> show chassis spmb
```

```
Slot 0 information:
  State                          Online
  Total CPU Utilization             2%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               24%
  Start time:                    2009-05-07 22:34:03 PDT
  Uptime:                        3 days, 4 hours, 14 minutes, 33 seconds
Slot 1 information:
  State                          Online - Standby
```

```
  Total CPU Utilization             0%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               24%
  Start time:                     2009-05-07 22:34:02 PDT
  Uptime:                         3 days, 4 hours, 14 minutes, 34 seconds
```

show chassis spmb sibs (T1600 Router)

`user@host>` **show chassis spmb sibs**

```
Slot  State               Uptime
 0    Check              3 days, 4 hours, 11 minutes, 59 seconds
 1    Disconnected       3 days, 4 hours, 12 minutes, 36 seconds
 2    Disconnected       3 days, 4 hours, 12 minutes, 26 seconds
 3    Disconnected       3 days, 4 hours, 12 minutes, 17 seconds
 4    Disconnected       3 days, 4 hours, 12 minutes, 8 seconds
```

show chassis spmb (TX Matrix Plus Router)

`user@host>` **show chassis spmb**

```
sfc0-re0:
--------------------------------------------------------------------------
Slot 0 information:
  State                          Online
  Total CPU Utilization            84%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               24%
  Start time:                    2009-05-11 01:25:20 PDT
  Uptime:                        46 minutes, 6 seconds
Slot 1 information:
  State                          Online - Standby
  Total CPU Utilization             0%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               24%
  Start time:                    2009-05-11 01:25:20 PDT
  Uptime:                        46 minutes, 6 seconds

lcc0-re1:
--------------------------------------------------------------------------
```

```
Slot 0 information:
  State                           Online - Standby
  Total CPU Utilization             0%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               24%
  Start time:                     2009-05-11 01:25:09 PDT
  Uptime:                         46 minutes, 24 seconds
Slot 1 information:
  State                           Online
  Total CPU Utilization             5%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               24%
  Start time:                     2009-05-11 01:25:08 PDT
  Uptime:                         46 minutes, 25 seconds

lcc1-re1:
--------------------------------------------------------------------------
Slot 0 information:
  State                           Online - Standby
  Total CPU Utilization             1%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               24%
  Start time:                     2009-05-11 01:25:09 PDT
  Uptime:                         46 minutes, 24 seconds
Slot 1 information:
  State                           Online
  Total CPU Utilization             5%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               24%
  Start time:                     2009-05-11 01:25:10 PDT
  Uptime:                         46 minutes, 23 seconds

lcc2-re1:
--------------------------------------------------------------------------
Slot 0 information:
  State                           Online - Standby
  Total CPU Utilization             0%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               24%
```

```
  Start time:                   2009-05-11 01:25:08 PDT
  Uptime:                       46 minutes, 25 seconds
Slot 1 information:
  State                         Online
  Total CPU Utilization            5%
  Interrupt CPU Utilization        0%
  Memory Heap Utilization          0%
  Buffer Utilization              24%
  Start time:                   2009-05-11 01:25:10 PDT
  Uptime:                       46 minutes, 23 seconds

lcc3-re1:
--------------------------------------------------------------------------
Slot 0 information:
  State                         Online - Standby
  Total CPU Utilization            1%
  Interrupt CPU Utilization        0%
  Memory Heap Utilization          0%
  Buffer Utilization              24%
  Start time:                   2009-05-11 01:25:10 PDT
  Uptime:                       46 minutes, 23 seconds
Slot 1 information:
  State                         Online
  Total CPU Utilization            5%
  Interrupt CPU Utilization        0%
  Memory Heap Utilization          0%
  Buffer Utilization              24%
  Start time:                   2009-05-11 01:25:09 PDT
  Uptime:                       46 minutes, 24 seconds
```

show chassis spmb lcc (TX Matrix Plus Router)

`user@host>` **show chassis spmb lcc 2**

```
lcc2-re1:
--------------------------------------------------------------------------
Slot 0 information:
  State                         Online - Standby
  Total CPU Utilization            0%
  Interrupt CPU Utilization        0%
  Memory Heap Utilization          0%
  Buffer Utilization              24%
  Start time:                   2009-05-11 01:25:08 PDT
  Uptime:                       45 minutes, 18 seconds
```

```
Slot 1 information:
  State                          Online
  Total CPU Utilization             6%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               24%
  Start time:                    2009-05-11 01:25:10 PDT
  Uptime:                        45 minutes, 16 seconds
```

show chassis spmb scc (TX Matrix Plus Router)

`user@host>` **show chassis spmb sfc 0**

```
sfc0-re0:
--------------------------------------------------------------------------
Slot 0 information:
  State                          Online
  Total CPU Utilization            87%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               24%
  Start time:                    2009-05-11 01:25:20 PDT
  Uptime:                        43 minutes, 32 seconds
Slot 1 information:
  State                          Online - Standby
  Total CPU Utilization             0%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               24%
  Start time:                    2009-05-11 01:25:20 PDT
  Uptime:                        43 minutes, 32 seconds
```

show chassis spmb sibs (TX Matrix Plus Router)

`user@host>` **show chassis spmb sibs**

```
sfc0-re0:
--------------------------------------------------------------------------
Slot  State              Type          Uptime
 0    Online             SIB F13        1 hour, 18 minutes, 54 seconds
 1    Online             SIB F13        1 hour, 18 minutes, 45 seconds
 2    Invalid
 3    Online             SIB F13        1 hour, 20 minutes, 21 seconds
```

```
 4    Online            SIB F13        1 hour, 20 minutes, 18 seconds
 5    Invalid
 6    Online            SIB F13        1 hour, 19 minutes, 51 seconds
 7    Fault             SIB F13
 8    Online            SIB F13        1 hour, 19 minutes, 17 seconds
 9    Online            SIB F13        1 hour, 19 minutes, 13 seconds
10    Invalid
11    Online            SIB F13        1 hour, 17 minutes, 54 seconds
12    Online            SIB F13        1 hour, 17 minutes, 51 seconds
13    Invalid
14    Invalid
15    Invalid
0/0   Online            SIB F2S        1 hour, 18 minutes, 52 seconds
0/2   Online            SIB F2S        1 hour, 18 minutes, 51 seconds
0/4   Online            SIB F2S        1 hour, 18 minutes, 49 seconds
0/6   Online            SIB F2S        1 hour, 18 minutes, 48 seconds
1/0   Online            SIB F2S        1 hour, 20 minutes, 16 seconds
1/2   Online            SIB F2S        1 hour, 20 minutes, 15 seconds
1/4   Online            SIB F2S        1 hour, 20 minutes, 14 seconds
1/6   Online            SIB F2S        1 hour, 20 minutes, 13 seconds
2/0   Online            SIB F2S        1 hour, 19 minutes, 48 seconds
2/2   Online            SIB F2S        1 hour, 19 minutes, 47 seconds
2/4   Online            SIB F2S        1 hour, 19 minutes, 46 seconds
2/6   Online            SIB F2S        1 hour, 19 minutes, 44 seconds
3/0   Online            SIB F2S        1 hour, 19 minutes, 24 seconds
3/2   Online            SIB F2S        1 hour, 19 minutes, 22 seconds
3/4   Online            SIB F2S        1 hour, 19 minutes, 21 seconds
3/6   Online            SIB F2S        1 hour, 19 minutes, 20 seconds
4/0   Online            SIB F2S        1 hour, 18 minutes, 2 seconds
4/2   Online            SIB F2S        1 hour, 18 minutes
4/4   Online            SIB F2S        1 hour, 17 minutes, 58 seconds
4/6   Online            SIB F2S        1 hour, 17 minutes, 58 seconds

lcc0-re1:
--------------------------------------------------------------------------
Slot  State               Uptime
 0    Online            1 hour, 18 minutes, 58 seconds
 1    Online            1 hour, 20 minutes, 25 seconds
 2    Fault
 3    Online            1 hour, 18 minutes, 30 seconds
 4    Online            1 hour, 18 minutes, 28 seconds

lcc1-re1:
--------------------------------------------------------------------------
```

```
Slot  State               Uptime
 0    Online             1 hour, 18 minutes, 58 seconds
 1    Online             1 hour, 20 minutes, 26 seconds
 2    Fault
 3    Online             1 hour, 18 minutes, 22 seconds
 4    Online             1 hour, 18 minutes, 20 seconds

lcc2-re1:
--------------------------------------------------------------------------
Slot  State               Uptime
 0    Online             1 hour, 18 minutes, 19 seconds
 1    Online             1 hour, 20 minutes, 25 seconds
 2    Fault
 3    Online             1 hour, 18 minutes, 17 seconds
 4    Online             1 hour, 18 minutes, 15 seconds

lcc3-re1:
--------------------------------------------------------------------------
Slot  State               Uptime
 0    Online             1 hour, 18 minutes, 27 seconds
 1    Online             1 hour, 20 minutes, 24 seconds
 2    Fault
 3    Online             1 hour, 18 minutes, 25 seconds
 4    Online             1 hour, 18 minutes, 23 seconds
```

show chassis spmb lcc (TX Matrix Plus router with 3D SIBs)

user@host > **show chassis spmb lcc 0**

```
lcc0-re1:
--------------------------------------------------------------------------
Slot 0 information:
  State                          Online - Standby
  Total CPU Utilization             0%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization                0%
  Start time:                    2013-02-08 00:57:20 PST
  Uptime:                        19 minutes, 43 seconds
Slot 1 information:
  State                          Online
  Total CPU Utilization             0%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
```

```
  Buffer Utilization               22%
  Start time:                     2013-02-08 00:56:59 PST
  Uptime:                         20 minutes, 4 seconds
```

show chassis spmb sfc (TX Matrix Plus router with 3D SIBs)

user@host> **show chassis spmb sfc o**

```
sfc0-re0:
--------------------------------------------------------------------------
Slot 0 information:
  State                           Online
  Total CPU Utilization              0%
  Interrupt CPU Utilization          0%
  Memory Heap Utilization            0%
  Buffer Utilization                 0%
  Start time:                     2013-02-06 19:16:55 PST
  Uptime:                         1 day, 6 hours, 2 minutes, 59 seconds
Slot 1 information:
  State                           Online - Standby
  Total CPU Utilization              0%
  Interrupt CPU Utilization          0%
  Memory Heap Utilization            0%
  Buffer Utilization                 0%
  Start time:                     2013-02-06 19:16:53 PST
  Uptime:                         1 day, 6 hours, 3 minutes, 1 second
```

show chassis spmb sibs

List of Syntax

Syntax on page 1763
Syntax (TX Matrix Router) on page 1763
Syntax (TX Matrix Plus Router) on page 1763

Syntax

```
show chassis spmb sibs
```

Syntax (TX Matrix Router)

```
show chassis spmb sibs
<lcc number | scc>
```

Syntax (TX Matrix Plus Router)

```
show chassis spmb sibs
<lcc number | sfc number>
```

Release Information

Command introduced before Junos OS Release 7.4.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

(T Series routers only) Display Switch Processor Mezzanine Board (SPMB) Switch Interface Board (SIB) status information.

Options

none—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, display the SIB status for the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display the SIB status for the TX Matrix Plus router and its attached routers.

lcc *number*—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display SIB status information for a specified T640 router (line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display SIB status information for a specified router (line-card chassis) that is connected to a TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

scc—(TX Matrix router only) (Optional) Display SIB status information for the TX Matrix router (switch-card chassis).

sfc—(TX Matrix Plus router only) (Optional) Display SIB status information for the TX Matrix Plus router (or switch-fabric chassis).

Additional Information

On a T Series router, you can use either this command or the **show chassis sibs** command to produce the same output. The **show chassis sibs** command is supported on the M320 router and on the T Series routers.

Required Privilege Level

view

RELATED DOCUMENTATION

show chassis sibs | **1733**

request chassis sib | **670**

request chassis spmb restart | **681**

List of Sample Output

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show chassis-spmb-sibs (T1600 Router) on page 1766
show chassis spmb sibs (T4000 Router) on page 1766
show chassis spmb sibs (TX Matrix Router) on page 1766
show chassis spmb sibs lcc (TX Matrix Router) on page 1767
show chassis spmb sibs scc (TX Matrix Router) on page 1767
show chassis spmb sibs (TX Matrix Plus Router) on page 1767
show chassis spmb sibs sfc (TX Matrix Plus Router) on page 1769

Output Fields

Table 102 on page 1765 lists the output fields for the **show chassis spmb sibs** command. Output fields are listed in the approximate order in which they appear.

Table 102: show chassis spmb sibs Output Fields

Field Name	Field Description

Slot	SIB slot number:
	• T640 router, T1600 router or TX Matrix router—**0** through **4**
	• TX Matrix Plus router:
	  ◦ TXP-F13 SIB Slots—**0** through **16**
	  ◦ TXP-F2S SIB Slots —**0** – **4**/[**0**|**2**|**4**|**6**]
	• T320 router—**0** through **2**

State	SIB status:
	• **Disconnected**—SIBs on all T640 routers on the TX Matrix router (switch-card chassis) are in the **Disconnected** state, because a SIB on the SCC has gone offline. Likewise, SIBs on all T1600 or T4000 routers on the TX Matrix Plus router (or switch-fabric chassis) are in the **Disconnected** state, because a SIB on the SFC has gone offline.
	• **Online**—SPMB is operational and running.
	• **Offline**—SPMB is powered down.
	• **Spare**—SIB is redundant and will move to active state if one of the working SIBs fail to pass traffic.
	• **Empty**—No SPMB is present.
	• **Fault**— SIB is in alarmed state where the SIB's plane is not operational for the following reasons:
	  ◦ On-board F-chip is not operational.
	  ◦ Fiber optic connector faults.
	  ◦ FPC connector faults.
	  ◦ SIB midplane connector faults.
	• **Check**—SIB is in alarmed state where the SIB's plane is partially operational for the following reasons:
	  ◦ SIB is not inserted properly.
	  ◦ Two or more links between the SIB and PFE fails.

Uptime	How long the SIB has been up and running.

Sample Output

show chassis spmb sibs (T320 Router)

```
user@host> show chassis spmb sibs
```

```
Slot  State
 0    Spare
 1    Online
 2    Online
```

show chassis-spmb-sibs (T1600 Router)

```
user@host> show chassis spmb sibs
```

```
Slot  State
 0    Spare
 1    Online
 2    Empty
 3    Online
 4    Offline
```

show chassis spmb sibs (T4000 Router)

```
user@host> show chassis spmb sibs
```

```
Slot  State                          Uptime
 0    Spare
 1    Online                         2 hours, 28 minutes, 13 seconds
 2    Online                         2 hours, 27 minutes, 57 seconds
 3    Online                         2 hours, 27 minutes, 40 seconds
 4    Online                         2 hours, 27 minutes, 24 seconds
```

show chassis spmb sibs (TX Matrix Router)

```
user@host> show chassis spmb sibs
```

```
Slot  State
 0    Online
 1    Online
 2    Empty
```

```
 3    Online
 4    Offline
```

show chassis spmb sibs lcc (TX Matrix Router)

`user@host>` **show chassis spmb sibs lcc 0**

```
lcc0-re0:
--------------------------------------------------------------------------
Slot  State               Uptime
 0    Empty
 1    Empty
 2    Empty
 3    Disconnected        8 days, 48 minutes, 58 seconds
 4    Online              8 days, 48 minutes, 57 seconds
```

show chassis spmb sibs scc (TX Matrix Router)

`user@host>` **show chassis spmb sibs scc**

```
scc-re0:
--------------------------------------------------------------------------
Slot  State       Uptime
 0    Empty
 1    Empty
 2    Empty
 3    Offline
 4    Online             8 days, 54 minutes, 1 second
```

show chassis spmb sibs (TX Matrix Plus Router)

`user@host>` **show chassis spmb sibs**

```
sfc0-re0:
--------------------------------------------------------------------------
Slot  State              Type          Uptime
 0    Online             SIB F13        1 hour, 52 minutes, 55 seconds
 1    Empty
 2    Invalid
 3    Online             SIB F13        1 hour, 53 minutes, 3 seconds
 4    Empty
 5    Invalid
```

```
 6    Empty
 7    Empty
 8    Empty
 9    Empty
10    Invalid
11    Empty
12    Empty
13    Invalid
14    Invalid
15    Invalid
0/0   Online            SIB F2S        1 hour, 53 minutes, 2 seconds
0/2   Online            SIB F2S        1 hour, 53 minutes, 1 second
0/4   Online            SIB F2S        1 hour, 52 minutes, 59 seconds
0/6   Online            SIB F2S        1 hour, 52 minutes, 58 seconds
1/0   Online            SIB F2S        1 hour, 53 minutes, 10 seconds
1/2   Online            SIB F2S        1 hour, 53 minutes, 8 seconds
1/4   Online            SIB F2S        1 hour, 53 minutes, 7 seconds
1/6   Online            SIB F2S        1 hour, 53 minutes, 6 seconds
2/0   Empty
2/2   Empty
2/4   Empty
2/6   Empty
3/0   Empty
3/2   Empty
3/4   Empty
3/6   Empty
4/0   Empty
4/2   Empty
4/4   Empty
4/6   Empty

lcc0-re0:
--------------------------------------------------------------------------
Slot  State               Uptime
 0    Online            1 hour, 53 minutes, 1 second
 1    Online            1 hour, 53 minutes, 3 seconds
 2    Empty
 3    Empty
 4    Empty

lcc1-re1:
--------------------------------------------------------------------------
Slot  State               Uptime
 0    Online            1 hour, 47 minutes, 13 seconds
```

```
 1    Online            1 hour, 47 minutes, 15 seconds
 2    Empty
 3    Empty
 4    Empty
```

show chassis spmb sibs sfc (TX Matrix Plus Router)

`user@host>` **show chassis spmb sibs sfc 0**

```
sfc0-re0:
--------------------------------------------------------------------------
Slot 0 information:
  State                          Online
  Total CPU Utilization            16%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               24%
  Start time:                    2009-06-17 20:59:47 PDT
  Uptime:                        1 hour, 56 minutes, 30 seconds
Slot 1 information:
  State                          Online - Standby
  Total CPU Utilization             0%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               24%
  Start time:                    2009-06-17 20:59:48 PDT
  Uptime:                        1 hour, 56 minutes, 29 seconds
```

show chassis synchronization

List of Syntax

Syntax on page 1770
Syntax (on ACX500 Series) on page 1770
Syntax (on EX9251 Switches) on page 1770

Syntax

```
show chassis synchronization
<clock-module> <(re0 | re1 | routing-engine (backup | both | local | master | other))>>
<extensive>
<backup | master>
<interface interface-name>
```

Syntax (on ACX500 Series)

```
show chassis synchronization
<gnss>
<extensive>
<backup | master>
```

Syntax (on EX9251 Switches)

```
show chassis synchronization
<clock-module
<extensive>
<interface interface-name>
```

Release Information

Command introduced in Junos OS Release 7.6 for M320 routers.
Command introduced in Junos OS Release 8.3 for M40e routers.
Command introduced in Junos OS Release 9.3 for M120 routers.
Command introduced in Junos OS Release 10.2 for T320, T640, and T1600 routers.
Command introduced in Junos OS Release 12.1 for PTX Series Packet Transport Routers.
Command introduced in Junos OS Release 12.2 for ACX Series routers.
Command introduced in Junos OS Release 12.3X54–D20 for ACX500 Series routers.
Command introduced in Junos OS Release 17.2 for PTX10008 Routers.
Command introduced in Junos OS Release 18.1R1 for EX9251 Switches.

Description

(ACX Series, M320, M40e,M120, T320, T640, and T1600 routers and PTX Series Packet Transport Routers only) Display information about the external clock source currently used for chassis synchronization.

Options

clock-module—Display clock module information. You can optionally specify one of these Routing Engine qualifiers:

re0—Routing Engine 0

re1—Routing Engine 1

routing-engine (backup | both | local | master | other)—Routing Engine type

extensive—(Optional) Display clock synchronization information in detail.

interface *interface-name*—(Optional) Display clock synchronization information for the specified interface.

backup—(Optional) Display clock synchronization information about the backup clock.

master— (Optional) Display clock synchronization information about the master clock.

Required Privilege Level
maintenance

RELATED DOCUMENTATION

request chassis synchronization switch | 686

Configuring Clock Synchronization Interface on MX Series Routers

Supported Time Synchronization Standard

Configuring External Clock Synchronization for ACX Series Routers

List of Sample Output

show chassis synchronization on page 1773
show chassis synchronization master on page 1774
show chassis synchronization backup on page 1774
show chassis synchronization extensive on page 1774
show chassis synchronization (T320, T640, and T1600 Routers) on page 1775
show chassis synchronization (PTX Series Packet Transport Routers) on page 1775
show chassis synchronization clock-module (PTX Series Packet Transport Routers) on page 1776
show chassis synchronization extensive (ACX Series Routers) on page 1777
show chassis synchronization extensive (ACX500 Series Routers) on page 1778
show chassis synchronization gnss (ACX500 Series Routers) on page 1778
show chassis synchronization gnss extensive (ACX500 Series Routers) on page 1778

show chassis synchronization clock-module (EX9251 Switches) on page 1779

Output Fields

Table 103 on page 1772 lists the output fields for the **show chassis synchronization** command. Output fields are listed in the approximate order in which they appear.show chassis synchronizationshow chassis synchronizationshow chassis synchronization

Table 103: show chassis synchronization Output Fields

Field Name	Field Description
Current state	Indicates current status of external clock sources: • backup—Source is currently the backup clock source. • master—Source is currently the master clock source. • Online-Master—(PTX Series Packet Transport Routers) Source is the master clock. Source is online. • Online-Standby—(PTX Series Packet Transport Routers) Source is the standby (backup) clock. Source is online.
Current clock state	Indicates current source of external synchronization: • internal—Source is providing its own clocking. • locked to master CB—(M320, M40e, and M120 routers) Source is locked to master clock source. • locked to master SCG—(T320, T640, and T1600 routers) Source is locked to master clock source. • locked to master CCG—(PTX Series Packet Transport Routers) Source is locked to master clock source.
SNMP trap status	Denotes the SNMP trap generation status (Enabled or Disabled) on ACX Series routers.
Selected for	Number of seconds this clock has been the master or backup clock source.
Selected since	Timestamp for establishment as master or backup clock source.
Deviation (in ppm)	Difference in clock timing, in parts per million (ppm). **NOTE:** Starting in Junos OS Release 16.1R2, if the clock source is locked and the deviation exceeds 10 ppm, the status of the configured source is displayed in the command output as **in-use**. This status indicates that the clock source is locked even though the clock has significant deviation.
Last deviation (in ppm)	Previous difference in clock timing, if any, in ppm.

Table 103: show chassis synchronization Output Fields *(continued)*

Field Name	Field Description
Configured sources	Information about clock sources eligible for selection as master clock.
Source	Information about external clock sources.
Priority	Indicates priority of external clock sources: • primary—Source is a primary reference. • secondary—Source is a secondary reference.
Deviation (in ppm)	Current difference in clock timing, in ppm: • measuring—Establishing source deviation. • *number*—Deviation in ppm.
Last deviation (in ppm)	Previous difference in clock timing, in ppm: • *number*—Deviation in ppm.
Status	Indicates status of external sources: • present—Source is configured and present. • qualified—Source is eligible for synchronization source.

Sample Output

show chassis synchronization

`user@host>` **show chassis synchronization**

```
Clock Synchronization Status :
  Clock module on CB 0
    Current state            : master
    Current clock state      : internal
      Selected for           : 18 hours, 12 minutes, 43 seconds
      Selected since         : 2008-09-10 03:27:47 PDT
      Deviation (in ppm)     : +0.00
      Last deviation (in ppm): +0.00
Clock Synchronization Status :
  Clock module on CB 1
    Current state            : backup
```

```
    Current clock state      : locked to master CB
      Selected for           : 1 day, 12 hours, 49 minutes, 20 seconds
      Selected since         : 2008-09-09 08:51:10 PDT
```

show chassis synchronization master

user@host> **show chassis synchronization master**

```
Clock Synchronization Status :
  Clock module on CB 0
    Current state            : master
    Current clock state      : internal
      Selected for           : 8 days, 21 minutes, 12 seconds
      Selected since         : 2008-08-27 21:05:40 PDT
      Deviation (in ppm)     : +0.00
      Last deviation (in ppm): +0.00
```

show chassis synchronization backup

user@host> **show chassis synchronization backup**

```
Clock Synchronization Status :
  Clock module on CB 1
    Current state            : backup
    Current clock state      : locked to master CB
      Selected for           : 34 days, 20 hours, 17 minutes, 8 seconds
      Selected since         : 2008-08-01 01:22:16 PDT
```

show chassis synchronization extensive

user@host> **show chassis synchronization extensive**

```
Clock Synchronization Status :
  Clock module on CB 0
    Current state            : master
    Current clock state      : internal
      Selected for           : 8 days, 36 minutes, 29 seconds
      Selected since         : 2008-08-27 21:05:40 PDT
      Deviation (in ppm)     : +0.00
      Last deviation (in ppm): +0.00
Clock Synchronization Status :
  Clock module on CB 1
```

```
    Current state           : backup
    Current clock state     : locked to master CB
      Selected for          : 34 days, 20 hours, 19 minutes, 53 seconds
      Selected since        : 2008-08-01 01:22:16 PDT
```

show chassis synchronization (T320, T640, and T1600 Routers)

`user@host>` **show chassis synchronization**

```
    Clock Synchronization Status :
      Clock module on SCG 0
        Current state           : master
        Current clock state     : locked to external-a
          Selected for          : 2 hours, 28 minutes, 4 seconds
          Selected since        : 2006-02-17 01:12:58 PST
        Configured sources
          Source      Priority   Deviation    Last deviation   Status
                                 (in ppm)     (in ppm)
          external-a  primary    measuring    -0.10            in-use
          external-b  secondary  -0.10        -0.10            qualified
    Clock Synchronization Status :
      Clock module on SCG 1
        Current state           : backup
        Current clock state     : locked to master SCG
          Selected for          : 19 hours, 49 minutes, 14 seconds
          Selected since        : 2006-02-16 07:51:48 PST
        Configured sources
          Source      Priority   Deviation    Last deviation   Status
                                 (in ppm)     (in ppm)
          external-a  primary    -0.25        -0.25            qualified
          external-b  secondary  -0.25        -0.25            qualified
```

show chassis synchronization (PTX Series Packet Transport Routers)

`user@host>` **show chassis synchronization**

```
Clock Synchronization Status :
  Clock module on CCG 0
    Current state           : Online - Master
    Current clock state     : internal
      Selected for          : 1 hour, 24 minutes, 21 seconds
      Selected since        : 2011-03-21 15:59:37 PDT
      Deviation (in ppm)    : +0.51
```

```
      Last deviation (in ppm): +0.51
Clock Synchronization Status :
  Clock module on CCG 1
    Current state            : Online - Standby
    Current clock state      : locked to master CCG
      Selected for           : 1 hour, 39 minutes, 12 seconds
      Selected since         : 2011-03-21 15:44:46 PDT
```

show chassis synchronization clock-module (PTX Series Packet Transport Routers)

`user@host>` **show chassis synchronization clock-module**

```
re0:
--------------------------------------------------------------------------
Clock Synchronization Status :
  Clock module on CCG 0
    Current state            : Online - Master
    Current clock state      : locked to bits-a
      Selected for           : 1 minute, 24 seconds
      Selected since         : 2015-06-22 15:01:33 PDT
      Deviation (in ppm)     : unknown
      Last deviation (in ppm): unknown
    Configured sources
      Source      Priority   Deviation    Last deviation   Status
ro                              (in ppm)     (in ppm)
      bits-a      primary    unknown      unknown          unknown
      fpc-2       secondary  unknown      unknown          unknown
Clock Synchronization Status :
  Clock module on CCG 1
    Current state            : Online - Standby
    Current clock state      : locked to master CCG
      Selected for           : 1 hour, 39 minutes, 52 seconds
      Selected since         : 2015-06-22 13:23:05 PDT
      Deviation (in ppm)     : unknown
      Last deviation (in ppm): unknown
    Configured sources
      Source      Priority   Deviation    Last deviation   Status
                             (in ppm)     (in ppm)
      bits-a      primary    unknown      unknown          unknown
      fpc-2       secondary  unknown      unknown          unknown
```

This following sample output displays the status of configured sources as **in-use#**. This status indicates that the clock source is locked even though the clock has significant deviation in timing.

user@host> **show chassis synchronization clock-module**

```
re0:
--------------------------------------------------------------------------
Clock Synchronization Status :
  Clock module on CB 0
    Current state            : Online - Master
    Current clock state      : locked to fpc-12
      Selected for           : 7 seconds
      Selected since         : 2016-08-16 09:39:07 PDT
      Deviation (in ppm)     : 10.00
      Last deviation (in ppm): 8.75
    Configured sources
      Source      Priority   Deviation    Last deviation   Status
                             (in ppm)     (in ppm)
      fpc-12      primary    10.00        8.75             in-use#
```

show chassis synchronization extensive (ACX Series Routers)

user@host> **show chassis synchronization extensive**

```


Current clock status  : Locked
Clock locked to       : Primary
SNMP trap status : Enabled

Configured sources:

Interface           : ge-0/0/7
Status              : Secondary     Index       : 136
Clock source state  : Clk qualified Priority    : 3
Configured QL       : SEC           ESMC QL     : PRC
Clock source type   : ifd           Clock Event : Clock qualified
Interface State     : Up,sec,ESMC Rx(SSM 0x2),ESMC TX(QL PRC/SSM 0x2),

Interface           : ge-0/1/1
Status              : Primary       Index       : 138
Clock source state  : Clk qualified Priority    : 2
Configured QL       : SEC           ESMC QL     : PRC
Clock source type   : ifd           Clock Event : Clock locked
Interface State     : Up,pri,ESMC Rx(SSM 0x2),ESMC TX(QL DNU/SSM 0xf)
```

show chassis synchronization extensive (ACX500 Series Routers)

user@host> **show chassis synchronization extensive**

```
Current clock status  : Locked
Clock locked to           : Primary

Configured ports:

Name                : gnss
Current ToD         : Mon Aug 10 08:50:52 2015
Last ToD update     : Mon Aug 10 08:50:51 2015
GPS receiver status : Synchronized
UTC Pending         : FALSE
UTC Offset          : 36

One PPS status : Active
```

show chassis synchronization gnss (ACX500 Series Routers)

user@host> **show chassis synchronization gnss**

```
Receiver Status          : Good
Constellation            : GPS & GLONASS
Cable delay compensation : 0
Antenna Status           : GPS Antenna Good
```

show chassis synchronization gnss extensive (ACX500 Series Routers)

user@host> **show chassis synchronization gnss extensive**

```
Receiver Status          : Good
Constellation            : GPS & GLONASS
Cable delay compensation : 0
Antenna Status           : GPS Antenna Good
Position                 : 12 56' 35.740410'' N   : 77 41' 32.228191'' E
Altitude                 : 841 meters
Number of satellites     : 17
Satellite List:

Sat No    Signal Level     Status        Type          Mode(T=Timing/P=Position)
17        34    dBHZ       Acquired      GPS           T,P
```

```
24        38    dBHZ       Acquired      GPS           T,P
12        31    dBHZ       Acquired      GPS           T,P
2         37    dBHZ       Acquired      GPS           T,P
5         48    dBHZ       Acquired      GPS           T,P
20        35    dBHZ       Acquired      GPS           T,P
28        42    dBHZ       Acquired      GPS           T,P
6         40    dBHZ       Acquired      GPS           T,P
71        41    dBHZ       Acquired      GLONASS       T,P
70        46    dBHZ       Acquired      GLONASS       T,P
76        36    dBHZ       Acquired      GLONASS       T,P
75        45    dBHZ       Acquired      GLONASS       T,P
72        40    dBHZ       Acquired      GLONASS       T,P
15        18    dBHZ       Acquired      GPS           NONE
13        36    dBHZ       Acquired      GPS           NONE
74        41    dBHZ       Acquired      GLONASS       NONE
77        19    dBHZ       Acquired      GLONASS       NONE
```

show chassis synchronization clock-module (EX9251 Switches)

`user@switch>` **show chassis synchronization clock-module**

```
re0:
--------------------------------------------------------------------------

Clock module on SCB0
  Current role     : master
```

show chassis synchronization (MX Series Routers)

Syntax

```
show chassis synchronization
<clock-module <(re0 | re1 | routing-engine (backup | both | local | master | other))>>
<extensive>
<interface interface-name>
```

Release Information

Command introduced in Junos OS Release 10.4.
Command introduced in Junos OS Release 13.3 for MX2020 routers.
clock-module option introduced in Junos OS Release 12.2.
Command introduced in Junos OS Release 17.3R1 for MX10003 Universal Routing Platforms.
Command introduced in Junos OS Release 17.4 for MX204 Universal Routing Platforms.

Description

Display information about clocks used for chassis synchronization.

NOTE: In hybrid mode, the EEC in the MPC derives frequency synchronization from Synchronous Ethernet and the phase and time of day from PTP; however, the **show chassis synchronization extensive** operational mode command output displays the lock status that is derived from the EEC located on the SCB.

NOTE:

The Switch Control Board (SCB) framer in MX Series routers supports only the first-generation Synchronization Status Message (SSM) format. Therefore, whenever the router needs to transmit an SSM value of st3e or tnc via an external interface, an SSM value of st3 is transmitted. However, on a Synchronous Ethernet interface, an ESMC packet with the unadjusted SSM is transmitted. The term *unadjusted* here means:

- If the **receive-quality** statement at the **[edit chassis synchronization selection-mode]** hierarchy level is configured, the originally received SSM value st3e or tnc (corresponding to the currently active Synchronous Ethernet clock interface) is transmitted.
- If the **configured quality** statement at the **[edit chassis synchronization selection-mode]** hierarchy level is configured, the originally configured SSM value of st3e or tnc (corresponding to the currently active Synchronous Ethernet clock interface) is transmitted.

Note that when the external interface receives an SSM value of either st3e or tnc, the SCB framer does not recognize either of these SSM codes, and therefore, it reports that the Do Not Use (DNU) quality value has been received.

SCBE2 does not support SSM when you configure the following framing format values on the external interface at the **[edit chassis synchronization interfaces external]** hierarchy level:

- sf for the **t1-options** statement
- g704-no-crc for the **e1-options** statement

Options

clock-module—(MX240, MX480, MX960, MX10003, MX204, MX2010, MX2020, and MX2008 routers with Enhanced MX Switch Control Board;) (Optional) Display clock module information. You can optionally specify one of these Routing Engine qualifiers:

re0—Routing Engine 0

re1—Routing Engine 1

routing-engine (backup | both | local | master | other)—Routing Engine type

extensive—(Optional) Display clock synchronization information in detail.

interface *interface-name*—(Optional) Display clock synchronization information for the specified interface.

Required Privilege Level

maintenance

RELATED DOCUMENTATION

Configuring an External Clock Synchronization Interface for MX Series Routers

Configuring External Clock Synchronization for ACX Series Routers

Example: Configuring Framing Mode for Synchronous Ethernet on MX Series Routers with 10-Gigabit Ethernet MIC

request chassis synchronization mode | **684**

show chassis synchronization | **1770**

synchronization (MX Series) | **552**

Synchronous Ethernet Overview

List of Sample Output

show chassis synchronization on page 1788
show chassis synchronization extensive on page 1788
show chassis synchronization extensive (Synchronous Ethernet with link down) on page 1789
show chassis synchronization extensive (Synchronous Ethernet with physical interface not restored) on page 1789
show chassis synchronization extensive (Synchronous Ethernet configured on ineligible slot 10) on page 1790
show chassis synchronization extensive (on MX104 Router) on page 1790
show chassis synchronization clock-module (MX10003 Router) on page 1791
show chassis synchronization clock-module (MX204 Router) on page 1792
show chassis synchronization interface on page 1792
show chassis synchronization clock-module on page 1792
show chassis synchronization (configured external clock interface) on page 1793
show chassis synchronization clock-module (configured external clock interface) on page 1793
show chassis synchronization extensive (configured external clock interface) on page 1794
show chassis synchronization clock-module(configured external clock interfaces) on page 1794
show chassis synchronization extensive (configured external clock interface) on page 1794

Output Fields

Table 104 on page 1783 lists the output fields for the **show chassis synchronization** command. Output fields are listed in the approximate order in which they appear.

Table 104: show chassis synchronization Output Fields

Field Name	Field Description	Level of Output
Current clock status	Indicates the current status of chassis synchronization: • **Locked**—Clock is operational. • **Holdover**—Clock is not operational. • **Freerun**—Clock is locked to the free-run local oscillator.	none
Clock locked to	Indicates whether the clock is locked to either the **primary** source or the **secondary** source.	none
Configured sources	Heading for the list of interfaces configured for chassis synchronization and their subsequent status indicators.	none
Source name	Indicates the configured interface that is the source. The **external** source name indicates the external clock interface.	none
Configured Priority	Indicates the priority configured for the interface.	none
Interface Status	Indicates the status of the interface as **primary**, **secondary**, or **n/a** (external).	none
Configured quality	Indicates the configured quality of the interface. • **prs** —Primary reference source—Stratum 1 • **st2**—Stratum 2 • **tnc**—Transit node clock • **st3e**—Stratum 3E • **st3**—Stratum 3 • **smc**—SONET minimum clock • **st4**—Stratum 4 • **prc**—Primary reference clock • **ssu-a**—Synchronization supply unit A • **ssu-b**—Synchronization supply unit B • **sec**—SDH equipment clock	none
Interface	Indicates the configured interface: • **ge-*fpc/pic/port***—Indicates the interface type and which FPC, PIC, and port are configured.	**extensive**

Table 104: show chassis synchronization Output Fields *(continued)*

Field Name	Field Description	Level of Output
Status	Indicates the synchronization status of the indicated interface, as follows: • **Primary**—This interface is the selected primary chassis clock source. • **Secondary**—This interface is the selected secondary chassis clock source. • **n/a**—This interface is not a selected clock source.	**extensive**
Index	Unique numeric identifier for the established Synchronous Ethernet configuration.	**extensive**
Clock source state	Indicates the status of the Synchronous Ethernet clock source: • **Clk qualified**—The Synchronous Ethernet clock source is qualified. • **n/a**—The Synchronous Ethernet clock source is not qualified.	**extensive**
Priority	Indicates the configured priority. The range is from 1 through 5. The following values indicate whether the parameter is not specified or undefined: • **Default(8)**—The parameter is not specified. • **-** —The parameter is undefined or out of range.	**extensive**
Configured QL	Indicates the configured source interface quality level (QL), which is dependent on the source interface and option. The following quality levels are supported and the configured QL is indicated: • **prc | ssu-a | ssu-b | sec**—Network option-1 QLs • **prs | st2 | tnc | st3e | st3 | smc | st4**—Network option-2 QLs	**extensive**
ESMC QL	Indicates the configured Ethernet Synchronization Message Channel (ESMC) quality level: • **DNU**—Network option-1 source • **DSU**—Network option-2 source	**extensive**
Clock source type	Indicates that the configured chassis synchronization clock source is one of the following types: • **ifd**—Uses the free-run local oscillator. • **extern**—Uses a configured qualified clock source.	**extensive**
Clock Event	Indicates the event clock status: • **Clock locked**—Clock is established. • **n/a**—Clock is not established.	**extensive**

Table 104: show chassis synchronization Output Fields *(continued)*

Field Name	Field Description	Level of Output
Configuration flags	Indicates **Ext** for external interface configuration	
Wait-to-restore time	Indicates the amount of time in minutes for the port signal to be up before the port is opened to receive and transmit Ethernet Synchronization messages.	**extensive**
Hold-off time	Indicates the amount of time in milliseconds for hold off time for Synchronous Ethernet interfaces and external clock source interfaces to prevent rapid successive switching. If an interface goes down, hold-off time delays short signal failures from being sent to the clock selection process.	**extensive**
Kernel flags	Indicates the Synchronous Ethernet software operational status: • **Up**—The Synchronous Ethernet software is operational for the configured interface. • **pri**—The source is the selected primary clock source. • **Dn**—The Synchronous Ethernet software is not operational for the configured interface.	**extensive**

Table 104: show chassis synchronization Output Fields *(continued)*

Field Name	Field Description	Level of Output
Ineligibility reason	Indicates the reason the interface is ineligible for the Synchronous Ethernet operation, including the following: • **Link Down**—The link between the Synchronous Ethernet interfaces is not operational. • **Not restored**—The Synchronous Ethernet link has not yet been restored because it is waiting for the specified **wait-to-restore** time to elapse. • **Forbidden slot**—Slot 10 is not supported. • **Interface unit missing**—The unit parameter is not set or is invalid. • **Locked**—The paired interface is not available. • **No cfg**—Synchronous Ethernet is not configured. • **RX Disabled**—The receiving interface is disabled. • **Undefined/invalid QL**—The QL mode is not specified in the configuration or, if specified, is not supported. **NOTE:** When GPS is configured as the clock source and the **quality-mode-enable** statement is configured, the **Current Lock Status** is displayed as **Locked** but **Undefined/invalid QL** is displayed as the Ineligibility reason. As a workaround, configure the **no-ssm-support** statement at the **[edit chassis synchronization source interfaces interface-name]** hierarchy level. • **System initialization in progress**—The remote system is performing initialization and not currently available for synchronization. • **Unsupported interface**—The configured interface does not support Synchronous Ethernet.	**extensive**
Clock module on	Indicates whether the clock module is on the Switch Control Board **SCB0** or **SCB1**.	**clock-module**
Current role	Indicates the role of the clock module: • **master**—The clock module is on the primary SCB, which is the active chassis clock source. • **backup**—The clock module is on the backup SCB, which mirrors the state of the active clock.	**clock-module**

Table 104: show chassis synchronization Output Fields *(continued)*

Field Name	Field Description	Level of Output
Current state	Indicates the state of the clock module: • **freerun**—The clock module is in free-run mode. When the system starts up, the default clock module state is free-run. • **acquiring-lock on**—The clock module is attempting to acquire a lock on the specified clock source. • **locked to**—The clock module is locked to the specified clock source. • **holdover on**—The clock module is in holdover mode on the specified clock source. Prior to the specified clock source becoming invalid, the clock module was locked on the source and holdover data was collected. • **holdover**—The clock module has transitioned into holdover prior to locking on a valid clock source and collecting holdover data.	**clock-module**
Monitored clock sources	Displays information about monitored clock sources.	**clock-module**
Interface	Indicates the interface type and which FPC, PIC, and port are configured: • **external**—External clock source • **ge-*fpc/pic/port***—Line Synchronous Ethernet or PTP slave • **xe-*fpc/pic/port***—Line Synchronous Ethernet or PTP slave	**clock-module**
Type	Indicates the type of clock source: • **t1**—BITS T1 framed • **e1**—BITS E1 framed • **2048khz**—BITS unframed 2048 KHz frequency source • **syncE**—Synchronous Ethernet frequency source • **ptp**—PTP slave source • **ptp-hybrid**—PTP slave source using Synchronous Ethernet for frequency	**clock-module**
Status	Indicates the status of the clock source: • **failed**—The clock source is in the failed state. • **qualifying**—The clock source is being qualified. • **qualified**—The clock source is qualified and can be selected as the chassis clock source. • **qualified-selected**—The clock source is qualified and selected as the chassis clock source.	**clock-module**

Sample Output

show chassis synchronization

user@host> **show chassis synchronization**

```
Current clock status: Locked
Clock locked to : Primary

Configured sources
Source      Configured       Interface       Configured
Name        Priority         Status          Quality

ge-1/0/0       -             Primary         PRC
```

Sample Output

show chassis synchronization extensive

user@host> **show chassis synchronization extensive**

```
Current clock status: Locked
Clock locked to            : Primary

Configured sources:
Interface           : ge-1/0/0
Status              : Primary         Index : 143
Clock source state  : Clk qualified   Priority : -
Configured QL       : PRC             ESMC QL : DNU
Clock source type   : ifd             Clock Event : Clock locked
Kernel flags        : Up,pri,
Wait-to-restore time   : 1
Hold-off time             :  1200
Interface State           : Up,ESMC TX(QL SEC/SSM 0xb),
```

Sample Output

show chassis synchronization extensive (Synchronous Ethernet with link down)

`user@host>` **show chassis synchronization extensive**

```
Current clock status  : Holdover
Configured sources:

Interface           : ge-1/0/2
Status              : n/a           Index       : 142
Clock source state  : n/a           Priority    : Default(8)
Configured QL       : SSU-B         ESMC QL     : DNU
Clock source type   : ifd           Clock Event : n/a
Kernel flags        : Dn,
Ineligibility reason: Link Down,
Wait-to-restore time   : 1
Hold-off time             :  1200
Interface State           : Up,ESMC TX(QL SEC/SSM 0xb),
```

Sample Output

show chassis synchronization extensive (Synchronous Ethernet with physical interface not restored)

`user@host>` **show chassis synchronization extensive**

```
Current clock status  : Holdover
Configured sources:

Interface           : ge-1/0/2
Status              : n/a           Index       : 142
Clock source state  : n/a           Priority    : Default(8)
Configured QL       : SSU-B         ESMC QL     : DNU
Clock source type   : ifd           Clock Event : n/a
Kernel flags        : Restoring in 13s,ESMC TX(QL DNU/SSM 0xf),
Ineligibility reason: Not restored,
Wait-to-restore time   : 1
Hold-off time             :  1200
Interface State           : Up,ESMC TX(QL SEC/SSM 0xb),
```

Sample Output

show chassis synchronization extensive (Synchronous Ethernet configured on ineligible slot 10)

`user@host>` **show chassis synchronization extensive**

```
Current clock status  : Holdover
Configured sources:

Interface           : ge-10/0/2  # Note: configuration 10/x/y (slot 10), which
does not support Synchronous Ethernet
Status              : n/a           Index       : 142
Clock source state  : n/a           Priority    : Default(8)
Configured QL       : SSU-B         ESMC QL     : DNU
Clock source type   : ifd           Clock Event : n/a
Kernel flags        : Up,
Ineligibility reason: Forbidden slot,
Wait-to-restore time   : 1
Hold-off time             :  1200
Interface State           : Up,ESMC TX(QL SEC/SSM 0xb),
```

Sample Output

show chassis synchronization extensive (on MX104 Router)

`user@host>` **show chassis synchronization extensive**

```
Current clock status  : Locked
Clock locked to       : Primary

Configured interfaces:

Name         : bits
Signal type  : e1 (g704 hdb3 sa4)
Rx status    : active
Tx status    : active

Configured sources:

Interface           : bits
Status              : Primary       Index       : 2
Clock source state  : Clk qualified Priority    : Default(7)
```

```
Configured QL       : SEC           ESMC QL     : SEC
Clock source type   : extern        Clock Event : Clock locked
Wait-to-restore     : 5  min        Hold-off    : 1000 ms
Interface State     : Up,pri,ESMC Rx(SSM 0xb)
```

Sample Output

show chassis synchronization clock-module (MX10003 Router)

`user@host>` **show chassis synchronization extensive**

```
Current clock status : Locked
Clock locked to : Primary
SNMP trap status : Disabled

Configured sources:

Interface : et-0/1/3
Status : Secondary Index : 563
Clock source state : Clk qualified Priority : 1
Configured QL : PRC ESMC QL : DNU
Clock source type : ifd Clock Event : Clock qualified
Wait-to-restore : 0 min Hold-off : 1000 ms
Interface State : Up,sec,ESMC TX(QL PRC/SSM 0x2),

Interface : et-0/1/7
Status : n/a Index : 567
Clock source state : n/a Priority : 3
Configured QL : PRC ESMC QL : DNU
Clock source type : ifd Clock Event : n/a
Wait-to-restore : 0 min Hold-off : 1000 ms
Interface State : Up,ESMC TX(QL PRC/SSM 0x2),

Interface : et-0/1/8
Status : Primary Index : 568
Clock source state : Clk qualified Priority : 1
Configured QL : PRC ESMC QL : DNU
Clock source type : ifd Clock Event : Clock locked
Wait-to-restore : 0 min Hold-off : 1000 ms
Interface State : Up,pri,ESMC TX(QL DNU/SSM 0xf),
```

```
Interface : et-1/1/1
Status : n/a Index : 555
Clock source state : n/a Priority : 5
Configured QL : PRC ESMC QL : DNU
Clock source type : ifd Clock Event : n/a
Wait-to-restore : 0 min Hold-off : 1000 ms
Interface State : Dn,
Ineligibility reason: Link Down
```

Sample Output

show chassis synchronization clock-module (MX204 Router)

`user@host>` **show chassis synchronization clock-module**

```
re0:
--------------------------------------------------------------------------

Clock module on SCB0
  Current role     : master
```

Sample Output

show chassis synchronization interface

`user@host>` **show chassis synchronization interface ge-1/0/2**

```
Current clock status  : Locked
Clock locked to       : Primary
```

Sample Output

show chassis synchronization clock-module

`user@host>` **show chassis synchronization clock-module**

```
Clock module on SCB0
  Current role     : master
  Current state    : locked to ge-4/1/0
    State for      : 0 days, 00 hrs, 00 mins, 15 secs
    State since    : Mon Jun  6 07:29:40 2011
  Monitored clock sources
    Interface      Type         Status
    ge-4/1/0       syncE        qualified-selected
    ge-4/3/0       syncE        qualified
```

show chassis synchronization (configured external clock interface)

```
user@host> show chassis synchronization
```

```
Current clock status  : Free-run

Configured interfaces:
Name            Signal type                Rx status      Tx status
external        e1 (g704 ami sa4)          loss of signal squelched

Configured outputs:
Interface       Tx status   Minimum QL   Tx QL
external        squelched   SEC          DNU

Configured sources:
Source         Configured    Interface   Configured
 Name           Priority     Status      Quality
external       Default(6)    n/a         SSU-A
```

show chassis synchronization clock-module (configured external clock interface)

```
user@host> show chassis synchronization clock-module
```

```
re0:
--------------------------------------------------------------------------

Clock module on SCB0
  Current role     : master
  Current state    : freerun
    State for      : 2 days, 06 hrs, 16 mins, 57 secs
    State since    : Wed Nov 14 08:02:07 2012
  Monitored clock sources
```

```
    Interface      Type         Status
    external       e1           failed
```

show chassis synchronization extensive (configured external clock interface)

`user@host>` **show chassis synchronization extensive**

```
Current clock status: Locked
Clock locked to            : Primary

Configured sources:
Interface           : xe-2/0/10
Status              : Primary         Index : 227
Clock source state  : Clk qualified   Priority : Default (8)
Configured QL       : SEC             ESMC QL : SEC
Clock source type   : ifd             Clock Event : Clock locked
Kernel flags        : Up,pri, ESMC Rx(SSM 0xb),ESMC TX(QL DNU/SSM 0xf),
```

show chassis synchronization clock-module(configured external clock interfaces)

`user@host>` **show chassis synchronization clock-module**

```
re0:
--------------------------------------------------------------------------

Clock module on SCB0
  Current role     : master
  Current state    : locked to xe-2/0/10
    State for      : 29 days, 10 hrs, 06 mins, 23 secs
    State since    : Wed Jun 7 21:55:23 2014
  Monitored clock sources
    Interface      Type         Status
    xe-2/0/10      syncE        qualified-selected
```

show chassis synchronization extensive (configured external clock interface)

`user@host> show chassis synchronization extensive`

```
Current clock status  : Free-run

Configured interfaces:
```

```
Name         : external
Signal type  : e1 (g704 ami sa4)
Rx status    : loss of signal
Tx status    : squelched
LED color    : red

Configured outputs:

Interface      : external
Tx status      : squelched (holdover data invalid)
Minimum QL     : SEC             Tx QL         : DNU
Holdover mode  : enabled         Wander filter : disabled
Source mode    : chassis         Source Tx DNU : disabled
Holdover data  : invalid
Current state  : holdover
  State for    : 2 days, 06 hrs, 03 mins, 46 secs
  State since  : Wed Nov 14 08:02:09 2012

Configured sources:

Interface           : external
Status              : n/a           Index       : 0
Clock source state  : n/a           Priority    : Default(6)
Configured QL       : SSU-A         ESMC QL     : DNU
Clock source type   : extern        Clock Event : n/a
Interface State     : Dn,ESMC Rx(SSM 0xf),
Ineligibility reason: Link Down,
```

show chassis temperature-thresholds

List of Syntax

Syntax on page 1796
Syntax (TX Matrix Routers) on page 1796
Syntax (TX Matrix Plus Routers) on page 1796
Syntax (MX Series Routers) on page 1796
Syntax (QFX Series) on page 1796

Syntax

```
show chassis temperature-thresholds
```

Syntax (TX Matrix Routers)

```
show chassis temperature-thresholds
<lcc number | scc>
```

Syntax (TX Matrix Plus Routers)

```
show chassis temperature-thresholds
<lcc number | sfc number>
```

Syntax (MX Series Routers)

```
show chassis temperature-thresholds
<all-members>
<local>
<member member-id>
<satellite [slot-id slot-ID |device-alias alias-name]>
```

Syntax (QFX Series)

```
show chassis temperature-thresholds
<interconnect-device name>
<node-device name>
```

Release Information

Command introduced in Junos OS Release 8.0.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc command introduced in Junos OS Release 9.6 for the TX Matrix Plus router.

Command introduced in Junos OS Release 11.1 for QFX Series.
Command introduced in Junos OS Release 12.1 for T4000 Core Routers.
Command introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers.
Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 Universal Routing Platforms.
Command introduced in Junos OS Release 13.2 for MX104 Universal Routing Platforms.
satellite option introduced in Junos OS Release 14.2R3.
Command introduced in Junos OS Release 17.2 for MX2008 Universal Routing Platforms and PTX10008 Routers.
Command introduced in Junos OS Release 17.3 for MX10003 Universal Routing Platforms and MX150 Router Appliance.
Command introduced in Junos OS Release 17.4 for MX204 Universal Routing Platforms.
Command introduced in Junos OS Release 18.1R1 for EX9251 switches.
Command introduced in Junos OS Release 18.2R1 for MX10008 Routers and EX9253 Switches.

Description

Display chassis temperature threshold settings, in degrees Celsius.

Options

none—Display the temperature threshold details.

all-members—(MX Series routers only) (Optional) Display the chassis temperature threshold settings of all member routers in the Virtual Chassis configuration.

interconnect-device *name*—(QFabric systems only) (Optional) Display the chassis temperature threshold settings of the Interconnect device.

lcc *number*—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display the temperature threshold details of a specified T640 router (line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display the temperature threshold details of a specified router (line-card chassis) that is connected to a TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

local—(MX Series routers only) (Optional) Display the chassis temperature threshold settings of the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display the chassis temperature threshold settings of the specified member of the Virtual Chassis configuration. Replace *member-id* with a value of 0 or 1.

node-device *name*—(QFabric systems only) (Optional) Display the chassis temperature threshold settings of the Node device.

satellite [slot-id *slot-ID* | device-alias *alias-name*]—(Junos Fusion only) (Optional) Display the chassis temperature threshold settings for the specified satellite device or devices in a Junos Fusion, or for all satellite devices if no satellite devices are specified.

scc—(TX Matrix routers only) (Optional) Display the temperature threshold details of the TX Matrix router (switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) On TX Matrix Plus routers, display the temperature threshold details of the TX Matrix Plus router, which is the switch-fabric chassis. Replace *number* with 0.

Required Privilege Level

view

List of Sample Output

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show chassis temperature-thresholds (MX480 Router with MPC4E) on page 1802
show chassis temperature-thresholds (MX2010 Router with MPC7E, MPC8E, and MPC9E) on page 1802
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show chassis temperature-thresholds (MX2008 Routers) on page 1809
show chassis temperature-thresholds (MX204 Router) on page 1813
show chassis temperature-thresholds (PTX10008 Routers) on page 1814
show chassis temperature-thresholds (T4000 Core Routers) on page 1816
show chassis temperature-thresholds (TX Matrix Plus Router) on page 1817
show chassis temperature-thresholds lcc (TX Matrix Plus Router) on page 1818
show chassis temperature-thresholds sfc (TX Matrix Plus Router) on page 1819
show chassis temperature-thresholds (TX Matrix Plus routers with 3D SIBs) on page 1820
show chassis temperature-thresholds (QFX3500 Switch and QFX3600) on page 1821
show chassis temperature-thresholds interconnect-device (QFabric System) on page 1822
show chassis temperature-thresholds (PTX5000 Packet Transport Router) on page 1822
show chassis temperature-thresholds (PTX1000 Packet Transport Router) on page 1824
show chassis temperature-thresholds (MX Routers with Media Services Blade [MSB]) on page 1824
show chassis temperature-thresholds (EX9251 Switches) on page 1825
show chassis temperature-thresholds (EX9253 witches) on page 1826

Output Fields

Table 105 on page 1799 lists the output fields for the **show chassis temperature-thresholds** command. Output fields are listed in the approximate order in which they appear.

Table 105: show chassis temperature-thresholds Output Fields

Field name	Field Description
Item	Chassis component. If per FRU per slot thresholds are configured, the components about which information is displayed include the chassis, the Routing Engines, FPCs, and FEBs. If per FRU per slot thresholds are not configured, the components about which information is displayed include the chassis and the Routing Engines.
Fan speed	**NOTE:** On the QFX3500 switch and QFX3600 switch, there are four fan speeds: **low**, **medium-low**, **medium-high**, and **high**. The fan speed changes at the threshold when going from a low speed to a higher speed. When the fan speed changes from a higher speed to a lower speed, the temperature changes two degrees below the threshold. Temperature threshold settings, in degrees Celsius, for the fans to operate at normal and high speeds. • Normal—The fans operate at normal speed if the component is at or below this temperature and all the fans are present and functioning normally. **NOTE:** On a TX Matrix Plus router with 3D SIBs, the threshold temperature at the XF junction is set to 70°C for **Normal** fan speed, which is less than or equal to 4800 RPM. • High—The fans operate at high speed if the component has exceeded this temperature or a fan has failed or is missing. **NOTE:** On a TX Matrix Plus router with 3D SIBs, the threshold temperature at the XF junction is set to 75°C for **High** fan speed, which is greater than or equal to 5000 RPM. **NOTE:** For MX480 Routers, there are three fan speeds: Low, Medium, and High. An alarm is not triggered until the temperature exceeds the threshold settings for a yellow alarm or a red alarm.
Yellow alarm	Temperature threshold settings, in degrees Celsius, that trigger a yellow alarm. • Normal—The temperature that must be exceeded on the component to trigger a yellow alarm when the fans are running at full speed. • Bad fan—The temperature that must be exceeded on the component to trigger a yellow alarm when one or more fans have failed or are missing.

Table 105: show chassis temperature-thresholds Output Fields *(continued)*

Field name	Field Description
Red alarm	Temperature threshold settings, in degrees Celsius, that trigger a red alarm. • Normal—The temperature that must be exceeded on the component to trigger a red alarm when the fans are running at full speed. • Bad fan—The temperature that must be exceeded on the component to trigger a red alarm when one or more fans have failed or are missing.
Fire Shutdown	(T4000 routers, TX Matrix Plus router with 3D SIBs, and PTX Series Packet Transport Routers only)—Temperature threshold settings, in degrees Celsius, for the network device to shut down.

Sample Output

show chassis temperature-thresholds

```
user@host> show chassis temperature-thresholds
```

```
                        Fan speed        Yellow alarm        Red alarm
                       (degrees C)       (degrees C)       (degrees C)
Item                  Normal   High    Normal   Bad fan    Normal   Bad fan
Chassis default           48     54        65        55        75        65
Routing Engine 0          70     80        95        95       110       110
Routing Engine 1          70     80        95        95       110       110
FPC 0                     55     60        75        65        90        80
FPC 1                     55     60        75        65        90        80
FPC 2                     55     60        75        65        90        80
FPC 3                     55     60        75        65        90        80
FPC 4                     55     60        75        65        90        80
FPC 5                     55     60        75        65        90        80
FPC 6                     55     60        75        65        90        80
FPC 7                     55     60        75        65        90        80
FPC 8                     55     60        75        65        90        80
FPC 9                     55     60        75        65        90        80
FPC 10                    55     60        75        65        90        80
FPC 11                    55     60        75        65        90        80
```

show chassis temperature-thresholds (MX150)

```
user@host> show chassis temperature-thresholds
```

```
Fan speed      Yellow alarm      Red alarm      Fire Shutdown
                        (degrees C)     (degrees C)     (degrees C)      (degrees
 C)
Item                     Normal  High   Normal  Bad fan   Normal  Bad fan
Normal
FPC 0 Sensor 1               43    65       68       68       70       70
72
FPC 0 Sensor 2               43    65       68       68       70       70
72
FPC 0 Coretemp               78    94      100      100      105      105      110
```

show chassis temperature-thresholds (MX104 Router)

`user@host>` **show chassis temperature-thresholds**

```
       Fan speed      Yellow alarm      Red alarm      Fire Shutdown
                        (degrees C)     (degrees C)     (degrees C)      (degrees
 C)
Item                     Normal  High   Normal  Bad fan   Normal  Bad fan
Normal
Chassis default              48    54       65       55       75       65      100
Routing Engine 0             55    80       95       95      105      100      108
```

show chassis temperature-thresholds (MX240, MX480, MX960 Routers with Application Services Modular Line Card)

`user@host>` **show chassis temperature-thresholds**

```
Fan speed      Yellow alarm      Red alarm      Fire Shutdown
                        (degrees C)     (degrees C)     (degrees C)      (degrees
 C)
Item                     Normal  High   Normal  Bad fan   Normal  Bad fan
Normal
Chassis default              48    54       65       55       75       65      100
Routing Engine 0             70    80       95       95      110      110      112
Routing Engine 1             70    80       95       95      110      110      112
FPC 0                        55    60       75       65       90       80
95
FPC 1                        55    60       75       65       90       80
95
FPC 2                        55    60       75       65       90       80
95
FPC 4                        55    60       75       65       90       80
```

```
95
FPC 5                        55    60       75       65       90       80
95
```

show chassis temperature-thresholds (MX480 Router with MPC4E)

`user@ host>` **show chassis temperature-thresholds**

```
       Fan speed      Yellow alarm      Red alarm      Fire Shutdown
                        (degrees C)     (degrees C)    (degrees C)     (degrees
 C)
Item                     Normal  High   Normal  Bad fan   Normal  Bad fan
Normal
Chassis default             48    54       65       55       75       65      100
Routing Engine 0            70    80       95       95      110      110      112
Routing Engine 1            70    80       95       95      110      110      112
FPC 2                       55    60       75       65       95       80      100
FPC 3                       55    60       75       65       95       80      100
FPC 4                        55    60       75       65       90       80
95
```

show chassis temperature-thresholds (MX2010 Router with MPC7E, MPC8E, and MPC9E)

`user@ host>` **show chassis temperature-thresholds**

```
                                    Fan speed      Yellow alarm      Red alarm
      Fire Shutdown
                                    (degrees C)      (degrees C)     (degrees
C)      (degrees C)
Item                               Normal  High   Normal  Bad fan   Normal  Bad
 fan     Normal

FPC 3 Intake                          53    59       72       67       80
   75         85
FPC 3 Exhaust A                       77    85       98       93      103
   98        108
FPC 3 Exhaust B                       54    62       80       75      103
   98        108
FPC 3 EA0 Chip                        64    72       90       90      100
  100        105
FPC 3 EA0_XR0 Chip                    79    87      102      102      106
  106        108
FPC 3 EA0_XR1 Chip                    79    87      102      102      106
```

```
  106        108
FPC 3 EA1 Chip                    64    72       90       90      100
  100        105
FPC 3 EA1_XR0 Chip                79    87      102      102      106
  106        108
FPC 3 EA1_XR1 Chip                79    87      102      102      106
  106        108
FPC 3 PEX Chip                    74    82      100      100      105
  105        110
FPC 3 EA2 Chip                    64    72       90       90      100
  100        105
FPC 3 EA2_XR0 Chip                79    87      102      102      106
  106        108
FPC 3 EA2_XR1 Chip                79    87      102      102      106
  106        108
FPC 3 EA3 Chip                    64    72       90       90      100
  100        105
FPC 3 EA3_XR0 Chip                79    87      102      102      106
  106        108
FPC 3 EA3_XR1 Chip                79    87      102      102      106
  106        108
FPC 3 EA0_HMC0 Logic die          81    89      103      103      107
  107        111
FPC 3 EA0_HMC0 DRAM botm          76    84       98       98      102
  102        106
FPC 3 EA0_HMC1 Logic die          81    89      103      103      107
  107        111
FPC 3 EA0_HMC1 DRAM botm          76    84       98       98      102
  102        106
FPC 3 EA0_HMC2 Logic die          81    89      103      103      107
  107        111
FPC 3 EA0_HMC2 DRAM botm          76    84       98       98      102
  102        106
FPC 3 EA1_HMC0 Logic die          81    89      103      103      107
  107        111
FPC 3 EA1_HMC0 DRAM botm          76    84       98       98      102
  102        106
FPC 3 EA1_HMC1 Logic die          81    89      103      103      107
  107        111
FPC 3 EA1_HMC1 DRAM botm          76    84       98       98      102
  102        106
FPC 3 EA1_HMC2 Logic die          81    89      103      103      107
  107        111
FPC 3 EA1_HMC2 DRAM botm          76    84       98       98      102
```

```
  102        106
FPC 3 EA2_HMC0 Logic die                81    89      103      103      107
  107        111
FPC 3 EA2_HMC0 DRAM botm                76    84       98       98      102
  102        106
FPC 3 EA2_HMC1 Logic die                81    89      103      103      107
  107        111
FPC 3 EA2_HMC1 DRAM botm                76    84       98       98      102
  102        106
FPC 3 EA2_HMC2 Logic die                81    89      103      103      107
  107        111
FPC 3 EA2_HMC2 DRAM botm                76    84       98       98      102
  102        106
FPC 3 EA3_HMC0 Logic die                81    89      103      103      107
  107        111
FPC 3 EA3_HMC0 DRAM botm                76    84       98       98      102
  102        106
FPC 3 EA3_HMC1 Logic die                81    89      103      103      107
  107        111
FPC 3 EA3_HMC1 DRAM botm                76    84       98       98      102
  102        106
FPC 3 EA3_HMC2 Logic die                81    89      103      103      107
  107        111
FPC 3 EA3_HMC2 DRAM botm                76    84       98       98      102
  102        106
FPC 4 Intake                            46    55       65       60       81
   76         90
FPC 4 Exhaust A                         61    70       80       75      100
   95        110
FPC 4 Exhaust B                         61    70       80       75       95
   90        105
FPC 4 EA0 Chip                          86    95      105      100      117
  112        123
FPC 4 EA0_XR0 Chip                      86    95      105      100      110
  105        116
FPC 4 EA0_XR1 Chip                      86    95      105      100      115
  110        121
FPC 4 EA1 Chip                          86    95      105      100      117
  112        123
FPC 4 EA1_XR0 Chip                      86    95      105      100      110
  105        116
FPC 4 EA1_XR1 Chip                      86    95      105      100      115
  110        121
FPC 4 PCIE_SW Chip                      81    90      105      100      115
```

```
  110        121
FPC 4 EA0_HMC0 DRAM botm                86    95      105      100      115
  110        121
FPC 4 EA0_HMC1 DRAM botm                86    95      105      100      115
  110        121
FPC 4 EA1_HMC0 DRAM botm                86    95      105      100      115
  110        121
FPC 4 EA1_HMC1 DRAM botm                86    95      105      100      115
  110        121
FPC 7 Intake                            53    59       72       67       80
   75         85
FPC 7 Exhaust A                         77    85       98       93      103
   98        108
FPC 7 Exhaust B                         54    62       80       75      103
   98        108
FPC 7 EA0 Chip                          64    72       90       90      100
  100        105
FPC 7 EA0_XR0 Chip                      79    87      102      102      106
  106        108
FPC 7 EA0_XR1 Chip                      79    87      102      102      106
  106        108
FPC 7 EA1 Chip                          64    72       90       90      100
  100        105
FPC 7 EA1_XR0 Chip                      79    87      102      102      106
  106        108
FPC 7 EA1_XR1 Chip                      79    87      102      102      106
  106        108
FPC 7 PEX Chip                          74    82      100      100      105
  105        110
FPC 7 EA2 Chip                          64    72       90       90      100
  100        105
FPC 7 EA2_XR0 Chip                      79    87      102      102      106
  106        108
FPC 7 EA2_XR1 Chip                      79    87      102      102      106
  106        108
FPC 7 EA3 Chip                          64    72       90       90      100
  100        105
FPC 7 EA3_XR0 Chip                      79    87      102      102      106
  106        108
FPC 7 EA3_XR1 Chip                      79    87      102      102      106
  106        108
FPC 7 EA0_HMC0 Logic die                81    89      103      103      107
  107        111
FPC 7 EA0_HMC0 DRAM botm                76    84       98       98      102
```

```
  102        106
FPC 7 EA0_HMC1 Logic die                81    89      103      103      107
  107        111
FPC 7 EA0_HMC1 DRAM botm                76    84       98       98      102
  102        106
FPC 7 EA0_HMC2 Logic die                81    89      103      103      107
  107        111
FPC 7 EA0_HMC2 DRAM botm                76    84       98       98      102
  102        106
FPC 7 EA1_HMC0 Logic die                81    89      103      103      107
  107        111
FPC 7 EA1_HMC0 DRAM botm                76    84       98       98      102
  102        106
FPC 7 EA1_HMC1 Logic die                81    89      103      103      107
  107        111
FPC 7 EA1_HMC1 DRAM botm                76    84       98       98      102
  102        106
FPC 7 EA1_HMC2 Logic die                81    89      103      103      107
  107        111
FPC 7 EA1_HMC2 DRAM botm                76    84       98       98      102
  102        106
FPC 7 EA2_HMC0 Logic die                81    89      103      103      107
  107        111
FPC 7 EA2_HMC0 DRAM botm                76    84       98       98      102
  102        106
FPC 7 EA2_HMC1 Logic die                81    89      103      103      107
  107        111
FPC 7 EA2_HMC1 DRAM botm                76    84       98       98      102
  102        106
FPC 7 EA2_HMC2 Logic die                81    89      103      103      107
  107        111
FPC 7 EA2_HMC2 DRAM botm                76    84       98       98      102
  102        106
FPC 7 EA3_HMC0 Logic die                81    89      103      103      107
  107        111
FPC 7 EA3_HMC0 DRAM botm                76    84       98       98      102
  102        106
FPC 7 EA3_HMC1 Logic die                81    89      103      103      107
  107        111
FPC 7 EA3_HMC1 DRAM botm                76    84       98       98      102
  102        106
FPC 7 EA3_HMC2 Logic die                81    89      103      103      107
  107        111
```

```
FPC 7 EA3_HMC2 DRAM botm                 76    84       98       98      102
  102        106
```

As per the above output, the MPC7E, MPC8E, and MPC9E are installed in the FPC slots 4, 7, and 3, respectively.

show chassis temperature-thresholds (MX2020 Router with MPC4E)

`user@host>` **show chassis temperature-thresholds**

```
     Fan speed      Yellow alarm      Red alarm      Fire Shutdown
                     (degrees C)      (degrees C)     (degrees C)      (degrees
C)
Item                Normal  High   Normal  Bad fan   Normal  Bad fan     Normal
Routing Engine 0        70    80       95       95      110      110      112
Routing Engine 1        70    80       95       95      110      110      112
CB 0 IntakeA-Zone0      60    65       78       75       85       80       95
CB 0 IntakeB-Zone1      60    65       78       75       85       80       95
CB 0 IntakeC-Zone0      60    65       78       75       85       80       95
CB 0 ExhaustA-Zone0     60    65       78       75       85       80       95
CB 0 ExhaustB-Zone1     60    65       78       75       85       80       95
CB 0 TCBC-Zone0         60    65       78       75       85       80       95
CB 1 IntakeA-Zone0      60    65       78       75       85       80       95
CB 1 IntakeB-Zone1      60    65       78       75       85       80       95
CB 1 IntakeC-Zone0      60    65       78       75       85       80       95
CB 1 ExhaustA-Zone0     60    65       78       75       85       80       95
CB 1 ExhaustB-Zone1     60    65       78       75       85       80       95
CB 1 TCBC-Zone0         60    65       78       75       85       80       95
SPMB 0 Intake           56    62       75       63       83       76       95
SPMB 1 Intake           56    62       75       63       83       76       95
SFB 0 Intake-Zone0      56    62       70       70       85       85       89
SFB 0 Exhaust-Zone1     56    62       70       70       85       85       89
SFB 0 IntakeA-Zone0     56    62       70       70       85       85       89
SFB 0 IntakeB-Zone1     56    62       70       70       85       85       89
SFB 0 Exhaust-Zone0     56    62       70       70       85       85       89
SFB 0 SFB-XF2-Zone1     70    75       90       85       95       90      100
SFB 0 SFB-XF1-Zone0     70    75       90       85       95       90      100
SFB 0 SFB-XF0-Zone0     70    75       90       85       95       90      100
SFB 1 Intake-Zone0      56    62       70       70       85       85       89
SFB 1 Exhaust-Zone1     56    62       70       70       85       85       89
SFB 1 IntakeA-Zone0     56    62       70       70       85       85       89
SFB 1 IntakeB-Zone1     56    62       70       70       85       85       89
SFB 1 Exhaust-Zone0     56    62       70       70       85       85       89
SFB 1 SFB-XF2-Zone1     70    75       90       85       95       90      100
```

```
SFB 1 SFB-XF1-Zone0     70    75       90       85       95       90      100
SFB 1 SFB-XF0-Zone0     70    75       90       85       95       90      100
SFB 2 Intake-Zone0      56    62       70       70       85       85       89
SFB 2 Exhaust-Zone1     56    62       70       70       85       85       89
SFB 2 IntakeA-Zone0     56    62       70       70       85       85       89
SFB 2 IntakeB-Zone1     56    62       70       70       85       85       89
SFB 2 Exhaust-Zone0     56    62       70       70       85       85       89
SFB 2 SFB-XF2-Zone1     70    75       90       85       95       90      100
SFB 2 SFB-XF1-Zone0     70    75       90       85       95       90      100
SFB 2 SFB-XF0-Zone0     70    75       90       85       95       90      100
SFB 3 Intake-Zone0      56    62       70       70       85       85       89
SFB 3 Exhaust-Zone1     56    62       70       70       85       85       89
SFB 3 IntakeA-Zone0     56    62       70       70       85       85       89
SFB 3 IntakeB-Zone1     56    62       70       70       85       85       89
SFB 3 Exhaust-Zone0     56    62       70       70       85       85       89
SFB 3 SFB-XF2-Zone1     70    75       90       85       95       90      100
SFB 3 SFB-XF1-Zone0     70    75       90       85       95       90      100
SFB 3 SFB-XF0-Zone0     70    75       90       85       95       90      100
SFB 4 Intake-Zone0      56    62       70       70       85       85       89
SFB 4 Exhaust-Zone1     56    62       70       70       85       85       89
SFB 4 IntakeA-Zone0     56    62       70       70       85       85       89
SFB 4 IntakeB-Zone1     56    62       70       70       85       85       89
SFB 4 Exhaust-Zone0     56    62       70       70       85       85       89
SFB 4 SFB-XF2-Zone1     70    75       90       85       95       90      100
SFB 4 SFB-XF1-Zone0     70    75       90       85       95       90      100
SFB 4 SFB-XF0-Zone0     70    75       90       85       95       90      100
SFB 5 Intake-Zone0      56    62       70       70       85       85       89
SFB 5 Exhaust-Zone1     56    62       70       70       85       85       89
SFB 5 IntakeA-Zone0     56    62       70       70       85       85       89
SFB 5 IntakeB-Zone1     56    62       70       70       85       85       89
SFB 5 Exhaust-Zone0     56    62       70       70       85       85       89
SFB 5 SFB-XF2-Zone1     70    75       90       85       95       90      100
SFB 5 SFB-XF1-Zone0     70    75       90       85       95       90      100
SFB 5 SFB-XF0-Zone0     70    75       90       85       95       90      100
SFB 6 Intake-Zone0      56    62       70       70       85       85       89
SFB 6 Exhaust-Zone1     56    62       70       70       85       85       89
SFB 6 IntakeA-Zone0     56    62       70       70       85       85       89
SFB 6 IntakeB-Zone1     56    62       70       70       85       85       89
SFB 6 Exhaust-Zone0     56    62       70       70       85       85       89
SFB 6 SFB-XF2-Zone1     70    75       90       85       95       90      100
SFB 6 SFB-XF1-Zone0     70    75       90       85       95       90      100
SFB 6 SFB-XF0-Zone0     70    75       90       85       95       90      100
SFB 7 Intake-Zone0      56    62       70       70       85       85       89
SFB 7 Exhaust-Zone1     56    62       70       70       85       85       89
```

```
SFB 7 IntakeA-Zone0     56    62       70       70       85       85       89
SFB 7 IntakeB-Zone1     56    62       70       70       85       85       89
SFB 7 Exhaust-Zone0     56    62       70       70       85       85       89
SFB 7 SFB-XF2-Zone1     70    75       90       85       95       90      100
SFB 7 SFB-XF1-Zone0     70    75       90       85       95       90      100
SFB 7 SFB-XF0-Zone0     70    75       90       85       95       90      100
FPC 0                   55    60       75       65       90       80       95
FPC 9                   55    60       75       65       90       80       95
FPC 10                  55    60       75       65       90       80       95
FPC 14                  55    60       75       65       95       80      100
FPC 19                  55    60       75       65       90       80       95
ADC 0 Intake            50    55       60       60       65       65       80
ADC 0 Exhaust           50    55       60       60       65       65       80
ADC 0 ADC-XF1           70    75       90       85       95       90      100
ADC 0 ADC-XF0           70    75       90       85       95       90      100
ADC 9 Intake            50    55       60       60       65       65       80
ADC 9 Exhaust           50    55       60       60       65       65       80
ADC 9 ADC-XF1           70    75       90       85       95       90      100
ADC 9 ADC-XF0           70    75       90       85       95       90      100
ADC 10 Intake           50    55       60       60       65       65       80
ADC 10 Exhaust          50    55       60       60       65       65       80
ADC 10 ADC-XF1          70    75       90       85       95       90      100
ADC 10 ADC-XF0          70    75       90       85       95       90      100
ADC 14 Intake           50    55       60       60       65       65       80
ADC 14 Exhaust          50    55       60       60       65       65       80
ADC 14 ADC-XF1          70    75       90       85       95       90      100
ADC 14 ADC-XF0          70    75       90       85       95       90      100
ADC 19 Intake           50    55       60       60       65       65       80
ADC 19 Exhaust          50    55       60       60       65       65       80
ADC 19 ADC-XF1          70    75       90       85       95       90      100
ADC 19 ADC-XF0          70    75       90       85       95       90      100
```

show chassis temperature-thresholds (MX2008 Routers)

`user@host>` **show chassis temperature-thresholds**

```
                          Fan speed      Yellow alarm      Red alarm      Fire
Shutdown
                        (degrees C)     (degrees C)     (degrees C)     (degrees
 C)
Item                     Normal  High   Normal  Bad fan   Normal  Bad fan
Normal
Routing Engine 0 CPU         58    63       78       75       93       90
98
```

```
Routing Engine 1 CPU         58    63       78       75       93       90
98
CB 0 Inlet1                  55    60       65       62       75       72
85
CB 0 Inlet2                  45    50       61       58       80       77
90
CB 0 Inlet3                  57    62       68       65       80       77
90
CB 0 Inlet4                  55    60       80       77       90       87
95
CB 0 Exhaust1                55    60       65       62       75       72
85
CB 0 Exhaust2                50    55       60       57       80       77
90
CB 0 Exhaust3                70    75       81       78       91       88
96
CB 0 Exhaust4                75    80       90       87      100       97      105
CB 1 Inlet1                  55    60       65       62       75       72
85
CB 1 Inlet2                  45    50       61       58       80       77
90
CB 1 Inlet3                  57    62       68       65       80       77
90
CB 1 Inlet4                  55    60       80       77       90       87
95
CB 1 Exhaust1                55    60       65       62       75       72
85
CB 1 Exhaust2                50    55       60       57       80       77
90
CB 1 Exhaust3                70    75       81       78       91       88
96
CB 1 Exhaust4                75    80       90       87      100       97      105
SFB 0 Inlet1                 49    54       62       59       76       73
81
SFB 0 Inlet2                 65    70       71       68       83       80
88
SFB 0 Exhaust1               45    50       61       58       75       72
80
SFB 0 Exhaust2               60    65       69       66       80       77
85
SFB 0 SFB2-PF-local          65    70       75       72       95       92      100
SFB 0 SFB2-PF-die            88    93       98       95      118      115      120
SFB 1 Inlet1                 49    54       62       59       76       73
81
```

```
SFB 1 Inlet2                65    70       71       68       83       80
88
SFB 1 Exhaust1              45    50       61       58       75       72
80
SFB 1 Exhaust2              60    65       69       66       80       77
85
SFB 1 SFB2-PF-local         65    70       75       72       95       92      100
SFB 1 SFB2-PF-die           88    93       98       95      118      115      120
SFB 2 Inlet1                49    54       62       59       76       73
81
SFB 2 Inlet2                65    70       71       68       83       80
88
SFB 2 Exhaust1              45    50       61       58       75       72
80
SFB 2 Exhaust2              60    65       69       66       80       77
85
SFB 2 SFB2-PF-local         65    70       75       72       95       92      100
SFB 2 SFB2-PF-die           88    93       98       95      118      115      120
SFB 3 Inlet1                49    54       62       59       76       73
81
SFB 3 Inlet2                65    70       71       68       83       80
88
SFB 3 Exhaust1              45    50       61       58       75       72
80
SFB 3 Exhaust2              60    65       69       66       80       77
85
SFB 3 SFB2-PF-local         65    70       75       72       95       92      100
SFB 3 SFB2-PF-die           88    93       98       95      118      115      120
SFB 4 Inlet1                49    54       62       59       76       73
81
SFB 4 Inlet2                65    70       71       68       83       80
88
SFB 4 Exhaust1              45    50       61       58       75       72
80
SFB 4 Exhaust2              60    65       69       66       80       77
85
SFB 4 SFB2-PF-local         65    70       75       72       95       92      100
SFB 4 SFB2-PF-die           88    93       98       95      118      115      120
SFB 5 Inlet1                49    54       62       59       76       73
81
SFB 5 Inlet2                65    70       71       68       83       80
88
SFB 5 Exhaust1              45    50       61       58       75       72
80
```

```
SFB 5 Exhaust2              60    65       69       66       80       77
85
SFB 5 SFB2-PF-local         65    70       75       72       95       92      100
SFB 5 SFB2-PF-die           88    93       98       95      118      115      120
SFB 6 Inlet1                49    54       62       59       76       73
81
SFB 6 Inlet2                65    70       71       68       83       80
88
SFB 6 Exhaust1              45    50       61       58       75       72
80
SFB 6 Exhaust2              60    65       69       66       80       77
85
SFB 6 SFB2-PF-local         65    70       75       72       95       92      100
SFB 6 SFB2-PF-die           88    93       98       95      118      115      120
SFB 7 Inlet1                49    54       62       59       76       73
81
SFB 7 Inlet2                65    70       71       68       83       80
88
SFB 7 Exhaust1              45    50       61       58       75       72
80
SFB 7 Exhaust2              60    65       69       66       80       77
85
SFB 7 SFB2-PF-local         65    70       75       72       95       92      100
SFB 7 SFB2-PF-die           88    93       98       95      118      115      120
FPC 0                       55    60       75       65       90       80
95
FPC 3                      55    60       75       65      105       80      110
FPC 5                      55    60       75       65      105       80      110
FPC 7                       55    60       75       65       90       80
95
FPC 9 Intake                60    65       75       75       85       85
95
FPC 9 Exhaust A             60    65       75       75       85       85
95
FPC 9 Exhaust B             60    65       75       75       85       85
95
FPC 9 XL 0 Chip             70    75       85       85      102      102      110
FPC 9 XL 0 XR2 0 Chip       75    80       90       90      105      105      115
FPC 9 XL 0 XR2 1 Chip       75    80       90       90      105      105      115
FPC 9 XL 1 Chip             70    75       85       85      102      102      110
FPC 9 XL 1 XR2 0 Chip       75    80       90       90      105      105      115
FPC 9 XL 1 XR2 1 Chip       75    80       90       90      105      105      115
FPC 9 XM 0 Chip             70    75       85       85      100      100      110
FPC 9 XM 1 Chip             70    75       85       85      100      100      110
```

```
FPC 9 XM 2 Chip              70    75       85       85      100      100      110
FPC 9 XM 3 Chip              70    75       85       85      100      100      110
FPC 9 PCIe Switch Chip       80    85       95       95      105      105      120
ADC 0 Intake                 50    55       65       65       75       75
80
ADC 0 Exhaust                50    55       65       65       75       75
80
ADC 0 ADC-XF1                70    75       90       85       95       90      100
ADC 0 ADC-XF0                70    75       90       85       95       90      100
ADC 3 Intake                 50    55       65       65       75       75
80
ADC 3 Exhaust                50    55       65       65       75       75
80
ADC 3 ADC-XF1                70    75       90       85       95       90      100
ADC 3 ADC-XF0                70    75       90       85       95       90      100
ADC 5 Intake                 50    55       65       65       75       75
80
ADC 5 Exhaust                50    55       65       65       75       75
80
ADC 5 ADC-XF1                70    75       90       85       95       90      100
ADC 5 ADC-XF0                70    75       90       85       95       90      100
ADC 7 Intake                 50    55       65       65       75       75
80
ADC 7 Exhaust                50    55       65       65       75       75
80
ADC 7 ADC-XF1                70    75       90       85       95       90      100
ADC 7 ADC-XF0                70    75       90       85       95       90      100
```

show chassis temperature-thresholds (MX204 Router)

`user@host>` **show chassis temperature-thresholds**

```
                                    Fan speed      Yellow alarm      Red alarm
      Fire Shutdown
                                    (degrees C)    (degrees C)       (degrees
C)      (degrees C)
Item                                Normal  High   Normal  Bad fan   Normal  Bad
 fan     Normal
Routing Engine                          48    54       85       85      100
  100        102
CB Top Right Inlet Sensor               35    40       63       63       85
   85         95
CB Top Left Inlet Sensor                40    45       65       65       85
```

```
   85         95
CB Top Right Exhaust Sensor               45    50       68       68       85
   85         95
CB Top Left Exhaust Sensor                65    70       78       78       85
   85         95
CB CPU Core-0 Temp                        65    70       80       80       90
   90        100
CB CPU Core-1 Temp                        65    70       80       80       90
   90        100
CB CPU Core-2 Temp                        65    70       80       80       90
   90        100
CB CPU Core-3 Temp                        65    70       80       80       90
   90        100
CB CPU Core-4 Temp                        65    70       80       80       90
   90        100
CB CPU Core-5 Temp                        65    70       80       80       90
   90        100
CB CPU Core-6 Temp                        65    70       80       80       90
   90        100
CB CPU Core-7 Temp                        65    70       80       80       90
   90        100
FPC EA0_HMC0 Logic die                    85    90       95       95      105
  105        110
FPC EA0_HMC0 DRAM botm                    80    85       90       90      105
  105        110
FPC EA0_HMC1 Logic die                    85    90       95       95      105
  105        110
FPC EA0_HMC1 DRAM botm                    80    85       90       90      105
  105        110
FPC EA0 Chip                              92    97      103      103      109
  109        115
FPC EA0-XR0 Chip                          85    90       98       98      103
  103        110
FPC EA0-XR1 Chip                          85    90       98       98      103
  103        110
```

show chassis temperature-thresholds (PTX10008 Routers)

`user@host>` **show chassis temperature-thresholds**

```
                             Fan speed      Yellow alarm      Red alarm      Fire
Shutdown
                           (degrees C)     (degrees C)     (degrees C)     (degrees
 C)
```

```
Item                      Normal  High    Normal  Bad fan   Normal  Bad fan
Normal
Routing Engine 0             48    54       85       85      100      100      102
Routing Engine 1             48    54       85       85      100      100      102
CB 0 Intake Temp Sensor      30    35       80       80       85       85
95
CB 0 Exhaust Temp Sensor     30    35       80       80       85       85
95
CB 0 CPU Die Temp Sensor     40    45       95       95      100      100      110
CB 1 Intake Temp Sensor      30    35       80       80       85       85
95
CB 1 Exhaust Temp Sensor     30    35       80       80       85       85
95
CB 1 CPU Die Temp Sensor     40    45       95       95      100      100      110
FPC 0 Intake-A Temp Sensor   30    35       80       80       85       85
95
FPC 0 Intake-B Temp Sensor   30    35       80       80       85       85
95
FPC 0 Exhaust-A Temp Sensor   30   35       80       80       85       85
95
FPC 0 Exhaust-B Temp Sensor   30   35       80       80       85       85
95
FPC 0 Exhaust-C Temp Sensor   30   35       80       80       85       85
95
FPC 0 PE0 Temp Sensor        40    45      100      100      105      105      115
FPC 0 PE1 Temp Sensor        40    45      100      100      105      105      115
FPC 0 PE2 Temp Sensor        40    45      100      100      105      105      115
FPC 0 LCPU Temp Sensor       40    45       95       95      100      100      110
FPC 5 Intake-A Temp Sensor   30    35       80       80       85       85
95
FPC 5 Intake-B Temp Sensor   30    35       80       80       85       85
95
FPC 5 Exhaust-A Temp Sensor   30   35       80       80       85       85
95
FPC 5 Exhaust-B Temp Sensor   30   35       80       80       85       85
95
FPC 5 Exhaust-C Temp Sensor   30   35       80       80       85       85
95
FPC 5 PE0 Temp Sensor        40    45      100      100      105      105      115
FPC 5 PE1 Temp Sensor        40    45      100      100      105      105      115
FPC 5 PE2 Temp Sensor        40    45      100      100      105      105      115
FPC 5 PE3 Temp Sensor        40    45      100      100      105      105      115
FPC 5 PE4 Temp Sensor        40    45      100      100      105      105      115
FPC 5 PE5 Temp Sensor        40    45      100      100      105      105      115
```

```
FPC 5 LCPU Temp Sensor       40    45       95       95      100      100      110
FPC 6 Intake-A Temp Sensor   30    35       80       80       85       85
95
FPC 6 Intake-B Temp Sensor   30    35       80       80       85       85
95
FPC 6 Exhaust-A Temp Sensor   30   35       80       80       85       85
95
FPC 6 Exhaust-B Temp Sensor   30   35       80       80       85       85
95
FPC 6 Exhaust-C Temp Sensor   30   35       80       80       85       85
95
FPC 6 PE0 Temp Sensor        40    45      100      100      105      105      115
FPC 6 PE1 Temp Sensor        40    45      100      100      105      105      115
FPC 6 PE2 Temp Sensor        40    45      100      100      105      105      115
FPC 6 PE3 Temp Sensor        40    45      100      100      105      105      115
FPC 6 PE4 Temp Sensor        40    45      100      100      105      105      115
FPC 6 PE5 Temp Sensor        40    45      100      100      105      105      115
FPC 6 LCPU Temp Sensor       40    45       95       95      100      100      110
SIB 0 Intake-A Temp Sensor   40    45       90       90       95       95      105
SIB 0 Intake-B Temp Sensor   40    45       90       90       95       95      105
SIB 0 Exhaust-A Temp Sensor   40   45       90       90       95       95      105
SIB 0 Exhaust-B Temp Sensor   40   45       90       90       95       95      105
SIB 0 PF0 Temp Sensor        50    55      100      100      105      105      115
SIB 0 PF1 Temp Sensor        50    55      100      100      105      105      115
SIB 1 Intake-A Temp Sensor   40    45       90       90       95       95      105
SIB 1 Intake-B Temp Sensor   40    45       90       90       95       95      105
SIB 1 Exhaust-A Temp Sensor   40   45       90       90       95       95      105
SIB 1 Exhaust-B Temp Sensor   40   45       90       90       95       95      105
SIB 1 PF0 Temp Sensor        50    55      100      100      105      105      115
SIB 1 PF1 Temp Sensor        50    55      100      100      105      105      115
```

show chassis temperature-thresholds (T4000 Core Routers)

`user@host>` **show chassis temperature-thresholds**

```
                    Fan speed      Yellow alarm      Red alarm   Fire Shutdown
                   (degrees C)     (degrees C)     (degrees C)   (degrees C)
Item               Normal  High   Normal  Bad fan  Normal  Bad fan     Normal
Chassis default       48    54       65       55       75       65      100
Routing Engine 0      55    65       85       85      100      100      102
Routing Engine 1      55    65       85       85      100      100      102
FPC 0                 63    68       75       70       90       83       95
FPC 3                 63    68       75       70       90       83       95
```

```
FPC 5                  56    62       75       63       83       76       95
FPC 6                  63    68       75       70       90       83       95
SIB 0                  64    70       76       72       87       84       95
SIB 1                  64    70       76       72       87       84       95
SIB 2                  64    70       76       72       87       84       95
SIB 3                  64    70       76       72       87       84       95
SIB 4                  64    70       76       72       87       84       95
```

show chassis temperature-thresholds (TX Matrix Plus Router)

`user@host>` **show chassis temperature-thresholds**

```
sfc0-re0:
--------------------------------------------------------------------------
                          Fan speed        Yellow alarm         Red alarm
                        (degrees C)        (degrees C)        (degrees C)
Item                   Normal   High    Normal   Bad fan    Normal   Bad fan
Chassis default            48     54        65        55        75        65
Routing Engine 0           55     65        85        85       100       100
Routing Engine 1           55     65        85        85       100       100
SIB F13 0                  64     70        76        72        90        84
SIB F13 3                  64     70        76        72        90        84
SIB F13 6                  64     70        76        72        90        84
SIB F13 8                  64     70        76        72        90        84
SIB F13 11                 64     70        76        72        90        84
SIB F13 12                 64     70        76        72        90        84
SIB F2S 16                 64     70        76        72        90        84
SIB F2S 17                 64     70        76        72        90        84
SIB F2S 18                 64     70        76        72        90        84
SIB F2S 19                 64     70        76        72        90        84
SIB F2S 20                 64     70        76        72        90        84
SIB F2S 21                 64     70        76        72        90        84
SIB F2S 22                 64     70        76        72        90        84
SIB F2S 23                 64     70        76        72        90        84
SIB F2S 24                 64     70        76        72        90        84
SIB F2S 25                 64     70        76        72        90        84
SIB F2S 26                 64     70        76        72        90        84
SIB F2S 27                 64     70        76        72        90        84
SIB F2S 28                 64     70        76        72        90        84
SIB F2S 29                 64     70        76        72        90        84
SIB F2S 30                 64     70        76        72        90        84
SIB F2S 31                 64     70        76        72        90        84
SIB F2S 32                 64     70        76        72        90        84
SIB F2S 33                 64     70        76        72        90        84
```

```
SIB F2S 34                    64     70        76        72        90        84
SIB F2S 35                    64     70        76        72        90        84

lcc0-re0:
--------------------------------------------------------------------------
                          Fan speed        Yellow alarm         Red alarm
                         (degrees C)        (degrees C)        (degrees C)
Item                     Normal   High    Normal   Bad fan    Normal   Bad fan
Chassis default              48     54        65        55        75        65
Routing Engine 0             55     65        85        85       100       100
Routing Engine 1             55     65        85        85       100       100
FPC 1                        56     62        75        63        83        76
FPC 3                        56     62        75        63        83        76
FPC 4                        56     62        75        63        83        76
FPC 6                        56     62        75        63        83        76
FPC 7                        56     62        75        63        83        76
SIB 0                        48     54        65        60        80        75
SIB 1                        48     54        65        60        80        75
SIB 2                        48     54        65        60        80        75
SIB 3                        48     54        65        60        80        75
SIB 4                        48     54        65        60        80        75

lcc1-re0:
--------------------------------------------------------------------------
                          Fan speed        Yellow alarm         Red alarm
                         (degrees C)        (degrees C)        (degrees C)
Item                     Normal   High    Normal   Bad fan    Normal   Bad fan
Chassis default              48     54        65        55        75        65
Routing Engine 0             55     65        85        85       100       100
Routing Engine 1             55     65        85        85       100       100
FPC 1                        56     62        75        63        83        76
FPC 3                        56     62        75        63        83        76
FPC 4                        56     62        75        63        83        76
FPC 6                        56     62        75        63        83        76
...
```

show chassis temperature-thresholds lcc (TX Matrix Plus Router)

`user@host>` **show chassis temperature-thresholds lcc 1**

```
lcc1-re0:
--------------------------------------------------------------------------
                          Fan speed        Yellow alarm         Red alarm
                         (degrees C)        (degrees C)        (degrees C)
```

```
Item                    Normal   High    Normal   Bad fan    Normal   Bad fan
Chassis default             48     54        65        55        75        65
Routing Engine 0            55     65        85        85       100       100
Routing Engine 1            55     65        85        85       100       100
FPC 1                       56     62        75        63        83        76
FPC 3                       56     62        75        63        83        76
FPC 4                       56     62        75        63        83        76
FPC 6                       56     62        75        63        83        76
SIB 0                       48     54        65        60        80        75
SIB 1                       48     54        65        60        80        75
SIB 2                       48     54        65        60        80        75
SIB 3                       48     54        65        60        80        75
SIB 4                       48     54        65        60        80        75
```

show chassis temperature-thresholds sfc (TX Matrix Plus Router)

`user@host>` **show chassis temperature-thresholds sfc 0**

```
sfc0-re0:
--------------------------------------------------------------------------
                         Fan speed        Yellow alarm         Red alarm
                        (degrees C)        (degrees C)        (degrees C)
Item                    Normal   High    Normal   Bad fan    Normal   Bad fan
Chassis default             48     54        65        55        75        65
Routing Engine 0            55     65        85        85       100       100
Routing Engine 1            55     65        85        85       100       100
SIB F13 0                   64     70        76        72        90        84
SIB F13 3                   64     70        76        72        90        84
SIB F13 6                   64     70        76        72        90        84
SIB F13 8                   64     70        76        72        90        84
SIB F13 11                  64     70        76        72        90        84
SIB F13 12                  64     70        76        72        90        84
SIB F2S 16                  64     70        76        72        90        84
SIB F2S 17                  64     70        76        72        90        84
SIB F2S 18                  64     70        76        72        90        84
SIB F2S 19                  64     70        76        72        90        84
SIB F2S 20                  64     70        76        72        90        84
SIB F2S 21                  64     70        76        72        90        84
SIB F2S 22                  64     70        76        72        90        84
SIB F2S 23                  64     70        76        72        90        84
SIB F2S 24                  64     70        76        72        90        84
SIB F2S 25                  64     70        76        72        90        84
SIB F2S 26                  64     70        76        72        90        84
SIB F2S 27                  64     70        76        72        90        84
```

```
SIB F2S 28                    64     70        76        72        90        84
SIB F2S 29                    64     70        76        72        90        84
SIB F2S 30                    64     70        76        72        90        84
SIB F2S 31                    64     70        76        72        90        84
SIB F2S 32                    64     70        76        72        90        84
SIB F2S 33                    64     70        76        72        90        84
SIB F2S 34                    64     70        76        72        90        84
SIB F2S 35                    64     70        76        72        90        84
```

show chassis temperature-thresholds (TX Matrix Plus routers with 3D SIBs)

user@host> **show chassis temperature-thresholds**

```
sfc0-re0:
--------------------------------------------------------------------------
                          Fan speed      Yellow alarm      Red alarm      Fire
Shutdown
                        (degrees C)     (degrees C)     (degrees C)     (degrees
 C)
Item                     Normal  High   Normal  Bad fan   Normal  Bad fan
Normal
Chassis default             48    54       65       55       75       65      100
Routing Engine 0            70    75       90       87      102       97      115
Routing Engine 1            70    75       90       87      102       97      115
SIB F13 0 Board             60    65       78       75       85       80
95
SIB F13 0 XF Junction       70    75       82       74      105      100      107
SIB F13 4 Board             60    65       78       75       85       80
95
SIB F13 4 XF Junction       70    75       82       74      105      100      107
SIB F13 6 Board             60    65       78       75       85       80
95
SIB F13 6 XF Junction       70    75       82       74      105      100      107
SIB F2S 16 Board            60    65       78       75       85       80
95
SIB F2S 16 XF Junction      70    75       82       74      105      100      107
SIB F2S 17 Board            60    65       78       75       85       80
95
SIB F2S 17 XF Junction      70    75       82       74      105      100      107
SIB F2S 18 Board            60    65       78       75       85       80
95
SIB F2S 18 XF Junction      70    75       82       74      105      100      107
SIB F2S 19 Board            60    65       78       75       85       80
95
```

```
SIB F2S 19 XF Junction       70    75       82       74      105      100      107
SIB F2S 24 Board             60    65       78       75       85       80
95
SIB F2S 24 XF Junction       70    75       82       74      105      100      107
SIB F2S 25 Board             60    65       78       75       85       80
95
SIB F2S 25 XF Junction       70    75       82       74      105      100      107
SIB F2S 26 Board             60    65       78       75       85       80
95
SIB F2S 26 XF Junction       70    75       82       74      105      100      107
SIB F2S 27 Board             60    65       78       75       85       80
95
SIB F2S 27 XF Junction       70    75       82       74      105      100      107

lcc0-re0:
--------------------------------------------------------------------------
                          Fan speed      Yellow alarm      Red alarm      Fire
Shutdown
                        (degrees C)     (degrees C)     (degrees C)     (degrees
 C)
Item                     Normal  High   Normal  Bad fan   Normal  Bad fan
Normal
Chassis default             48    54       65       55       75       65      100
Routing Engine 0            55    65       85       85      100      100      102
FPC 0                       63    68       75       70       90       83
95
FPC 1                       56    62       75       63       83       76
95
FPC 7                       56    62       75       63       83       76
95
SIB 0                       64    70       76       72       87       84
95
SIB 0 ASIC Junction         63    68       75       70      105      100      107
SIB 2                       64    70       76       72       87       84
95
SIB 2 ASIC Junction         63    68       75       70      105      100      107
SIB 3                       64    70       76       72       87       84
95
SIB 3 ASIC Junction         63    68       75       70      105      100      107
```

show chassis temperature-thresholds (QFX3500 Switch and QFX3600)

`user@switch>` **show chassis temperature-thresholds**

```
                          Fan speed      Yellow alarm      Red alarm
                         (degrees C)     (degrees C)     (degrees C)
Item                    Normal  High   Normal  Bad fan   Normal  Bad fan
rmal
FPC Sensor TopLeft I        48    56       53       43       56       46
FPC Sensor TopRight I       46    54       51       41       54       44
FPC Sensor TopLeft E        58    65       62       52       65       55
FPC Sensor TopRight E       56    64       61       51       64       54
FPC Sensor TopMiddle I      58    64       61       51       64       54
FPC Sensor TopMiddle E      67    74       71       61       74       64
FPC Sensor Bottom I         59    67       64       54       67       57
FPC Sensor Bottom E         66    73       70       60       73       63
FPC Sensor Die Temp         69    75       72       62       75       65
FPC Sensor Mgmnt Brd I      46    54       51       41       54       44
FPC Sensor Switch I         56    63       60       50       63       53
```

show chassis temperature-thresholds interconnect-device (QFabric System)

`user@switch>` **show chassis temperature-thresholds interconnect-device interconnect1**

```
temperature-thresholds interconnect-device interconnect1
                          Fan speed        Yellow alarm         Red alarm
Item                    Normal   High    Normal   Bad fan    Normal   Bad fan
Chassis default             48     54        65        55        75        65
```

show chassis temperature-thresholds (PTX5000 Packet Transport Router)

`user@switch>` **show chassis temperature-thresholds**

```
user@switch> show chassis temperature-thresholds

                          Fan speed      Yellow alarm      Red alarm      Fire
Shutdown
                        (degrees C)     (degrees C)     (degrees C)     (degrees
 C)
Item                    Normal  High   Normal  Bad fan   Normal  Bad fan
Normal
Routing Engine 0            80    90       95       85      105       95      115
CB 0 Exhaust A              60    65       78       75       85       80
95
CB 0 Exhaust B              60    65       78       75       85       80
95
CB 1 Exhaust A              60    65       78       75       85       80
```

```
95
CB 1 Exhaust B              60    65       78       75       85       80
95
FPC 3 Exhaust A             80    90       95       85      105       95      115
FPC 3 Exhaust B             80    90       95       85      105       95      115
FPC 3 TL5                   80    90       95       85      105       95      115
FPC 3 TQ5                   80    90       95       85      105       95      115
FPC 3 TL6                   80    90       95       85      105       95      115
FPC 3 TQ6                   80    90       95       85      105       95      115
FPC 3 TL1                   80    90       95       85      105       95      115
FPC 3 TQ1                   80    90       95       85      105       95      115
FPC 3 TL2                   80    90       95       85      105       95      115
FPC 3 TQ2                   80    90       95       85      105       95      115
FPC 3 TL4                   80    90       95       85      105       95      115
FPC 3 TQ4                   80    90       95       85      105       95      115
FPC 3 TL7                   80    90       95       85      105       95      115
FPC 3 TQ7                   80    90       95       85      105       95      115
FPC 3 TL0                   80    90       95       85      105       95      115
FPC 3 TQ0                   80    90       95       85      105       95      115
FPC 3 TL3                   80    90       95       85      105       95      115
FPC 3 TQ3                   80    90       95       85      105       95      115
SIB 0 Exhaust               60    65       78       75       85       80
95
SIB 0 Junction              75    80       90       85      105       95      115
SIB 1 Exhaust               60    65       78       75       85       80
95
SIB 1 Junction              75    80       90       85      105       95      115
SIB 2 Exhaust               60    65       78       75       85       80
95
SIB 2 Junction              75    80       90       85      105       95      115
SIB 3 Exhaust               60    65       78       75       85       80
95
SIB 3 Junction              75    80       90       85      105       95      115
SIB 4 Exhaust               60    65       78       75       85       80
95
SIB 4 Junction              75    80       90       85      105       95      115
SIB 5 Exhaust               60    65       78       75       85       80
95
SIB 5 Junction              75    80       90       85      105       95      115
SIB 6 Exhaust               60    65       78       75       85       80
95
SIB 6 Junction              75    80       90       85      105       95      115
SIB 7 Exhaust               60    65       78       75       85       80
95
```

```
SIB 7 Junction              75    80       90       85      105       95      115
SIB 8 Exhaust               60    65       78       75       85       80
95
SIB 8 Junction              75    80       90       85      105       95      115
```

show chassis temperature-thresholds (PTX1000 Packet Transport Router)

`user@host>` **show chassis temperature-thresholds**

```
                           Fan speed      Yellow alarm      Red alarm      Fire
Shutdown
                         (degrees C)     (degrees C)     (degrees C)     (degrees
 C)
Item                     Normal  High    Normal  Bad fan   Normal  Bad fan
Normal
FPC 0 Intake Temp Sensor     30    65       65       65       70       70
75
FPC 0 Exhaust Temp Sensor    30    65       65       65       70       70
75
FPC 0 Mezz Temp Sensor 0     30    65       65       65       70       70
75
FPC 0 Mezz Temp Sensor 1     30    65       65       65       70       70
75
FPC 0 PE2 Temp Sensor        50    90       90       90      100      100      103
FPC 0 PE1 Temp Sensor        50    90       90       90      100      100      103
FPC 0 PF0 Temp Sensor        50    90       90       90      100      100      103
FPC 0 PE0 Temp Sensor        50    90       90       90      100      100      103
FPC 0 PE5 Temp Sensor        50    90       90       90      100      100      103
FPC 0 PE4 Temp Sensor        50    90       90       90      100      100      103
FPC 0 PF1 Temp Sensor        50    90       90       90      100      100      103
FPC 0 PE3 Temp Sensor        50    90       90       90      100      100      103
FPC 0 CPU Die Temp Sensor    50    90       90       90      100      100      103
FPC 0 OCXO Temp Sensor       50    90       90       90      100      100      103
```

show chassis temperature-thresholds (MX Routers with Media Services Blade [MSB])

`user@switch>` **show chassis temperature-thresholds**

```
  Fan speed      Yellow alarm      Red alarm      Fire Shutdown
                        (degrees C)     (degrees C)     (degrees C)      (degrees
 C)
Item                     Normal  High   Normal  Bad fan   Normal  Bad fan
Normal
Chassis default             48    54       65       55       75       65      100
Routing Engine 0            70    80       95       95      110      110      112
Routing Engine 1            70    80       95       95      110      110      112
FPC 0                       55    60       75       65       90       80
95
FPC 1                       55    60       75       65       90       80
95
FPC 2                       55    60       75       65       90       80
95
FPC 4                       55    60       75       65       90       80
95
FPC 5                       55    60       75       65       90       80
95
```

show chassis temperature-thresholds (EX9251 Switches)

`user@switch>` **show chassis temperature-thresholds**

```
                           Fan speed      Yellow alarm      Red alarm      Fire
Shutdown
                         (degrees C)     (degrees C)     (degrees C)      (degrees
 C)
Item                     Normal  High   Normal  Bad fan   Normal  Bad fan
Normal
Routing Engine                          48    54       85       85      100
  100        102
CB Top Right Inlet Sensor               35    40       63       63       85
   85         95
CB Top Left Inlet Sensor                40    45       65       65       85
   85         95
CB Top Right Exhaust Sensor             45    50       68       68       85
   85         95
CB Top Left Exhaust Sensor              65    70       78       78       85
   85         95
CB CPU Core-0 Temp                      65    70       80       80       90
   90        100
CB CPU Core-1 Temp                      65    70       80       80       90
```

```
   90        100
CB CPU Core-2 Temp                      65    70       80       80       90
   90        100
CB CPU Core-3 Temp                      65    70       80       80       90
   90        100
CB CPU Core-4 Temp                      65    70       80       80       90
   90        100
CB CPU Core-5 Temp                      65    70       80       80       90
   90        100
CB CPU Core-6 Temp                      65    70       80       80       90
   90        100
CB CPU Core-7 Temp                      65    70       80       80       90
   90        100
FPC EA0_HMC0 Logic die                  85    90       95       95      105
  105        110
FPC EA0_HMC0 DRAM botm                  80    85       90       90      105
  105        110
FPC EA0_HMC1 Logic die                  85    90       95       95      105
  105        110
FPC EA0_HMC1 DRAM botm                  80    85       90       90      105
  105        110
FPC EA0 Chip                            92    97      103      103      109
  109        115
FPC EA0-XR0 Chip                        85    90       98       98      103
  103        110
FPC EA0-XR1 Chip                        85    90       98       98      103
  103        110
```

show chassis temperature-thresholds (EX9253 witches)

`user@switch>` **show chassis temperature-thresholds**

```
                          Fan speed      Yellow alarm      Red alarm      Fire
Shutdown
                        (degrees C)     (degrees C)     (degrees C)     (degrees
 C)
Item                     Normal  High   Normal  Bad fan   Normal  Bad fan
Normal
Routing Engine 0                         48    54       85       85      100
  100        102
CB 0 Exhaust Temp Sensor                 60    65       75       75       85
   85         95
CB 0 Inlet Temp Sensor                   60    65       75       75       85
```

```
   85         95
CB 0 CPU DIE Temp Sensor                83    90       98       98      105
  105        110
CB 1 Exhaust Temp Sensor                60    65       75       75       85
   85         95
CB 1 Inlet Temp Sensor                  60    65       75       75       85
   85         95
CB 1 CPU DIE Temp Sensor                83    90       98       98      105
  105        110
FPC 0 Intake Temp Sensor                40    45       75       70       85
   80         95
FPC 0 Exhaust-A Temp Sensor             55    60       85       80       90
   90        100
FPC 0 Exhaust-B Temp Sensor             55    60       85       80       90
   90        100
FPC 0 EA0 Chip                          87    92       97       97      105
  105        110
FPC 0 EA0-XR0 Chip                      88    93       98       98      120
  120        125
FPC 0 EA0-XR1 Chip                      88    93       98       98      120
  120        125
FPC 0 EA1 Chip                          87    92       97       97      105
  105        110
FPC 0 EA1-XR0 Chip                      88    93       98       98      120
  120        125
FPC 0 EA1-XR1 Chip                      88    93       98       98      120
  120        125
FPC 0 EA2 Chip                          87    92       97       97      105
  105        110
FPC 0 EA2-XR0 Chip                      88    93       98       98      120
  120        125
FPC 0 EA2-XR1 Chip                      88    93       98       98      120
  120        125
FPC 0 PF Chip                           89    94      104      104      120
  120        120
FPC 0 EA0_HMC0 Logic die                88    93      103      103      120
  120        125
FPC 0 EA0_HMC0 DRAM botm                83    88       98       98      120
  120        125
FPC 0 EA0_HMC1 Logic die                88    93      103      103      120
  120        125
FPC 0 EA0_HMC1 DRAM botm                83    88       98       98      120
  120        125
FPC 0 EA0_HMC2 Logic die                88    93      103      103      120
```

```
  120        125
FPC 0 EA0_HMC2 DRAM botm                83    88       98       98      120
  120        125
FPC 0 EA1_HMC0 Logic die                88    93      103      103      120
  120        125
FPC 0 EA1_HMC0 DRAM botm                83    88       98       98      120
  120        125
FPC 0 EA1_HMC1 Logic die                88    93      103      103      120
  120        125
FPC 0 EA1_HMC1 DRAM botm                83    88       98       98      120
  120        125
FPC 0 EA1_HMC2 Logic die                88    93      103      103      120
  120        125
FPC 0 EA1_HMC2 DRAM botm                83    88       98       98      120
  120        125
FPC 0 EA2_HMC0 Logic die                88    93      103      103      120
  120        125
FPC 0 EA2_HMC0 DRAM botm                83    88       98       98      120
  120        125
FPC 0 EA2_HMC1 Logic die                88    93      103      103      120
  120        125
FPC 0 EA2_HMC1 DRAM botm                83    88       98       98      120
  120        125
FPC 0 EA2_HMC2 Logic die                88    93      103      103      120
  120        125
FPC 0 EA2_HMC2 DRAM botm                83    88       98       98      120
  120        125
FPC 1 Intake Temp Sensor                40    45       75       70       85
   80         95
FPC 1 Exhaust-A Temp Sensor             55    60       85       80       90
   90        100
FPC 1 Exhaust-B Temp Sensor             55    60       85       80       90
   90        100
FPC 1 EA0 Chip                          87    92       97       97      105
  105        110
FPC 1 EA0-XR0 Chip                      88    93       98       98      120
  120        125
FPC 1 EA0-XR1 Chip                      88    93       98       98      120
  120        125
FPC 1 EA1 Chip                          87    92       97       97      105
  105        110
FPC 1 EA1-XR0 Chip                      88    93       98       98      120
  120        125
FPC 1 EA1-XR1 Chip                      88    93       98       98      120
```

```
  120        125
FPC 1 EA2 Chip                      87    92       97       97      105
  105        110
FPC 1 EA2-XR0 Chip                  88    93       98       98      120
  120        125
FPC 1 EA2-XR1 Chip                  88    93       98       98      120
  120        125
FPC 1 PF Chip                       89    94      104      104      120
  120        120
FPC 1 EA0_HMC0 Logic die            88    93      103      103      120
  120        125
FPC 1 EA0_HMC0 DRAM botm            83    88       98       98      120
  120        125
FPC 1 EA0_HMC1 Logic die            88    93      103      103      120
  120        125
FPC 1 EA0_HMC1 DRAM botm            83    88       98       98      120
  120        125
FPC 1 EA0_HMC2 Logic die            88    93      103      103      120
  120        125
FPC 1 EA0_HMC2 DRAM botm            83    88       98       98      120
  120        125
FPC 1 EA1_HMC0 Logic die            88    93      103      103      120
  120        125
FPC 1 EA1_HMC0 DRAM botm            83    88       98       98      120
  120        125
FPC 1 EA1_HMC1 Logic die            88    93      103      103      120
  120        125
FPC 1 EA1_HMC1 DRAM botm            83    88       98       98      120
  120        125
FPC 1 EA1_HMC2 Logic die            88    93      103      103      120
  120        125
FPC 1 EA1_HMC2 DRAM botm            83    88       98       98      120
  120        125
FPC 1 EA2_HMC0 Logic die            88    93      103      103      120
  120        125
FPC 1 EA2_HMC0 DRAM botm            83    88       98       98      120
  120        125
FPC 1 EA2_HMC1 Logic die            88    93      103      103      120
  120        125
FPC 1 EA2_HMC1 DRAM botm            83    88       98       98      120
  120        125
FPC 1 EA2_HMC2 Logic die            88    93      103      103      120
  120        125
```

```
FPC 1 EA2_HMC2 DRAM botm                  83    88       98       98      120
  120        125
```

show chassis zones

List of Syntax

Syntax on page 1831
Syntax (MX Series Routers) on page 1831
Syntax (QFX Series) on page 1831

Syntax

```
show chassis zones
<detail>
```

Syntax (MX Series Routers)

```
show chassis zones
<detail>
<all-members>
<local>
<member member-id>
```

Syntax (QFX Series)

```
show chassis zones
<detail>
<interconnect-device name>
```

Release Information

Command introduced in Junos OS Release 11.3 for the QFX Series.
Command introduced in Junos OS Release 12.3 for MX2020 Universal Routing Platforms.
Command introduced in Junos OS Release 12.3 for MX2010 Universal Routing Platforms.
all-members, **local**, and **member *member-id*** options introduced in Junos OS Release 15.1 for MX2020 and MX2010 routers.
Command introduced in Junos OS Release 17.2 for MX2008 Universal Routing Platforms.

Description

(QFabric systems only) Display the status of the two cooling system zones on the Interconnect device. Zone 1 consists of eight (0 – 7) front cards, which are cooled by two fan trays. Zone 2 consists of two control boards and eight rear cards, which are cooled by eight (0 – 7) fan trays.

(MX2010, MX2020, and MX2008 routers only) Display the status of the cooling system zones of the chassis. Zone 0 consists of the Control Board, ten (0–9) FPCs, and their respective PICs, Switch Fabric

Boards, and Adapter Cards. Zone 1 consists of the Routing Engine, Control Board, and Switch Processor Mezzanine Boards.

(PTX5000 Packet Transport Router only) Display the status of the two cooling system zones of the chassis. Zone 0 consists of the Routing Engine, Control Board, SIB, PMB, and the CCG, and is cooled by the vertical fan tray. Zone 1 consists of the eight (0–7) FPCs, and their respective PICs, and is cooled by the horizontal fan trays. The vertical fan tray is located at the front of the chassis. One horizontal fan tray is located at the front top of the chassis, and another is located at the front bottom of the chassis.

Options

all-members—(MX2010, MX2020, and MX2008 routers only) (Optional) Display the status of the cooling system zones in all members of the Virtual Chassis configuration.

detail—(MX2010, MX2020, and MX2008 routers only) (Optional) Display detailed status of the cooling system zones.

detail *device-name*— (QFabric systems only) (Optional) Display detailed status of the two cooling systems on the Interconnect device.

interconnect-device *name*— (QFabric systems only) (Optional) Display the status of the cooling zones on the Interconnect device.

local—(MX2010, MX2020, and MX2008 routers only) (Optional) Display the status of the cooling system zones in the local member of the Virtual Chassis.

member *member-id*—(MX2010, MX2020, and MX2008 routers only) (Optional) Display the status of the cooling system zones in the specified member of the Virtual Chassis. Replace ***member-id*** with the value 0 or 1.

Required Privilege Level

view

RELATED DOCUMENTATION

show chassis fan | **1463**

show chassis temperature-thresholds | **1796**

List of Sample Output

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show chassis zones detail (PTX5000 Packet Transport Router) on page 1841

Output Fields

Table 106 on page 1833 lists the output fields for the **show chassis zones** command. Output fields are listed in the approximate order in which they appear.

Table 106: show chassis zones Output Fields

Field Name	Field Description
Slot	FPC slot number of the device whose content is being displayed. On QFX3500 standalone switches, the number is always **0**.
Beacon State	Status of the beacon state: • Off—The beacon is **OFF**. • On—The beacon is **ON**.
show chassis zones command output fields for MX2020, MX2010, and MX2008 routers:	
Driving FRU	Field replacable unit (FRU).
Temperature	Temperature of the specified FRU in degrees Celsius and degrees Fahrenheit.
Condition	Condition of the specified FRU. Condition can be **HIGH TEMP**, **WARM TEMP**, **OK**, and **Offline**.
Num Fans Missing	Number of fans or fan trays missing.
Num Fans Failed	Number of fans or fan trays that have failed.
Fan Duty Cycle	Fan duty cycle value.
show chassis zones detail command output fields for MX2020, MX2010, and MX2008 routers:	

Table 106: show chassis zones Output Fields *(continued)*

Field Name	Field Description
Item	Chassis component: • Information about the chassis, Routing Engines, Control Boards (CBs), Switch Fabric Boards (SFBs), PICs, Flexible PIC Concentrators (FPCs), and Adapter Cards (ADCs).
Measurement	Fan tray speed utilization in percentage.
Status	Status of the specified item. Status can be **OK**, **Absent**, or **Offline**.

Sample Output

show chassis zones interconnect-device (QFabric System)

`user@switch>` **show chassis zones interconnect-device interconnect1**

```
Slot            Beacon State
   FPC     0           OFF
```

show chassis zones (MX2010 Router)

`user@host>` **show chassis zones**

```
ZONE 0 Status
    Driving FRU                FPC 6
    Temperature                81 degrees C / 177 degrees F
    Condition                  HIGH TEMP
    Num Fans Missing           0
    Num Fans Failed            0
    Fan Duty Cycle             30

ZONE 1 Status
    Driving FRU                SFB 0 Exhaust-Zone1
    Temperature                71 degrees C / 159 degrees F
    Condition                  WARM TEMP
    Num Fans Missing           0
    Num Fans Failed            0
    Fan Duty Cycle             30
```

show chassis zones detail (MX2010 Router)

user@host > **show chassis zones**

```
ZONE 0 Status
Item                  Status               Measurement
CB 0                  WARM TEMP
CB 1                  WARM TEMP
FPC 0                 HIGH TEMP
FPC 1                 HIGH TEMP
FPC 2                 WARM TEMP
FPC 3                 HIGH TEMP
FPC 4                 HIGH TEMP
FPC 5                 HIGH TEMP
FPC 6                 HIGH TEMP
FPC 7                 HIGH TEMP
FPC 8                 HIGH TEMP
FPC 9                 HIGH TEMP
ADC 0                 WARM TEMP
ADC 1                 WARM TEMP
ADC 2                 WARM TEMP
ADC 3                 WARM TEMP
ADC 4                 WARM TEMP
ADC 5                 WARM TEMP
ADC 6                 WARM TEMP
ADC 7                 WARM TEMP
ADC 8                 WARM TEMP
ADC 9                 WARM TEMP
SFB 0                 WARM TEMP
SFB 1                 WARM TEMP
SFB 2                 WARM TEMP
SFB 3                 Offline
SFB 4                 HIGH TEMP
SFB 5                 WARM TEMP
SFB 6                 HIGH TEMP
SFB 7                 WARM TEMP
Fan Tray 0            OK                   Spinning at 98% fan tray speed
Fan Tray 1            OK                   Spinning at 98% fan tray speed

ZONE 1 Status
Item                  Status               Measurement
CB 0                  WARM TEMP
CB 1                  WARM TEMP
Routing Engine 0      OK
Routing Engine 1      OK
```

```
SFB 0                 WARM TEMP
SFB 1                 WARM TEMP
SFB 2                 WARM TEMP
SFB 3                 Offline
SFB 4                 HIGH TEMP
SFB 5                 WARM TEMP
SFB 6                 HIGH TEMP
SFB 7                 WARM TEMP
SPMB 0                OK
SPMB 1                OK
Fan Tray 2            OK                    Spinning at 64% fan tray speed
Fan Tray 3            OK                    Spinning at 64% fan tray speed
```

show chassis zones (MX2020 Router)

`user@host>` **show chassis zones**

```
ZONE 0 Status
    Driving FRU               FPC 0
    Temperature               31 degrees C / 87 degrees F
    Condition                 OK
    Num Fans Missing          0
    Num Fans Failed           0
    Fan Duty Cycle            30

ZONE 1 Status
    Driving FRU               FPC 19
    Temperature               32 degrees C / 89 degrees F
    Condition                 OK
    Num Fans Missing          0
    Num Fans Failed           0
    Fan Duty Cycle            30
```

show chassis zones detail (MX2020 Router)

`user@host>` **show chassis zones detail**

```
ZONE 0 Status
Item                  Status               Measurement
CB 0                  OK
CB 1                  OK
FPC 0                 OK
FPC 1                 OK
```

```
FPC 2                   OK
FPC 3                   OK
FPC 4                   OK
FPC 5                   OK
FPC 6                   OK
FPC 7                   OK
FPC 8                   OK
FPC 9                   OK
ADC 0                   OK
ADC 1                   OK
ADC 2                   OK
ADC 3                   OK
ADC 4                   OK
ADC 5                   OK
ADC 6                   OK
ADC 7                   OK
ADC 8                   OK
ADC 9                   OK
SFB 0                   OK
SFB 1                   OK
SFB 2                   OK
SFB 3                   OK
SFB 4                   OK
SFB 5                   OK
SFB 6                   OK
SFB 7                   OK
Fan Tray 0              OK                  Spinning at 38% fan tray speed
Fan Tray 1              OK                  Spinning at 37% fan tray speed

ZONE 1 Status
Item                    Status              Measurement
CB 0                    OK
CB 1                    OK
Routing Engine 0        OK
Routing Engine 1        OK
FPC 10                  OK
FPC 11                  OK
FPC 12                  OK
FPC 13                  OK
FPC 14                  OK
FPC 15                  OK
FPC 16                  OK
FPC 17                  OK
FPC 18                  OK
```

```
FPC 19                OK
ADC 10                OK
ADC 11                OK
ADC 12                OK
ADC 13                OK
ADC 14                OK
ADC 15                OK
ADC 16                OK
ADC 17                OK
ADC 18                OK
ADC 19                OK
SFB 0                 OK
SFB 1                 OK
SFB 2                 OK
SFB 3                 OK
SFB 4                 OK
SFB 5                 OK
SFB 6                 OK
SFB 7                 OK
SPMB 0                OK
SPMB 1                OK
Fan Tray 2            OK                  Spinning at 38% fan tray speed
Fan Tray 3            OK                  Spinning at 38% fan tray speed
```

show chassis zones (MX2008 Router)

`user@host>` **show chassis zones**

```
ZONE 0 Status
    Driving FRU               Routing Engine 0
    Temperature               67 degrees C / 152 degrees F
    Condition                 WARM TEMP
    Num Fans Missing          0
    Num Fans Failed           0
    Fan Duty Cycle            27
```

show chassis zones detail (MX2008 Router)

`user@host>` **show chassis zones detail**

```
ZONE 0 Status
Item                  Status              Measurement
```

```
CB 0                  OK
CB 1                  OK
Routing Engine 0      OK
Routing Engine 1      OK
FPC 0                 OK
FPC 1                 Absent
FPC 2                 Absent
FPC 3                 OK
FPC 4                 Absent
FPC 5                 OK
FPC 6                 Absent
FPC 7                 OK
FPC 8                 Absent
FPC 9                 OK
ADC 0                 OK
ADC 1                 Absent
ADC 2                 Absent
ADC 3                 OK
ADC 4                 Absent
ADC 5                 OK
ADC 6                 Absent
ADC 7                 OK
ADC 8                 Absent
ADC 9                 Absent
SFB 0                 OK
SFB 1                 OK
SFB 2                 OK
SFB 3                 OK
SFB 4                 OK
SFB 5                 OK
SFB 6                 OK
SFB 7                 OK
SPMB 0                OK
SPMB 1                OK
Fan Tray 0            OK                  Spinning at 60% fan tray speed
Fan Tray 1            OK                  Spinning at 58% fan tray speed
```

show chassis beacon interconnect-device (QFabric System)

`user@switch>` **show chassis beacon interconnect-device interconnect1**

```
Chassis             OFF
CB 0                OFF
CB 1                OFF
```

```
FC 0 FPC 0           OFF
FC 1 FPC 1           OFF
RC 0 FPC 8           OFF
RC 1 FPC 9           OFF
```

show chassis beacon interconnect-device fpc (QFabric System)

`user@switch>` **show chassis beacon interconnect-device interconnect1 fpc 0**

```
FPC 0                ON
```

show chassis beacon node-device (QFabric System)

`user@switch>` **show chassis beacon node-device node1**

```
node1               ON
```

show chassis beacon node-device fpc (QFabric System)

`user@switch>` **show chassis beacon node-device node1 fpc 0**

```
FPC 0              ON
```

show chassis zones (PTX5000 Packet Transport Router)

`user@host>` **show chassis zones**

```
ZONE 0 Status
    Driving FRU                Routing Engine 1
    Temperature                62 degrees C / 143 degrees F
    Condition                  OK
    Num Fans Missing           0
    Num Fans Failed            0
    Fan Duty Cycle             0

ZONE 1 Status
    Driving FRU                FPC 0 TL0
    Temperature                71 degrees C / 159 degrees F
    Condition                  OK
    Num Fans Missing           0
```

```
    Num Fans Failed             0
    Fan Duty Cycle              0
```

show chassis zones detail (PTX5000 Packet Transport Router)

`user@host>` **show chassis zones detail**

```
ZONE 0 Status
Item                  Status                Measurement
CB 0                  OK
CB 1                  OK
Routing Engine 0      OK
Routing Engine 1      OK
SIB 0                 OK
SIB 1                 OK
SIB 2                 OK
SIB 3                 OK
SIB 4                 OK
SIB 5                 Absent
SIB 6                 Absent
SIB 7                 Absent
SIB 8                 Absent
Fan Tray 0            OK                    Spinning at 30% fan tray speed

ZONE 1 Status
Item                  Status                Measurement
FPC 0                 OK
FPC 1                 OK
FPC 2                 OK
FPC 3                 OK
FPC 4                 OK
FPC 5                 Absent
FPC 6                 Offline
FPC 7                 OK
Fan Tray 1            OK                    Spinning at 33% fan tray speed
Fan Tray 2            OK                    Spinning at 36% fan tray speed
```

show pfe cfeb

Syntax

```
show pfe cfeb
```

Release Information

Command introduced before Junos OS Release 7.4.

Description

(M7i routers only) Display Packet Forwarding Engine Compact Forwarding Engine Board (CFEB) status and statistics information.

Options

This command has no options.

Required Privilege Level

admin

List of Sample Output

show pfe cfeb on page 1843

Output Fields

Table 107 on page 1842 lists the output fields for the **show pfe cfeb** command. Output fields are listed in the approximate order in which they appear.

Table 107: show pfe cfeb Output Fields

Field Name	Field Description

CFEB status	Status of CFEB:
	• Slot—CFEB slot number.
	• State—Status of the CFEB:
	  ◦ Online—CFEB is online and running.
	  ◦ Offline—CFEB is powered down.
	• Last State Change—Date and time the CFEB state last changed.
	• Uptime (total)—How long the Routing Engine has been connected to the CFEB and, therefore, how long the Flexible PIC Concentrator (FPC) has been up and running.
	• Failures—Number of PFE Peer detach failures.
	• Pending—Number of messages waiting to be sent.
	• Policer Drop Probability—Current policer drop probability. The default is high, and can be configured using the policer-drop-probability-low statement.

Table 107: show pfe cfeb Output Fields *(continued)*

Field Name	Field Description

Peer message type receive qualifiers	• Message Type—IPC Message Type. For example, interface and nexthop.
	• Receive Qualifier – Message receive qualifier for a peer (non-None only):
	  ◦ All
	  ◦ Only this slot
	  ◦ Selective slot

PFE listener statistics	PFE listener statistics: • Open—Number of times a peer was opened. • Close—Number of times a peer was closed. • Sleep—Number of times a thread slept. • Wakeup—Number of times wakeup was issued. • Resync Request—Number of resync requests. • Resync Done—Number of successful resyncs. • Resync Fail—Number of failed resyncs. • Resync Time—Time the resync last happened.
PFE IPC statistics	• type—IPC Message Type. • TX Messages—Number of Tx messages. • RX Messages—Number of Rx messages.
PFE socket-buffer mbuf depth	• bucket—Bucket number. • count—Number of messages in the bucket.
PFE socket-buffer bytes pending transmit	• bucket—Bucket number. • count—Number of bytes pending transmit.

Sample Output

show pfe cfeb

```
user@host> show pfe cfeb
```

```
CFEB status:
  Slot:                 Present
  State:                Online
  Last State Change:    2005-03-10 09:01:25 PST
```

```
  Uptime (total):       2d 00:44
  Failures:             0
  Pending:              0
..Policer Drop Probability: HIGH

Peer message type receive qualifiers:
 Message Type      Receive Qualifier
 ---------------  -----------------
              TTP  All
              IFD  All
              IFL  All
          Nexthop  All
              COS  All
            Route  All
      SW Firewall  All
      HW Firewall  All
   PFE Statistics  All
   PIC Statistics  All
         Sampling  All
       Monitoring  None
              ASP  None
             L2TP  None
        Collector  None
 PIC Configuration  All
 Queue Statistics  All
           (null)  None

PFE listener statistics:
  Open:                 1
  Close:                0
  Sleep:                0
  Wakeup:               0
  Resync Request:       0
  Resync Done:          1
  Resync Fail:          0
  Resync Time:          0

PFE IPC statistics:
 type        TX Messages  RX messages
 ----------- -----------  -----------
      Header           0            0
        Test           0            0
   Interface         562        14582
     Chassis           0            0
```

```
        Boot           0           0
    Next-hop         104           0
       Jtree           0           0
       Cprod           0           0
       Route         103           1
         Pfe        3770        2925
         Dfw          10           0
  Mastership           0           0
    Sampling           0           0
        GUCP           0           0
         CoS          50           0
        GCCP           0           0
        GHCP           0           0
        IRSD           0           0
  Monitoring           0           0
          RE           0           0
         PIC           0           0
     ASP cfg           0           0
     ASP cmd           0           0
    L2TP cfg           0           0
   Collector           0           0
   PIC state           0           0
  Aggregator           0           0
       Empty           0           0

PFE socket-buffer mbuf depth:
 bucket          count
 ------          -----
     0               0
     1               0
     2               0
     3               0
     4               0
     5               0
     6               0
     7               0
     8               0
     9               0
    10               0
    11               0
    12               0
    13               0
    14               0
    15               0
```

```
    16               0
    17               0
    18               0
    19               0
    20               0
    21               0

PFE socket-buffer bytes pending transmit:
 bucket          count
 ------          -----
     0               0
     1               0
     2               0
     3               0
     4               0
     5               0
     6               0
     7               0
     8               0
     9               0
    10               0
    11               0
    12               0
    13               0
    14               0
    15               0
    16               0
    17               0
    18               0
    19               0
    20               0
    21               0
```

show pfe feb

Syntax

```
show pfe feb
```

Release Information

Command introduced before Junos OS Release 7.4.

Description

(M5 and M10 routers only) Display Packet Forwarding Engine Forwarding Engine Board (FEB) status and statistics information.

Options

This command has no options.

Required Privilege Level

admin

List of Sample Output

show pfe feb on page 1849
show pfe feb on page 1852

Output Fields

Table 108 on page 1848 lists the output fields for the **show pfe feb** command. Output fields are listed in the approximate order in which they appear.

Table 108: show pfe feb Output Fields

Field Name	Field Description

FEB status	Status of FEB:
	• Slot—FEB slot number.
	• State—State of the FEB:
	  ◦ Offline—FEB is powered down.
	  ◦ Online—FEB is operational and running.
	  ◦ Check—FEB is in alarmed state where the Switch Interface Board (SIB) plane is partially operational for the following reasons:
	  ▪ FEB is not inserted properly.
	  ▪ Two or more links between the FEB and Packet Forwarding Engine fail.
	• Last State Change—Date and time the CFEB state last changed.
	• Uptime (total)—How long the Routing Engine has been connected to the FEB and, therefore, how long the Flexible PIC Concentrator (FPC) has been up and running.
	• Failures—Number of PFE Peer detach failures.
	• Pending—Number of messages waiting to be sent.
	• Policer Drop Probability—Current policer drop probability. The default is high, and can be configured using the policer-drop-probability-low statement.

Peer message type receive qualifiers	• Message Type—IPC Message Type. For example, interface and nexthop.
	• Receive Qualifier – Message receive qualifier for a peer (non-None only):
	  ◦ All
	  ◦ Only this slot
	  ◦ Selective slot

PFE listener statistics	PFE listener statistics: • Open—Number of times a peer was opened. • Close—Number of times a peer was closed. • Sleep—Number of times a thread slept. • Wakeup—Number of times wakeup was issued. • Resync Request—Number of resync requests. • Resync Done—Number of successful resyncs. • Resync Fail—Number of failed resyncs. • Resync Time—Time the resync last happened.

Table 108: show pfe feb Output Fields *(continued)*

Field Name	Field Description
PFE IPC statistics	• type—IPC Message Type. • TX Messages—Number of Tx messages. • RX Messages—Number of Rx messages.
PFE socket-buffer mbuf depth	• bucket—Bucket number. • count—Number of messages in the bucket.
PFE socket-buffer bytes pending transmit	• bucket—Bucket number. • count—Number of bytes pending transmit.

Sample Output

show pfe feb

```
user@host> show pfe feb
```

```
FEB status:
  Slot:                Present
  State:               Online
  Last State Change:   2005-03-11 00:33:57 PST
  Uptime (total):      1d 09:14
  Failures:            0
  Pending:             0
..Policer Drop Probability: HIGH

Peer message type receive qualifiers:
 Message Type      Receive Qualifier
 ---------------  -----------------
              TTP  All
              IFD  All
              IFL  All
          Nexthop  All
              COS  All
            Route  All
      SW Firewall  All
      HW Firewall  All
   PFE Statistics  All
   PIC Statistics  All
         Sampling  All
```

```
       Monitoring  None
              ASP  None
            L2TP  None
        Collector  None
 PIC Configuration  All
 Queue Statistics  All
           (null)  None

PFE listener statistics:
  Open:                 1
  Close:                0
  Sleep:                0
  Wakeup:               0
  Resync Request:       0
  Resync Done:          1
  Resync Fail:          0
  Resync Time:          0

PFE IPC statistics:
 type        TX Messages  RX messages
 ----------- -----------  -----------
      Header           0            0
        Test           0            0
   Interface         639        11889
     Chassis           0            0
        Boot           0            0
    Next-hop         104            0
       Jtree           0            0

       Cprod           0            0
       Route         940            0
         Pfe        3008         1995
         Dfw           9            0
  Mastership           0            0
    Sampling           0            0
        GUCP           0            0
         CoS          35            0
        GCCP           0            0
        GHCP           0            0
        IRSD           0            0
  Monitoring           0            0
          RE           0            0
         PIC           0            0
     ASP cfg           0            0
```

```
     ASP cmd           0           0
    L2TP cfg           0           0
   Collector           0           0
   PIC state           0           0
  Aggregator           0           0
       Empty           0           0

PFE socket-buffer mbuf depth:
 bucket          count
 ------          -----
     0               0
     1               0
     2               0
     3               0
     4               0
     5               0
     6               0
     7               0
     8               0
     9               0
    10               0
    11               0
    12               0
    13               0
    14               0
    15               0
    16               0
    17               0
    18               0
    19               0
    20               0
    21               0

PFE socket-buffer bytes pending transmit:
 bucket          count
 ------          -----
     0               0
     1               0
     2               0
     3               0
     4               0
     5               0
     6               0
     7               0
```

```
     8              0
     9              0
    10              0
    11              0
    12              0
    13              0
    14              0
    15              0
    16              0
    17              0
    18              0
    19              0
    20              0
    21              0
```

show pfe feb

user@host> **show pfe feb**

```
FEB status:
  Slot:                 Present
  State:                Online
  Last State Change:    2005-03-11 00:33:57 PST
  Uptime (total):       1d 09:14
  Failures:             0
  Pending:              0

Peer message type receive qualifiers:
 Message Type      Receive Qualifier
 ----------------  -----------------
              TTP  All
              IFD  All
              IFL  All
          Nexthop  All
              COS  All
            Route  All
      SW Firewall  All
      HW Firewall  All
   PFE Statistics  All
   PIC Statistics  All
         Sampling  All
       Monitoring  None
              ASP  None
             L2TP  None
```

```
       Collector  None
 PIC Configuration  All
 Queue Statistics  All
          (null)  None

PFE listener statistics:
  Open:                1
  Close:               0
  Sleep:               0
  Wakeup:              0
  Resync Request:      0
  Resync Done:         1
  Resync Fail:         0
  Resync Time:         0

PFE IPC statistics:
 type        TX Messages  RX messages
 ----------- -----------  -----------
     Header           0            0
       Test           0            0
  Interface         639        11889
    Chassis           0            0
       Boot           0            0
   Next-hop         104            0
      Jtree           0            0

      Cprod           0            0
      Route         940            0
        Pfe        3008         1995
        Dfw           9            0
 Mastership           0            0
   Sampling           0            0
       GUCP           0            0
        CoS          35            0
       GCCP           0            0
       GHCP           0            0
       IRSD           0            0
 Monitoring           0            0
         RE           0            0
        PIC           0            0
    ASP cfg           0            0
    ASP cmd           0            0
   L2TP cfg           0            0
  Collector           0            0
```

```
   PIC state           0           0
  Aggregator           0           0
       Empty           0           0

PFE socket-buffer mbuf depth:
 bucket          count
 ------          -----
     0               0
     1               0
     2               0
     3               0
     4               0
     5               0
     6               0
     7               0
     8               0
     9               0
    10               0
    11               0
    12               0
    13               0
    14               0
    15               0
    16               0
    17               0
    18               0
    19               0
    20               0
    21               0

PFE socket-buffer bytes pending transmit:
 bucket          count
 ------          -----
     0               0
     1               0
     2               0
     3               0
     4               0
     5               0
     6               0
     7               0
     8               0
     9               0
    10               0
```

```
11              0
12              0
13              0
14              0
15              0
16              0
17              0
18              0
19              0
20              0
21              0
```

show pfe fpc

List of Syntax

Syntax on page 1856
Syntax (TX Matrix and TX Matrix Plus Router) on page 1856
Syntax (MX Series Router) on page 1856

Syntax

```
show pfe fpc slot
<detail | extensive>
```

Syntax (TX Matrix and TX Matrix Plus Router)

```
show pfe fpc
<lcc number>
```

Syntax (MX Series Router)

```
show pfe fpc slot
<detail | extensive>
<all-members>
<local>
<member member-id>
```

Release Information

Command introduced before Junos OS Release 7.4.

Description

Display Packet Forwarding Engine statistics for the specified Flexible PIC Concentrator (FPC).

Options

slot—FPC slot number. Replace ***slot*** with a value from **0** through **2**.

detail | extensive—(Optional) Display the specified level of detail.

all-members—(MX Series routers only) (Optional) Display Packet Forwarding Engine statistics for the specified FPC in all members of the Virtual Chassis configuration.

lcc *number*—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, the slot number of the T640 router (or line-card chassis) that houses the FPC. On a TX Matrix Plus router, **lcc *number*** represents the slot number of the router (or line-card chassis) that houses the FPC.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

local—(MX Series routers only) (Optional) Display Packet Forwarding Engine statistics for the specified FPC in the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display Packet Forwarding Engine statistics for the specified FPC in the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value of 0 or 1.

Required Privilege Level
admin

List of Sample Output
show pfe fpc on page 1860
show pfe fpc lcc on page 1861
show pfe fpc 0 detail on page 1865
show pfe fpc 0 (MX 960 with DPC) on page 1868

Output Fields

Table 109 on page 1858 lists the output fields for the **show pfe fpc** command. Output fields are listed in the approximate order in which they appear.

Table 109: show pfe fpc Output Fields

Field Name	Field Description

FPC 1 status	Status of FPC 1:
	• Slot—FPC slot number – 1.
	• State—State of FPC1:
	  ◦ Dead—Held in reset because of errors.
	  ◦ Diag—Slot is being ignored while the FPC is running diagnostics.
	  ◦ Dormant—Held in reset.
	  ◦ Empty—No FPC is present.
	  ◦ Online—FPC is online and running.
	  ◦ Present—FPC is detected by the chassis daemon but either is not supported by the current version of Junos OS or is inserted in the wrong slot. The output also states either Hardware Not Supported or Hardware Not in Right Slot. The FPC is coming up but not yet online.
	  ◦ Probed—Probe is complete; awaiting restart of the Packet Forwarding Engine (PFE).
	  ◦ Probe-wait—Waiting to be probed.
	• Last State Change—Date and time the FPC state last changed.
	• Uptime—How long the Routing Engine has been connected to the FEB and, therefore, how long the Flexible PIC Concentrator (FPC) has been up and running.
	• Failures—Number of PFE Peer detach failures.
	• Pending—Number of messages waiting to be sent.
	• Route Memory Enhanced—Reallocation of the jtree memory on the Packet Forwarding Engine to allocate more memory for routing tables. Can be configured with the memory-enhanced statement.

PFE listener statistics	PFE listener statistics: • Open—Number of times a peer was opened. • Close—Number of times a peer was closed. • Sleep—Number of times a thread slept. • Wakeup—Number of times wakeup was issued. • Resync Request—Number of resync requests. • Resync Done—Number of successful resyncs. • Resync Fail—Number of failed resyncs. • Resync Time—Time the resync last happened.
PFE IPC statistics	• type—IPC Message Type. • TX Messages—Number of Tx messages. • RX Messages—Number of Rx messages.

Table 109: show pfe fpc Output Fields *(continued)*

Field Name	Field Description
GFPC 0 status	Status of GFPC 0: • Slot—GFPC slot number – 0. • State—State of GFPC. • Last State Change—Date and time the GFPC state last changed.
Peer message type receive qualifiers [non-NONE(s) only]	• IPC Msg Type—IPC Message Type. For example, interface, nexthop. • Receive Qualifier—Message receive qualifier for a peer (non-NONE(s) only):
IFSTATE BITS SET	IFSTATE clients that have registered to receive the message types this slot is listening to.
PFE listener statistics	PFE listener statistics: • Open—Number of times a peer was opened. • Close—Number of times a peer was closed. • Sleep—Number of times a thread slept. • Wakeup—Number of times wakeup was issued. • Resync Request—Number of resync requests. • Resync Done—Number of successful resyncs. • Resync Fail—Number of failed resyncs. • Resync Time—Time the resync last happened.
PFE IPC statistics	• type—IPC Message Type. • TX Messages—Number of Tx messages. • RX Messages—Number of Rx messages.
PFE socket-buffer mbuf depth	• bucket—Bucket number. • count—Number of messages in the bucket.
PFE socket-buffer bytes pending transmit	• bucket—Bucket number. • count—Number of bytes pending transmit.

Table 109: show pfe fpc Output Fields *(continued)*

Field Name	Field Description
GFPC 2 status	Status of GFPC 2: • Slot—GFPC slot number – 2. • State—State of GFPC. • Last State Change—Date and time the GFPC state last changed. • Route Memory Enhanced—Reallocation of the jtree memory on the Packet Forwarding Engine to allocate more memory for routing tables. Can be configured with the memory-enhanced statement. • Filter Memory Enhanced—Reallocation of the jtree memory on the Packet Forwarding Engine to allocate more memory for firewall filters. Can be configured with the memory-enhanced statement.
XDPC status	XDPC status: • Slot—Present or empty. • State—Online or offline. • Last State Change—Date and time the DPC state last changed. • Uptime (total)—Length of time the DPC has been online. • Failures—Number of DPC failures. • Pending—Number of messages waiting to be sent. • Route Memory Enhanced—Reallocation of the jtree memory on the Packet Forwarding Engine to allocate more memory for routing tables. Can be configured with the memory-enhanced statement. • Policer Drop Probability—Current policer drop probability. The default is high, and can be configured using the policer-drop-probability-low statement.

Sample Output

show pfe fpc

```
user@host> show pfe fpc 1
```

```
FPC 1 status:
  Slot:                 Present
  State:                Online
  Last State Change:    2000-01-10 18:12:27 UTC
  Uptime:               1d 03:31
```

```
  Failures:              0
  Pending:               0
  Route Memory Enhanced: 0
PFE listener statistics:
  Open:                 1
  Close:                0
  Sleep:                0
  Wakeup:               0
  Resync Request:       0
  Resync Done:          0
  Resync Fail:          0
  Resync Time:          0

PFE IPC statistics:
 type        TX Messages  RX messages
 ----------- -----------  -----------
      Header           0            0
        Test           0            0
   Interface        2251         2219
     Chassis           0            0
        Boot           0            0
    Next-hop           0            0
       Jtree           0            0
       Cprod           0            0
       Route           0            0
         Pfe           0            1
         Dfw
```

show pfe fpc lcc

user@host> **show pfe fpc 0 lcc 0**

```
lcc0-re0:
--------------------------------------------------------------------------
GFPC 0 status:
  Slot:                 Present
  State:                Online
  Last State Change:    2009-06-17 21:00:35 PDT
  Uptime (total):       02:31:45
  Failures:             0
  Pending:              0

Peer message type receive qualifiers [ non-NONE(s) only ]:
 IPC Msg Type (subtype)     Receive Qualifier
```

```
 ----------------  -----------------
 Interface        (0)           All
 Interface        (1)           All
 Interface        (2)           All
 Interface        (3)           All
 Interface        (4)           All
 Interface        (5)           All
 Interface        (6)           All
 Interface        (7)           All
 Interface        (8)           All
 Interface        (9)           All
 Interface        (10)          All
 Interface        (11)          All
 Interface        (12)          All
 Interface        (13)          All
 Interface        (14)          All
 Interface        (15)          All
 Interface        (16)          All
 Interface        (17)          All
 Interface        (18)          All
 Interface        (19)          All
 Interface        (20)          Slot only
 Interface        (21)          All
...
 Next-hop         (0)           All
 Next-hop         (1)           All
 Next-hop         (2)           All
 Next-hop         (3)           All
 Next-hop         (4)           All
 Next-hop         (5)           Always TRUE
...
 Route            (0)           All
 Route            (1)           All
 Route            (2)           All
 Route            (3)           All
 Route            (4)           All
 Route            (5)           All
 Route            (6)           All
 Route            (7)           All
 Route            (8)           All

...
 Pfe              (1)           Always TRUE
 Pfe              (3)           Always TRUE
```

```
 Pfe              (5)          Always TRUE
...
 Dfw              (0)          All
 Dfw              (1)          All
 Dfw              (2)          All
 Dfw              (3)          All

...
 Sampling         (1)          All
 Sampling         (2)          All
 Sampling         (3)          All
 CoS              (0)          All
 CoS              (1)          All
 CoS              (2)          All
 CoS              (3)          All
...
 PIC              (1)          Always TRUE
 PIC              (3)          Always TRUE
...
 GenCfg           (8)          All
 GenCfg           (15)         All
...
 IFSTATE BITS SET:
 ----------------
        IFD
        IFL
        IFF
        IFA
        RTTABLE
        ROUTE
        NEXTHOP
        FIREWALL
        NAME TABLE
        COS_FABRIC
        COS_POLICY
        COS_RED
        COS_REWRT_TABLE
        COS_REWRT_IFLMAP
        COS_CLASS_TABLE
        COS_CLASS_IFLMAP
        COS_POLICER
        COS_SHAPER
        SAMPLE
        RTCOS
```

```
        SYSCONF
        IFVP
        SADB
        IFVC
        COS_FC_QUEUE
        COS_FRAGMAP_TABLE
        COS_FRAGMAP_IFLMAP
        Generic config
        Mesh group

PFE listener statistics:
  Open:                 1
  Close:                0
  Sleep:                0
  Wakeup:               0
  Resync Request:       0
  Resync Done:          1
  Resync Fail:          0
  Resync Time:          0

PFE IPC statistics:
 Type (subtype)             TX Messages    RX messages
 --------------             -----------   -----------
 Interface  ( 3)                165            0
 Interface  ( 4)                 81            0
 Interface  ( 5)                  0          190
 Interface  ( 8)                145            0
 Interface  ( 9)                425            0
 Interface  (10)                 24            0
...
PFE socket-buffer mbuf depth:
 bucket          count
 ------          -----
     0               0
     1               0
     2               0

PFE socket-buffer bytes pending transmit:
 bucket          count
 ------          -----
     0               0
     1               0
...
```

show pfe fpc 0 detail

user@host> **show pfe fpc 0 detail**

```
GFPC 2 status:
  Slot:                 Present
  State:                Online
  Last State Change:    2010-11-16 03:55:25 PST
  Uptime (total):       00:11:06
  Failures:             1
  Pending:              0
  Route Memory Enhanced: 0
 Filter Memory Enhanced: 1

Peer message type receive qualifiers [ non-NONE(s) only ]:
 IPC Msg Type (subtype)     Receive Qualifier
 ---------------  -----------------
 Interface        (0)           All
 Interface        (1)           All
 Interface        (2)           All
 Interface        (3)           All
 Interface        (4)           All
 Interface        (5)           All
 Interface        (6)           All
 Interface        (7)           All
 Interface        (8)           All
 Interface        (9)           All
 Interface        (10)          All
 Interface        (11)          All
 ...
 Next-hop         (0)           All
 Next-hop         (1)           All
 Next-hop         (2)           All
 Next-hop         (3)           All
 Next-hop         (4)           All
 Next-hop         (5)           All
...
 Route            (0)           All
 Route            (1)           All
 Route            (2)           All
 Route            (3)           All
 Route            (4)           All
 Route            (5)           All
...
```

```
 Pfe              (1)          Always TRUE
 Pfe              (3)          Always TRUE
 Pfe              (5)          Always TRUE
...
 Dfw              (0)          All
 Dfw              (1)          All
 Dfw              (2)          All
 Dfw              (3)          All
...
 Sampling         (1)          All
 Sampling         (2)          All
 Sampling         (3)          All
 CoS              (0)          All
 CoS              (1)          All
 CoS              (2)          All
 CoS              (3)          All
 CoS              (4)          All
...
 PIC              (1)          Always TRUE
 PIC              (3)          Always TRUE
...
 GenCfg           (8)          All
 GenCfg           (15)         All
...
 IFSTATE BITS SET:
 ----------------
        IFD
        IFL
        IFF
        IFA
        RTTABLE
        ROUTE
        NEXTHOP
        FIREWALL
        NAME TABLE
        COS_FABRIC
        COS_POLICY
        COS_RED
        COS_REWRT_TABLE
        COS_REWRT_IFLMAP
        COS_CLASS_TABLE
        COS_CLASS_IFLMAP
        COS_POLICER
        COS_SHAPER
```

```
        SAMPLE
        RTCOS
        SYSCONF
        IFVP
        SADB
        IFVC
        COS_FC_QUEUE
        COS_FRAGMAP_TABLE
        COS_FRAGMAP_IFLMAP
        Generic config
        Mesh group

PFE listener statistics:
  Open:                 2
  Close:                1
  Sleep:                0
  Wakeup:               0
  Resync Request:       0
  Resync Done:          2
  Resync Fail:          0
  Resync Time:          0

PFE IPC statistics:
 Type (subtype)             TX Messages    RX messages
 --------------             -----------   -----------
 Interface  ( 3)                104            0
 Interface  ( 5)                  0            8
 Interface  ( 8)                 85            0
 Interface  ( 9)                 67            0
 Interface  (10)                  4            0
...
 Next-hop   ( 1)                364            0
 Next-hop   ( 3)                 12            0
 Next-hop   (11)                 33            0
 Next-hop   (23)                 39            0
 Route      ( 1)                331            0
 Route      ( 2)                 34            0
 Route      ( 3)                  1            0
 Route      ( 6)                  1            0
 Route      ( 9)                 48            0
 Pfe        ( 1)                  0            1
 Pfe        ( 3)                  1            0
 Pfe        ( 4)                  0            1
 Pfe        ( 5)                  1            0
```

```
...
 Dfw        ( 1)                20           0
 Dfw        (18)                 1           0
 GenCfg     ( 8)                45           0
 GenCfg     (15)                 1           0
```

show pfe fpc 0 (MX 960 with DPC)

user@host> **show pfe fpc 0**

```
XDPC 0 status:
  Slot:                 Present
  State:                Online
  Last State Change:    2012-08-07 13:13:01 PDT
  Uptime (total):       21:01:41
  Failures:             0
  Pending:              0
  Route Memory Enhanced: 0
  Policer Drop Probability: HIGH

Peer message type receive qualifiers [ non-NONE(s) only ]:
 IPC Msg Type (subtype)     Receive Qualifier
 ----------------  -----------------
 Interface        (0)           All
 Interface        (1)           All
 Interface        (2)           All
 Interface        (3)           All
 Interface        (4)           All
 Interface        (5)           All
 Interface        (6)           All
 Interface        (7)           All
 Interface        (8)           All
 Interface        (9)           All
 Interface        (10)          All
 Interface        (11)          All
 Interface        (12)          All
 Interface        (13)          All
 Interface        (14)          All
 Interface        (15)          All
 Interface        (16)          All
 Interface        (17)          All
 Interface        (18)          All
 Interface        (19)          All
```

```
Interface       (20)         Slot only
Interface       (21)         All
Interface       (22)         Slot only
Interface       (23)         All
Interface       (24)         All
Interface       (25)         All
Interface       (26)         All
Interface       (27)         All
Interface       (28)         All
Interface       (29)         All
Interface       (30)         All
Interface       (31)         All
Interface       (32)         All
Interface       (33)         All
Interface       (34)         All
Interface       (35)         All
Interface       (36)         All
Interface       (37)         All
Interface       (38)         All
Interface       (39)         All
Interface       (40)         All
Interface       (41)         All
Interface       (42)         Slot only
Interface       (43)         Slot only
Interface       (44)         Slot only
Interface       (45)         All
Interface       (46)         All
Interface       (47)         All
Interface       (48)         Slot only
Interface       (49)         Slot only
Interface       (50)         Slot only
Interface       (51)         Slot only
Interface       (52)         All
Interface       (53)         All
Interface       (54)         All
Interface       (55)         All
Interface       (56)         Slot only
Interface       (57)         All
Interface       (58)         All
Interface       (59)         All
Interface       (60)         All
Interface       (61)         All
Interface       (62)         All
Interface       (63)         All
```

```
Interface       (64)         Slot only
Interface       (65)         All
Interface       (66)         All
Interface       (67)         All
Interface       (68)         All
Interface       (69)         All
Interface       (70)         All
Interface       (71)         All
Interface       (72)         All
Interface       (73)         All
Interface       (74)         All
Interface       (75)         All
Interface       (76)         Slot only
Interface       (77)         Slot only
Interface       (78)         Slot only
Interface       (79)         All
Interface       (80)         All
Interface       (81)         All
Interface       (82)         All
Interface       (83)         Slot only
Interface       (84)         All
Interface       (85)         All
Interface       (86)         All
Interface       (87)         All
Interface       (88)         All
Interface       (89)         All
Interface       (90)         All
Interface       (91)         All
Interface       (92)         All
Interface       (93)         Slot only
Interface       (94)         Slot only
Interface       (95)         Slot only
Interface       (96)         All
Interface       (97)         All
Interface       (98)         All
Interface       (99)         All
Interface       (100)        All
Interface       (101)        All
Interface       (102)        All
Interface       (103)        All
Interface       (104)        All
Interface       (105)        Slot only
Interface       (106)        Slot only
Interface       (107)        All
```

```
Interface       (108)       All
Interface       (109)       All
Interface       (110)       All
Interface       (111)       All
Interface       (112)       All
Interface       (113)       All
Interface       (114)       All
Interface       (115)       All
Interface       (116)       All
Interface       (117)       All
Interface       (118)       All
Interface       (119)       All
Interface       (120)       All
Interface       (121)       Slot only
Interface       (122)       All
Interface       (123)       All
Interface       (124)       All
Interface       (125)       Slot only
Interface       (126)       Slot only
Interface       (127)       Slot only
Interface       (128)       All
Interface       (129)       All
Interface       (130)       All
Interface       (131)       All
Interface       (132)       All
Interface       (133)       All
Interface       (134)       All
Interface       (135)       All
Interface       (138)       All
Interface       (139)       All
Interface       (142)       All
Interface       (145)       All
Interface       (146)       All
Interface       (147)       All
Interface       (148)       All
Interface       (149)       All
Interface       (150)       Slot only
Interface       (151)       All
Interface       (152)       Slot only
Interface       (153)       All
Interface       (154)       All
Interface       (155)       All
Interface       (156)       All
Interface       (157)       All
```

```
Interface       (158)        All
Interface       (159)        Slot only
Interface       (160)        All
Interface       (161)        All
Interface       (163)        All
Interface       (164)        Slot only
Interface       (165)        Slot only
Interface       (167)        All
Interface       (168)        All
Interface       (169)        All
Interface       (170)        Slot only
Interface       (171)        Slot only
Interface       (172)        All
Interface       (173)        All
Interface       (174)        All
Interface       (175)        All
Interface       (176)        All
Interface       (177)        All
Interface       (178)        All
Interface       (179)        All
Interface       (180)        All
Interface       (181)        All
Interface       (182)        All
Interface       (183)        All
Interface       (184)        All
Interface       (185)        All
Interface       (186)        All
Interface       (187)        All
Interface       (188)        All
Interface       (189)        All
Interface       (190)        All
Interface       (191)        All
Interface       (192)        All
Interface       (193)        All
Interface       (194)        All
Interface       (195)        All
Interface       (196)        All
Interface       (197)        All
Interface       (198)        All
Interface       (199)        All
Interface       (200)        All
Interface       (201)        All
Interface       (202)        All
Interface       (204)        All
```

```
Interface       (205)       All
Interface       (206)       All
Interface       (207)       All
Interface       (208)       All
Interface       (209)       All
Interface       (210)       All
Interface       (211)       All
Interface       (212)       All
Interface       (213)       All
Interface       (214)       All
Interface       (215)       All
Interface       (216)       All
Interface       (217)       All
Interface       (218)       All
Interface       (219)       All
Interface       (220)       All
Interface       (221)       All
Interface       (222)       All
Interface       (223)       All
Interface       (224)       All
Interface       (225)       All
Interface       (226)       All
Interface       (227)       All
Interface       (229)       All
Interface       (230)       All
Interface       (231)       All
Interface       (232)       All
Interface       (233)       All
Interface       (234)       All
Interface       (235)       All
Interface       (236)       All
Interface       (237)       All
Interface       (238)       All
Interface       (239)       All
Next-hop        (0)         All
Next-hop        (1)         All
Next-hop        (2)         All
Next-hop        (3)         All
Next-hop        (4)         All
Next-hop        (5)         All
Next-hop        (6)         All
Next-hop        (7)         All
Next-hop        (8)         All
Next-hop        (9)         All
```

```
Next-hop         (10)          All
Next-hop         (11)          All
Next-hop         (12)          All
Next-hop         (13)          All
Next-hop         (14)          All
Next-hop         (15)          All
Next-hop         (16)          All
Next-hop         (17)          All
Next-hop         (18)          All
Next-hop         (19)          All
Next-hop         (20)          All
Next-hop         (21)          All
Next-hop         (22)          All
Next-hop         (23)          All
Next-hop         (24)          All
Next-hop         (25)          All
Next-hop         (26)          All
Next-hop         (27)          All
Next-hop         (28)          All
Next-hop         (29)          All
Next-hop         (30)          All
Next-hop         (31)          All
Next-hop         (32)          All
Next-hop         (33)          All
Next-hop         (34)          All
Next-hop         (35)          All
Next-hop         (36)          All
Next-hop         (37)          All
Next-hop         (39)          Always TRUE
Next-hop         (40)          All
Next-hop         (41)          All
Next-hop         (42)          All
Next-hop         (43)          All
Route            (0)           All
Route            (1)           All
Route            (2)           All
Route            (3)           All
Route            (4)           All
Route            (5)           All
Route            (6)           All
Route            (7)           All
Route            (8)           All
Route            (9)           All
Route            (10)          All
```

```
Route           (11)         All
Route           (12)         All
Route           (13)         All
Route           (14)         All
Route           (15)         All
Route           (16)         All
Route           (17)         All
Route           (18)         All
Route           (19)         All
Route           (20)         All
Route           (22)         All
Route           (23)         All
Route           (24)         All
Route           (25)         All
Route           (26)         All
Route           (27)         All
Route           (28)         All
Route           (29)         Always TRUE
Route           (30)         Always TRUE
Pfe             (1)          Always TRUE
Pfe             (3)          Always TRUE
Pfe             (5)          Always TRUE
Pfe             (7)          Always TRUE
Pfe             (10)         Always TRUE
Pfe             (11)         Always TRUE
Pfe             (12)         Always TRUE
Pfe             (13)         Always TRUE
Pfe             (14)         Always TRUE
Pfe             (15)         Always TRUE
Pfe             (35)         Always TRUE
Dfw             (0)          All
Dfw             (1)          All
Dfw             (2)          All
Dfw             (3)          All
Dfw             (4)          All
Dfw             (5)          All
Dfw             (6)          All
Dfw             (7)          All
Dfw             (8)          All
Dfw             (9)          All
Dfw             (10)         All
Dfw             (11)         All
Dfw             (12)         All
Dfw             (13)         All
```

```
Dfw             (14)         All
Dfw             (18)         All
Dfw             (19)         All
Sampling        (1)          All
Sampling        (2)          All
Sampling        (3)          All
CoS             (0)          All
CoS             (1)          All
CoS             (2)          All
CoS             (3)          All
CoS             (4)          All
CoS             (5)          All
CoS             (6)          All
CoS             (7)          All
CoS             (8)          All
CoS             (9)          All
CoS             (10)         All
CoS             (11)         All
CoS             (12)         All
CoS             (13)         All
CoS             (14)         All
CoS             (15)         All
CoS             (16)         All
CoS             (17)         All
CoS             (18)         All
CoS             (19)         All
CoS             (20)         All
CoS             (21)         All
CoS             (22)         All
CoS             (23)         All
CoS             (27)         All
CoS             (29)         All
CoS             (31)         All
CoS             (32)         All
PIC             (1)          Always TRUE
PIC             (3)          Always TRUE
PIC             (5)          Always TRUE
PIC             (7)          Always TRUE
PIC             (10)         Always TRUE
PIC             (11)         Always TRUE
PIC             (12)         Always TRUE
PIC             (13)         Always TRUE
PIC             (14)         Always TRUE
PIC             (15)         Always TRUE
```

```
GenCfg          (2)          All
GenCfg          (4)          All
GenCfg          (5)          All
GenCfg          (6)          All
GenCfg          (8)          All
GenCfg          (9)          All
GenCfg          (10)         All
GenCfg          (15)         All
GenCfg          (17)         All
GenCfg          (24)         All
GenCfg          (27)         All
GenCfg          (29)         All
GenCfg          (31)         All
STP             (1)          All
BD              (0)          All
BD              (1)          All
BD              (2)          All
IFSTATE BITS SET:
----------------
       IFD
       IFL
       IFF
       IFA
       RTTABLE
       ROUTE
       NEXTHOP
       FIREWALL
       NAME TABLE
       COS_FABRIC
       COS_POLICY
       COS_RED
       COS_REWRT_TABLE
       COS_REWRT_IFLMAP
       COS_CLASS_TABLE
       COS_CLASS_IFLMAP
       COS_POLICER
       COS_SHAPER
       SAMPLE
       RTCOS
       SYSCONF
       IFVP
       SADB
       IFVC
       COS_FC_QUEUE
```

```
        COS_FRAGMAP_TABLE
        COS_FRAGMAP_IFLMAP
        Generic config
        STP
        Mesh group
        Bridge Domain
        IFBD

PFE listener statistics:
  Open:                 1
  Close:                0
  Sleep:                0
  Wakeup:               0
  Resync Request:       0
  Resync Done:          1
  Resync Fail:          0
  Resync Time:          0

PFE IPC statistics:
 Type (subtype)             TX Messages    RX messages
 --------------             -----------   -----------
 Interface  ( 3)                131            0
 Interface  ( 5)                  0          379
 Interface  ( 9)                 48            0
 Interface  (10)                102            0
 Interface  (11)                  1            0
 Interface  (12)                204            0
 Interface  (13)                177            0
 Interface  (15)                 90            0
 Interface  (23)                 49            0
 Interface  (24)                  8            0
 Interface  (29)                 27            0
 Interface  (30)                 11            0
 Interface  (33)                101            0
 Interface  (34)                101            0
 Interface  (35)                 84            0
 Interface  (36)                 18            0
 Interface  (37)                 38            0
 Interface  (39)                  0            1
 Interface  (53)                  0          379
 Interface  (54)                620            0
 Interface  (55)               2064            0
 Interface  (56)                  0          379
 Interface  (57)                 57            0
```

```
Interface  (58)                1            0
Interface  (90)                0           21
Interface  (91)                0           13
Interface  (92)                0           12
Interface  (117)               0         1516
Interface  (138)               0          758
Interface  (151)             244            0
Interface  (163)             124            0
Interface  (201)             101            0
Interface  (226)              91            0
Interface  (229)             124            0
Interface  (238)             205            0
Next-hop   ( 1)              159            0
Next-hop   ( 2)                5            0
Next-hop   ( 3)               16            0
Next-hop   (11)               51            0
Next-hop   (23)               12            0
Next-hop   (40)                3            0
Route      ( 1)              164            0
Route      ( 2)               70            0
Route      ( 3)               11            0
Route      ( 6)                1            0
Route      ( 9)               14            0
Route      (12)                2            0
Route      (13)                1            0
Route      (22)                4            0
Pfe        ( 1)                0            1
Pfe        ( 3)              157            0
Pfe        ( 4)                0          157
Pfe        ( 5)              158            0
Pfe        ( 6)                0          158
Pfe        ( 7)              158            0
Pfe        ( 8)                0          158
Pfe        ( 9)                0            1
Pfe        (10)                1            0
Pfe        (11)                1            0
Pfe        (12)             2772            0
Pfe        (13)              108          108
Pfe        (15)              158            0
Pfe        (16)                0          158
Pfe        (47)                0            1
Dfw        ( 1)               23            0
Dfw        ( 2)                1            0
Dfw        ( 6)                0            6
```

```
Dfw         (18)              175            0
GenCfg      ( 5)                1            0
GenCfg      ( 8)              157            0
GenCfg      ( 9)               21            0
GenCfg      (15)               57            0
STP         ( 1)              112            0
STP         ( 2)                0           98
STP         ( 5)                0           97
```

show fib-local-accounting ip

Syntax

```
show fib-local-accounting ip
```

Release Information

Command introduced in Junos OS Release 12.3 for MX Series routers.

Description

Display the number of packets that were sent to an anchor MPC due to FIB localization.

Required Privilege Level

view

RELATED DOCUMENTATION

fib-remote | 371

fib-local | 370

Example: Configuring Packet Forwarding Engine FIB Localization

Sample Output

show fib-local-accounting ip

`user@host>` **show fib-local-accounting ip**

```
PFE 0
        fe_addr         packets         bytes
        28                      0                       0
        29                      0                       0
        30                      0                       0
        31                      0                       0
PFE 1
        fe_addr         packets         bytes
        28                      0                       0
        29                      0                       0
        30                      0                       0
        31                      0                       0
```

show ptp aggregated-ethernet interfaces

Syntax

```
show ptp aggregated-ethernet interfaces
```

Release Information

Command introduced in Junos OS Release 17.2R1.

Description

Display the information related to aggregated Ethernet bundles.

Options

This command has no options.

Required Privilege Level

View

RELATED DOCUMENTATION

Precision Time Protocol Overview

Output Fields

Table 110 on page 1882 lists the output fields for the **show ptp aggregated-ethernet interfaces** command. Output fields are listed in the approximate order in which they appear.

Table 110: show ptp aggregated-ethernet interfaces

Field Name	Field Description
Bundle	Name of the aggregated Ethernet bundle.
Primary	Primary interface in an aggregated Ethernet bundle. • **active**—Indicates that the link is actively receiving ptp packets. • **down**—Indicates that the link is down.
Secondary	Secondary interface in an aggregated Ethernet bundle. • **active**—Indicates that the link is actively receiving ptp packets. • **ready**—Indicates that the link is ready to take over if the primary link fails.

Table 110: show ptp aggregated-ethernet interfaces *(continued)*

Field Name	Field Description
Role	Role of the aggregated Ethernet bundle: • **Master**, **Slave**, or **Stateful**

Sample Output

show ptp aggregated-ethernet interfaces

```
user@host> show ptp aggregated-ethernet interfaces
```

```
bundle       primary                   secondary         role
ae0.0        ge-1/0/1 (active)       ge-5/0/5 (ready)    slave
ae2.0        ge-5/0/1 (down)         ge-6/1/1 (active)   master
```

show ptp aggregated-ethernet interfaces (stateful ports)

```
user@host> show ptp aggregated-ethernet interfaces
```

```
AE Bundle         Ifstate  Primary               Secondary              Role
ae0.0              Up      et-11/0/5(active)     et-11/1/2(secondary)   Stateful
```

show ptp clock

Syntax

```
show ptp clock
```

Release Information

Command introduced in Junos OS Release 12.2.
Command introduced in Junos OS Release 12.3 for ACX Series Routers.
Command introduced in Junos OS Release 17.3 for QFX Series switches.

Description

(ACX Series, MX80, MX240, MX480, MX960 routers, and QFX Series switches) Display the details of the clock configured on the node.

Options

This command has no options.

Required Privilege Level

view

RELATED DOCUMENTATION

- *IEEE 1588v2 PTP Boundary Clock Overview*
- *IEEE 1588v2 Precision Timing Protocol (PTP)*
- *Precision Time Protocol Overview*

List of Sample Output

show ptp clock on page 1886
show ptp clock (ACX Series Routers) on page 1887

Output Fields

Table 111 on page 1884 lists the output fields for the **show ptp clock** command. Output fields are listed in the approximate order in which they appear.

Table 111: show ptp clock Output Fields

Field Name	Field Description
Slot Number	Number of the FPC or MIC slot.

Table 111: show ptp clock Output Fields *(continued)*

Field Name	Field Description
Two-step Clock	Whether the clock provides time information which is a combination of an event message and a subsequent general message: **True** or **False**.
Clock Identity	Clock identity of the slave or client as defined in IEEE 1588.
Total Ports on Device	Total number of PTP ports on the router.
Clock Class	Attribute of an ordinary or boundary clock that denotes the traceability of the time or frequency distributed by the grandmaster clock.
Clock Accuracy	Indicates the expected accuracy of a clock when it is the grandmaster, or in the event it becomes the grandmaster.
Log Variance	Represents an estimate of the variations of the local clock when it is not synchronized via PTP to another clock.
Clock Priority1	Priority value of the clock. Lower value takes precedence.
Clock Priority2	Prioritize the masters to avoid confusion when the **Clock Priority1** value is the same for different masters in a network.
UTC Offset	Offset between International Atomic Time (TAI) and Coordinated Universal Time (UTC) times. The value is 34 seconds as of January 2012.
Leap59	When **TRUE**, the last minute of the current UTC day has only 59 seconds (instead of the 60 SI seconds).
Leap61	When **TRUE**, the last minute of the current UTC day has 61 seconds (instead of the 60 SI seconds).
Time Traceable	When **TRUE**, the timescale and the UTC offset are traceable to a primary reference.
Frequency Traceable	When **TRUE**, frequency determining the timescale is traceable to a primary reference.
Time Source	Time source external to the Precision Time Protocol (PTP), which provides time and/or frequency as appropriate. The time source is traceable to the international standards laboratories maintaining clocks that form the basis for the International Atomic Time (TAI) and Universal Coordinated Time (UTC) timescales. Examples of these are Global Positioning System (GPS), NTP, and National Institute of Standards and Technology (NIST) timeservers.

Table 111: show ptp clock Output Fields *(continued)*

Field Name	Field Description
Delay Req Sending Time	Interval in seconds between the delay-request messages sent by the slave to the master.
Steps Removed	Number of boundary clocks between the local clock and the foreign master clock.
Slave-only	Set to **TRUE**, when the system is used in ordinary slave clock mode; otherwise, **FALSE**.
Parent Id	EUI-64 clock identifier of the immediate upstream master clock.
GMC Id	EUI-64 clock identifier of the grandmaster clock.
GMC Class	Denotes the grandmaster clock's traceability of the distributed time or frequency.
GMC Accuracy	Indicates the expected accuracy of the grandmaster clock.
GMC Variance	Represents an estimate of the variations of the grandmaster clock.
GMC Priority1	**Priority1-value** of the grandmaster clock.
GMC Priority2	**Priority2-value** of the grandmaster clock.

Sample Output

show ptp clock

```
user@host> run show ptp clock
```

```
Clock Details:

Slot Number           : 7
Default Data:
Two-step Clock        : FALSE                     Clock Identity :
00:05:85:ff:fe:73:ef:d0
Total Ports on Device : 0                         Clock Class    : 255
Clock Accuracy        : 49                        Log Variance   : -12944
Clock Priority1       : 128                       Clock Priority2: 128
UTC Offset            : 33                        Leap59         : FALSE
Leap61                : FALSE                     Time Traceable  : FALSE
Frequency Traceable   : FALSE                     Time master    : 0
```

```
Delay Req Sending Time: 0                          Steps Removed  : 1
Slave-only            : NA
Parent Data:
Parent Id             : 00:18:0b:ff:ff:20:01:62
GMC Id                : 00:18:0b:ff:ff:20:01:62   GMC Class        : 52
GMC Accuracy          : 254                       GMC Variance     : 11952
GMC Priority1         : 0                         GMC Priority2    : 0
Global Data:
UTC Offset            : 34                        Leap-59          : FALSE
Leap-61               : FALSE                     Time traceable    : FALSE
Freq Traceable        : FALSE                     Time Scale       : FALSE
Time master           : 160
```

show ptp clock (ACX Series Routers)

`user@host>` **run show ptp clock**

```
Clock Details:
Slot Number           : 0
Default Data:
Two-step Clock        : FALSE                     Clock Identity :
84:18:88:ff:fe:c0:7a:00
Total Ports on Device : 0                         Clock Class    : 255
Clock Accuracy        : 34                        Log Variance   : 15353
Clock Priority1       : 128                       Clock Priority2: 128
UTC Offset            : 0                         Leap59         : FALSE
Leap61                : FALSE                     Time Traceable : FALSE
Frequency Traceable   : FALSE                     Time Source    : 0
Delay Req Sending Time: 0                         Steps Removed  : 0
Slave-only            : NA
Parent Data:
Parent Id             : 00:00:64:ff:fe:01:01:02
GMC Id                : 00:00:64:ff:fe:01:01:02   GMC Class        : 80
GMC Accuracy          : 35                        GMC Variance     : 0
GMC Priority1         : 128                       GMC Priority2    : 128
Global Data:
UTC Offset            : 0                         Leap-59          : FALSE
Leap-61               : FALSE                     Time tracable    : FALSE
Freq Traceable        : FALSE                     Time Scale       : FALSE
Time source           : 16
```

show ptp hybrid

Syntax

```
show ptp hybrid
<config | status>
```

Release Information
Command introduced in Junos OS Release 12.2R2.

Description
Display the current configuration and current operation mode of the slave.

Options
config—Display the PTP source to Synchronous Ethernet interface mappings.

status—Display the current hybrid mode operational status.

Required Privilege Level
View

RELATED DOCUMENTATION

Understanding Hybrid Mode

Output Fields
Table 110 on page 1882 lists the output fields for the **show ptp hybrid** command. Output fields are listed in the approximate order in which they appear.

Table 112: show ptp hybrid Output Fields

Field Name	Field Description
ptp source	Displays the IP address of the PTP source.
synce source	Displays the interface name of the Synchronous Ethernet source through which the PTP source is traceable.
Configured Mode	Displays the current configured mode of the router as **Hybrid**.
Operating Mode	Displays the current operation mode: **Hybrid** or **None**.
PTP Reference	Displays the IP address and the interface name of the PTP reference clock.

Table 112: show ptp hybrid Output Fields *(continued)*

Field Name	Field Description
Synchronous Ethernet Reference	Displays the interface name of the Synchronous Ethernet reference clock.
Lock state	Displays the current lock state of the router: **Locked**, **Initializing**, or **Acquiring**.
Lock state description	Displays the description for the current lock state of the router: • **Initializing**—Hybrid mode is being initialized. • **Acquiring Frequency**—Synchronous Ethernet source identified for frequency synchronization, acquiring frequency-related data from master clock. • **Frequency Locked, Acquiring Phase**—Frequency locked from the Synchronous Ethernet source, acquiring phase-related data from master clock. • **Frequency and Phase Locked**—Slave clock is frequency and phase synchronized with master clock.

Sample Output

show ptp hybrid config

```
user@host> show ptp hybrid config
```

```
ptp source          synce source
100.1.1.2              ge-1/1/2
```

show ptp hybrid status

```
user@host> show ptp hybrid status
```

```
Hybrid Mode Status:
Configured Mode               : Hybrid
Operating  Mode               : Hybrid
PTP Reference                 : 100.1.1.2, ge-1/0/0.0
Synchronous Ethernet Reference : ge-1/1/2
Lock state                    : Locked
Lock state description        : Frequency and Phase Locked
```

show ptp lock-status

Syntax

```
show ptp lock-status
```

Release Information

Command introduced in Junos OS Release 12.2.
Command introduced in Junos OS Release 17.3 for the QFX Series.

Description

(ACX Series, MX80, MX240, MX480, MX960 routers, and QFX Series switches) Display information about the lock status of the slave. The output verifies whether the slave is aligned to the grandmaster (master clock) or not.

Options

detail—Display detailed information about the lock status of the slave.

Required Privilege Level

view

RELATED DOCUMENTATION

- *IEEE 1588v2 PTP Boundary Clock Overview*
- *IEEE 1588v2 Precision Timing Protocol (PTP)*
- *Precision Time Protocol Overview*

List of Sample Output

show ptp lock-status on page 1891
show ptp lock-status (ACX Series) on page 1892
show ptp lock-status detail (ACX Series) on page 1892
show ptp lock-status detail (with IPv6 addresses for PTP master/slave) on page 1892
show ptp lock-status detail (with IPv6 addresses for PTP master/slave with AE interface) on page 1892
show ptp lock-status detail (with IPv6 addresses for PTP master/slave with loopback interface) on page 1893

Output Fields

Table 113 on page 1891 lists the output fields for the **show ptp lock-status** command. Output fields are listed in the approximate order in which they appear.

Table 113: show ptp lock-status Output Fields

Field Name	Field Description
Lock State	State of the slave clock with respect to its master clock: • Freerun • Holdover • Phase Aligned • Acquiring • Initializing • Freq locked
Phase offset	Time offset information of a slave clock with respect to its master clock. Precision of this time offset is 1 nanosecond.
State since	Date, time, and how long ago the lock status of the PTP client or slave clock changed. The format is **State since: year-month-day hour:minute:second:timezone (hour:minute:second ago)**. For example, **State since: 2002-04-26 10:52:40 PDT (04:33:20 ago)**. On ACX Series routers, this field is displayed in Junos OS Release 15.1 and later.
Selected Master Details	Details include the following: • **Upstream Master address**—The address of the remote master from which the salve acquires the clock. • **Slave interface**—The slave interface on this router corresponding to the Master above. **NOTE:** On ACX Series router, if the PTP lock state is **FREERUN**, then the **Selected Master Details** field is not shown.

Sample Output

show ptp lock-status

```
user@host> run show ptp lock-status
```

```
Lock Status:

Lock State    : 5 (PHASE ALIGNED)
Phase offset  : 0.000000001 sec
```

show ptp lock-status (ACX Series)

```
user@host> show ptp lock-status
```

```
Lock Status:

Lock State    : 1 (FREERUN)
Phase offset  : 0.000000869 sec
```

show ptp lock-status detail (ACX Series)

```
user@host> show ptp lock-status detail
```

```
Lock Status:

Lock State    : 5 (PHASE ALIGNED)
State since   : 2014-09-10 11:24:11 PDT (00:02:51 ago)

Phase offset  : 0.000000030 sec

Selected Master Details:
Upstream Master address    : 13.13.13.1
Slave interface            : ge-0/1/5.0
```

show ptp lock-status detail (with IPv6 addresses for PTP master/slave)

```
user@host> show ptp lock-status detail
```

```
Lock Status:
Lock State    : 5 (PHASE ALIGNED)
Phase offset  : -0.000000010 sec

Selected Master Details:
Upstream Master address    : 2001:cdba:0000:0000:0000:0000:3257:9652
Slave interface            : ge-0/2/0.0
Parent Id                  : 84:18:88:ff:fe:c0:34:00
GMC Id                     : 00:18:0b:ff:fe:20:03:14
```

show ptp lock-status detail (with IPv6 addresses for PTP master/slave with AE interface)

```
user@host> show ptp lock-status detail
```

```
Lock Status:

Lock State    : 5 (PHASE ALIGNED)
Phase offset  : -0.000000016 sec
State since   : 2018-10-17 01:53:29 UTC (01:09:37 ago)

Selected Master Details:
Upstream Master address    : 2003::a
Slave interface            : ae0.0
Parent Id                  : 12:34:56:78:9a:bc:de:01
GMC Id                     : 12:34:56:78:9a:bc:de:01
```

show ptp lock-status detail (with IPv6 addresses for PTP master/slave with loopback interface)

`user@host>` **show ptp lock-status detail**

```
Lock Status:

Lock State    : 5 (PHASE ALIGNED)
Phase offset  : -0.000000016 sec
State since   : 2018-10-17 01:53:29 UTC (01:09:37 ago)

Selected Master Details:
Upstream Master address    : 2003::a
Slave interface            : lo0.0
Parent Id                  : 12:34:56:78:9a:bc:de:01
GMC Id                     : 12:34:56:78:9a:bc:de:01
```

show ptp master

Syntax

```
show ptp master
<brief |detail | interface>
```

Release Information

Command introduced in Junos OS Release 12.2.
Command introduced in Junos OS Release 17.3 for the QFX Series.

Description

(MX80, MX240, MX480, MX960 routers, and the QFX Series) Display information about the configured master and the status of the master.

Options

brief—Display information about the master in brief.

detail—Display information about the master in detail.

interface—Display information about the configured interface of the master.

Required Privilege Level

View

RELATED DOCUMENTATION

> *Precision Time Protocol Overview*
>
> *Configuring the Precision Time Protocol G.8275.2 Enhanced Profile (Telecom Profile)*

Output Fields

Table 114 on page 1894 lists the output fields for the **show ptp master** command. Output fields are listed in the approximate order in which they appear.

Table 114: show ptp master Output Fields

Field Name	Field Description
Interface	Name of the interface configured for Precision Time Protocol (PTP) on the master.

Table 114: show ptp master Output Fields *(continued)*

Field Name	Field Description
Status	Status of the Precision Time Protocol master: • **Master** or **Slave** • **Active** or **Inactive** • **Initializing** or **Down**
Local Adddress	IP or MAC address of the configured master clock.
Status (Local address Status)	Status of the local address of the interface: • **Configured** or **Not configured** • **Master** or **Slave** • **Active** or **Inactive**
Status (Remote address Status)	Status of the remote address of the interface on the QFX Series: • **Configured** or **Not configured** • **Master** or **Slave** • **Active** or **Inactive**
Total Remote Slaves	Number of remote slaves.
Slave Address	IP or MAC address of the slave.
Status (Slave Address Status)	Status of the address of the slave: • **Configured** or **Not configured** • **Master** or **Slave** • **Active** or **Inactive** or **Ready**

Sample Output

show ptp master

`user@host>` **run show ptp master brief**

```
PTP Master Interface Configured:
```

```
Master Interface           Status
ge-7/0/2.0                 Master, Active
```

show ptp master detail (Enterprise Profile on the QFX Series)

`user@host>` **run show ptp master detail**

```
PTP Master Interface Details:
Interface  : xe-0/0/6:1.0
Status     : Master, Active
Clock Info :
    Local Address: 50.50.50.1         Status: Configured, Master, Active
        Remote Address: 224.0.1.129
    Total Remote Slaves: 1
```

show ptp master detail (Enterprise Profile with dynamically learned master and slave interfaces for each physical interface on the QFX Series)

`user@host>` **run show ptp slave detail**

```
PTP Master Interface Details:

Interface  : xe-0/0/31:3.0
Status     : Master, Active
Clock Info :
    Local Address: 10.10.10.2         Status: Configured, Master, Active
        Remote Address: 10.10.10.1         Status: Learned, Slave, Active
        Remote Address: 224.0.1.129        Status: Configured, Slave, Active
    Total Remote Slaves: 2

Interface  : xe-0/0/35:3.0
Status     : Master, Active
Clock Info :
    Local Address: 10.2.2.1           Status: Configured, Master, Active
        Remote Address: 10.2.2.24          Status: Learned, Slave, Active
        Remote Address: 10.2.2.29          Status: Learned, Slave, Active
        Remote Address: 10.2.2.30          Status: Learned, Slave, Active
        Remote Address: 10.2.2.32          Status: Learned, Slave, Active
        Remote Address: 10.2.2.35          Status: Learned, Slave, Active
        Remote Address: 10.2.2.52          Status: Learned, Slave, Active
        Remote Address: 10.2.2.61          Status: Learned, Slave, Active
        Remote Address: 224.0.1.129        Status: Configured, Slave, Active
    Total Remote Slaves: 8
```

show ptp master detail

```
user@host> run show ptp master detail
```

```
PTP Master Interface Details:
Interface  : ge-7/0/2.0
Status     : Master, Active
Clock Info :
    Local Address: 10.0.0.1              Status: Configured, Master, Active
    Total Remote Slaves: 0
        Slave IP: 10.0.0.2           Status: Configured, Slave, Active
```

show ptp master detail (with IPv6 addresses for PTP master/slave)

```
user@host> run show ptp master detail
```

```
 PTP Master Interface Details:
Interface  : ge-0/1/5.0
Status     : Master, Active
Clock Info :
    Local Address: 84:18:88:c0:60:a1  Status: Configured, Master, Active
        Remote Address: [Slave Mac]  Status: Configured, Slave, Active
    Total Remote Slaves: 1
```

show ptp master detail (with IPv6 addresses for PTP master/slave using loopback interface on the QFX Series)

```
user@host> run show ptp master detail
```

```
PTP Master Interface Details:
Interface  : lo0.0
Status     : Master, Active
Clock Info :
    Local Address: 2001::1:132        Status: Configured, Master, Active
        Remote Address: 2002::1            Status: SECURE AUTO SLAVE,
                                                   Sig State: Ann + Sync
        Remote Address: 3001::1:133        Status: SECURE AUTO SLAVE,
                                                   Sig State: Ann + Sync
    Total Remote Slaves: 2
```

show ptp interface ge-7/0/2.0

```
user@host> run show ptp master interface ge-7/0/2.0
```

```
PTP Master Interface Configured:

Master Interface           Status
ge-7/0/2.0                 Master, Active
```

show ptp path-trace detail

Syntax

```
show ptp path-trace detail
```

Release Information

Command introduced in Junos OS Release 13.3R4.

Description

(MX80, MX240, MX480, and MX960 routers) Display the details of the path an announce message takes in a PTP ring topology.

Options

This command has no options.

Required Privilege Level

view

RELATED DOCUMENTATION

> *IEEE 1588v2 PTP Boundary Clock Overview*
>
> *Precision Time Protocol Overview*

List of Sample Output

show ptp path-trace detail on page 1900

Output Fields

Table 115 on page 1899 lists the output fields for the **show ptp path-trace detail** command. Output fields are listed in the approximate order in which they appear.

Table 115: show ptp path-trace detail Output Fields

Field Name	Field Description
Hop Count	The count of the next router in a network trail where the announce message is received.
Member Clock Identity	Clock identity of the slave or client as defined in IEEE 1588.

Sample Output

show ptp path-trace detail

```
user@host> show ptp path-trace detail
```

```
Hop count          Member Clock Identity

     1               00:05:85:ff:fe:74:1f:d0
     2               00:05:85:ff:fe:73:ef:d0
```

show ptp phy-timestamping-interfaces

Syntax

```
show ptp phy-timestamping-interfaces
```

Release Information

Command introduced in Junos OS Release 17.1R1.

Description

Display information about the interfaces that have PHY timestamping enabled. PHY timestamping is the timestamping of the IEEE 1588 event packets at the physical layer. Timestamping the packet at the physical layer eliminates the noise or the packet delay variation (PDV) that is introduced by the Packet Forwarding Engine.

Options

This command has no options.

Required Privilege Level

view

RELATED DOCUMENTATION

Precision Time Protocol Overview

List of Sample Output

show ptp phy-timestamping-interfaces on page 1902

Output Fields

Table 33 on page 701 lists the output fields for the **show ptp phy-timestamping-interfaces** command. Output fields are listed in the approximate order in which they appear.

Table 116: show-ptp-phy-timestamping-interfaces

Field Name	Field Description
PHY time-stamp interfaces	Name of the interface configured for phy-timestamping.

Sample Output

show ptp phy-timestamping-interfaces

```
user@host> show ptp phy-timestamping-interfaces
```

```
PHY time-stamp interfaces:
    xe-0/2/1
    xe-4/1/3
```

show ptp port

Syntax

```
show ptp port
<brief | detail>
ifl logical-interface-name
```

Release Information

Command introduced in Junos OS Release 12.2.
ifl *logical-interface-name* added in Junos OS Release 16.1.

Description

(MX80, MX240, MX480, and MX960 routers) Display information about the number of ports created according to the configuration. For each unique local IP address, one Precision Time Protocol port is created.

Options

brief—Display information about the PTP port in brief.

detail—Display information about the PTP port in detail.

logical-interface-name—Display PTP port information for a specific logical interface.

Required Privilege Level

View

RELATED DOCUMENTATION

Precision Time Protocol Overview

Output Fields

Table 117 on page 1903 lists the output fields for the **show ptp port** command. Output fields are listed in the approximate order in which they appear.

Table 117: show ptp port Output Fields

Field Name	Field Description
Local Interface	Local logical interface.
Local IP	IP address of the interface acting as the slave.

Table 117: show ptp port Output Fields *(continued)*

Field Name	Field Description
Remote IP	IP address of the remote node.
Clock Stream	Unique index for each session created.
Clock Identity	IP address of the slave.
Port State	Status of the port: **PTP listening** or **PTP initializing**.
Delay Req Interval	Interval in seconds between the delay request messages sent by the slave to the master.
Announce Interval	Logarithmic mean interval for the announce messages to be sent by the master.
Announce Timeout	Number of times the announce interval message has to pass between the slave and the master without receipt of an announce message.
Sync Interval	Logarithmic mean interval for sync interval messages to be sent by the master.
Delay Mechanism	Type of delay mechanism used.
Port Number	PTP port number.
Operating Mode	Clock mode of the node.
Master Clock ID	Unique clock-identity of the master.
Previous Announce Messages	Previous announce messages.
Current Announce Message	Current announce messages.

Sample Output

show ptp port brief

```
user@host> run show ptp port brief
```

```
PTP port-data:
Local IP          : 10.0.0.1       Remote IP         : 10.0.0.2
```

```
Clock Stream      : 1             Clock Identity    : 00:05:85:ff:fe:73:ef:d0
Port State        : Listening     Delay Req Interval: -4
Announce Interval : 1             Announce Timeout  : 3
Sync Interval     : -6            Delay Mechanism   : End-to-end
Port Number       : 2             Operating Mode    : Master only

Local IP          : 10.10.1.10    Remote IP         : 10.10.1.2
Clock Stream      : 0             Clock Identity    : 00:05:85:ff:fe:73:ef:d0
Port State        : Listening     Delay Req Interval: -4
Announce Interval : 1             Announce Timeout  : 3
Sync Interval     : -6            Delay Mechanism   : End-to-end
Port Number       : 1             Operating Mode    : BMC Mode
```

show ptp port detail

user@host> **run show ptp port detail**

```
PTP port-data:
Local IP          : 10.0.0.1      Remote IP         : 10.0.0.2
Clock Stream      : 1             Clock Identity    : 00:05:85:ff:fe:73:ef:d0
Port State        : Listening     Delay Req Interval: -4
Announce Interval : 1             Announce Timeout  : 3
Sync Interval     : -6            Delay Mechanism   : End-to-end
Port Number       : 2             Operating Mode    : Master only

Local IP          : 10.10.1.10    Remote IP         : 10.10.1.2
Clock Stream      : 0             Clock Identity    : 00:05:85:ff:fe:73:ef:d0
Port State        : Listening     Delay Req Interval: -4
Announce Interval : 1             Announce Timeout  : 3
Sync Interval     : -6            Delay Mechanism   : End-to-end
Port Number       : 1             Operating Mode    : BMC Mode

Foreign Master Clock Details:
Master Clock Id               : 00:18:0b:ff:ff:20:01:62
Previous Announce Messages    : 8
Current Announce Messages     : 1
```

user@host> **show ptp port ifl ge-1/0/5.0**

```
PTP port-data:
Local Interface   : ge-1/0/5.0
Local Address     : 2001:db8:00:05:85:73:b0:aa
```

```
Remote Address    : 2001:db8:01:80:c2:00:00:0e
Clock Stream      : 0             Clock Identity    : 2001:db8::85:ff:fe:73:b7:d0
Port State        : Master         Delay Req Interval: -4
Announce Interval : 1              Announce Timeout  : 3
Sync Interval     : -6             Delay Mechanism   : End-to-end
Port Number       : 1              Operating Mode    : Master only
```

show ptp slave

Syntax

```
show ptp slave
<brief | detail | interface>
```

Release Information
Command introduced in Junos OS Release 12.2.
Command introduced in Junos OS Release 17.3 for the QFX Series.

Description
(MX80, MX240, MX480, MX960 routers, and the QFX Series) Display information about the configured slave and the status of the slave.

Options
brief—Display information about the slave in detail.

detail—Display information about the slave in detail.

interface—Display information about the configured interface of the slave.

Required Privilege Level
View

RELATED DOCUMENTATION

Precision Time Protocol Overview

Configuring the Precision Time Protocol G.8275.2 Enhanced Profile (Telecom Profile)

Output Fields
Table 118 on page 1907 lists the output fields for the **show ptp slave** command. Output fields are listed in the approximate order in which they appear.

Table 118: show ptp slave Output Fields

Field Name	Field Description
Interface	Name of the interface configured for Precision Time Protocol.

Table 118: show ptp slave Output Fields *(continued)*

Field Name	Field Description
Status	Status of the Precision Time Protocol slave: • **Master** or **Slave** • **Active** or **Inactive** • **Initializing** or **Down**
Interface	Interface configured on the slave.
Local Address	IP or MAC address of the local interface.
Status (Local address Status)	Status of the local address of the interface acting as the slave: • **Configured** or **Unconfigured** • **Master** or **Slave** • **Active** or **Inactive** or **Ready**
Status (Remote address Status)	Status of the remote address of the interface on the QFX Series: • **Configured** or **Not configured** • **Master** or **Slave** • **Active** or **Inactive**
Total Remote Masters	Number of remote masters.
Remote Master	IP or MAC address of the remote node.
Status (Slave IP Address Status)	Status of the address of the master: • **Configured** or **Unconfigured** • **Master** or **Slave** • **Active** or **Inactive**

Sample Output

show ptp slave

```
user@host> run show ptp slave
```

```
PTP Slave Interfaces Configured:

Slave Interface             Status
ge-7/0/0.0                  Slave, Active
```

show ptp slave detail

user@host> **run show ptp slave detail**

```
PTP Slave Interface Details:

Interface        : ge-7/0/0.0
Status           : Slave, Active
Clock Info
    Local address : 10.10.1.10              Status: Configured, Slave, Active
    Total Remote Masters: 0
        Remote Master: 10.10.1.2        Status: Configured, Master, Active
```

show ptp slave detail (with IPv6 addresses for PTP master/slave)

user@host> **run show ptp slave detail**

```
PTP Slave Interface Details:

Interface        : ge-0/1/5.0
Status           : Slave, Active
Clock Info
   Local Address 2001:cdba:0000:0000:0000:0000:3257:9653       Status: Configured,
 Slave, Active
      Remote Master:: 2001:cdba:0000:0000:0000:0000:3257:9652 Status: Configured,
 Master, Active
   Total Remote Masters: 1
```

show ptp slave detail (with IPv6 addresses for PTP master/slave using AE interface on the QFX Series)

user@host> **run show ptp slave detail**

```
PTP Slave Interface Details:

Interface        : ae0.0
Status           : Slave, Active
Clock Info
```

```
Local Address : 2003::b                    Status: Configured, Slave, Active
    Remote Master: 2003::a           Status: Configured, Master, Active
Total Remote Masters: 1
```

show ptp stateful detail

Syntax

```
show ptp stateful detail
```

Release Information

Command introduced in Junos OS Release 17.1R1.

Description

Display information about the stateful interfaces.

Options

This command has no options.

Required Privilege Level

view

RELATED DOCUMENTATION

> *Precision Time Protocol Overview*

List of Sample Output

show ptp stateful detail on page 1912

Output Fields

Table 33 on page 701 lists the output fields for the **show ptp stateful detail** command. Output fields are listed in the approximate order in which they appear.

Table 119: show ptp stateful detail

Field Name	Field Description
Interface	Name of the configured stateful interface.
Status	Status of the stateful interface: stateful and active or inactive.
Local Address	MAC address of the configured stateful interfaces.
Status (of local address)	Status of the local address of the interface: • Configured or not configured • Active or inactive

Table 119: show ptp stateful detail *(continued)*

Field Name	Field Description
Port Status	Status of the port configured: • Master or slave
Remote Address	MAC address of the remote stateful interface.

Sample Output

show ptp stateful detail

`user@host>` **show ptp stateful detail**

```
Interface  : ge-7/0/1.0
Status     : Stateful, Active
Clock Info :
    Local Address: 01:00:5E:90:10:00  Status: Configured, Active
    Port Status: Slave
        Remote Address: 01:00:5E:90:10:FF
```

show synchronous-ethernet esmc statistics

Syntax

```
show synchronous-ethernet esmc statistics
<brief interface interface-name>
<detail interface interface-name>
< interface interface-name>
< interface interface-name (brief | detail)>
```

Release Information

Command introduced in Junos OS Release 11.2R4 for MX Series 5G Universal Routing Platforms.
Command introduced in Junos OS Release 14.2R1 for PTX Series Packet Transport Routers.

Description

(MX5, MX10, MX40, MX80, MX80-T, MX240, MX480, MX960, MX2010, MX2020 , and PTX Series routers only) Display the Synchronous Ethernet ESMC statistics.

Required Privilege Level

maintenance

RELATED DOCUMENTATION

Synchronous Ethernet Overview

Configuring an External Clock Synchronization Interface for MX Series Routers

request chassis synchronization mode | **684**

request chassis synchronization switch | **686**

show synchronous-ethernet global-information | **1918**

show synchronous-ethernet esmc transmit | **1916**

clear synchronous-ethernet esmc statistics | **598**

List of Sample Output

show synchronous-ethernet esmc statistics on page 1914
show synchronous-ethernet esmc statistics detail on page 1914
show synchronous-ethernet esmc statistics interface (PTX) on page 1914

Output Fields

Table 120 on page 1914 lists the output fields for the**show synchronous-ethernet esmc statistics** command. Output fields are listed in the approximate order in which they appear.

Table 120: show synchronous-ethernet esmc statistics Output Fields

Field Name	Field Description
Interface Name	**interface-slot/pic/port**—Displays the name of the interface for which the ESMC statistics are displayed.
Transmit Count	**number**—Displays the number of ESMC packets transmitted.
Receive Count	**number**—Displays the number of ESMC packets received.

Sample Output

show synchronous-ethernet esmc statistics

```
user@host> show synchronous-ethernet esmc statistics
```

```
ESMC statistics:
Interface Name       Transmit Count      Receive Count
ge-1/0/4             3540                0
ge-1/0/2             3539                0
ge-1/2/4             3540                0
```

show synchronous-ethernet esmc statistics detail

```
user@host> show synchronous-ethernet esmc statistics detail
```

```
ESMC Statistics:

Interface Name  :  xe-2/0/10
Transmit Count  :  40908            Receive Count        : 40534
Total Drop Count:  336              Ineligible Drop Count: 0
Adjacency Count :  4
```

show synchronous-ethernet esmc statistics interface (PTX)

```
user@host> show synchronous-ethernet esmc statistics interface et-1/1/0:0
```

```
ESMC statistics:
Interface Name       Transmit Count      Receive Count
et-1/1/0:0           358                 338
```

show synchronous-ethernet esmc transmit

Syntax

```
show synchronous-ethernet esmc transmit
<brief interface interface-name>
<detail interface interface-name>
< interface interface-name>
< interface interface-name (brief | detail)>
```

Release Information

Command introduced in Junos OS Release 11.2R4 for MX80 Universal Routing Platforms.
Command introduced in Junos OS Release 14.2R1 for PTX Series Routers.

Description

(MX5, MX10, MX40, MX80, MX80-T, MX240, MX480, MX960, MX2010, MX2020, and PTX Series routers only) Display the Synchronous Ethernet ESMC transmit interface details.

Required Privilege Level

maintenance

RELATED DOCUMENTATION

Synchronous Ethernet Overview

Configuring an External Clock Synchronization Interface for MX Series Routers

request chassis synchronization mode | **684**

request chassis synchronization switch | **686**

show synchronous-ethernet global-information | **1918**

show synchronous-ethernet esmc statistics | **1913**

List of Sample Output

show synchronous-ethernet esmc transmit on page 1917

Output Fields

Table 121 on page 1917 lists the output fields for the **show synchronous-ethernet esmc transmit detail** command. Output fields are listed in the approximate order in which they appear.

Table 121: show synchronous-ethernet esmc transmit detail Output Fields

Field Name	Field Description
Interface name	**interface-slot/pic/port**—Displays the name of the interface for which the ESMC transmit details are displayed.
Status	**string**—Displays the ESMC transmit interface status details.

Sample Output

`user@host#` **show synchronous-ethernet esmc transmit detail**

```
ESMC Transmit interface details:
    Interface name: ge-1/0/4          Status: ESMC Tx (QL SSU-A/SSM 0x4)
    Interface name: ge-1/0/2          Status: ESMC Tx (QL DNU/SSM 0xf)
    Interface name: ge-1/2/4          Status: ESMC Tx (QL SSU-A/SSM 0x4)
```

show synchronous-ethernet esmc transmit

`user@host>` **show synchronous-ethernet esmc transmit**

```
ESMC Transmit interfaces:
    xe-2/0/10
```

show synchronous-ethernet esmc transmit (PTX)

`user@host>` **show synchronous-ethernet esmc transmit**

```
ESMC Transmit interfaces:
    et-1/1/0:0
    et-2/0/22:3
```

show synchronous-ethernet global-information

Syntax

```
show synchronous-ethernet global-information
<brief>
```

Release Information

Command introduced in Junos OS Release 11.2R4 for MX80-T, MX5, MX10, MX40, MX240, MX480, and MX960 routers.

Command introduced in Junos OS Release 14.2R1 for PTX Series Routers.

Description

(MX5, MX10, MX40, MX80, MX80-T, MX240, MX480, MX960, and PTX routers only) Display information about the global configuration for Synchronous Ethernet chassis synchronization.

Required Privilege Level

maintenance

RELATED DOCUMENTATION

Synchronous Ethernet Overview

Configuring an External Clock Synchronization Interface for MX Series Routers

request chassis synchronization mode | **684**

show synchronous-ethernet esmc statistics | **1913**

show synchronous-ethernet esmc transmit | **1916**

List of Sample Output

show synchronous-ethernet global-information (MX) on page 1919
show synchronous-ethernet global-information (PTX) on page 1920

Output Fields

Table 122 on page 1919 lists the output fields for the **show synchronous-ethernet global-information** command. Output fields are listed in the approximate order in which they appear.

Table 122: show synchronous-ethernet global-information Output Fields

Field Name	Field Description
Network option	**(option-1(EEC1) | option-2(EEC2))**—Displays the network option configuration, either option-1(EEC1) or option-2(EEC2).
Clock mode	**(free-run | auto-select)**—Displays the configured mode of operation. The clock source can be either from the free-run local oscillator or from an external qualified clock. The default is auto-select mode.
QL mode	**(enable | disable)**—Displays the configured quality level mode configuration. The default is disable.
Switchover mode	**(revertive | non-revertive)**—Displays the configured synchronization clock switching mode. The default mode is revertive.
Config change holdover	**seconds**—Displays the time interval to wait before selecting the new clock source during a configuration change. The default value is 30 seconds.
Switchover holdover	**seconds**—Displays the time interval to wait before selecting the new clock source during switchover. The default value is 30 seconds.
Reboot holdover	**seconds**—Displays the time interval to wait before selecting the new clock source during reboot. The default value is 120 seconds.

Sample Output

show synchronous-ethernet global-information (MX)

```
user@host# show synchronous-ethernet global-information
```

```
Global Configuration:

Network option         : option-1(EEC1)
Clock mode             : Auto-select
QL mode                : Disabled
Switchover mode        : Revertive
Config change holdover : 15  seconds
Switchover holdover    : 30  seconds
Reboot holdover        : 120 seconds
```

show synchronous-ethernet global-information (PTX)

```
user@host# show synchronous-ethernet global-information
```

```
Global Configuration:

Network option         : option-1(EEC1)
Clock mode             : Auto-select
Max transmit quality   : PRC
QL mode                : Disabled
Clock selection mode   : Config-QL based
Switchover mode        : Revertive
Config change holdover : 15  seconds
Switchover holdover    : 30  seconds
Reboot holdover        : 120 seconds
RE Status              : Master
Global Wait to Restore : 0   min
```

show system errors active

Syntax

```
show system errors active
<detail [fru slot-number [scope error-scope] [category error-category]]>
<fru slot-number>
```

Release Information

Command introduced in Junos OS Release 18.2R1.

Description

Display information collected by the J-Insight fault monitoring feature. Specifically, display summary or detailed information about the active errors based on FRU, error scope, or error category.

Options

none—Display a brief summary of the system error information for all applicable FRUs.

category *error-category*—(Optional) Display system error information based on error category. An error category categorizes errors into various subgroups under a specific error scope level. Values include: core, functional, io, memory, processing, storage, and switch.

detail—(Optional) Display detailed system error information.

fru slot-number—(Optional) Display system error information for a specific FRU. For devices running Junos OS, output displays error details for FPC FRUs. For devices running Junos OS Evolved, output displays error details for FPC and other components such as fan, PSM, CB, and chassis.

scope *error-scope*—(Optional) Display system error information based on error scope. An error scope provides a level of classification above error category. Values include: board, pfe, and scope-all.

Required Privilege Level

admin

RELATED DOCUMENTATION

J-Insight Device Monitor Basic Configuration

show system errors count | **1927**

show system errors error-id | **1929**

show system errors fru | **1932**

List of Sample Output

show system errors active on page 1923
show system errors active fpc-slot on page 1925
show system errors active detail on page 1926

Output Fields

Table 123 on page 1922 list the output fields for the **show system errors active** command. Output fields are listed in the approximate order in which they appear.

Table 123: show system errors active Output Fields

Field Name	Field Description
Error Name	Name of error.
Identifier	Each error is uniquely identified with an error ID that is represented as a Uniform Resource Identifier (URI).
Description	Description of the error.
State	State of the error. Values are: enabled or disabled.
Scope	Scope classification to which the error belongs. Values include board and pfe.
Category	Category subgroup under the scope level to which the error belongs. Values include: core, functional, io, memory, processing, storage, and switch.
Level	Severity level of the error.
Threshold	Configured threshold value. The associated detection and recovery actions are triggered when this value is exceeded.
Error Limit	The maximum number of times the error is reported.
Support	Support details for the error type.
Occur count	Number of times errors of a specific scope, category, and severity level has occurred.
Clear count	Number of times error instances have been cleared.
Last occurred (ms ago)	Amount of time (in milliseconds) passed since the error last occurred.

Sample Output

show system errors active

For devices running Junos OS, output displays error details for FPC FRUs. For devices running Junos OS Evolved, output displays error details for FPC and other components such as fan, PSM, CB, and chassis.

`user@host>` **show system errors active**

```
System Active Errors Information
CB 0
---------------------------------
Active Minor Errors           : 0
Active Major Errors           : 0
Active Fatal Errors           : 0
CHASSIS 0
---------------------------------
Active Minor Errors           : 0
Active Major Errors           : 5
Active Fatal Errors           : 0
FAN 0
---------------------------------
Active Minor Errors           : 0
Active Major Errors           : 0
Active Fatal Errors           : 0
FAN 1
---------------------------------
Active Minor Errors           : 0
Active Major Errors           : 0
Active Fatal Errors           : 0
FAN 2
---------------------------------
Active Minor Errors           : 0
Active Major Errors           : 0
Active Fatal Errors           : 0
FAN 3
---------------------------------
Active Minor Errors           : 0
Active Major Errors           : 0
Active Fatal Errors           : 0
FAN 4
---------------------------------
Active Minor Errors           : 0
Active Major Errors           : 0
```

```
Active Fatal Errors          : 0
FPC 0
---------------------------------
Active Minor Errors          : 0
Active Major Errors          : 0
Active Fatal Errors          : 0
FPC 1
---------------------------------
Active Minor Errors          : 0
Active Major Errors          : 0
Active Fatal Errors          : 0
FPC 2
---------------------------------
Active Minor Errors          : 0
Active Major Errors          : 0
Active Fatal Errors          : 0
FPC 3
---------------------------------
Active Minor Errors          : 0
Active Major Errors          : 0
Active Fatal Errors          : 0
FPM 0
---------------------------------
Active Minor Errors          : 0
Active Major Errors          : 0
Active Fatal Errors          : 0
PDU 0
---------------------------------
Active Minor Errors          : 0
Active Major Errors          : 0
Active Fatal Errors          : 0
PICS 0
---------------------------------
Active Minor Errors          : 0
Active Major Errors          : 0
Active Fatal Errors          : 0
PICS 1
---------------------------------
Active Minor Errors          : 0
Active Major Errors          : 0
Active Fatal Errors          : 0
PSM 0
---------------------------------
Active Minor Errors          : 0
```

```
Active Major Errors           : 0
Active Fatal Errors           : 0
PSM 1
---------------------------------
Active Minor Errors           : 0
Active Major Errors           : 0
Active Fatal Errors           : 0
PSM 2
---------------------------------
Active Minor Errors           : 0
Active Major Errors           : 0
Active Fatal Errors           : 0
PSM 3
---------------------------------
Active Minor Errors           : 0
Active Major Errors           : 0
Active Fatal Errors           : 0
RE 0
---------------------------------
Active Minor Errors           : 0
Active Major Errors           : 0
Active Fatal Errors           : 0
SIB 0
---------------------------------
Active Minor Errors           : 0
Active Major Errors           : 0
Active Fatal Errors           : 0
SIB 1
---------------------------------
Active Minor Errors           : 0
Active Major Errors           : 0
Active Fatal Errors           : 0
```

show system errors active fpc-slot

`user@host>` **show system errors active fpc-slot 0**

```
System Active Errors Information
FPC 0
-------------------------------------------------
Active Minor Errors: 0
Active Major Errors: 1
Active Fatal Errors: 0
```

show system errors active detail

user@host> **show system errors active detail**

```
System Active Errors Detail Information
CHASSIS 0
-----------------------------------------------------------------
Error Name : fan_tray_removal
Identifier : /chassis/0/hwdre/0/cm/0/fan_tray/Fan Tray 0/fan_tray_removal
Description : Fan_tray_absent
State : disabled
Scope : board
Category : functional
Level : major
Threshold : 1
Error limit : 1
Support : No help info provided
Occur count : 1
Clear count : 0
Last occurred(ms ago) : 339112691
```

show system errors count

Syntax

```
show system errors count
```

Release Information

Command introduced in Junos OS Release 18.2R1.

Description

Display information collected by the J-Insight fault monitoring feature. Specifically, display information about the number of detected errors and recovery actions triggered based on error severity level.

Options

This command has no options.

Required Privilege Level

admin

RELATED DOCUMENTATION

J-Insight Device Monitor Basic Configuration

show system errors active | 1921

show system errors error-id | 1929

show system errors fru | 1932

List of Sample Output

show system errors count on page 1928

Output Fields

Table 124 on page 1927 lists the output fields for the **show system errors count** command. Output fields are listed in the approximate order in which they appear.

Table 124: show system errors count Output Fields

Field Name	Field Description
Level	Severity level of the error. Values are: Minor, Major, or Fatal.
Occurred	Number of times errors of a specific severity level occurred.

Table 124: show system errors count Output Fields *(continued)*

Field Name	Field Description
Cleared	Number of times errors of a specific severity level were cleared.
Action-Taken	Number of times a recovery action was triggered for a specific severity level.

Sample Output

show system errors count

```
user@host> show system errors count
```

```
Level   Occurred   Cleared      Action-Taken
-------------------------------------------------------
 Minor:  0          0             0
 Major:  1          0             1
 Fatal:  0          0             0
```

show system errors error-id

Syntax

```
show system errors error-id error-id-uri
```

Release Information

Command introduced in Junos OS Release 19.1R1.

Description

Display information collected by the J-Insight fault monitoring feature. Specifically, display information about detected errors based on the error ID Uniform Resource Identifier (URI). For devices running Junos OS Evolved, output displays only errors that have occurred at least once in the system.

Options

This command has no options.

Additional Information

Required Privilege Level

admin

RELATED DOCUMENTATION

J-Insight Device Monitor Basic Configuration

show system errors active | **1921**

show system errors count | **1927**

show system errors fru | **1932**

List of Sample Output

show system errors error-id on page 1930

Output Fields

Table 125 on page 1929 lists the output fields for the **show system errors error-id** command. Output fields are listed in the approximate order in which they appear.

Table 125: show system errors error-id Output Fields

Field Name	Field Description
Error Name	Name of error.

Table 125: show system errors error-id Output Fields *(continued)*

Field Name	Field Description
Identifier	Each error is uniquely identified with an error ID that is represented as a Uniform Resource Identifier (URI).
Description	Description of the error.
State	State of the error. Values are: enabled or disabled.
Scope	Scope classification to which the error belongs. Values include board and pfe.
Category	Category subgroup under the scope level to which the error belongs. Values include: core, functional, io, memory, processing, storage, and switch.
Level	Severity level of the error.
Threshold	Configured threshold value. The associated detection and recovery actions are triggered when this value is exceeded.
Error Limit	The maximum number of times the error is reported.
Support	Support details for the error type.
Occur count	Number of times errors of a specific scope, category, and severity level has occurred.
Clear count	Number of times error instances have been cleared.
Last occurred (ms ago)	Amount of time (in milliseconds) passed since the error last occurred.

Sample Output

show system errors error-id

```
user@host> show system errors error-id "/chassis/0/hwdre/0/cm/0/fan_tray/Fan Tray 0/fan_tray_removal"
```

```
System Errors Detail Information
CHASSIS 0
------------------------------------------------------------------
Error Name            : fan_tray_removal
Identifier          : /chassis/0/hwdre/0/cm/0/fan_tray/Fan Tray 0/fan_tray_removal
Description           : Fan_tray_absent
State                 : enabled
Scope                 : board
Category              : functional
Level                 : major
Threshold             : 1
Error limit           : 1
Support               : No help info provided
Occur count           : 1
Clear count           : 0
Last occurred(ms ago) : 84091182
```

show system errors fru

Syntax

```
show system errors fru detail [fru slot-number]
```

Release Information

Command introduced in Junos OS Release 18.2R1.

Description

Display information collected by the J-Insight fault monitoring feature. Specifically, display information about detected errors based on the FRU.

Options

none—Display a brief summary of the system error information for the FRU.

detail—(Optional) Display detailed system error information.

fru slot-number—(Optional) Display system error information for a specific FRU. For devices running Junos OS, output displays error details for FPC FRUs. For devices running Junos OS Evolved, output displays error details for FPC and other components such as fan, PSM, CB, and chassis.

Required Privilege Level

admin

RELATED DOCUMENTATION

J-Insight Device Monitor Basic Configuration

show system errors active | **1921**

show system errors count | **1927**

show system errors error-id | **1929**

List of Sample Output

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show system errors fru detail (PTX10003) on page 1935

Output Fields

Table 126 on page 1933 lists the output fields for the **show system errors fru** command. Output fields are listed in the approximate order in which they appear.

Table 126: show system errors fru Output Fields

Field Name	Field Description
FRU	FRU identification number.
Scope	An error scope provides a level of classification above error category. Error scope values are: pfe and board.
Category	An error category categorizes errors into various subgroups under a specific error scope level. Values include: functional, io, memory, processing, storage, and switch.
Level	Severity level of the error.
Occurred	Number of times errors of a specific scope, category, and severity level has occurred.
Cleared	Number of times errors of a specific scope, category, and severity level were cleared.
Threshold	Configured threshold value. The associated detection and recovery actions are triggered when this value is exceeded.
Action-Taken	Number of times a user-configured recovery action was triggered for errors of a specific scope, category, and severity level.
Action	Action that is triggered when the threshold value is exceeded.

Sample Output

show system errors fru detail

`user@host>` **show system errors fru detail**

```
Fru    Scope   Category    Level   Occurred    Cleared     Threshold   Action-Taken
    Action
FPC 0
        board
                functional  Minor        0           0           10          0
         LOG|
                            Major        0           0            1          0
       GET STATE|CM ALARM|
```

```
                    Fatal       0          0           1          0
DISABLE PFE
          memory    Minor       0          0          10          0
  LOG|
                    Major       0          0           1          0
GET STATE|CM ALARM|
                    Fatal       0          0           1          0
DISABLE PFE
              io    Minor       0          0          10          0
  LOG|
                    Major       0          0           1          0
GET STATE|CM ALARM|
                    Fatal       0          0           1          0
DISABLE PFE
         storage    Minor       0          0          10          0
  LOG|
                    Major       0          0           1          0
GET STATE|CM ALARM|
                    Fatal       0          0           1          0
DISABLE PFE
          switch    Minor       0          0          10          0
  LOG|
                    Major       0          0           1          0
GET STATE|CM ALARM|
                    Fatal       0          0           1          0
DISABLE PFE
        processing  Minor       0          0          10          0
  LOG|
                    Major       0          0           1          0
GET STATE|CM ALARM|
                    Fatal       0          0           1          0
DISABLE PFE
 pfe
        functional  Minor       0          0          10          0
  LOG|
                    Major       0          0           1          0
GET STATE|CM ALARM|
                    Fatal       0          0           1          0
DISABLE PFE
          memory    Minor       0          0          10          0
  LOG|
                    Major       0          0           1          0
GET STATE|CM ALARM|
                    Fatal       0          0           1          0
```

```
      DISABLE PFE
                    io    Minor        0          0          10          0
        LOG|
                          Major        0          0           1          0
      GET STATE|CM ALARM|
                          Fatal        0          0           1          0
      DISABLE PFE
                 storage    Minor        0          0          10          0
        LOG|
                          Major        0          0           1          0
      GET STATE|CM ALARM|
                          Fatal        0          0           1          0
      DISABLE PFE
                  switch    Minor        0          0          10          0
        LOG|
                          Major        0          0           1          0
      GET STATE|CM ALARM|
                          Fatal        0          0           1          0
      DISABLE PFE
                processing  Minor        0          0          10          0
        LOG|
                          Major        0          0           1          0
      GET STATE|CM ALARM|
                          Fatal        0          0           1          0
      DISABLE PFE
```

Sample Output

show system errors fru detail (PTX10003)

The following output has been shortened for clarity. For each part of a FRU, the full output displays any errors in the functional, io, memory, processing, storage, and switch categories, similar to the CB 0 FRU below.

`user@host>` **show system errors fru detail**

```
Fru    Scope   Category    Level   Occurred    Cleared     Threshold   Action-Taken
    Action
CB 0
        board
                functional  Minor        0          0          10          0
```

```
        LOG|
                          Major        0          0           1          0
      GET STATE|CM ALARM|
                          Fatal        0          0           1          0
      CM ALARM|RESET
                     io   Minor        0          0          10          0
        LOG|
                          Major        0          0           1          0
      GET STATE|CM ALARM|
                          Fatal        0          0           1          0
      CM ALARM|RESET
                 memory   Minor        0          0          10          0
        LOG|
                          Major        0          0           1          0
      GET STATE|CM ALARM|
                          Fatal        0          0           1          0
      CM ALARM|RESET
               processing Minor        0          0          10          0
        LOG|
                          Major        0          0           1          0
      GET STATE|CM ALARM|
                          Fatal        0          0           1          0
      CM ALARM|RESET
                storage   Minor        0          0          10          0
        LOG|
                          Major        0          0           1          0
      GET STATE|CM ALARM|
                          Fatal        0          0           1          0
      CM ALARM|RESET
                 switch   Minor        0          0          10          0
        LOG|
                          Major        0          0           1          0
      GET STATE|CM ALARM|
                          Fatal        0          0           1          0
      CM ALARM|RESET
CHASSIS 0
       board
...
FAN 0
       board
...
FAN 1
       board
...
```

```
FPC 0
        board

...
        pfe
...
FPC 1
        board
...

        pfe
...
FPM 0
        board
...
PDU 0
        board
...
PICS 0
        board
...
PICS 1
        board
...
PSM 0
        board
...
PSM 1
        board
...
RE 0
        board
 ...
SIB 0
        board
...
        switch
...
SIB 1
        board
...
        switch
...
```