



PTX Series Packet Transport Switch Software Documentation



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PTX Series Packet Transport Switch Software Documentation

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- Supported Platforms on page xi
- Using the Examples in This Manual on page xi
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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 <http://www.juniper.net/techpubs/>.

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Supported Platforms

For the features described in this document, the following platforms are supported:

- PTX Series

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.xml;
    }
  }
}
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.xml; }
```

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 the [Junos OS CLI User Guide](#).

Documentation Conventions

[Table 1 on page xiii](#) 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.

[Table 2 on page xiii](#) 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

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

Convention	Description	Examples
<i>Italic text like this</i>	<ul style="list-style-type: none"> Introduces important new terms. Identifies book names. Identifies RFC and Internet draft titles. 	<ul style="list-style-type: none"> A policy <i>term</i> is a named structure that defines match conditions and actions. <i>Junos OS System Basics Configuration Guide</i> RFC 1997, <i>BGP Communities Attribute</i>
<i>Italic text like this</i>	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 <i>domain-name</i>
Text like this	Represents names of configuration statements, commands, files, and directories; interface names; configuration hierarchy levels; or labels on routing platform components.	<ul style="list-style-type: none"> 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)	Enclose optional keywords or variables.	stub <default-metric <i>metric</i> >;
(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 (<i>string1</i> <i>string2</i> <i>string3</i>)
# (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)	Enclose a variable for which you can substitute one or more values.	community name members [<i>community-ids</i>]
Indentation and braces ({ })	Identify a level in the configuration hierarchy.	[edit] routing-options { static { route default { nexthop <i>address</i> ; retain; } } }
;(semicolon)	Identifies a leaf statement at a configuration hierarchy level.	
J-Web GUI Conventions		
Bold text like this	Represents J-Web graphical user interface (GUI) items you click or select.	<ul style="list-style-type: none"> In the Logical Interfaces box, select All Interfaces. To cancel the configuration, click Cancel.
> (bold right angle bracket)	Separates levels in a hierarchy of J-Web selections.	In the configuration editor hierarchy, select Protocols>Ospf .

Documentation Feedback

We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation. You can send your comments to techpubs-comments@juniper.net, or fill out the documentation feedback form at <https://www.juniper.net/cgi-bin/docbugreport/>. If you are using e-mail, be sure to include the following information with your comments:

- Document or topic name
- URL or page number
- Software release version (if applicable)

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- JTAC policies—For a complete understanding of our JTAC procedures and policies, review the *JTAC User Guide* located at <http://www.juniper.net/us/en/local/pdf/resource-guides/7100059-en.pdf>.
- Product warranties—For product warranty information, visit <http://www.juniper.net/support/warranty/>.
- JTAC hours of operation—The JTAC centers have resources available 24 hours a day, 7 days a week, 365 days a year.

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- Search for known bugs: <http://www2.juniper.net/kb/>
- Find product documentation: <http://www.juniper.net/techpubs/>
- Find solutions and answer questions using our Knowledge Base: <http://kb.juniper.net/>
- Download the latest versions of software and review release notes: <http://www.juniper.net/customers/csc/software/>
- Search technical bulletins for relevant hardware and software notifications: <https://www.juniper.net/alerts/>

- Join and participate in the Juniper Networks Community Forum:
<http://www.juniper.net/company/communities/>
- Open a case online in the CSC Case Management tool: <http://www.juniper.net/cm/>

To verify service entitlement by product serial number, use our Serial Number Entitlement (SNE) Tool: <https://tools.juniper.net/SerialNumberEntitlementSearch/>

Opening a Case with JTAC

You can open a case with JTAC on the Web or by telephone.

- Use the Case Management tool in the CSC at <http://www.juniper.net/cm/> .
- 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 <http://www.juniper.net/support/requesting-support.html> .

PART 1

Overview

- [Platform Overview on page 3](#)
- [Platform Components Overview on page 5](#)

CHAPTER 1

Platform Overview

- [Chained Composite Next Hops for Transit Devices on page 3](#)

Chained Composite Next Hops for Transit Devices

The Juniper Networks PTX Series Packet Transport Switch is principally designed to handle large volumes of transit traffic in the core of large networks. Chained composite next hops help to facilitate this capability by allowing a packet transport switch to process much larger volumes of routes. A chained composite next hop allows the packet transport switch to direct sets of routes sharing the same destination to a common forwarding next hop, rather than having each route also include the destination. In the event that a network destination is changed, rather than having to update all of the routes sharing that destination with the new information, just the shared forwarding next hop is updated with the new information. The chained composite next hops continue to point to this forwarding next hop which now contains the new destination.

When the next hops for MPLS LSPs are created on packet transport switches, the tag information corresponding to the inner-most MPLS label is extracted into a chained composite next hop. The chained composite next hop is stored in the ingress PFE. The chained composite next hop points to a next hop called the forwarding next hop that resides on the egress PFE. The forwarding next hop contains all of the other information (all of the labels except for the inner-most labels; and the IFA/IP information corresponding to the actual next hop node). Many chained composite next hops can share the same forwarding next hop. Additionally, separating the label from the forwarding next hop and storing it on the ingress PFE (within the chained composite next hop) helps to conserve egress PFE memory by reducing the number of rewrite strings stored on the egress PFE.

On PTX Series Packet Transport Switches, chained composite next hops are enabled by default for the following MPLS and VPN protocols and applications:

- Labeled BGP
- Layer 2 VPNs
- Layer 3 VPNs
- LDP
- MPLS

- Point-to-Multipoint LSPs
- RSVP
- Static LSPs

**Related
Documentation**

- [Accepting BGP Updates with Unique Inner VPN Labels in Layer 3 VPNs](#)

CHAPTER 2

Platform Components Overview

- [Platform Components for PTX Series Packet Transport Switches on page 5](#)

Platform Components for PTX Series Packet Transport Switches

The PTX Series Packet Transport Switches are a portfolio of high-performance platforms designed for the service provider supercore. These switches deliver powerful capabilities based on innovative silicon and a forwarding architecture focused on MPLS and Ethernet. PTX Series Packet Transport Switches deliver several critical core functionalities, including industry-leading density and scalability, cost optimization, high availability, and network simplification.

The Junos OS chassis management software for the PTX Series provides enhanced environmental monitoring and field-replaceable unit (FRU) control. Chassis management delivers: a faster master switchover, enhanced power budgeting with modular power management, reduced power consumption for partially-populated systems, granular control over FRU power-on, multi-zone cooling with better fan speed control for reduced noise, and CPU leveling during monitoring intervals.

FRUs supported on the PTX Series include:

- RE – Routing Engines
- CB – Control Board including an Switch Processor Mezzanine Board (SPMB)
- PDU and PSM – Power distribution unit and Power Supply Module (replaces PEM)
- FAN – Horizontal and Vertical Fan Trays
- PIC – PIC
- SIB – Switch Interface Board
- FPD – Craft Interface (Front Panel Display)
- CCG – Centralized Clock Generator

For Junos OS 12.1, physical interfaces for PTX Series Packet Transport Switches include:

- 24-port 10 Gigabit Ethernet PIC
- 2-port 40 Gigabit Ethernet PIC
- 2-port 100 Gigabit Ethernet PIC

System clocking is controlled by centralized clock generators (CCGs) that provide a 19.44-MHz Stratum 3 clock signal. The CCG can derive a master clock from a valid source and synchronize all interfaces on the chassis to this master clock.

The modular power design allows power efficiency on the order of 1 watt per Gbps. Power Supply Modules (PSMs) regulate zone power and provide power to specific FRUs in the system. Power distribution units (PDUs) distribute zone power. Customers can use only as much power required for their chassis depending on the number of FRU present.

The chassis has separate cooling chambers. Fans operating in one chamber have no impact on cooling in another chamber, enabling the chassis to run fans at different speeds in different chambers. The chassis can coordinate FRU temperatures in each zone and the fan speeds of the fan trays in these zones.

Table 3: Maximum FRUs supported on the PTX5000 Packet Transport Switch

FRU	Maximum Number
Routing Engines	2
Control Board (CB)	2
Power distribution unit (PDU)	2
Power Supply Module (PSM)	4 per PDU
Fan	3
FPC	8
PIC	2 per FPC
Switch Interface Board (SIB)	9
Craft Interface (FPD)	1
Centralized Clock Generator (CCG)	2

Related Documentation

- [Understanding Ethernet Interfaces for the PTX Series Packet Transport Switches on page 9](#)
- [Clock Sources for the PTX Series Packet Transport Switches on page 23](#)
- [PTX5000 Packet Transport Switch Hardware Guide](#)

PART 2

Configuration

- [Configuration Overview on page 9](#)
- [New or Changed Configuration Tasks for Interfaces on page 15](#)
- [New or Changed Configuration Tasks for Clocking, Power Management, and Cooling on page 23](#)
- [New or Changed Configuration Tasks for CoS on page 31](#)
- [New or Changed Configuration Tasks for Firewall Filters on page 51](#)
- [New or Changed Junos Configuration Statements on page 79](#)
- [Configuration Differences Between PTX Series and T Series on page 107](#)

CHAPTER 3

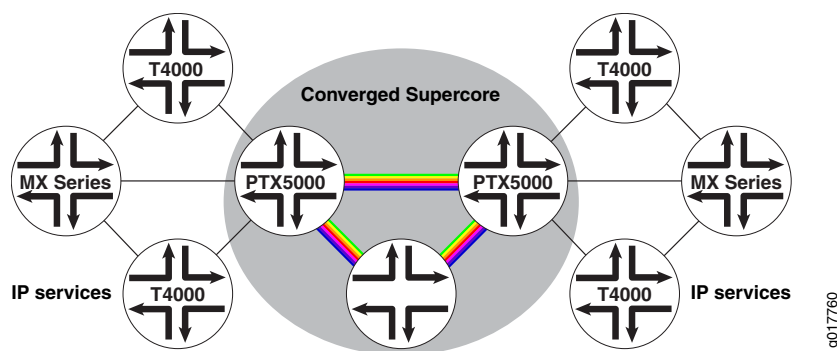
Configuration Overview

- [Understanding Ethernet Interfaces for the PTX Series Packet Transport Switches on page 9](#)
- [Physical Part of an Interface Name on page 11](#)
- [Logical Part of an Interface Name on page 12](#)
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- [Overview of Forwarding Classes on page 13](#)

Understanding Ethernet Interfaces for the PTX Series Packet Transport Switches

PTX Series Packet Transport Switches are a portfolio of high-performance platforms designed for the service provider supercore. A PTX Series Switch working in conjunction with a T Series core router allows a service provider to build a core network that is flexible enough to accommodate: cloud-delivered services, mobility for devices and users, and bandwidth-intensive applications such as HD video. Forwarding architecture for the PTX Series Switches is focused on MPLS and Ethernet.

Figure 1: PTX5000 in a Juniper Networks Environment



For Junos OS 12.1, physical interfaces for PTX Series Packet Transport Switches include:

- 24-port 10 Gigabit Ethernet PIC (SNG-24X10GE). This PIC is a Type 5 PIC, which occupies FPC slot 0 or 1 in a Type 5 FPC.
- 2-port 40 Gigabit Ethernet PIC (SNG-2X40GE). This PIC is a Type 5 PIC, which occupies FPC slot 0 or 1 in a Type 5 FPC.

- 2-port 100 Gigabit Ethernet PIC (SNG-2X100GE). This PIC is a Type 5 PIC, which occupies FPC slot 0 or 1 in a Type 5 FPC.

The PTX5000 can be used as a switch for the supercore delivering statistical multiplexing and dynamic label-switched path (LSP) creation and management. PTX5000 can also function as a packet optical node delivering functionality for multiple layers with a consistent operating system-based platform without going to multichassis.

Juniper Networks PTX5000 Packet Transport Switch supports up to eight FPCs, with each FPC supporting two PICs. The Juniper Networks PTX5000 scales to 384 10-Gigabit Ethernet interfaces, 32 40-Gigabit Ethernet interfaces, or 32 100-Gigabit Ethernet interfaces in a single chassis.

All PTX Series Ethernet PICs have these common features:

- Up to 4094 logical interfaces shared across all ports on a single PFE.
VLAN tagging values range from 0 through 4094. Each VLAN-tagged port consumes a 0.32767 logical interface.
- MAC source and destination address filtering for each port.
- MAC source address filtering for each logical interface.
- MAC source address accounting for each logical interface.
- Flexible VLAN tagging.
- Flexible Ethernet services encapsulation.
- Interrupt-driven, link down detection for MPLS fast reroute.
- Aggregated Ethernet.
- Interface monitor (IFMON) and interface information (IFINFO) support.
- SNMP support.
- 802.3 ah OAM support.
- 802.1 ag OAM support.

Physical interfaces on PTX Series Packet Transport Switches have the following format:

type-fpc/pic/port

type is the media type, which identifies the network device. For Ethernet interfaces on the PTX Series Switches, the interface type is always **et**. This interface type applies to all Ethernet interfaces: 10-Gigabit Ethernet, 40-Gigabit Ethernet, and 100-Gigabit Ethernet. Currently, no other interface types are supported.

For the PTX5000 Packet Transport Switch:

- FPCs are numbered **0** through **7**.
- PICs are numbered **0** or **1**.
- Ports on the 24-port 10-Gigabit Ethernet PIC are numbered **0** through **23**.

- Ports on the 2-port 40-Gigabit Ethernet PIC are numbered **0** or **1**.
- Ports on the 2-port 100-Gigabit Ethernet PIC are numbered **0** or **1**.

Currently, physical interfaces on the PTX Series Packet Transport Switches do not support:

- VLAN rewrite for CCC encapsulation
- Source MAC learning for accounting
- MAC policing
- Wide Area Network Physical Layer Device (WAN PHY) mode on the 24-port 10-Gigabit Ethernet PIC

Related Documentation

- [Configuring MAC Filtering on PTX Series Packet Transport Switches on page 15](#)
- PTX5000 Packet Transport Switch
- PTX5000 PICs Supported

Physical Part of an Interface Name

- [Interface Names for M Series and T Series Routers and PTX Series Packet Transport Switches on page 11](#)
- [MX Series Router Interface Names on page 11](#)
- [J Series Interface Names on page 12](#)

Interface Names for M Series and T Series Routers and PTX Series Packet Transport Switches

On M Series and T Series routers and PTX Series Packet Transport Switches, when you display information about an interface, you specify the interface type, the slot in which the Flexible PIC Concentrator (FPC) is installed, the slot on the FPC in which the Physical Interface Card (PIC) is located, and the configured port number.

In the physical part of the interface name, a hyphen (-) separates the media type from the FPC number, and a slash (/) separates the FPC, PIC, and port numbers:

type-fpc/pic/port



NOTE: Exceptions to the *type-fpc/pic/port* physical description include the aggregated Ethernet and aggregated SONET/SDH interfaces, which use the syntax *aenumber* and *asnumber*, respectively.

MX Series Router Interface Names

On MX Series router, when you display information about an interface, you specify the interface type, the slot in which the Dense Port Concentrator (DPC), Flexible PIC Concentrator (FPC), or Modular Port Concentrator (MPC) is installed, the slot on the FPC in which the Physical Interface Card (PIC) is located, the slot on the MPC in which the Modular Interface Card (MIC) is located, and the configured port number.

In the physical part of the interface name, a hyphen (-) separates the media type from the FPC number, and a slash (/) separates the DPC, FPC or MPC, and the MIC or PIC, and port numbers:

type-dpc/pic/port



NOTE: Although the MX Series routers use DPCs, command syntax in this book is shown as *fpc/pic/port* for simplicity.

J Series Interface Names

On J Series routers, when you display information about an interface, you specify the interface type, the slot in which the Physical Interface Module (PIM) is installed, 0, and the configured port number.

In the physical part of the interface name, a hyphen (-) separates the media type from the PIM number, and a slash (/) separates the PIM, 0, and port numbers:

type-pim/0/port



NOTE: An exception to the *type-pim/0/port* physical description is the Integrated Services Digital Network (ISDN) dialer interface, which uses the syntax *dlnumber*.

Logical Part of an Interface Name

The logical unit part of the interface name corresponds to the logical unit number, which can be a number from 0 through 16,384. In the virtual part of the name, a period (.) separates the port and logical unit numbers:

- M Series and T Series routers and PTX Series Packet Transport Switches:

type-fpc/pic/port.logical

- J Series routers:

type-pim/0/port.logical

PTX Series Packet Transport Switches Management Ethernet Interfaces

For PTX Series Packet Transport Switches, the Junos OS automatically creates the router's management Ethernet interfaces, **em0** and **em1**. To use **em0** or **em1** as a management port, you must configure its logical port (for example, **em0.0**) with a valid IP address.

When you enter the **show interfaces** command on a TX Matrix Plus router, the management Ethernet interfaces (and logical interfaces) are displayed:

```
user@host> show interfaces ?
```

```
...
em0
em0.0
em1
...
```



NOTE: The Routing Engines in the PTX Series Packet Transport Switches do not support the management Ethernet interface `fxp0`, or the internal Ethernet interfaces `fxp1` or `fxp2`.

Overview of Forwarding Classes

It is helpful to think of forwarding classes as output queues. In effect, the end result of classification is the identification of an output queue for a particular packet.

For a classifier to assign an output queue to each packet, it must associate the packet with one of the following forwarding classes:

- Expedited forwarding (EF)—Provides a low-loss, low-latency, low-jitter, assured bandwidth, end-to-end service.
- Assured forwarding (AF)—Provides a group of values you can define and includes four subclasses: AF1, AF2, AF3, and AF4, each with three drop probabilities: low, medium, and high.
- Best effort (BE)—Provides no service profile. For the best effort forwarding class, loss priority is typically not carried in a class-of-service (CoS) value and random early detection (RED) drop profiles are more aggressive.
- Network control (NC)—This class is typically high priority because it supports protocol control.

For Juniper Networks M Series Multiservice Edge Routers (except the M320), you can configure up to four forwarding classes, one of each type: expedited forwarding (EF), assured forwarding (AF), best effort (BE), and network control (NC).

The Juniper Networks M320 Multiservices Edge Routers, T Series Core Routers, and PTX Packet Transport Switches support 16 forwarding classes, enabling you to classify packets more granularly. For example, you can configure multiple classes of EF traffic: EF, EF1, and EF2. The software supports up to eight output queues; therefore, if you configure more than eight forwarding classes, you must map multiple forwarding classes to single output queues. For more information, see [“Configuring Up to 16 Forwarding Classes” on page 34](#).

By default, the loss priority is low. On most devices, you can configure high or low loss priority. On the following devices, you can configure high, low, medium-high, or medium-low loss priority:

- J Series Services Router interfaces
- M320 routers and T Series routers with Enhanced II Flexible PIC Concentrators (FPCs)

- T640 routers with Enhanced Scaling FPC4s
- PTX Series Packet Transport Switches

For more information, see the J Series router documentation and Policer Overview.

To configure CoS forwarding classes, include the **forwarding-classes** statement at the **[edit class-of-service]** hierarchy level:

```
[edit class-of-service]
forwarding-classes {
  class class-name queue-num queue-number priority (high | low);
  queue queue-number class-name priority (high | low);
}
forwarding-classes-interface-specific forwarding-class-map-name {
  class class-name queue-num queue-number [ restricted-queue queue-number ];
}
interfaces {
  interface-name {
    unit logical-unit-number {
      forwarding-class class-name;
      forwarding-classes-interface-specific forwarding-class-map-name;
    }
  }
}
restricted-queues {
  forwarding-class class-name queue queue-number;
}
```

CHAPTER 4

New or Changed Configuration Tasks for Interfaces

- [Configuring MAC Filtering on PTX Series Packet Transport Switches on page 15](#)
- [Configuring Flexible VLAN Tagging on PTX Series Packet Transport Switches on page 16](#)
- [Configuring Tag Protocol IDs \(TPIDs\) on PTX Series Packet Transport Switches on page 17](#)
- [Configuring Interface Encapsulation on PTX Series Packet Transport Switches on page 17](#)
- [Configuring Ethernet 802.3ah OAM on PTX Series Packet Transport Switches on page 19](#)
- [Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Switches on page 20](#)
- [Configuring Aggregated Ethernet Interfaces on PTX Series Packet Transport Switches on page 21](#)

Configuring MAC Filtering on PTX Series Packet Transport Switches

This topic describes how to configure MAC filtering on PTX Series Packet Transport Switches. MAC filtering enables you to specify the MAC addresses from which the PTX Ethernet interface can receive packets.

MAC filtering support on PTX Series Packet Transport Switches includes:

- MAC source and destination address filtering for each port.
- MAC source address filtering for each physical interface.
- MAC source address filtering for each logical interface.

When you filter logical and physical interfaces, you can specify up to 1000 MAC source addresses per port.

To configure MAC source address filtering for a physical interface, include the **source-filtering** and **source-address-filter** statements at the **[edit interfaces et-fpc/pic/port gigether-options]** hierarchy level:

```
[edit interfaces]
et-x/y/z {
  gigether-options {
    source-filtering;
```

```
source-address-filter {  
    mac-address;  
}  
}
```

The **source-address-filter** statement configures which MAC source addresses are filtered. The specified physical interface drops all packets from the MAC source addresses you specify. You can specify the MAC address as *nn:nn:nn:nn:nn:nn* where *n* is a decimal digit. To specify more than one address, include multiple **mac-address** options in the **source-address-filter** statement.

To configure MAC source address filtering for a logical interface, include the **accept-source-mac** statement at the **[edit interfaces et-fpc/pic/port unit logical-unit-number]** hierarchy level:

```
[edit interfaces]  
et-x/y/z {  
    gigether-options {  
        source-filtering;  
    }  
    unit logical-unit-number {  
        accept-source-mac {  
            mac-address mac-address;  
        }  
    }  
}
```

The **accept-source-mac** statement configures which MAC source addresses are accepted on the logical interface. You can specify the MAC address as *nn:nn:nn:nn:nn:nn* where *n* is a decimal digit. To specify more than one address, include multiple **mac-address mac-address** options in the **accept-source-mac** statement.

After an interface filter is configured, there is an accounting entry that is associated with the MAC address filter. Counters accumulate if there are packets with matching MAC source addresses. You can use the **show interfaces mac-database** Junos OS CLI command to view the address count.

- Related Documentation**
- [Understanding Ethernet Interfaces for the PTX Series Packet Transport Switches on page 9](#)
 - [show interfaces mac-database \(Gigabit Ethernet\) on page 473](#)

Configuring Flexible VLAN Tagging on PTX Series Packet Transport Switches

This topic describes how to configure flexible VLAN tagging on PTX Series Packet Transport Switches. In addition to VLAN tagging and stacked VLAN tagging, you can configure a port for flexible tagging. With flexible VLAN tagging, you can configure two logical interfaces on the same Ethernet port, one with single-tag framing and one with dual-tag framing.

To configure mixed tagging, include the **flexible-vlan-tagging** statement at the **[edit interfaces et-fpc/pic/port]** hierarchy level. You must also include the **vlan-tags** statement

with **inner** and **outer** options or the **vlan-id** statement at the **[edit interfaces et-fpc/pic/port unit logical-unit-number]** hierarchy level:

```
[edit interfaces et-fpc/pic/port]
flexible-vlan-tagging;
unit logical-unit-number {
  vlan-id number;
}
unit logical-unit-number {
  vlan-tags inner tpid.vlan-id outer tpid.vlan-id;
}
```

**Related
Documentation**

- [Understanding Ethernet Interfaces for the PTX Series Packet Transport Switches on page 9](#)

Configuring Tag Protocol IDs (TPIDs) on PTX Series Packet Transport Switches

This topic describes how to configure the TPIDs expected to be sent or received on a particular VLAN for PTX Series Packet Transport Switches.

For other types of Juniper Networks Ethernet PICs, you could configure 8 TPIDs per port. However, the PTX Series Packet Transport Switches use MTIP and TL to classify a specific TPID and Ethernet type. For MTIP, you can configure a maximum of 8 TPIDs for each MAC chip.

As a consequence, you can specify the **tag-protocol-id** configuration statement only for the first port (0) of a PTX Series Ethernet PIC. If you configure **tag-protocol-id** statements on the other port, the configuration is ignored and a system error is recorded.

For example, the following is a supported configuration:

```
[edit interfaces et-2/0/0]
gether-options {
  ethernet-switch-profile {
    tag-protocol-id [0x8100 0x9100];
  }
}
```

The **tag-protocol-id** configuration statement supports up to eight TPIDs on port 0 of a given Ethernet PIC. All eight TPIDs are populated to the two MTIPs and TLs associated with the Ethernet PIC.

**Related
Documentation**

- [Understanding Ethernet Interfaces for the PTX Series Packet Transport Switches on page 9](#)
- [Configuring Flexible VLAN Tagging on PTX Series Packet Transport Switches on page 16](#)

Configuring Interface Encapsulation on PTX Series Packet Transport Switches

This topic describes how to configure interface encapsulation on PTX Series Packet Transport Switches. Use the **flexible-ethernet-services** configuration statement to configure different encapsulation for different logical interfaces under a physical interface.

With flexible Ethernet services encapsulation, you can configure each logical interface encapsulation without range restrictions for VLAN IDs.

Supported encapsulations for physical interfaces include:

- **flexible-ethernet-services**
- **ethernet-ccc**
- **ethernet-tcc**

Supported encapsulations for logical interfaces include:

- **ENET2**
- **vlan-ccc**
- **vlan-tcc**



NOTE: PTX Series Packet Transport Switches do not support **extended-vlan-cc** and **extended-vlan-tcc** encapsulation on logical interfaces. Instead, you can configure a tag protocol ID (TPID) value of 0x9100 to achieve the same results.

To configure flexible Ethernet services encapsulation, include the **encapsulation flexible-ethernet-services** statement at the **[edit interfaces et-*fpc/pic/port*]** hierarchy level. For example:

```
interfaces {
  et-fpc/pic/port {
    vlan-tagging;
    encapsulation flexible-ethernet-services;
    unit 0 {
      vlan-id 1000;
      family inet {
        address 11.0.0.20/24;
      }
    }
    unit 1 {
      encapsulation vlan-ccc;
      vlan-id 1010;
    }
    unit 2 {
      encapsulation vlan-tcc;
      vlan-id 1020;
      family tcc {
        proxy {
          inet-address 11.0.2.160;
        }
        remote {
          inet-address 11.0.2.10;
        }
      }
    }
  }
}
```

```
}
}
```

**Related
Documentation**

- [Understanding Ethernet Interfaces for the PTX Series Packet Transport Switches on page 9](#)

Configuring Ethernet 802.3ah OAM on PTX Series Packet Transport Switches

The IEEE 802.3ah standard for Operation, Administration, and Management (OAM) provides a specification for *Ethernet in the first mile (EFM)* connectivity. EFM defines how Ethernet can be transmitted over new media types using new Ethernet physical layer (PHY) interfaces. You can configure IEEE 802.3ah OAM on Ethernet point-to-point direct links or links across Ethernet repeaters. The IEEE 802.3ah OAM standard meets the requirement for OAM capabilities as Ethernet moves from being solely an enterprise technology to being a WAN and access technology, as well as being backward-compatible with existing Ethernet technology.

For Ethernet interfaces capable of running at 100 Mbps or faster, the IEEE 802.3ah OAM standard is supported on numerous Juniper Networks routers and switches. This topic describes configuration support for IEEE 802.3ah OAM features on PTX Series Packet Transport Switches.

On PTX Series Packet Transport Switches, Junos OS Release 12.1 supports the following IEEE 802.3ah OAM features at the physical interface level:

- Discovery and link monitoring
- Fault signaling and detection
- Periodic packet management (PPM) processing
- Action profile support
- graceful Routing Engine switchover (GRES)

To configure 802.3ah OAM support for Ethernet interfaces, include the **oam** statement at the **[edit protocols]** hierarchy level:

```
oam {
  ethernet {
    link-fault-management {
      interfaces {
        interface-name {
          pdu-interval interval;
          link-discovery (active | passive);
          pdu-threshold count;
        }
      }
    }
  }
}
```

**Related
Documentation**

- [Understanding Ethernet Interfaces for the PTX Series Packet Transport Switches on page 9](#)

- Configuring IEEE 802.3ah OAM Link-Fault Management
- Configuring Link Discovery
- Detecting Remote Faults
- Configuring an OAM Action Profile

Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Switches

The IEEE 802.1ag provides a specification for Ethernet connectivity fault management (CFM). The Ethernet network may be comprised of one or more service instances. A service instance could be a VLAN, or a concatenation of VLANs. The goal of CFM is to provide a mechanism to monitor, locate, and isolate faulty links. Ethernet 802.1ag is supported on numerous Juniper Networks routers and switches. This topic describes configuration support for Ethernet OAM 802.1ag features on the PTX Series Packet Transport Switches.

Supported features include:

- Maintenance domain (**maintenance-domain *domain-name***) and maintenance levels (**level *number***).
- Maintenance association (**maintenance-association *ma-name***), including name formats (**name-format** and **short-name-format** for **vlan** and **2octet**), loss threshold (**loss-threshold *number***), and hold interval (**hold-interval *minutes***).
- maintenance association endpoint (MEP) functions, including Maintenance Endpoint ID (**mep *mep-id***), direction down (**direction down**), and autodiscovery (**auto-discovery**).
- Link trace for down MEPs (**link-down**).
- action profile (**action-profile *profile-name***)
- Loopback message generation and reply for down MEPs.

Features that are not supported include:

- Up MEP configuration.
- maintenance association intermediate point (MIP) configuration.

To configure flexible Ethernet services encapsulation on PTX Series Packet Transport Switches, include the **oam** statement at the **[edit protocols]** hierarchy level. For example:

```
[edit protocols]
oam {
  ethernet {
    connectivity-fault-management {
      maintenance-domain md1 {
        level 0;
      }
      maintenance-association ma1 {
        continuity-check {
          interval 100ms;
        }
      }
    }
  }
}
```

```

mep 1 {
  interface et-0/1/1;
  direction down;
  auto-discovery;
}
}
}
}
}
}

```

**Related
Documentation**

- [Understanding Ethernet Interfaces for the PTX Series Packet Transport Switches on page 9](#)
- IEEE 802.1ag OAM Connectivity Fault Management Overview

Configuring Aggregated Ethernet Interfaces on PTX Series Packet Transport Switches

IEEE 802.3ad link aggregation enables you to group Ethernet interfaces to form a single link layer interface, also known as a link aggregation group (LAG) or bundle. Link aggregation can be used for point-to-point connections. It balances traffic across the member links within an aggregated Ethernet bundle and effectively increases the uplink bandwidth. Another advantage of link aggregation is increased availability because the LAG is composed of multiple member links. If one member link fails, the LAG continues to carry traffic over the remaining links.

This topic describes how to configure aggregated Ethernet interfaces on PTX Series Packet Transport Switches.

On PTX Series Packet Transport Switches, the physical interfaces can be:

- 24-port 10-Gigabit Ethernet PIC
- 2-port 40-Gigabit Ethernet PIC
- 2-port 100-Gigabit Ethernet PIC

On PTX Series Packet Transport Switches, aggregated Ethernet support includes the following features:

- A consistent interface type (**et fpc/pic/port**) across all Ethernet interfaces.
- Ability to bundle multiple Ethernet interfaces
- Fault tolerance
- Load balancing between child links
- Advanced features including flexible VLAN tagging and Ethernet services encapsulation

Aggregated Ethernet interfaces can use interfaces from different FPCs or PICs. The following configuration is sufficient to get an aggregated Gigabit Ethernet interface up and running.

```
[edit chassis]
```

```
aggregated-devices {
  ethernet {
    device-count 2;
  }
}

[edit interfaces]
et-0/0/0 {
  gigether-options {
    802.3ad ae0;
  }
}
et-0/0/1 {
  gigether-options {
    802.3ad ae0;
  }
}
ae0 {
  vlan-tagging;
  unit 0 {
    vlan-id 100;
    family inet {
      address 200.200.1.2/24;
    }
  }
  unit 1 {
    vlan-id 101;
    family inet {
      address 200.200.2.2/24;
    }
  }
}
```

**Related
Documentation**

- [Understanding Ethernet Interfaces for the PTX Series Packet Transport Switches on page 9](#)
- [Configuring an Aggregated Ethernet Interface](#)

CHAPTER 5

New or Changed Configuration Tasks for Clocking, Power Management, and Cooling

- [Clock Sources for the PTX Series Packet Transport Switches on page 23](#)
- [Cooling System for PTX Series Packet Transport Switches on page 25](#)
- [Configuring an External Clock Synchronization Interface for PTX Series Packet Transport Switches on page 26](#)
- [Synchronous Ethernet Overview on page 27](#)
- [Configuring the Power-On Sequence for FPCs on PTX Series Packet Transport Switches on page 29](#)

Clock Sources for the PTX Series Packet Transport Switches

System clocking on the PTX Series Packet Transport Switches is controlled by a Centralized Clock Generator (CCG). The CCG is capable of deriving a master clock from a valid source and synchronizing all interfaces on the chassis to this master clock. The CCG plugs into the rear of the chassis. A pair of CCGs installed in the chassis provide a redundant fallback option.

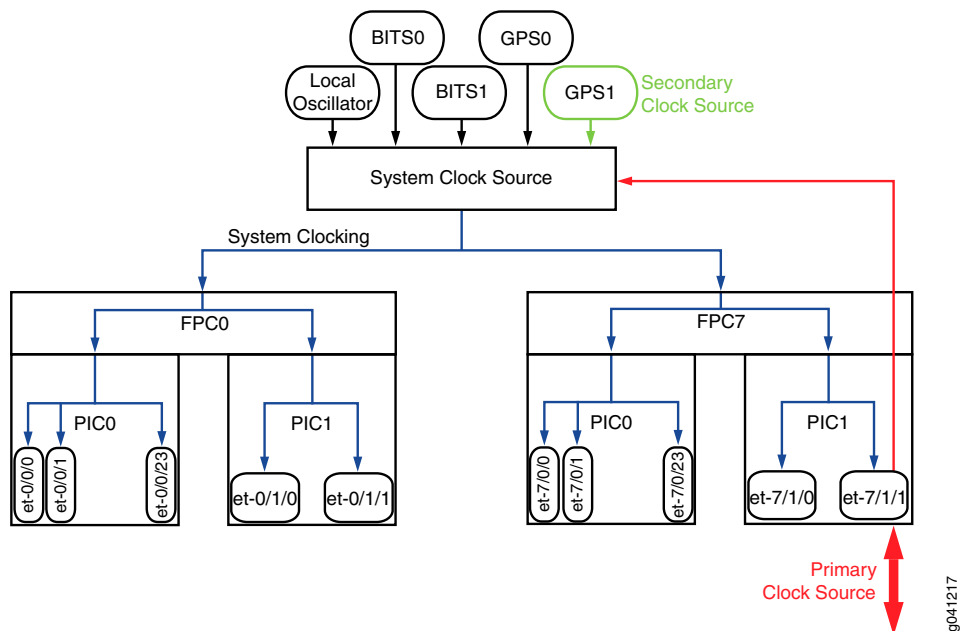
PTX Series Packet Transport Switches can use an internal clock source or it can extract clocking from an external source.

Clock sources and specifications include:

- The PTX series clock is a Stratum 3E-compliant clock with Free Run +/- 4.6 ppm/20 years, Holdover +/- 0.01 ppm/24 hours, and Drift +/- 0.001 ppm/24 hours.
- The internal clock is based on Freerun OCXO with +/- 10 ppb accuracy.
- External clocking includes a choice of GPS-based clock recovery (5 MHz and 10 MHz) or BITS-T1/E1 Line synchronization (1.544 MHz and 2.048 MHz)
- Synchronous Ethernet is supported based on the ITU G.8261 and G.8262 specifications with line timing from the 10-Gigabit Ethernet, 40-Gigabit Ethernet, or 100-Gigabit Ethernet interface.

Synchronous Ethernet is a key requirement for circuit (emulation) services and mobile radio access technologies. Synchronous Ethernet supports sourcing and transfer of frequency for synchronization purposes for both wireless and wireline services and is primarily used for mobile backhaul and converged transport.

Figure 2: Clocking Example for PTX Series Transport Switches



In this example, the primary clock source is configured as interface **et-7/1/1** and the secondary clock source is configured as **gps1**.

Related Documentation

- [Configuring an External Clock Synchronization Interface for PTX Series Packet Transport Switches on page 26](#)

Cooling System for PTX Series Packet Transport Switches

The cooling system components work together to keep all components within the acceptable temperature range. The host subsystem monitors the temperature of the components. When the PTX Series Packet Transport Switch is operating normally, the fans function at lower than full speed. If a fan fails or the ambient temperature rises above a threshold, the speed of the remaining fans is automatically adjusted to keep the temperature within the acceptable range. If the ambient maximum temperature specification is exceeded and the system cannot be adequately cooled, the Routing Engine shuts down some or all of the hardware components.

The PTX5000 Packet Transport Switch has a cooling system that contains different zones that are monitored and cooled independently.

The cooling system consists of:

- Fans
- Different cooling zones
- Individual monitors and controls for each fan
- Temperature sensors

Fans are monitored by using CLI commands such as **show chassis fan**, **show chassis environment**, and **show chassis zones**. The command displays the cooling zones, number of fans running, and the temperature of the chassis components. Each horizontal fan tray has 6 fans. The fans run at 30% capacity, instead of 70%, which saves 845 W.

Temperature sensors drive fan speeds. PTX5000 has variable fan speed control for each fan. Fan trays have a wide range of 30-100% of maximum RPM. A wide RPM range allows fans to run at minimum speed, while still enabling an increase in RPM to protect hot components.

Fan trays fail if:

- Any fan falls below the set RPM
- Any fan rises above the set RPM
- Any fan loses power

Cooling Protections

- Vertical fan tray 0 ramps to 70
- Horizontal Fan trays 1,2 ramp to 50%
- After 10 minutes, all fan trays ramp to 100%
- If the fans cooling the Routing Engine and Control Board are below 50% of the maximum RPM, the Routing Engine and Control Board will shutdown in 15 minutes
- If a fan fails, all other fans in that cooling zone will ramp to 100%.

- Related Documentation
- [show chassis fan on page 299](#)
 - [show chassis environment on page 134](#)
 - show chassis zones
 - PTX5000 Hardware Guide

Configuring an External Clock Synchronization Interface for PTX Series Packet Transport Switches

The PTX Series Packet Transport Switches support an external synchronization interface that can be configured to synchronize the internal Stratum 3 clock to an external source, and then synchronize the chassis interface clock to that source.

This feature can be configured for external primary and secondary interfaces that use building-integrated timing system (BITS), SDH Equipment Timing Source (SETS) timing sources, or an equivalent quality timing source. On the Physical Interface Cards (PICs), the transmit clock of the interface is synchronized to BITS/SETS timing and is traceable to timing within the network.

The PTX Series Packet Transport Switches include a Centralized Clock Generator (CCG) that is used to generate systemwide interface timing signals. It:

- Provides a synchronous Ethernet clock source to the chassis.
- Accepts a BITS clock from CCG bulkhead to use as the basis for the Stratum clock source.
- Accepts an RX recovered clock from an FPC to use as input for the Stratum clock source.

The sources can be BITS, GPS, freerunning, or RX recovered line timing.

To configure external synchronization on the router, include the **synchronization** statement at the **[edit chassis]** hierarchy level:

```
[edit chassis]
synchronization {
  signal-type (t1 | e1);
  switching--mode (revertive | non-revertive);
  transmitter-enable;
  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);
}
```

Use the **synchronization** statement options to specify a primary and secondary timing source. To do this, configure the following options:

- For the PTX Series Packet Transport Switches, specify a signal type mode for interfaces, either **t1** or **e1**.
- Specify the switching mode as **revertive** if a lower-priority synchronization can be switched to a valid, higher-priority synchronization.
- Specify the primary external timing source by using the **primary (fpc-slot-number | gps-0-10mhz | gps-0-5mhz | gps-1-10mhz | gps-1-5mhz | bits-a | bits-b)** statement.
- Specify the secondary external timing source by using the **secondary (fpc-slot-number | gps-0-10mhz | gps-0-5mhz | gps-1-10mhz | gps-1-5mhz | bits-a | bits-b)** statement.

For the PTX 5000 Packet Transport Switch, the supported clock sources are:

- **fpc-0, fpc-1, fpc-2, fpc-3, fpc-4, fpc-5, fpc-6, or fpc-7.**
- **gps-0-10mhz, gps-0-5mhz, gps-1-10mhz, or gps-1-5mhz.**
- **bits-a or bits-b**

Synchronous Ethernet Overview

Synchronization is a key requirement for circuit (emulation) services and mobile radio access technologies. Traditionally, mobile networks utilized SONET/SDH technologies to backhaul voice and data traffic, and used the native support for frequency of SONET/SDH to synchronize their radio network. With the need for greater-capacity backhaul networks, packet-based technologies such as Carrier Ethernet (which do not support the transfer of frequency), and wireless technologies such as frequency division duplex and time division duplex require not only frequency synchronization but also proper time and phase alignment. This requirement is fulfilled by Synchronous Ethernet, which is used for physical layer frequency synchronization of connected access devices (such as base stations, access nodes, and so on). Synchronous Ethernet supports sourcing and transfer of frequency for synchronization purposes for both wireless and wireline services and is primarily used for mobile backhaul and converged transport.

Synchronous Ethernet (ITU-T G.8261) is a physical layer technology that functions regardless of the network load and supports hop-by-hop frequency transfer, where all interfaces on the trail must support Synchronous Ethernet. It enables you to deliver synchronization services that meet the requirements of the present-day mobile network, as well as future Long Term Evolution (LTE)–based infrastructures.

[Table 4 on page 27](#) summarizes the first Junos OS release that supports Synchronous Ethernet on the various Juniper Networks routers and their components:

Table 4: Synchronous Ethernet Support on Junos OS

Routers and Components	Junos OS Release
MX80 3D Universal Edge Routers	10.4
10-Gigabit Ethernet MPC with SFP+	11.2R4

Table 4: Synchronous Ethernet Support on Junos OS (*continued*)

Routers and Components	Junos OS Release
MX5, MX10, MX40, MX80 3D Universal Edge Routers with model numbers MX5-T, MX10-T, MX40-T, and MX80-T	11.2R4
On MX240, MX480, and MX960 3D Universal Edge Routers, only the following Enhanced MPCs (MPCs) support Synchronous Ethernet: <ul style="list-style-type: none"> • MPC1E (MX-MPC1E-3D) • MPC1E Q (MX-MPC1E-3D-Q) • MPC2E (MX-MPC2E-3D) • MPC2E Q (MX-MPC2E-3D-Q) • MPC2E EQ (MX-MPC2E-3D-EQ) 	11.2R4
10-Gigabit Ethernet MIC with XFP in WAN-PHY framing mode	10.4
10-Gigabit Ethernet MIC with XFP in LAN-PHY framing mode	11.4
Juniper Networks PTX Series Packet Transport Switches with their 10-Gigabit Ethernet, 40-Gigabit Ethernet, and 100-Gigabit Ethernet interfaces	12.1

The ingress clock monitoring feature is supported on all MX Series routers with the 16x10GE MPC. On these routers, the incoming Synchronous Ethernet signals cannot be monitored on the 16x10GE MPC but are monitored by other Modular Port Concentrators (MPCs) in the chassis. Therefore, you can use the 16x10GE MPC for incoming Synchronous Ethernet signals if at least one other MPC with an Ethernet Equipment Clock (EEC) is present in the chassis. This behavior is referred to as *ingress clock monitoring*. Note that the 16x10GE MPC does not have a built-in EEC or internal clock; therefore, it can only input (accept) a clock signal but cannot act as a clock source.

When an MX Series router is configured for Synchronous Ethernet on the 16x10GE MPC and no other MPC with an EEC is present in the chassis, the Synchronous Ethernet feature cannot be supported by the system. The system notifies the user through log messages and CLI output and justifies its inability to support Synchronous Ethernet.

For information about Synchronous Ethernet support on the 10-Gigabit Ethernet MIC, see [Synchronous Ethernet on 10-Gigabit Ethernet MIC Overview](#).

Starting with Junos OS Release 12.1, Synchronous Ethernet is supported on Juniper Networks PTX Series Packet Transport Switches. On the packet transport switches, Synchronous Ethernet is supported on 10-Gigabit Ethernet, 40-Gigabit Ethernet, and 100-Gigabit Ethernet interfaces and is compliant with ITU-T G.8261 and ITU-T G.8262 standards.

Synchronous Ethernet is not supported in the following instances:

- Slot 10 on MX Series router chassis
- RJ-45 ports

- MPC3E with CFP
- 10-Gigabit Ethernet MPC with SFP+ in Junos OS Release 10.4.



NOTE: Unified in-service software upgrade (unified ISSU) is currently not supported when clock synchronization is configured for Synchronous Ethernet on MX80 3D Universal Edge Routers and on the MICs and MPCEs on MX240, MX480, and MX960 routers.

Related Documentation

- [Clock Sources for the PTX Series Packet Transport Switches on page 23](#)
- Configuring an External Clock Synchronization Interface for MX Series Routers
- Ethernet Synchronization Message Channel Overview
- Example: Configuring Framing Mode for Synchronous Ethernet on MX Series Routers with 10-Gigabit Ethernet MIC
- request chassis synchronization mode
- Synchronous Ethernet on 10-Gigabit Ethernet MIC Overview
- synchronization

Configuring the Power-On Sequence for FPCs on PTX Series Packet Transport Switches

The PTX Series Packet Transport Switch chassis supplies redundant power to all FPCs. The Power Supply Modules—PSM2 and PSM3—can power up to four FPCs without redundancy. In cases where all PSMs are not present, or some Power Supply Modules (PSMs) fail or are removed during operation, service interruption is minimized by keeping as many affected FPCs online without supplying redundant power to these FPCs. For example, If there is only one PSM in the PSM2 and PSM3 slots on both Power Distribution Units (PDUs) and more than four FPCs in the chassis, then the first four FPCs as configured by the **fru-poweron-sequence** configuration are kept online, whereas the other FPCs are offline because of no power.

By default, Junos OS uses the ascending order of the slot numbers of the FPCs as the sequence to power on the FPCs. To configure the power-on sequence, include the **fru-poweron-sequence** statement at the **[edit chassis]** hierarchy level:

```
[edit chassis]
fru-poweron-sequence;
```

Issue the **show chassis power** command to view power limits and usage details for the FPCs. Issue the **show chassis power sequence** command to view details about the power-on sequence for the FPCs. For more information about these commands, see the [Junos OS System Basics and Services Command Reference](#).

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.

Related Documentation • [fru-poweron-sequence on page 90](#)

CHAPTER 6

New or Changed Configuration Tasks for CoS

- [Understanding CoS CLI Configuration Statements on PTX Series Packet Transport Switches on page 31](#)
- [Configuring Up to 16 Forwarding Classes on page 34](#)
- [Configuring Drop Profile Maps for Schedulers on page 41](#)
- [Hardware Capabilities and Limitations on page 41](#)

Understanding CoS CLI Configuration Statements on PTX Series Packet Transport Switches

PTX Series Packet Transport Switches have no new Junos OS CLI configuration statements. However, some statements or statement options supported on other platforms are not supported or may not have effect on PTX Series devices. These exceptions are summarized here.

[edit chassis] Hierarchy Level

The following statement is not applicable to PTX Series Packet Transport Switches. There are always eight queues available. However, if there is a requirement to use only four of eight queues, you can do this by configuring the forwarding class to queue mapping, as appropriate.

```
[edit chassis fpc slot-number pic pic-number],  
  max-queues-per-interface (4 | 8);
```

The following CLI is not applicable to PICs supported on PTX Series Packet Transport Switches:

```
[edit chassis fpc slot-number pic pic-number],  
  q-pic-large-buffer {  
    [large-scale | small-scale]  
  }
```

On PTX Series Packet Transport Switches, buffer occupancy is computed as weighted average. However, configuration of weight at the PIC level is not supported. The default weights are applied.

```
[edit chassis fpc slot-number pic pic-number],
```

```
red-buffer-occupancy {  
    weighted-averaged [ instant-usage-weight-exponent ] weight-value;  
}
```

The following CLI is not applicable to PICs supported on PTX Series Packet Transport Switches:

```
[edit chassis fpc slot-number pic pic-number],  
traffic-manager {  
    egress-shaping-overhead number;  
    ingress-shaping-overhead number;  
    mode session-shaping;  
}
```

[edit class-of-service] Hierarchy Level

The following CLI is not applicable to PTX Series Packet Transport Switches because there are no separate fabric queues and egress queues:

```
fabric {  
    scheduler-map {  
        priority (high | low) scheduler scheduler-name;  
    }  
}
```

The following CLI does not support the **priority** and **policing-priority** options.

```
forwarding-classes {  
    class queue-num queue-number priority (high | low);  
    queue queue-number class-name priority (high | low) [ policing-priority (premium |  
        normal) ];  
}
```

The following statements are not supported on PTX Series Packet Transport Switches:

- **inet-precedence** rewrite
- Rewrite of both exp and inet-precedence fields for VPN and non-VPN traffic that use the **mpls-inet-both** and **mpls-inet-both-non-vpn** protocol types.
- **exp-push-push-push** and **exp-swap-push-push** rules
- **input-scheduler-map** and **input-shaping-rate**
- The physical interface scheduler is applied on the Packet Forwarding Engine, hence the **scheduler-map-chassis** statement is not applicable.

```
interfaces {  
    interface-name {  
        input-scheduler-map map-name;  
        input-shaping-rate rate;  
        scheduler-map-chassis map-name;  
        unit logical-unit-number {  
            rewrite-rules {  
                inet-precedence (rewrite-name | default) protocol  
                    protocol-types;  
                exp (write-name | default) protocol protocol-types;  
                exp-push-push-push default;  
            }  
        }  
    }  
}
```



```

        exp-swap-push-push default;
    }
}
}

```

In the following CLI, only the **inet-precedence** statement is not supported.

```

rewrite-rules {
  (dscp | dscp-ipv6 | exp | ieee-802.1 | ieee-802.1ad | inet-precedence) rewrite-name {
    import (rewrite-name | default);
    forwarding-class class-name {
      loss-priority level code-point (alias | bits);
    }
  }
}

```

Classifiers on routing instances are not supported on PTX Series Packet Transport Switches because L3VPN is not supported. Hence, the following CLI is not applicable.

```

[edit class-of-service]
routing-instances routing-instance-name {
  classifiers {
    exp (classifier-name | default);
    dscp (classifier-name | default);
    dscp-ipv6 (classifier-name | default);
  }
}

```

The following limitations apply to statements under **schedulers** on PTX Series Packet Transport Switches:

- **protocol** (non-tcp | tcp) is not supported for **drop-profile-map**. The **any** option is supported.
- **excess-priority** is not supported.
- **excess-rate** is not supported.
- **rate-limit** is supported for **transmit-rate**. It is applied only when schedulers are configured as **strict-high**.

```

schedulers {
  scheduler-name {
    buffer-size (percent percentage | remainder | temporal microseconds);
    drop-profile-map loss-priority (any | low | medium-low | medium-high
    high) protocol (any ) drop-profile profile-name;
    priority priority-level;
    transmit-rate (rate | percent percentage | remainder) <exact | rate-limit>;
  }
}

```



NOTE: Configurations that are supported only on Gigabit Ethernet IQ PICs, channelized IQ PICs, and so forth are not applicable to PTX Series Packet Transport Switches. These PICs are not supported on this platform. Those CLIs are not listed here.

[edit firewall] Hierarchy Level

In the following CLI, the **dscp** clause is not supported.

```
family family-name {  
  filter filter-name {  
    term term-name {  
      from {  
        match-conditions;  
      }  
      then {  
        dscp 0;  
        forwarding-class class-name;  
        loss-priority (high | low);  
        three-color-policer {  
          (single-rate | two-rate) policer-name;  
        }  
      }  
    }  
  }  
}
```

Configuring Up to 16 Forwarding Classes

By default on all routers, four output queues are mapped to four forwarding classes, as shown in the topic Default Forwarding Classes. On Juniper Networks J Series Services Routers, M120 and M320 Multiservice Edge Routers, and T Series Core Routers, you can configure more than four forwarding classes and queues. For information about configuring J Series routers, see the J Series router documentation.



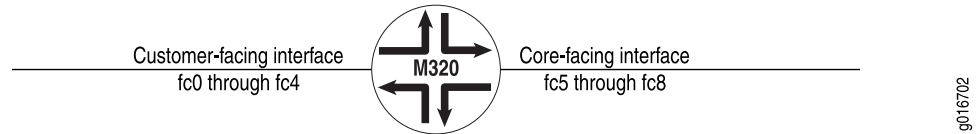
NOTE: You cannot use CoS-based forwarding features if you configure more than eight forwarding classes on the device.

On M120, M320, MX Series, T Series routers, and PTX Series Packet Transport Switches, you can configure up to 16 forwarding classes and eight queues, with multiple forwarding classes assigned to single queues. The concept of assigning multiple forwarding classes to a queue is sometimes referred to as creating *forwarding-class aliases*. This section explains how to configure M320 and T Series routers.

Mapping multiple forwarding classes to single queues is useful. Suppose, for example, that forwarding classes are set based on multifield packet classification, and the multifield classifiers are different for core-facing interfaces and customer-facing interfaces. Suppose you need four queues for a core-facing interface and five queues for a customer-facing interface, where **fc0** through **fc4** correspond to the classifiers for the customer-facing

interface, and **fc5** through **fc8** correspond to classifiers for the core-facing interface, as shown in [Figure 3 on page 35](#).

Figure 3: Customer-Facing and Core-Facing Forwarding Classes



In this example, there are nine classifiers and, therefore, nine forwarding classes. The forwarding class-to-queue mapping is shown in [Table 5 on page 35](#).

Table 5: Sample Forwarding Class-to-Queue Mapping

Forwarding Class Names	Queue Number
fc0 fc5	0
fc1 fc6	1
fc2 fc7	2
fc3 fc8	3
fc4	4

To configure up to 16 forwarding classes, include the **class** and **queue-num** statements at the **[edit class-of-service forwarding-classes]** hierarchy level:

```
[edit class-of-service forwarding-classes]
class class-name queue-num queue-number;
```

You can configure up to 16 different forwarding-class names. The corresponding output queue number can be from 0 through 7. Therefore, you can map multiple forwarding classes to a single queue. If you map multiple forwarding classes to a queue, the multiple forwarding classes must refer to the same scheduler (at the **[edit class-of-service scheduler-maps map-name forwarding-class class-name scheduler scheduler-name]** hierarchy level).

When you configure up to 16 forwarding classes, you can use them as you can any other forwarding class—in classifiers, schedulers, firewall filters (multifield classifiers), policers, and rewrite rules.

When you configure up to 16 forwarding classes, the following limitations apply:

- The **class** and **queue** statements at the **[edit class-of-service forwarding-classes]** hierarchy level are mutually exclusive. In other words, you can include one or the other of the following configurations, but not both:

```
[edit class-of-service forwarding-classes]
queue queue-number class-name;
```

```
[edit class-of-service forwarding-classes]
class class-name queue-num queue-number;
```

- On T Series routers only, when you configure IEEE 802.1p rewrite marking on Gigabit Ethernet IQ, Gigabit Ethernet IQ2, Gigabit Ethernet Enhanced IQ (IQE), and Gigabit Ethernet Enhanced IQ2 (IQ2E) PICs, you cannot configure more than eight forwarding classes. This limitation does not apply to M Series routers. On M Series routers, you can configure up to 16 forwarding classes when you configure IEEE 802.1p rewrite marking on any of these PICs.
- For GRE and IP-IP tunnels, IP precedence and DSCP rewrite marking of the inner header do not work with more than eight forwarding classes.
- When you use CoS-based forwarding features, you cannot configure more than eight forwarding classes with a forwarding policy. However, if you try to configure CoS-based forwarding with more than eight forwarding classes configured, commit fails with a message. Therefore, you can configure CBF on a router with eight or less than eight forwarding classes only. Under this condition, the forwarding class to queue mapping can be either one-to-one or one-to-many.
- A scheduler map that maps eight different forwarding classes to eight different schedulers can only be applied to interfaces that support eight queues. If you apply this type of scheduler map to an interface that only supports four queues, then the commit will fail.
- We recommend that you configure the statements changing PICs to support eight queues and then applying an eight queue scheduler map in two separate steps. Otherwise, the commit might succeed but the PIC might not have eight queues when the scheduler map is applied, generating an error.

You can determine the ID number assigned to a forwarding class by issuing the **show class-of-service forwarding-class** command. You can determine whether the classification is fixed by issuing the **show class-of-service forwarding-table classifier mapping** command. In the command output, if the **Table Type** field appears as **Fixed**, the classification is fixed. For more information about fixed classification, see [Applying Forwarding Classes to Interfaces](#).

For information about configuring eight forwarding classes on ATM2 IQ interfaces, see [Enabling Eight Queues on ATM Interfaces](#).

This section discusses the following topics:

- [Enabling Eight Queues on Interfaces on page 37](#)
- [Multiple Forwarding Classes and Default Forwarding Classes on page 38](#)

- [PICs Restricted to Four Queues on page 38](#)
- [Examples: Configuring Up to 16 Forwarding Classes on page 39](#)

Enabling Eight Queues on Interfaces

By default, Intelligent Queuing (IQ), Intelligent Queuing 2 (IQ2), Intelligent Queuing Enhanced (IQE), and Intelligent Queuing 2 Enhanced (IQ2E) PICs on M320 and T Series routers are restricted to a maximum of four egress queues per interface. To configure a maximum of eight egress queues on these interfaces, include the **max-queues-per-interface** statement at the **[edit chassis fpc slot-number pic pic-number]** hierarchy level:

```
[edit chassis fpc slot-number pic pic-number]
max-queues-per-interface (4 | 8);
```

On a TX Matrix or TX Matrix Plus router, include the **max-queues-per-interface** statement at the **[edit chassis lcc number fpc slot-number pic pic-number]** hierarchy level:

```
[edit chassis lcc number fpc slot-number pic pic-number]
max-queues-per-interface (4 | 8);
```

The numerical value can be 4 or 8.

For Juniper Networks J Series routers, this statement is not supported. J Series routers always have eight queues available.



NOTE: In addition to configuring eight queues at the **[edit chassis]** hierarchy level, the configuration at the **[edit class-of-service]** hierarchy level must support eight queues per interface.

The maximum number of queues per IQ PIC can be 4 or 8. If you include the **max-queues-per-interface** statement, all ports on the IQ PIC use configured mode and all interfaces on the IQ PIC have the same maximum number of queues.

To determine how many queues an interface supports, you can check the **CoS queues** output field of the **show interfaces interface-name extensive** command:

```
user@host> show interfaces so-1/0/0 extensive
CoS queues: 8 supported
```

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 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.

For Quad T3 and Quad E3 PICs, 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.

When you include the **max-queues-per-interface** statement and commit the configuration, all physical interfaces on the IQ PIC are deleted and readded. Also, the PIC is taken offline and then brought back online immediately. You do not need to take the PIC offline and online manually. You should change modes between four queues and eight queues only when there is no active traffic going to the IQ PIC.

Multiple Forwarding Classes and Default Forwarding Classes

For queues 0 through 3, if you assign multiple forwarding classes to a single queue, default forwarding class assignment works as follows:

- The first forwarding class that you assign to queue 0 acquires the default BE classification and scheduling.
- The first forwarding class that you assign to queue 1 acquires the default EF classification and scheduling.
- The first forwarding class that you assign to queue 2 acquires the default AF classification and scheduling.
- The first forwarding class that you assign to queue 3 acquires the default NC classification and scheduling.

Of course you can override the default classification and scheduling by configuring custom classifiers and schedulers.

If you do not explicitly map forwarding classes to queues 0 through 3, then the respective default classes are automatically assigned to those queues. When you are counting the 16 forwarding classes, you must include in the total any default forwarding classes automatically assigned to queues 0 through 3. As a result, you can map up to 13 forwarding classes to a single queue when the single queue is queue 0, 1, 2, or 3. You can map up to 12 forwarding classes to a single queue when the single queue is queue 4, 5, 6, or 7. In summary, there must be at least one forwarding class each (default or otherwise) assigned to queue 0 through 3, and you can assign the remaining 12 forwarding classes (16–4) to any queue.

For example, suppose you assign two forwarding classes to queue 0 and you assign no forwarding classes to queues 1 through 3. The software automatically assigns one default forwarding class each to queues 1 through 3. This means 11 forwarding classes (16–5) are available for you to assign to queues 4 through 7.

For more information about forwarding class defaults, see Default Forwarding Classes.

PICs Restricted to Four Queues

Some Juniper Networks T Series Core Router PICs support up to 16 forwarding classes and are restricted to 4 queues. Contact Juniper Networks customer support for a current list of T Series router PICs that are restricted to four queues. To determine how many queues an interface supports, you can check the **CoS queues** output field of the **show interfaces *interface-name* extensive** command:

```
user@host> show interfaces so-1/0/0 extensive
CoS queues: 8 supported
```

By default, for T Series router PICs that are restricted to four queues, the router overrides the global configuration based on the following formula:

$$Q_r = Q_d \text{ mod } R_{\text{max}}$$

Q_r is the queue number assigned if the PIC is restricted to four queues.

Q_d is the queue number that would have been mapped if this PIC were not restricted.

R_{max} is the maximum number of restricted queues available. Currently, this is four.

For example, assume you map the forwarding class **ef** to queue 6. For a PIC restricted to four queues, the queue number for forwarding class **ef** is **Q_r = 6 mod 4 = 2**.

To determine which queue is assigned to a forwarding class, use the **show class-of-service forwarding-class** command from the top level of the CLI. The output shows queue assignments for both global queue mappings and restricted queue mappings:

```
user@host> show class-of-service forwarding-class
Forwarding class      Queue    Restricted Queue  Fabric priority
be                    0         2             low
ef                    1         2             low
assured-forwarding    2         2             low
network-control       3         3             low
```

For T Series router PICs restricted to four queues, you can override the formula-derived queue assignment by including the **restricted-queues** statement at the **[edit class-of-service]** hierarchy level:

```
[edit class-of-service]
restricted-queues {
  forwarding-class class-name queue queue-number;
}
```

You can configure up to 16 forwarding classes. The output queue number can be from 0 through 3. Therefore, for PICs restricted to four queues, you can map multiple forwarding classes to single queues. If you map multiple forwarding classes to a queue, the multiple forwarding classes must refer to the same scheduler. This requirement applies to all PICs. The class name you configure at the **[edit class-of-service restricted-queues]** hierarchy level must be either a default forwarding class name or a forwarding class you configure at the **[edit class-of-service forwarding-classes]** hierarchy level.

Examples: Configuring Up to 16 Forwarding Classes

Configure 16 forwarding classes:

Configuring 16 Forwarding Classes	<pre>[edit class-of-service] forwarding-classes { class fc0 queue-num 0; class fc1 queue-num 0; class fc2 queue-num 1; class fc3 queue-num 1; class fc4 queue-num 2; class fc5 queue-num 2;</pre>
--	---

```
class fc6 queue-num 3;
class fc7 queue-num 3;
class fc8 queue-num 4;
class fc9 queue-num 4;
class fc10 queue-num 5;
class fc11 queue-num 5;
class fc12 queue-num 6;
class fc13 queue-num 6;
class fc14 queue-num 7;
class fc15 queue-num 7;
}
```

For PICs restricted to four queues, map four forwarding classes to each queue:

**Restricted Queues:
Mapping Two
Forwarding Classes to
Each Queue**

```
[edit class-of-service]
restricted-queues {
  forwarding-class fc0 queue 0;
  forwarding-class fc1 queue 0;
  forwarding-class fc2 queue 0;
  forwarding-class fc3 queue 0;
  forwarding-class fc4 queue 1;
  forwarding-class fc5 queue 1;
  forwarding-class fc6 queue 1;
  forwarding-class fc7 queue 1;
  forwarding-class fc8 queue 2;
  forwarding-class fc9 queue 2;
  forwarding-class fc10 queue 2;
  forwarding-class fc11 queue 2;
  forwarding-class fc12 queue 3;
  forwarding-class fc13 queue 3;
  forwarding-class fc14 queue 3;
  forwarding-class fc15 queue 3;
}
```

If you map multiple forwarding classes to a queue, the multiple forwarding classes must refer to the same scheduler:

**Configuring a
Scheduler Map
Applicable to an
Interface Restricted to
Four Queues**

```
[edit class-of-service]
scheduler-maps {
  interface-restricted {
    forwarding-class be scheduler Q0;
    forwarding-class ef scheduler Q1;
    forwarding-class ef1 scheduler Q1;
    forwarding-class ef2 scheduler Q1;
    forwarding-class af1 scheduler Q2;
    forwarding-class af scheduler Q2;
    forwarding-class nc scheduler Q3;
    forwarding-class nc1 scheduler Q3;
  }
}
[edit class-of-service]
restricted-queues {
  forwarding-class be queue 0;
  forwarding-class ef queue 1;
  forwarding-class ef1 queue 1;
  forwarding-class ef2 queue 1;
  forwarding-class af queue 2;
```



```

forwarding-class af1 queue 2;
forwarding-class nc queue 3;
forwarding-class nc1 queue 3;
}

```

Configuring Drop Profile Maps for Schedulers

Drop-profile maps associate drop profiles with a scheduler. The map examines the current loss priority setting of the packet (high, low, or any) and assigns a drop profile according to these values. For example, you can specify that all TCP packets with low loss priority are assigned a drop profile that you name **low-drop**. You can associate multiple drop-profile maps with a single queue.

The scheduler drop profile defines the drop probabilities across the range of delay-buffer occupancy, thereby supporting the RED process. Depending on the drop probabilities, RED might drop packets aggressively long before the buffer becomes full, or it might drop only a few packets even if the buffer is almost full. For information on how to configure drop profiles, see RED Drop Profiles Overview.

By default, the drop profile is mapped to packets with low PLP and any protocol type. To configure how packet types are mapped to a specified drop profile, include the **drop-profile-map** statement at the **[edit class-of-service schedulers *scheduler-name*]** hierarchy level:

```

[edit class-of-service schedulers scheduler-name ]
drop-profile-map loss-priority (any | low | medium-low | medium-high | high) protocol (any
| non-tcp | tcp) drop-profile profile-name;

```

The map sets the drop profile for a specific PLP and protocol type. The inputs for the map are the PLP and the protocol type. The output is the drop profile. For more information about how CoS maps work, see CoS Inputs and Outputs Overview.



NOTE: On Juniper Network MX Series 3D Universal Edge Routers, T4000 Core Routers, and PTX Series Packet Transport Switches, you can configure only the **any** option for the **protocol** statement.

For each scheduler, you can configure separate drop profile maps for each loss priority.

You can configure a maximum of 32 different drop profiles.

Related Documentation

- [Configuring RED Drop Profiles](#)

Hardware Capabilities and Limitations

Juniper Networks J Series Services Routers, M320 Multiservice Edge Routers, and T Series Core Routers, as well as M Series Multiservice Edge Routers with enhanced Flexible PIC Concentrators (FPCs), have more CoS capabilities than M Series routers that use other FPC models. [Table 6 on page 42](#) lists some of these the differences. Basic MX Series

router architecture information is presented in Packet Flow on MX Series Ethernet Services Routers.

To determine whether your M Series router is equipped with an enhanced FPC, issue the **show chassis hardware** command. The presence of an enhanced FPC is designated by the **E-FPC** description in the output.

```
user@host> show chassis hardware
```

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			31959	M7i
Midplane	REV 02	710-008761	CA0209	M7i Midplane
Power Supply 0	REV 04	740-008537	PD10272	AC Power Supply
Routing Engine	REV 01	740-008846	1000396803	RE-5.0
CFEB	REV 02	750-009492	CA0166	Internet Processor IIV1
FPC 0				E-FPC
PIC 0	REV 04	750-003163	HJ6416	1x G/E, 1000 BASE-SX
PIC 1	REV 04	750-003163	HJ6423	1x G/E, 1000 BASE-SX
PIC 2	REV 04	750-003163	HJ6421	1x G/E, 1000 BASE-SX
PIC 3	REV 02	750-003163	HJ0425	1x G/E, 1000 BASE-SX
FPC 1				E-FPC
PIC 2	REV 01	750-009487	HM2275	ASP - Integrated
PIC 3	REV 01	750-009098	CA0142	2x F/E, 100 BASE-TX

J Series Services Routers do not use FPCs. Instead, they use Physical Interface Modules (PIMs), which are architecturally like FPCs but functionally like PICs. Both PIMs and PICs provide the interfaces to the routers.

In [Table 6 on page 42](#), the information in the column titled “M320 and T Series FPCs” is valid for all M320 and T Series router FPCs, including Enhanced II FPCs.

Table 6: CoS Hardware Capabilities and Limitations

Feature	J Series PIMs	M Series FPCs	M Series Enhanced FPCs	M320 and T Series FPCs	Comments
Classifiers					
Maximum number per FPC, PIC, or PIM	64	1	8	64	For M Series router FPCs, the one-classifier limit includes the default IP precedence classifier. If you create a new classifier and apply it to an interface, the new classifier does not override the default classifier for other interfaces on the same FPC. In general, the first classifier associated with a logical interface is used. The default classifier can be replaced only when a single interface is associated with the default classifier. For more information, see <i>Applying Classifiers to Logical Interfaces</i> .
dscp	Yes	No	Yes	Yes	On all routers, you cannot configure IP precedence and DiffServ code point (DSCP) classifiers on a single logical interface, because both apply to IPv4 packets. For more information, see <i>Applying Classifiers to Logical Interfaces</i> .

Table 6: CoS Hardware Capabilities and Limitations (*continued*)

Feature	J Series PIMs	M Series FPCs	M Series Enhanced FPCs	M320 and T Series FPCs	Comments
dscp-ipv6	Yes	No	Yes	Yes	<p>For T Series routers, you can apply separate classifiers for IPv4 and IPv6 packets per logical interface.</p> <p>For M Series router enhanced FPCs, you cannot apply separate classifiers for IPv4 and IPv6 packets. Classifier assignment works as follows:</p> <ul style="list-style-type: none"> • If you assign a DSCP classifier only, IPv4 and IPv6 packets are classified using the DSCP classifier. • If you assign an IP precedence classifier only, IPv4 and IPv6 packets are classified using the IP precedence classifier. The lower three bits of the DSCP field are ignored because IP precedence mapping requires the upper three bits only. • If you assign either the DSCP or the IP precedence classifier in conjunction with the DSCP IPv6 classifier, the commit fails. • If you assign a DSCP IPv6 classifier only, IPv4 and IPv6 packets are classified using the DSCP IPv6 classifier, but the commit displays a warning message. <p>For more information, see Applying Classifiers to Logical Interfaces.</p>
ieee-802.1p	Yes	No	Yes	Yes	<p>On M Series router enhanced FPCs and T Series routers, if you associate an IEEE 802.1p classifier with a logical interface, you cannot associate any other classifier with that logical interface. For more information, see Applying Classifiers to Logical Interfaces.</p> <p>For most PICs, if you apply an IEEE 802.1p classifier to a logical interface, you cannot apply non-IEEE classifiers on other logical interfaces on the same physical interface. This restriction does not apply to Gigabit Ethernet IQ2 PICs.</p>
inet-precedence	Yes	Yes	Yes	Yes	<p>On all routers, you cannot assign IP precedence and DSCP classifiers to a single logical interface, because both apply to IPv4 packets. For more information, see Applying Classifiers to Logical Interfaces.</p>
mpls-exp	Yes	Yes	Yes	Yes	<p>For M Series router FPCs, only the default MPLS EXP classifier is supported; the default MPLS EXP classifier takes the EXP bits 1 and 2 as the output queue number.</p>
Loss priorities based on the Frame Relay discard eligible (DE) bit	Yes	No	No	No	—

Table 6: CoS Hardware Capabilities and Limitations (*continued*)

Feature	J Series PIMs	M Series FPCs	M Series Enhanced FPCs	M320 and T Series FPCs	Comments
Drop Profiles					
Maximum number per FPC, PIC, or PIM	32	2	16	32	—
Per queue	Yes	No	Yes	Yes	—
Per loss priority	Yes	Yes	Yes	Yes	—
Per Transmission Control Protocol (TCP) bit	Yes	No	Yes	Yes	—
Policing					
Adaptive shaping for Frame Relay traffic	Yes	No	No	No	—
Traffic policing	Yes	Yes	Yes	Yes	—
Two-rate tricolor marking (TCM)	No	No	No	Yes	Allows you to configure up to four loss priorities. Two-rate TCM is supported on T Series routers with Enhanced II FPCs and the T640 Core Router with Enhanced Scaling FPC4.
Virtual channels	Yes	No	No	No	—
Queuing					
					<p>Gigabit Ethernet IQ2 PICs support only one queue in the scheduler map with medium-high, high, or strict-high priority. If more than one queue is configured with high or strict-high priority, the one that appears first in the configuration is implemented as strict-high priority. This queue receives unlimited transmission bandwidth. The remaining queues are implemented as low priority, which means they might be starved.</p> <p>On the IQE PIC, you can rate-limit the strict-high and high queues. Without this limiting, traffic that requires low latency (delay) such as voice can block the transmission of medium-priority and low-priority packets. Unless limited, high and strict-high traffic is always sent before lower priority traffic.</p>

Table 6: CoS Hardware Capabilities and Limitations (*continued*)

Feature	J Series PIMs	M Series FPCs	M Series Enhanced FPCs	M320 and T Series FPCs	Comments
Priority	Yes	No	Yes	Yes	Support for the medium-low and medium-high queuing priority mappings varies by FPC type. For more information, see Platform Support for Priority Scheduling.
Per-queue output statistics	Yes	No	Yes	Yes	Per-queue output statistics are shown in the output of the show interfaces queue command.
Rewrite Markers					
Maximum number per FPC, PIC, or PIM	64	No maximum	No maximum	64	—
dscp	Yes	No	Yes	Yes	<p>For J Series router PIMs and M Series Enhanced FPCs, bits 0 through 5 are rewritten, and bits 6 through 7 are preserved.</p> <p>For M320 and T Series router non-IQ FPCs, bits 0 through 5 are rewritten, and bits 6 through 7 are preserved.</p> <p>For M320 and T Series router FPCs, you must decode the loss priority using the firewall filter before you can use loss priority to select the rewrite CoS value. For more information, see Setting Packet Loss Priority.</p> <p>For M320 and T Series router FPCs, Adaptive Services PIC link services IQ interfaces (lsq-) do not support DSCP rewrite markers.</p>
dscp-ipv6	Yes	No	Yes	Yes	<p>For J Series router PIMs, M Series router Enhanced FPCs, and M320 and T Series router FPCs, bits 0 through 5 are rewritten, and bits 6 through 7 are preserved.</p> <p>For M320 and T Series routers FPCs, you must decode the loss priority using the firewall filter before you can use loss priority to select the rewrite CoS value. For more information, see Setting Packet Loss Priority.</p> <p>For M320 and T Series router FPCs, Adaptive Services PIC link services IQ interfaces (lsq-) do not support DSCP rewrite markers.</p>
frame-relay-de	Yes	No	No	No	—
ieee-802.1	Yes	No	Yes	Yes	<p>For M Series router enhanced FPCs and T Series router FPCs, fixed rewrite loss priority determines the value for bit 0; queue number (forwarding class) determines bits 1 and 2. For IQ PICs, you can only configure one IEEE 802.1 rewrite rule on a physical port. All logical ports (units) on that physical port should apply the same IEEE 802.1 rewrite rule.</p>

Table 6: CoS Hardware Capabilities and Limitations (*continued*)

Feature	J Series PIMs	M Series FPCs	M Series Enhanced FPCs	M320 and T Series FPCs	Comments
inet-precedence	Yes	Yes	Yes	Yes	<p>For J Series router PIMs, bits 0 through 2 are rewritten, and bits 3 through 7 are preserved.</p> <p>For M Series router FPCs, bits 0 through 2 are rewritten, and bits 3 through 7 are preserved.</p> <p>For M Series router Enhanced FPCs, bits 0 through 2 are rewritten, bits 3 through 5 are cleared, and bits 6 through 7 are preserved.</p> <p>For M320 and T Series routers FPCs, bits 0 through 2 are rewritten and bits 3 through 7 are preserved.</p> <p>For M320 and T Series router FPCs, you must decode the loss priority using the firewall filter before you can use loss priority to select the rewrite CoS value. For more information, see Setting Packet Loss Priority.</p>
mpls-exp	Yes	Yes	Yes	Yes	<p>For M320 and T Series router FPCs, you must decode the loss priority using the firewall filter before you can use loss priority to select the rewrite CoS value. For more information, see Setting Packet Loss Priority.</p> <p>For M Series routers FPCs, fixed rewrite loss priority determines the value for bit 0; queue number (forwarding class) determines bits 1 and 2.</p>

[Table 7 on page 46](#) lists CoS hardware capabilities and limitations on PTX Series Packet Transport Switches.

Table 7: CoS Hardware Capabilities and Limitations on PTX Series Packet Transport Switches

Feature	PTX Series	Comments
Classifiers		
Maximum number per PFE	64	<p>L2 classifiers (sum of ieee-802.1 + ieee-802.1ad cannot exceed 32)</p> <p>DSCP and inet-precedence classifiers (sum of dscp + inet-precedence classifiers cannot exceed 32)</p> <p>dscp-ipv6 classifiers</p> <p>exp classifiers</p>
dscp	Yes	DSCP and IP precedence classifiers cannot be configured on the same logical interface.

Table 7: CoS Hardware Capabilities and Limitations on PTX Series Packet Transport Switches (*continued*)

Feature	PTX Series	Comments
dscp-ipv6	Yes	Separate classifiers can be applied for IPv4 and IPv6 packets per logical interface.
ieee-802.1p	Yes	You can associate ieee-802.1p with any other type of classifier on the same logical interface. For L3 packets, an L3 classifier takes precedence over an IEEE classifier.
inet-precedence	Yes	
mpls-exp	Yes	
Loss priorities based on the Frame Relay discard eligible (DE) bit	No	

Table 7: CoS Hardware Capabilities and Limitations on PTX Series Packet Transport Switches (*continued*)

Feature	PTX Series	Comments
Drop Profiles		
Maximum number	32	You can configure up to 32 drop profiles in the PTX chassis.
Per queue	Yes	
Per loss priority	Yes	
Per Transmission Control Protocol (TCP) bit	No	
Policing		
Traffic policing	Yes	
Two-rate tricolor marking (TCM)	Yes	
Queuing		
Priority	Yes (4)	
Per-queue output statistics	Yes	Red-dropped counters are not maintained per drop precedence. Also tail drop counters always show zero because packets are always dropped by the RED algorithm.
Rewrite Markers		
Maximum number per PFE	64	The sum of L2 and L3 rewrite rules cannot exceed 64.
dscp	Yes	
dscp-ipv6	Yes	
ieee-802.1	Yes	L2 and L3 rewrites can be applied to the same packet simultaneously.
inet-precedence	No	
mpls-exp	Yes	



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NOTE: The T4000 router supports the lowest of the scaling numbers for classifiers, rewrite rules, and WRED associated with MX Series and T Series routers.

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Many operations involving the DSCP bits depend on the router and PIC type. For example, some DSCP classification configurations for MPLS and Internet can only be performed on MX, M120, and M320 routers with Enhanced Type III FPCs only. For examples of these possibilities, see *Applying Classifiers to Logical Interfaces*.

CHAPTER 7

New or Changed Configuration Tasks for Firewall Filters

- [Standard Firewall Filter Match Conditions for IPv4 Traffic on page 51](#)
- [Standard Firewall Filter Match Conditions for IPv6 Traffic on page 60](#)
- [Standard Firewall Filter Match Conditions for MPLS Traffic on page 67](#)
- [Standard Firewall Filter Match Conditions for Layer 2 CCC Traffic on page 69](#)
- [Standard Firewall Filter Terminating Actions on page 71](#)
- [Standard Firewall Filter Nonterminating Actions on page 72](#)

Standard Firewall Filter Match Conditions for IPv4 Traffic

You can configure a standard stateless firewall filter with match conditions for Internet Protocol version 4 (IPv4) traffic (**family inet**). [Table 8 on page 51](#) describes the **match-conditions** you can configure at the **[edit firewall family inet filter *filter-name* term *term-name* from]** hierarchy level.

Table 8: Standard Firewall Filter Match Conditions for IPv4 Traffic

Match Condition	Description
address <i>address</i>	Match the IPv4 source or destination address field.
address <i>address</i> except	Do not match the IPv4 source or destination address field. NOTE: This match condition is not supported on PTX series packet transport switches.
ah-spi <i>spi-value</i>	(M Series routers, except M120 and M320) Match the IPsec authentication header (AH) security parameter index (SPI) value. NOTE: This match condition is not supported on PTX series packet transport switches.
ah-spi-except <i>spi-value</i>	(M Series routers, except M120 and M320) Do not match the IPsec AH SPI value. NOTE: This match condition is not supported on PTX series packet transport switches.
apply-groups	Specify which groups to inherit configuration data from. You can specify more than one group name. You must list them in order of inheritance priority. The configuration data in the first group takes priority over the data in subsequent groups.

Table 8: Standard Firewall Filter Match Conditions for IPv4 Traffic (*continued*)

Match Condition	Description
apply-groups-except	Specify which groups not to inherit configuration data from. You can specify more than one group name.
destination-address <i>address</i>	Match the IPv4 destination address field. You cannot specify both the address and destination-address match conditions in the same term.
destination-address <i>address</i> except	Do not match the IPv4 destination address field. For more information, see the destination-address field. NOTE: This match condition is not supported on PTX series packet transport switches.
destination-class <i>class-names</i>	Match one or more specified destination class names (sets of destination prefixes grouped together and given a class name). For more information, see Firewall Filter Match Conditions Based on Address Classes. NOTE: This match condition is not supported on PTX series packet transport switches.
destination-class-except <i>class-names</i>	Do not match one or more specified destination class names. For details, see the destination-class match condition. NOTE: This match condition is not supported on PTX series packet transport switches.
destination-port <i>number</i>	Match the UDP or TCP destination port field. You cannot specify both the port and destination-port match conditions in the same term. If you configure this match condition, we recommend that you also configure the protocol udp or protocol tcp match statement in the same term to specify which protocol is being used on the port. In place of the numeric value, you can specify one of the following text synonyms (the port numbers are also listed): afs (1483), bgp (179), biff (512), bootpc (68), bootps (67), cmd (514), cvspserver (2401), dhcp (67), domain (53), eklogin (2105), ekshell (2106), exec (512), finger (79), ftp (21), ftp-data (20), http (80), https (443), ident (113), imap (143), kerberos-sec (88), klogin (543), kpasswd (761), krb-prop (754), krbupdate (760), kshell (544), ldap (389), ldp (646), login (513), mobileip-agent (434), mobileip-mn (435), msdp (639), netbios-dgm (138), netbios-ns (137), netbios-ssn (139), nfsd (2049), nntp (119), ntalk (518), ntp (123), pop3 (110), pptp (1723), printer (515), radacct (1813), radius (1812), rip (520), rkinit (2108), smtp (25), snmp (161), snmptrap (162), snpp (444), socks (1080), ssh (22), sunrpc (111), syslog (514), tacacs (49), tacacs-ds (65), talk (517), telnet (23), tftp (69), timed (525), who (513), or xmcp (177).
destination-port-except <i>number</i>	Do not match the UDP or TCP destination port field. For details, see the destination-port match condition.
destination-prefix-list <i>name</i>	Match destination prefixes in the specified list. Specify the name of a prefix list defined at the [edit policy-options prefix-list prefix-list-name] hierarchy level.
destination-prefix-list <i>name</i> except	Do not match destination prefixes in the specified list. For more information, see the destination-prefix-list match condition. NOTE: This match condition is not supported on PTX series packet transport switches.

Table 8: Standard Firewall Filter Match Conditions for IPv4 Traffic (*continued*)

Match Condition	Description
dscp number	<p>Match the Differentiated Services code point (DSCP). The DiffServ protocol uses the type-of-service (ToS) byte in the IP header. The most significant 6 bits of this byte form the DSCP. For more information, see the Junos OS Class of Service Configuration Guide.</p> <p>You can specify a numeric value from 0 through 63. To specify the value in hexadecimal form, include 0x as a prefix. To specify the value in binary form, include b as a prefix.</p> <p>In place of the numeric value, you can specify one of the following text synonyms (the field values are also listed):</p> <ul style="list-style-type: none"> • RFC 3246, <i>An Expedited Forwarding PHB (Per-Hop Behavior)</i>, defines one code point: ef (46). • RFC 2597, <i>Assured Forwarding PHB Group</i>, defines 4 classes, with 3 drop precedences in each class, for a total of 12 code points: <ul style="list-style-type: none"> • af11 (10), af12 (12), af13 (14) • af21 (18), af22 (20), af23 (22) • af31 (26), af32 (28), af33 (30) • af41 (34), af42 (36), af43 (38)
dscp-except number	Do not match on the DSCP number. For more information, see the dscp match condition.
esp-spi spi-value	<p>Match the IPsec encapsulating security payload (ESP) SPI value. Match on this specific SPI value. You can specify the ESP SPI value in hexadecimal, binary, or decimal form.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p>
esp-spi-except spi-value	<p>Match the IPsec ESP SPI value. Do not match on this specific SPI value.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p>
first-fragment	<p>Match if the packet is the first fragment of a fragmented packet. Do not match if the packet is a trailing fragment of a fragmented packet. The first fragment of a fragmented packet has a fragment offset value of 0.</p> <p>This match condition is an alias for the bit-field match condition fragment-offset 0 match condition.</p> <p>To match both first and trailing fragments, you can use two terms that specify different match conditions: first-fragment and is-fragment.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p>
forwarding-class class	<p>Match the forwarding class of the packet.</p> <p>Specify assured-forwarding, best-effort, expedited-forwarding, or network-control.</p> <p>For information about forwarding classes and router-internal output queues, see the Junos OS Class of Service Configuration Guide.</p>
forwarding-class-except class	Do not match the forwarding class of the packet. For details, see the forwarding-class match condition.

Table 8: Standard Firewall Filter Match Conditions for IPv4 Traffic (*continued*)

Match Condition	Description
fragment-flags <i>number</i>	<p>(Ingress only) Match the three-bit IP fragmentation flags field in the IP header.</p> <p>In place of the numeric field value, you can specify one of the following keywords (the field values are also listed): dont-fragment (0x4), more-fragments (0x2), or reserved (0x8).</p>
fragment-offset <i>value</i>	<p>Match the 13-bit fragment offset field in the IP header. The value is the offset, in 8-byte units, in the overall datagram message to the data fragment. Specify a numeric value, a range of values, or a set of values. An offset value of 0 indicates the first fragment of a fragmented packet.</p> <p>The first-fragment match condition is an alias for the fragment-offset 0 match condition.</p> <p>To match both first and trailing fragments, you can use two terms that specify different match conditions (first-fragment and is-fragment).</p>
fragment-offset-except <i>number</i>	Do not match the 13-bit fragment offset field.
icmp-code <i>number</i>	<p>Match the ICMP message code field.</p> <p>If you configure this match condition, we recommend that you also configure the protocol icmp match condition in the same term.</p> <p>If you configure this match condition, you must also configure the icmp-type <i>message-type</i> match condition in the same term. An ICMP message code provides more specific information than an ICMP message type, but the meaning of an ICMP message code is dependent on the associated ICMP message type.</p> <p>In place of the numeric value, you can specify one of the following text synonyms (the field values are also listed). The keywords are grouped by the ICMP type with which they are associated:</p> <ul style="list-style-type: none"> parameter-problem: ip-header-bad (0), required-option-missing (1) redirect: redirect-for-host (1), redirect-for-network (0), redirect-for-tos-and-host (3), redirect-for-tos-and-net (2) time-exceeded: ttl-eq-zero-during-reassembly (1), ttl-eq-zero-during-transit (0) unreachable: communication-prohibited-by-filtering (13), destination-host-prohibited (10), destination-host-unknown (7), destination-network-prohibited (9), destination-network-unknown (6), fragmentation-needed (4), host-precedence-violation (14), host-unreachable (1), host-unreachable-for-TOS (12), network-unreachable (0), network-unreachable-for-TOS (11), port-unreachable (3), precedence-cutoff-in-effect (15), protocol-unreachable (2), source-host-isolated (8), source-route-failed (5)
icmp-code-except <i>message-code</i>	Do not match the ICMP message code field. For details, see the icmp-code match condition.

Table 8: Standard Firewall Filter Match Conditions for IPv4 Traffic (*continued*)

Match Condition	Description
icmp-type <i>number</i>	<p>Match the ICMP message type field.</p> <p>If you configure this match condition, we recommend that you also configure the protocol icmp match condition in the same term.</p> <p>In place of the numeric value, you can specify one of the following text synonyms (the field values are also listed): echo-reply (0), echo-request (8), info-reply (16), info-request (15), mask-request (17), mask-reply (18), parameter-problem (12), redirect (5), router-advertisement (9), router-solicit (10), source-quench (4), time-exceeded (11), timestamp (13), timestamp-reply (14), or unreachable (3).</p>
icmp-type-except <i>message-type</i>	Do not match the ICMP message type field. For details, see the icmp-type match condition.
interface <i>interface-name</i>	<p>Match the interface on which the packet was received.</p> <p>NOTE: If you configure this match condition with an interface that does not exist, the term does not match any packet.</p>
interface-group <i>group-number</i>	<p>Match the logical interface on which the packet was received to the specified interface group or set of interface groups. For <i>group-number</i>, specify a single value or a range of values from 0 through 255.</p> <p>To assign a logical interface to an interface group <i>group-number</i>, specify the <i>group-number</i> at the [interfaces interface-name unit number family family filter group] hierarchy level.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p> <p>For more information, see Filtering Packets Received on a Set of Interface Groups Overview.</p>
interface-group-except <i>group-number</i>	<p>Do not match the logical interface on which the packet was received to the specified interface group or set of interface groups. For details, see the interface-group match condition.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p>
interface-set <i>interface-set-name</i>	<p>Match the interface on which the packet was received to the specified interface set.</p> <p>To define an interface set, include the interface-set statement at the [edit firewall] hierarchy level.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p> <p>For more information, see Filtering Packets Received on an Interface Set Overview.</p>

Table 8: Standard Firewall Filter Match Conditions for IPv4 Traffic (*continued*)

Match Condition	Description
ip-options values	<p>Match the 8-bit IP option field, if present, to the specified value or list of values.</p> <p>In place of a numeric value, you can specify one of the following text synonyms (the option values are also listed): loose-source-route (131), record-route (7), router-alert (148), security (130), stream-id (136), strict-source-route (137), or timestamp (68).</p> <p>To match <i>any</i> value for the IP option, use the text synonym any. To match on <i>multiple</i> values, specify the list of values within square brackets ('[' and ']'). To match a <i>range</i> of values, use the value specification [<i>value1-value2</i>].</p> <p>For example, the match condition ip-options [0-147] matches on an IP options field that contains the loose-source-route, record-route, or security values, or any other value from 0 through 147. However, this match condition does not match on an IP options field that contains only the router-alert value (148).</p> <p>For most interfaces, a filter term that specifies an ip-option match on one or more <i>specific</i> IP option values (a value other than any) causes packets to be sent to the Routing Engine so that the kernel can parse the IP option field in the packet header.</p> <ul style="list-style-type: none"> For a firewall filter term that specifies an ip-option match on one or more specific IP option values, you cannot specify the count, log, or syslog nonterminating actions <i>unless</i> you also specify the discard terminating action in the same term. This behavior prevents double-counting of packets for a filter applied to a transit interface on the router. Packets processed on the kernel might be dropped in case of a system bottleneck. To ensure that matched packets are instead sent to the Packet Forwarding Engine (where packet processing is implemented in hardware), use the ip-options any match condition. <p>The 10-Gigabit Ethernet Modular Port Concentrator (MPC), 100-Gigabit Ethernet MPC, 60-Gigabit Ethernet MPC, 60-Gigabit Queuing Ethernet MPC, and 60-Gigabit Ethernet Enhanced Queuing MPC on MX Series routers are capable of parsing the IP option field of the IPv4 packet header. For interfaces configured on those MPCs, <i>all</i> packets that are matched using the ip-options match condition are sent to the Packet Forwarding Engine for processing.</p>
ip-options-except values	<p>Do not match the IP option field to the specified value or list of values. For details about specifying the values, see the ip-options match condition.</p>
is-fragment	<p>Match if the packet is a trailing fragment of a fragmented packet. Do not match the first fragment of a fragmented packet.</p> <p>NOTE: To match both first and trailing fragments, you can use two terms that specify different match conditions (first-fragment and is-fragment).</p>

Table 8: Standard Firewall Filter Match Conditions for IPv4 Traffic (*continued*)

Match Condition	Description
loss-priority level	<p>Match the packet loss priority (PLP) level.</p> <p>Specify a single level or multiple levels: low, medium-low, medium-high, or high.</p> <p>Supported on M120 and M320 routers; M7i and M10i routers with the Enhanced CFEB (CFEB-E); and MX Series routers.</p> <p>For IP traffic on M320, MX Series, and T Series routers with Enhanced II Flexible PIC Concentrators (FPCs), you must include the tri-color statement at the [edit class-of-service] hierarchy level to commit a PLP configuration with any of the four levels specified. If the tri-color statement is not enabled, you can only configure the high and low levels. This applies to all protocol families.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p> <p>For information about the tri-color statement and for information about using behavior aggregate (BA) classifiers to set the PLP level of incoming packets, see the Junos OS Class of Service Configuration Guide.</p>
loss-priority-except level	<p>Do not match the PLP level. For details, see the loss-priority match condition.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p>
packet-length bytes	<p>Match the length of the received packet, in bytes. The length refers only to the IP packet, including the packet header, and does not include any Layer 2 encapsulation overhead.</p>
packet-length-except bytes	<p>Do not match the length of the received packet, in bytes. For details, see the packet-length match type.</p>
port number	<p>Match the UDP or TCP source or destination port field.</p> <p>If you configure this match condition, you cannot configure the destination-port match condition or the source-port match condition in the same term.</p> <p>If you configure this match condition, we recommend that you also configure the protocol udp or protocol tcp match statement in the same term to specify which protocol is being used on the port.</p> <p>In place of the numeric value, you can specify one of the text synonyms listed under destination-port.</p>
port-except number	<p>Do not match the UDP or TCP source or destination port field. For details, see the port match condition.</p>
precedence ip-precedence-field	<p>Match the IP precedence field.</p> <p>In place of the numeric field value, you can specify one of the following text synonyms (the field values are also listed): critical-ecp (0xa0), flash (0x60), flash-override (0x80), immediate (0x40), internet-control (0xc0), net-control (0xe0), priority (0x20), or routine (0x00). You can specify precedence in hexadecimal, binary, or decimal form.</p>

Table 8: Standard Firewall Filter Match Conditions for IPv4 Traffic (*continued*)

Match Condition	Description
precedence-except precedence-field	Do not match the IP precedence field. In place of the numeric field value, you can specify one of the following text synonyms (the field values are also listed): critical-ecp (0xa0), flash (0x60), flash-override (0x80), immediate (0x40), internet-control (0xc0), net-control (0xe0), priority (0x20), or routine (0x00). You can specify precedence in hexadecimal, binary, or decimal form.
prefix-list name	Match the prefixes of the source or destination address fields to the prefixes in the specified list. The prefix list is defined at the [edit policy-options prefix-list prefix-list-name] hierarchy level.
prefix-list name except	Do not match the prefixes of the source or destination address fields to the prefixes in the specified list. For more information, see the prefix-list match condition. NOTE: This match condition is not supported on PTX series packet transport switches.
protocol number	Match the IP protocol type field. In place of the numeric value, you can specify one of the following text synonyms (the field values are also listed): ah (51), dstopts (60), egp (8), esp (50), fragment (44), gre (47), hop-by-hop (0), icmp (1), icmp6 (58), icmpv6 (58), igmp (2), ipip (4), ipv6 (41), ospf (89), pim (103), rsvp (46), sctp (132), tcp (6), udp (17), or vrp (112).
protocol-except number	Do not match the IP protocol type field. In place of the numeric value, you can specify one of the following text synonyms (the field values are also listed): ah (51), dstopts (60), egp (8), esp (50), fragment (44), gre (47), hop-by-hop (0), icmp (1), icmp6 (58), icmpv6 (58), igmp (2), ipip (4), ipv6 (41), ospf (89), pim (103), rsvp (46), sctp (132), tcp (6), udp (17), or vrp (112).
service-filter-hit	Match a packet received from a filter where a service-filter-hit action was applied. NOTE: This match condition is not supported on PTX series packet transport switches.
source-address address	Match the IPv4 address of the source node sending the packet. You cannot specify both the address and source-address match conditions in the same term.
source-address address except	Do not match the IPv4 address of the source node sending the packet. For more information, see the source-address match condition. NOTE: This match condition is not supported on PTX series packet transport switches.
source-class class-names	Match one or more specified source class names (sets of source prefixes grouped together and given a class name). For more information, see Firewall Filter Match Conditions Based on Address Classes. NOTE: This match condition is not supported on PTX series packet transport switches.
source-class-except class-names	Do not match one or more specified source class names. For details, see the source-class match condition. NOTE: This match condition is not supported on PTX series packet transport switches.

Table 8: Standard Firewall Filter Match Conditions for IPv4 Traffic (*continued*)

Match Condition	Description
source-port <i>number</i>	<p>Match the UDP or TCP source port field.</p> <p>You cannot specify the port and source-port match conditions in the same term.</p> <p>If you configure this match condition for IPv4 traffic, we recommend that you also configure the protocol udp or protocol tcp match statement in the same term to specify which protocol is being used on the port.</p> <p>In place of the numeric value, you can specify one of the text synonyms listed with the destination-port <i>number</i> match condition.</p>
source-port-except <i>number</i>	Do not match the UDP or TCP source port field. For details, see the source-port match condition.
source-prefix-list <i>name</i>	Match source prefixes in the specified list. Specify the name of a prefix list defined at the [edit policy-options prefix-list <i>prefix-list-name</i>] hierarchy level.
source-prefix-list <i>name</i> except	<p>Do not match source prefixes in the specified list. For more information, see the source-prefix-list match condition.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p>
tcp-established	<p>Match TCP packets of an established TCP session (packets other than the first packet of a connection). This is an alias for tcp-flags "(ack rst)".</p> <p>This match condition does not implicitly check that the protocol is TCP. To check this, specify the protocol tcp match condition.</p>
tcp-flags <i>value</i>	<p>Match one or more of the low-order 6 bits in the 8-bit TCP flags field in the TCP header.</p> <p>To specify individual bit fields, you can specify the following text synonyms or hexadecimal values:</p> <ul style="list-style-type: none"> • fin (0x01) • syn (0x02) • rst (0x04) • push (0x08) • ack (0x10) • urgent (0x20) <p>In a TCP session, the SYN flag is set only in the initial packet sent, while the ACK flag is set in all packets sent after the initial packet.</p> <p>You can string together multiple flags using the bit-field logical operators.</p> <p>For combined bit-field match conditions, see the tcp-established and tcp-initial match conditions.</p> <p>If you configure this match condition, we recommend that you also configure the protocol tcp match statement in the same term to specify that the TCP protocol is being used on the port.</p> <p>For IPv4 traffic only, this match condition does not implicitly check whether the datagram contains the first fragment of a fragmented packet. To check for this condition for IPv4 traffic only, use the first-fragment match condition.</p>

Table 8: Standard Firewall Filter Match Conditions for IPv4 Traffic (*continued*)

Match Condition	Description
tcp-initial	Match the initial packet of a TCP connection. This is an alias for tcp-flags "(!ack & syn)" . This condition does not implicitly check that the protocol is TCP. If you configure this match condition, we recommend that you also configure the protocol tcp match condition in the same term.
ttl number	Match the IPv4 time-to-live number. Specify a TTL value or a range of TTL values. For number , you can specify one or more values from 0 through 255. This match condition is supported only on M120, M320, MX Series, and T Series routers.
ttl-except number	Do not match on the IPv4 TTL number. For details, see the ttl match condition.
vlan-ether-type value	Match the virtual local area network (VLAN) Ethernet type field of a VPLS packet. NOTE: This match condition is not supported on PTX series packet transport switches.
vlan-ether-type-except value	Do not match the VLAN Ethernet type field of a VPLS packet. NOTE: This match condition is not supported on PTX series packet transport switches.

- Related Documentation**
- Guidelines for Configuring Standard Firewall Filters
 - [Standard Firewall Filter Terminating Actions on page 71](#)
 - [Standard Firewall Filter Nonterminating Actions on page 72](#)

Standard Firewall Filter Match Conditions for IPv6 Traffic

You can configure a standard stateless firewall filter with match conditions for Internet Protocol version 6 (IPv6) traffic (**family inet6**). [Table 9 on page 60](#) describes the **match-conditions** you can configure at the **[edit firewall family inet6 filter filter-name term term-name from]** hierarchy level.

Table 9: Standard Firewall Filter Match Conditions for IPv6 Traffic

Match Condition	Description
address address	Match the IPv6 source or destination address field.
address address except	Do not match the IPv6 source or destination address field. NOTE: This match condition is not supported on PTX series packet transport switches.
apply-groups	Specify which groups to inherit configuration data from. You can specify more than one group name. You must list them in order of inheritance priority. The configuration data in the first group takes priority over the data in subsequent groups.
apply-groups-except	Specify which groups not to inherit configuration data from. You can specify more than one group name.

Table 9: Standard Firewall Filter Match Conditions for IPv6 Traffic (*continued*)

Match Condition	Description
destination-address <i>address</i>	<p>Match the IPv6 destination address field.</p> <p>You cannot specify both the address and destination-address match conditions in the same term.</p>
destination-address <i>address</i> except	<p>Do not match the IPv6 destination address field. For more information, see the destination-address field.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p>
destination-class <i>class-names</i>	<p>Match one or more specified destination class names (sets of destination prefixes grouped together and given a class name).</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p> <p>For more information, see Firewall Filter Match Conditions Based on Address Classes.</p>
destination-class <i>class-names</i> except	<p>Do not match one or more specified destination class names. For details, see the destination-class match condition.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p>
destination-port <i>number</i>	<p>Match the UDP or TCP destination port field.</p> <p>You cannot specify both the port and destination-port match conditions in the same term.</p> <p>If you configure this match condition, we recommend that you also configure the next-header udp or next-header tcp match condition in the same term to specify which protocol is being used on the port.</p> <p>In place of the numeric value, you can specify one of the following text synonyms (the port numbers are also listed): afs (1483), bgp (179), biff (512), bootpc (68), bootps (67), cmd (514), cvspserver (2401), dhcp (67), domain (53), eklogin (2105), ekshell (2106), exec (512), finger (79), ftp (21), ftp-data (20), http (80), https (443), ident (113), imap (143), kerberos-sec (88), klogin (543), kpasswd (761), krb-prop (754), krbupdate (760), kshell (544), ldap (389), ldp (646), login (513), mobileip-agent (434), mobileip-mn (435), msdp (639), netbios-dgm (138), netbios-ns (137), netbios-ssn (139), nfsd (2049), nntp (119), ntalk (518), ntp (123), pop3 (110), pptp (1723), printer (515), radacct (1813), radius (1812), rip (520), rkinit (2108), smtp (25), snmp (161), snmptrap (162), snpp (444), socks (1080), ssh (22), sunrpc (111), syslog (514), tacacs (49), tacacs-ds (65), talk (517), telnet (23), tftp (69), timed (525), who (513), or xdmcp (177).</p>
destination-port <i>number</i> except	<p>Do not match the UDP or TCP destination port field. For details, see the destination-port match condition.</p>
destination-prefix-list <i>prefix-list-name</i>	<p>Match the prefix of the IPv6 destination address field. The prefix list is defined at the [edit policy-options prefix-list <i>prefix-list-name</i>] hierarchy level.</p>
destination-prefix-list <i>prefix-list-name</i> except	<p>Do not match the prefix of the IPv6 destination address field. For more information, see the destination-prefix-list match condition.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p>

Table 9: Standard Firewall Filter Match Conditions for IPv6 Traffic (*continued*)

Match Condition	Description
forwarding-class <i>class</i>	<p>Match the forwarding class of the packet.</p> <p>Specify assured-forwarding, best-effort, expedited-forwarding, or network-control.</p> <p>For information about forwarding classes and router-internal output queues, see the Junos OS Class of Service Configuration Guide.</p>
forwarding-class-except <i>class</i>	Do not match the forwarding class of the packet. For details, see the forwarding-class match condition.
icmp-code <i>message-code</i>	<p>Match the ICMP message code field.</p> <p>If you configure this match condition, we recommend that you also configure the next-header icmp or next-header icmp6 match condition in the same term.</p> <p>If you configure this match condition, you must also configure the icmp-type <i>message-type</i> match condition in the same term. An ICMP message code provides more specific information than an ICMP message type, but the meaning of an ICMP message code is dependent on the associated ICMP message type.</p> <p>In place of the numeric value, you can specify one of the following text synonyms (the field values are also listed). The keywords are grouped by the ICMP type with which they are associated:</p> <ul style="list-style-type: none"> parameter-problem: ip6-header-bad (0), unrecognized-next-header (1), unrecognized-option (2) time-exceeded: ttl-eq-zero-during-reassembly (1), ttl-eq-zero-during-transit (0) destination-unreachable: administratively-prohibited (1), address-unreachable (3), no-route-to-destination (0), port-unreachable (4)
icmp-code-except <i>message-code</i>	Do not match the ICMP message code field. For details, see the icmp-code match condition.
icmp-type <i>message-type</i>	<p>Match the ICMP message type field.</p> <p>If you configure this match condition, we recommend that you also configure the next-header icmp or next-header icmp6 match condition in the same term.</p> <p>In place of the numeric value, you can specify one of the following text synonyms (the field values are also listed): destination-unreachable (1), echo-reply (129), echo-request (128), membership-query (130), membership-report (131), membership-termination (132), neighbor-advertisement (136), neighbor-solicit (135), node-information-reply (140), node-information-request (139), packet-too-big (2), parameter-problem (4), redirect (137), router-advertisement (134), router-renumbering (138), router-solicit (133), or time-exceeded (3).</p>
icmp-type-except <i>message-type</i>	Do not match the ICMP message type field. For details, see the icmp-type match condition.
interface <i>interface-name</i>	<p>Match the interface on which the packet was received.</p> <p>NOTE: If you configure this match condition with an interface that does not exist, the term does not match any packet.</p>

Table 9: Standard Firewall Filter Match Conditions for IPv6 Traffic (*continued*)

Match Condition	Description
interface-group <i>group-number</i>	<p>Match the logical interface on which the packet was received to the specified interface group or set of interface groups. For <i>group-number</i>, specify a single value or a range of values from 0 through 255.</p> <p>To assign a logical interface to an interface group <i>group-number</i>, specify the <i>group-number</i> at the [interfaces <i>interface-name</i> unit <i>number</i> family <i>family</i> filter group] hierarchy level.</p> <p>For more information, see Filtering Packets Received on a Set of Interface Groups Overview.</p>
interface-group-except <i>group-number</i>	<p>Do not match the logical interface on which the packet was received to the specified interface group or set of interface groups. For details, see the interface-group match condition.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p>
interface-set <i>interface-set-name</i>	<p>Match the interface on which the packet was received to the specified interface set.</p> <p>To define an interface set, include the interface-set statement at the [edit firewall] hierarchy level.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p> <p>For more information, see Filtering Packets Received on an Interface Set Overview.</p>
loss-priority level	<p>Match the packet loss priority (PLP) level.</p> <p>Specify a single level or multiple levels: low, medium-low, medium-high, or high.</p> <p>Supported on M120 and M320 routers; M7i and M10i routers with the Enhanced CFEB (CFEB-E); and MX Series routers.</p> <p>For IP traffic on M320, MX Series, and T Series routers with Enhanced II Flexible PIC Concentrators (FPCs), you must include the tri-color statement at the [edit class-of-service] hierarchy level to commit a PLP configuration with any of the four levels specified. If the tri-color statement is not enabled, you can only configure the high and low levels. This applies to all protocol families.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p> <p>For information about the tri-color statement and for information about using behavior aggregate (BA) classifiers to set the PLP level of incoming packets, see the Junos OS Class of Service Configuration Guide.</p>
loss-priority-except level	<p>Do not match the PLP level. For details, see the loss-priority match condition.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p>

Table 9: Standard Firewall Filter Match Conditions for IPv6 Traffic (*continued*)

Match Condition	Description
next-header <i>header-type</i>	<p>Match the 8-bit IP protocol field that identifies the type of header immediately following the IP header.</p> <p>In place of the numeric value, you can specify one of the following text synonyms (the field values are also listed): ah (51), dstops (60), egp (8), esp (50), fragment (44), gre (47), hop-by-hop (0), icmp (1), icmp6 (58), icmpv6 (58), igmp (2), ipip (4), ipv6 (41), no-next-header (59), ospf (89), pim (103), routing (43), rsvp (46), sctp (132), tcp (6), udp (17), or vrp (112).</p> <p>NOTE: next-header icmp6 and next-header icmpv6 match conditions perform the same function. next-header icmp6 is the preferred option. next-header icmpv6 is hidden in the Junos OS CLI.</p>
next-header-except <i>header-type</i>	Do not match the 8-bit IP protocol field that identifies the type of header immediately following the IPv6 header. For details, see the next-header match type.
packet-length <i>bytes</i>	Match the length of the received packet, in bytes. The length refers only to the IP packet, including the packet header, and does not include any Layer 2 encapsulation overhead.
packet-length-except <i>bytes</i>	Do not match the length of the received packet, in bytes. For details, see the packet-length match type.
port <i>number</i>	<p>Match the UDP or TCP source or destination port field.</p> <p>If you configure this match condition, you cannot configure the destination-port match condition or the source-port match condition in the same term.</p> <p>If you configure this match condition, we recommend that you also configure the next-header udp or next-header tcp match condition in the same term to specify which protocol is being used on the port.</p> <p>In place of the numeric value, you can specify one of the text synonyms listed under destination-port.</p>
port-except <i>number</i>	Do not match the UDP or TCP source or destination port field. For details, see the port match condition.
prefix-list <i>prefix-list-name</i>	Match the prefixes of the source or destination address fields to the prefixes in the specified list. The prefix list is defined at the [edit policy-options prefix-list prefix-list-name] hierarchy level.
prefix-list <i>prefix-list-name</i> except	<p>Do not match the prefixes of the source or destination address fields to the prefixes in the specified list. For more information, see the prefix-list match condition.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p>
service-filter <i>hit</i>	<p>Match a packet received from a filter where a service-filter-hit action was applied.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p>
source-address <i>address</i>	<p>Match the IPv6 address of the source node sending the packet.</p> <p>You cannot specify both the address and source-address match conditions in the same term.</p>

Table 9: Standard Firewall Filter Match Conditions for IPv6 Traffic (*continued*)

Match Condition	Description
source-address <i>address</i> except	<p>Do not match the IPv6 address of the source node sending the packet. For more information, see the source-address match condition.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p>
source-class <i>class-names</i>	<p>Match one or more specified source class names (sets of source prefixes grouped together and given a class name).</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p> <p>For more information, see Firewall Filter Match Conditions Based on Address Classes.</p>
source-class-except <i>class-names</i>	<p>Do not match one or more specified source class names. For details, see the source-class match condition.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p>
source-port <i>number</i>	<p>Match the UDP or TCP source port field.</p> <p>You cannot specify the port and source-port match conditions in the same term.</p> <p>If you configure this match condition, we recommend that you also configure the next-header udp or next-header tcp match condition in the same term to specify which protocol is being used on the port.</p> <p>In place of the numeric value, you can specify one of the text synonyms listed with the destination-port <i>number</i> match condition.</p>
source-port-except <i>number</i>	<p>Do not match the UDP or TCP source port field. For details, see the source-port match condition.</p>
source-prefix-list <i>name</i>	<p>Match the IPv6 address prefix of the packet source field. Specify a prefix list name defined at the [edit policy-options prefix-list prefix-list-name] hierarchy level.</p>
source-prefix-list <i>name</i> except	<p>Do not match the IPv6 address prefix of the packet source field. For more information, see the source-prefix-list match condition.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p>
tcp-established	<p>Match TCP packets other than the first packet of a connection. This is a text synonym for tcp-flags "(ack rst)" (0x14).</p> <p>NOTE: This condition does not implicitly check that the protocol is TCP. To check this, specify the protocol tcp match condition.</p> <p>If you configure this match condition, we recommend that you also configure the next-header tcp match condition in the same term.</p>

Table 9: Standard Firewall Filter Match Conditions for IPv6 Traffic (*continued*)

Match Condition	Description
tcp-flags <i>flags</i>	<p>Match one or more of the low-order 6 bits in the 8-bit TCP flags field in the TCP header.</p> <p>To specify individual bit fields, you can specify the following text synonyms or hexadecimal values:</p> <ul style="list-style-type: none"> • fin (0x01) • syn (0x02) • rst (0x04) • push (0x08) • ack (0x10) • urgent (0x20) <p>In a TCP session, the SYN flag is set only in the initial packet sent, while the ACK flag is set in all packets sent after the initial packet.</p> <p>You can string together multiple flags using the bit-field logical operators.</p> <p>For combined bit-field match conditions, see the tcp-established and tcp-initial match conditions.</p> <p>If you configure this match condition, we recommend that you also configure the next-header tcp match condition in the same term to specify that the TCP protocol is being used on the port.</p>
tcp-initial	<p>Match the initial packet of a TCP connection. This is a text synonym for tcp-flags "(lack & syn)".</p> <p>This condition does not implicitly check that the protocol is TCP. If you configure this match condition, we recommend that you also configure the next-header tcp match condition in the same term.</p>
traffic-class <i>number</i>	<p>Match the 8-bit field that specifies the class-of-service (CoS) priority of the packet.</p> <p>This field was previously used as the type-of-service (ToS) field in IPv4.</p> <p>You can specify a numeric value from 0 through 63. To specify the value in hexadecimal form, include 0x as a prefix. To specify the value in binary form, include b as a prefix.</p> <p>In place of the numeric value, you can specify one of the following text synonyms (the field values are also listed):</p> <ul style="list-style-type: none"> • RFC 3246, <i>An Expedited Forwarding PHB (Per-Hop Behavior)</i>, defines one code point: ef (46). • RFC 2597, <i>Assured Forwarding PHB Group</i>, defines 4 classes, with 3 drop precedences in each class, for a total of 12 code points: <ul style="list-style-type: none"> • af11 (10), af12 (12), af13 (14) • af21 (18), af22 (20), af23 (22) • af31 (26), af32 (28), af33 (30) • af41 (34), af42 (36), af43 (38)
traffic-class-except <i>number</i>	<p>Do not match the 8-bit field that specifies the CoS priority of the packet. For details, see the traffic-class match description.</p>



NOTE: If you specify an IPv6 address in a match condition (the address, destination-address, or source-address match conditions), use the syntax for text representations described in RFC 2373, *IP Version 6 Addressing Architecture*. For more information about IPv6 addresses, see “IPv6 Overview” and “IPv6 Standards” in the *Junos OS Routing Protocols Configuration Guide*.

Related Documentation

- Guidelines for Configuring Standard Firewall Filters
- [Standard Firewall Filter Terminating Actions on page 71](#)
- [Standard Firewall Filter Nonterminating Actions on page 72](#)

Standard Firewall Filter Match Conditions for MPLS Traffic

You can configure a standard stateless firewall filter with match conditions for MPLS traffic (**family mpls**).



NOTE: The input-list *filter-names* and output-list *filter-names* statements for firewall filters for the mpls protocol family are supported on all interfaces with the exception of management interfaces and internal Ethernet interfaces (fxp or em0), loopback interfaces (lo0), and USB modem interfaces (umd).

[Table 10 on page 67](#) describes the *match-conditions* you can configure at the [edit firewall family mpls filter *filter-name* term *term-name* from] hierarchy level.

Table 10: Standard Firewall Filter Match Conditions for MPLS Traffic

Match Condition	Description
apply-groups	Specify which groups to inherit configuration data from. You can specify more than one group name. You must list them in order of inheritance priority. The configuration data in the first group takes priority over the data in subsequent groups.
apply-groups-except	Specify which groups not to inherit configuration data from. You can specify more than one group name.
exp number	Experimental (EXP) bit number or range of bit numbers in the MPLS header. For <i>number</i> , you can specify one or more values from 0 through 7 in decimal, binary, or hexadecimal format. NOTE: This match condition is not supported on PTX series packet transport switches.
exp-except number	Do not match on the EXP bit number or range of bit numbers in the MPLS header. For <i>number</i> , you can specify one or more values from 0 through 7. NOTE: This match condition is not supported on PTX series packet transport switches.
forwarding-class class	Forwarding class. Specify assured-forwarding , best-effort , expedited-forwarding , or network-control .

Table 10: Standard Firewall Filter Match Conditions for MPLS Traffic (*continued*)

Match Condition	Description
forwarding-class-except class	Do not match on the forwarding class. Specify assured-forwarding , best-effort , expedited-forwarding , or network-control .
interface interface-name	<p>Interface on which the packet was received. You can configure a match condition that matches packets based on the interface on which they were received.</p> <p>NOTE: If you configure this match condition with an interface that does not exist, the term does not match any packet.</p>
interface-set interface-set-name	<p>Match the interface on which the packet was received to the specified interface set.</p> <p>To define an interface set, include the interface-set statement at the [edit firewall] hierarchy level.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p> <p>For more information, see Filtering Packets Received on an Interface Set Overview.</p>
ip-version number	<p>(Interfaces on Enhanced Scaling flexible PIC concentrators [FPCs] on supported T Series routers only) Inner IP version. To match MPLS-tagged IPv4 packets, match on the text synonym ipv4.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p>
loss-priority level	<p>Match the packet loss priority (PLP) level.</p> <p>Specify a single level or multiple levels: low, medium-low, medium-high, or high.</p> <p>Supported on M120 and M320 routers; M7i and M10i routers with the Enhanced CFEB (CFEB-E); and MX Series routers.</p> <p>For IP traffic on M320, MX Series, and T Series routers with Enhanced II Flexible PIC Concentrators (FPCs), you must include the tri-color statement at the [edit class-of-service] hierarchy level to commit a PLP configuration with any of the four levels specified. If the tri-color statement is not enabled, you can only configure the high and low levels. This applies to all protocol families.</p> <p>For information about the tri-color statement and for information about using behavior aggregate (BA) classifiers to set the PLP level of incoming packets, see the Junos OS Class of Service Configuration Guide.</p>
loss-priority-except level	<p>Do not match the PLP level. For details, see the loss-priority match condition.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p>

- Related Documentation**
- [Guidelines for Configuring Standard Firewall Filters](#)
 - [Standard Firewall Filter Terminating Actions on page 71](#)
 - [Standard Firewall Filter Nonterminating Actions on page 72](#)

Standard Firewall Filter Match Conditions for Layer 2 CCC Traffic

You can configure a standard stateless firewall filter with match conditions for Layer 2 circuit cross-connect (CCC) traffic (**family ccc**).

The following restrictions apply to firewall filters for Layer 2 CCC traffic:

- The **input-list *filter-names*** and **output-list *filter-names*** statements for firewall filters for the **ccc** protocol family are supported on all interfaces with the exception of management interfaces and internal Ethernet interfaces (**fxp** or **em0**), loopback interfaces (**lo0**), and USB modem interfaces (**umd**).
- On MX Series routers only, you cannot apply a Layer 2 CCC stateless firewall filter (a firewall filter configured at the **[edit firewall filter family ccc]** hierarchy level) as an output filter. On MX Series routers, firewall filters configured for the **family ccc** statement can be applied only as input filters.

Table 11 on page 69 describes the *match-conditions* you can configure at the **[edit firewall family ccc filter *filter-name* term *term-name* from]** hierarchy level.

Table 11: Standard Firewall Filter Match Conditions for Layer 2 CCC Traffic

Match Condition	Description
apply-groups	Specify which groups to inherit configuration data from. You can specify more than one group name. You must list them in order of inheritance priority. The configuration data in the first group takes priority over the data in subsequent groups.
apply-groups-except	Specify which groups not to inherit configuration data from. You can specify more than one group name.
destination-mac-address address	<p>(MX Series routers only) Match the destination media access control (MAC) address of a virtual private LAN service (VPLS) packet.</p> <p>To have packets correctly evaluated by this match condition when applied to egress traffic flowing over a CCC circuit from a logical interface on an I-chip DPC in a Layer 2 virtual private network (VPN) routing instance, you must make a configuration change to the Layer 2 VPN routing instance. You must explicitly disable the use of a control word for traffic flowing out over a Layer 2 circuit. The use of a control word is enabled by default for Layer 2 VPN routing instances to support the emulated virtual circuit (VC) encapsulation for Layer 2 circuits.</p> <p>To explicitly disable the use of a control word for Layer 2 VPNs, include the no-control-word statement at either of the following hierarchy levels:</p> <ul style="list-style-type: none"> • [edit routing-instances <i>routing-instance-name</i> protocols l2vpn] • [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols l2vpn] <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p> <p>For more information, see “Disabling the Control Word for Layer 2 VPNs” in the <i>Junos OS VPNs Configuration Guide</i>.</p>
forwarding-class <i>class</i>	Forwarding class. Specify assured-forwarding , best-effort , expedited-forwarding , or network-control .

Table 11: Standard Firewall Filter Match Conditions for Layer 2 CCC Traffic (*continued*)

Match Condition	Description
forwarding-class-except class	Do not match on the forwarding class. Specify assured-forwarding , best-effort , expedited-forwarding , or network-control .
interface-group group-number	<p>Match the logical interface on which the packet was received to the specified interface group or set of interface groups. For group-number, specify a single value or a range of values from 0 through 255.</p> <p>To assign a logical interface to an interface group group-number, specify the group-number at the [interfaces interface-name unit number family family filter group] hierarchy level.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p> <p>For more information, see Filtering Packets Received on a Set of Interface Groups Overview.</p>
interface-group-except number	<p>Do not match the logical interface on which the packet was received to the specified interface group or set of interface groups. For details, see the interface-group match condition.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p>
learn-vlan-1p-priority number	<p>(MX Series routers only) Match on the IEEE 802.1p learned VLAN priority bits in the provider VLAN tag (the only tag in a single-tag frame with 802.1Q VLAN tags or the outer tag in a dual-tag frame with 802.1Q VLAN tags). Specify a single value or multiple values from 0 through 7.</p> <p>Compare with the user-vlan-1p-priority match condition.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p>
learn-vlan-1p-priority-except number	<p>(MX Series routers only) Do not match on the IEEE 802.1p learned VLAN priority bits. For details, see the learn-vlan-1p-priority match condition.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p>
loss-priority level	<p>Packet loss priority (PLP) level. Specify a single level or multiple levels: low, medium-low, medium-high, or high.</p> <p>Supported on M120 and M320 routers; M7i and M10i routers with the Enhanced CFEB (CFEB-E); and MX Series routers.</p> <p>For IP traffic on M320, MX Series, and T Series routers with Enhanced II Flexible PIC Concentrators (FPCs), you must include the tri-color statement at the [edit class-of-service] hierarchy level to commit a PLP configuration with any of the four levels specified. If the tri-color statement is not enabled, you can only configure the high and low levels. This applies to all protocol families.</p> <p>For information about the tri-color statement and for information about using behavior aggregate (BA) classifiers to set the PLP level of incoming packets, see the Junos OS Class of Service Configuration Guide.</p>
loss-priority-except level	<p>Do not match on the packet loss priority level. Specify a single level or multiple levels: low, medium-low, medium-high, or high.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p> <p>For information about using behavior aggregate (BA) classifiers to set the PLP level of incoming packets, see the Junos OS Class of Service Configuration Guide.</p>

Table 11: Standard Firewall Filter Match Conditions for Layer 2 CCC Traffic (*continued*)

Match Condition	Description
user-vlan-1p-priority <i>number</i>	<p>(MX Series routers only) Match on the IEEE 802.1p user priority bits in the customer VLAN tag (the inner tag in a dual-tag frame with 802.1Q VLAN tags). Specify a single value or multiple values from 0 through 7.</p> <p>Compare with the learn-vlan-1p-priority match condition.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p>
user-vlan-1p-priority-except <i>number</i>	<p>(MX Series routers only) Do not match on the IEEE 802.1p user priority bits. For details, see the user-vlan-1p-priority match condition.</p> <p>NOTE: This match condition is not supported on PTX series packet transport switches.</p>

- Related Documentation**
- Guidelines for Configuring Standard Firewall Filters
 - [Standard Firewall Filter Terminating Actions on page 71](#)
 - [Standard Firewall Filter Nonterminating Actions on page 72](#)

Standard Firewall Filter Terminating Actions

Standard stateless firewall filters support different sets of terminating actions for each protocol family.



NOTE: You cannot configure the next term action with a *terminating* action in the same filter term. However, you can configure the next term action with another *nonterminating* action in the same filter term.

Table 12 on page 71 describes the terminating actions you can specify in a standard firewall filter term.

Table 12: Terminating Actions for Standard Firewall Filters

Terminating Action	Description	Protocols
accept	Accept the packet.	<ul style="list-style-type: none"> family any family inet family inet6 family mpls family vpls family ccc family bridge

Table 12: Terminating Actions for Standard Firewall Filters (*continued*)

Terminating Action	Description	Protocols
discard	Discard a packet silently, without sending an Internet Control Message Protocol (ICMP) message. Discarded packets are available for logging and sampling.	<ul style="list-style-type: none"> family any family inet family inet6 family mpls family vpls family ccc family bridge
logical-system <i>logical-system-name</i>	Direct the packet to the specified logical system. NOTE: This action is not supported on PTX series packet transport switches.	<ul style="list-style-type: none"> family inet family inet6
reject message-type	Reject the packet and return an ICMPv4 or ICMPv6 message: <ul style="list-style-type: none"> If no message-type is specified, a destination unreachable message is returned by default. If tcp-reset is specified as the message-type, tcp-reset is returned only if the packet is a TCP packet. Otherwise, the administratively-prohibited message, which has a value of 13, is returned. If any other message-type is specified, that message is returned. NOTE: Rejected packets can be sampled or logged if you configure the sample or syslog action. The message-type can be one of the following values: address-unreachable , administratively-prohibited , bad-host-tos , bad-network-tos , beyond-scope , fragmentation-needed , host-prohibited , host-unknown , host-unreachable , network-prohibited , network-unknown , network-unreachable , no-route , port-unreachable , precedence-cutoff , precedence-violation , protocol-unreachable , source-host-isolated , source-route-failed , or tcp-reset .	<ul style="list-style-type: none"> family inet family inet6
routing-instance <i>routing-instance-name</i>	Direct the packet to the specified routing instance. NOTE: This action is not supported on PTX series packet transport switches.	<ul style="list-style-type: none"> family inet family inet6
topology <i>topology-name</i>	Direct the packet to the specified topology. NOTE: This action is not supported on PTX series packet transport switches.	<ul style="list-style-type: none"> family inet family inet6

- Related Documentation**
- Guidelines for Configuring Standard Firewall Filters
 - [Standard Firewall Filter Nonterminating Actions on page 72](#)

Standard Firewall Filter Nonterminating Actions

Standard stateless firewall filters support different sets of nonterminating actions for each protocol family.



NOTE: You cannot configure the next term action with a *terminating* action in the same filter term. However, you can configure the next term action with another *nonterminating* action in the same filter term.

Table 13 on page 73 describes the nonterminating actions you can configure for a standard firewall filter term.

Table 13: Nonterminating Actions for Standard Firewall Filters

Nonterminating Action	Description	Protocol Families
<code>count counter-name</code>	Count the packet in the named counter.	<ul style="list-style-type: none">• family any• family inet• family inet6• family mpls• family vpls• family ccc• family bridge

Table 13: Nonterminating Actions for Standard Firewall Filters (*continued*)

Nonterminating Action	Description	Protocol Families
dscp value	<p>Set the IPv4 Differentiated Services code point (DSCP) bit. You can specify a numerical value from 0 through 63. To specify the value in hexadecimal form, include 0x as a prefix. To specify the value in binary form, include b as a prefix.</p> <p>The default DSCP value is best effort, that is, be or 0.</p> <p>You can also specify on the following text synonyms:</p> <ul style="list-style-type: none"> • af11—Assured forwarding class 1, low drop precedence • af12—Assured forwarding class 1, medium drop precedence • af13—Assured forwarding class 1, high drop precedence • af21—Assured forwarding class 2, low drop precedence • af22—Assured forwarding class 2, medium drop precedence • af23—Assured forwarding class 2, high drop precedence • af31—Assured forwarding class 3, low drop precedence • af32—Assured forwarding class 3, medium drop precedence • af33—Assured forwarding class 3, high drop precedence • af41—Assured forwarding class 4, low drop precedence • af42—Assured forwarding class 4, medium drop precedence • af43—Assured forwarding class 4, high drop precedence • be—Best effort • cs0—Class selector 0 • cs1—Class selector 1 • cs2—Class selector 2 • cs3—Class selector 3 • cs4—Class selector 4 • cs5—Class selector 5 • cs6—Class selector 6 • cs7—Class selector 7 • ef—Expedited forwarding <p>NOTE: This action is not supported on PTX Series packet transport switches.</p> <p>NOTE: The actions dscp 0 or dscp be are supported only on T320, T640, T1600, TX Matrix, TX Matrix Plus, and M320 routers and on the 10-Gigabit Ethernet Modular Port Concentrators (MPC), 60-Gigabit Ethernet MPC, 60-Gigabit Ethernet Queuing MPC, and 60-Gigabit Ethernet Enhanced Queuing MPC on MX Series routers. However, these actions are not supported on Enhanced III Flexible PIC Concentrators (FPCs) on M320 routers.</p> <p>NOTE: On T4000 routers, the dscp 0 action is not supported during the interoperation between a T1600 Enhanced Scaling Type 4 FPC and a T4000 Type 5 FPC.</p>	family inet

Table 13: Nonterminating Actions for Standard Firewall Filters (*continued*)

Nonterminating Action	Description	Protocol Families
forwarding-class <i>class-name</i>	Classify the packet to the named forwarding class: <ul style="list-style-type: none"> <i>forwarding-class-name</i> assured-forwarding best-effort expedited-forwarding network-control 	<ul style="list-style-type: none"> family any family inet family inet6 family mpls family vpls family ccc family bridge
ipsec-sa <i>ipsec-sa</i>	Use the specified IPsec security association. NOTE: This action is not supported on MX Series routers, Type 5 FPCs on T4000 routers, and PTX Series packet transport switches.	family inet
load-balance <i>group-name</i>	Use the specified load-balancing group. NOTE: This action is not supported on MX Series routers or PTX Series packet transport switches.	family inet
log	Log the packet header information in a buffer within the Packet Forwarding Engine. You can access this information by issuing the show firewall log command at the command-line interface (CLI).	<ul style="list-style-type: none"> family inet family inet6
logical-system <i>logical-system-name</i>	Direct packets to a specific logical system.	<ul style="list-style-type: none"> family inet family inet6
loss-priority (high medium-high medium-low low)	<p>Set the packet loss priority (PLP) level.</p> <p>You cannot also configure the three-color-policer nonterminating action for the same firewall filter term. These two nonterminating actions are mutually exclusive.</p> <p>Supported on M120 and M320 routers; M7i and M10i routers with the Enhanced CFEB (CFEB-E); and MX Series routers.</p> <p>For IP traffic on M320, MX Series, and T Series routers with Enhanced II Flexible PIC Concentrators (FPCs), you must include the tri-color statement at the [edit class-of-service] hierarchy level to commit a PLP configuration with any of the four levels specified. If the tri-color statement is not enabled, you can only configure the high and low levels. This applies to all protocol families.</p> <p>For information about the tri-color statement and for information about using behavior aggregate (BA) classifiers to set the PLP level of incoming packets, see the Junos OS Class of Service Configuration Guide.</p>	<ul style="list-style-type: none"> family any family inet family inet6 family mpls family vpls family ccc family bridge
next-hop-group <i>group-name</i>	Use the specified next-hop group.	family inet
packet-mode	Updates a bit field in the packet key buffer, which specifies traffic that will bypass flow-based forwarding. Packets with the packet-mode action modifier follow the packet-based forwarding path and bypass flow-based forwarding completely. For more information about selective stateless packet-based services, see the Junos OS Security Configuration Guide .	family any

Table 13: Nonterminating Actions for Standard Firewall Filters (*continued*)

Nonterminating Action	Description	Protocol Families
policer <i>policer-name</i>	<p>Name of policer to use to rate-limit traffic.</p> <p>NOTE: For IPv6, applies to SRX100, SRX210, SRX220, SRX240, and SRX650 devices only.</p>	<ul style="list-style-type: none"> • family any • family inet • family inet6 • family mpls • family vpls • family ccc • family bridge
port-mirror	<p>Port-mirror the packet based on the specified family. Supported on M120 routers, M320 routers configured with Enhanced III FPCs, and MX Series routers only.</p> <p>NOTE: This action is not supported on T4000 Type 5 FPCs.</p>	<ul style="list-style-type: none"> • family inet • family inet6 • family vpls • family ccc • family bridge
prefix-action <i>action-name</i>	<p>Count or police packets based on the specified action name.</p> <p>NOTE: This action is not supported on PTX Series packet transport switches.</p>	family inet
sample	<p>Sample the packet.</p> <p>NOTE: The Junos OS does not sample packets originating from the router. If you configure a filter and apply it to the output side of an interface, then only the transit packets going through that interface are sampled. Packets that are sent from the Routing Engine to the Packet Forwarding Engine are not sampled.</p> <p>NOTE: This action is not supported on T4000 Type 5 FPCs.</p>	<ul style="list-style-type: none"> • family inet • family inet6 • family mpls
service-accounting	<p>Count the packet for service accounting. The count is applied to a specific named counter (__junos-dyn-service-counter) that RADIUS can obtain.</p> <p>NOTE: This action is not supported on T4000 Type 5 FPCs and PTX Series packet transport switches.</p> <p>For more information, see "Configuring Service Packet Counting" in the <i>Junos OS Subscriber Access Configuration Guide</i>.</p>	<ul style="list-style-type: none"> • family inet • family inet6
service-filter-hit	<p>(Only if the service-filter-hit flag is marked by a previous filter in the current type of chained filters) Direct the packet to the next type of filters.</p> <p>Indicate to subsequent filters in the chain that the packet was already processed. This action, coupled with the service-filter-hit match condition in receiving filters, helps to streamline filter processing.</p> <p>NOTE: This action is not supported on T4000 Type 5 FPCs and PTX Series packet transport switches.</p> <p>For more information, see "Configuring Firewall Filter Bypass" in the <i>Junos OS Subscriber Access Configuration Guide</i>.</p>	<ul style="list-style-type: none"> • family inet • family inet6

Table 13: Nonterminating Actions for Standard Firewall Filters (*continued*)


Nonterminating Action	Description	Protocol Families
syslog	Log the packet to the system log file.	<ul style="list-style-type: none"> • family inet • family inet6
three-color-policer (single-rate two-rate) policer-name	<p>Police the packet using the specified single-rate or two-rate three-color-policer.</p> <p>You cannot also configure the loss-priority action for the same firewall filter term. These two actions are mutually exclusive.</p>	<ul style="list-style-type: none"> • family inet • family inet6 • family mpls • family vpls • family ccc • family bridge
traffic-class value	<p>Specify the traffic-class code point. You can specify a numerical value from 0 through 63. To specify the value in hexadecimal form, include 0x as a prefix. To specify the value in binary form, include b as a prefix.</p> <p>The default traffic-class value is best effort, that is, be or 0.</p> <p>In place of the numeric value, you can specify one of the following text synonyms:</p> <ul style="list-style-type: none"> • af11—Assured forwarding class 1, low drop precedence • af12—Assured forwarding class 1, medium drop precedence • af13—Assured forwarding class 1, high drop precedence • af21—Assured forwarding class 2, low drop precedence • af22—Assured forwarding class 2, medium drop precedence • af23—Assured forwarding class 2, high drop precedence • af31—Assured forwarding class 3, low drop precedence • af32—Assured forwarding class 3, medium drop precedence • af33—Assured forwarding class 3, high drop precedence • af41—Assured forwarding class 4, low drop precedence • af42—Assured forwarding class 4, medium drop precedence • af43—Assured forwarding class 4, high drop precedence • be—Best effort • cs0—Class selector 0 • cs1—Class selector 1 • cs2—Class selector 2 • cs3—Class selector 3 • cs4—Class selector 4 • cs5—Class selector 5 • cs6—Class selector 6 • cs7—Class selector 7 • ef—Expedited forwarding <p>NOTE: The actions traffic-class 0 or traffic-class be are supported only on T Series and M320 routers and on the 10-Gigabit Ethernet Modular Port Concentrator (MPC), 60-Gigabit Ethernet MPC, 60-Gigabit Ethernet Queuing MPC, and 60-Gigabit Ethernet Enhanced Queuing MPC on MX Series routers. However, these actions are not supported on Enhanced III Flexible PIC Concentrators (FPCs) on M320 routers.</p>	family inet6

- Related Documentation**
- Guidelines for Configuring Standard Firewall Filters
 - [Standard Firewall Filter Terminating Actions on page 71](#)

CHAPTER 8

New or Changed Junos Configuration Statements

accept-source-mac

Syntax	<pre> accept-source-mac { mac-address <i>mac-address</i> { policer { input <i>cos-policer-name</i>; output <i>cos-policer-name</i>; } } } </pre>
Hierarchy Level	<pre> [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>] </pre>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 12.1 for PTX Packet Transport Switches.</p>
Description	<p>For Gigabit Ethernet intelligent queuing (IQ) interfaces only, accept traffic from and to the specified remote media access control (MAC) address.</p> <p>The accept-source-mac statement is equivalent to the source-address-filter statement, which is valid for aggregated Ethernet, Fast Ethernet, and Gigabit Ethernet interfaces only.</p> <p>On untagged Gigabit Ethernet interfaces, you should not configure the source-address-filter statement and the accept-source-mac statement simultaneously. On tagged Gigabit Ethernet interfaces, you should not configure the source-address-filter statement and the accept-source-mac statement with an identical MAC address specified in both filters.</p> <p>The statements are explained separately.</p>
	<div>  <p>NOTE: The policer statement is not supported on PTX Series Packet Transport Switches.</p> </div>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> Configuring MAC Address Filtering Configuring MAC Filtering on PTX Series Packet Transport Switches on page 15 source-filtering on page 101

encapsulation (Logical Interface)

Syntax	encapsulation (atm-ccc-cell-relay atm-ccc-vc-mux atm-cisco-nlpid atm-mlppp-llc atm-nlpid atm-ppp-llc atm-ppp-vc-mux atm-snap atm-tcc-snap atm-tcc-vc-mux atm-vc-mux ether-over-atm-llc ether-vpls-over-atm-llc ether-vpls-over-fr ether-vpls-over-ppp ethernet frame-relay-ccc frame-relay-ether-type frame-relay-ether-type-tcc frame-relay-ppp frame-relay-tcc multilink-frame-relay-end-to-end multilink-ppp ppp-over-ether ppp-over-ether-over-atm-llc vlan-bridge vlan-ccc vlan-vci-ccc vlan-tcc vlan-vpls);
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit interfaces <i>rlsnumber</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.1 for PTX Series Packet Transport Switches (vlan-ccc and vlan-tcc options only).
Description	Configure a logical link-layer encapsulation type.
Options	<p>atm-ccc-cell-relay—Use ATM cell-relay encapsulation.</p> <p>atm-ccc-vc-mux—Use ATM virtual circuit (VC) multiplex encapsulation on CCC circuits. When you use this encapsulation type, you can configure the ccc family only.</p> <p>atm-cisco-nlpid—Use Cisco ATM network layer protocol identifier (NLPID) encapsulation. When you use this encapsulation type, you can configure the inet family only.</p> <p>atm-mlppp-llc—For ATM2 IQ interfaces only, use Multilink Point-to-Point (MLPPP) over AAL5 LLC. For this encapsulation type, your router must be equipped with a Link Services or Voice Services PIC. MLPPP over ATM encapsulation is not supported on ATM2 IQ OC48 interfaces.</p> <p>atm-nlpid—Use ATM NLPID encapsulation. When you use this encapsulation type, you can configure the inet family only.</p> <p>atm-ppp-llc—For ATM2 IQ interfaces only, use PPP over AAL5 LLC encapsulation.</p> <p>atm-ppp-vc-mux—For ATM2 IQ interfaces only, use PPP over ATM AAL5 multiplex encapsulation.</p> <p>atm-snap—Use ATM subnetwork attachment point (SNAP) encapsulation.</p> <p>atm-tcc-snap—Use ATM SNAP encapsulation on translational cross-connect (TCC) circuits.</p> <p>atm-tcc-vc-mux—Use ATM VC multiplex encapsulation on TCC circuits. When you use this encapsulation type, you can configure the tcc family only.</p> <p>atm-vc-mux—Use ATM VC multiplex encapsulation. When you use this encapsulation type, you can configure the inet family only.</p>

ether-over-atm-llc—For interfaces that carry IPv4 traffic, use Ethernet over ATM LLC encapsulation. When you use this encapsulation type, you cannot configure multipoint interfaces.

ether-vpls-over-atm-llc—For ATM2 IQ interfaces only, use the Ethernet virtual private LAN service (VPLS) over ATM LLC encapsulation to bridge Ethernet interfaces and ATM interfaces over a VPLS routing instance (as described in RFC 2684, *Multiprotocol Encapsulation over ATM Adaptation Layer 5*). Packets from the ATM interfaces are converted to standard ENET2/802.3 encapsulated Ethernet frames with the frame check sequence (FCS) field removed.

ether-vpls-over-fr—For E1, T1, E3, T3, and SONET interfaces only, use the Ethernet virtual private LAN service (VPLS) over Frame Relay encapsulation to support Bridged Ethernet over Frame Relay encapsulated TDM interfaces for VPLS applications, as per RFC 2427 (1490).



NOTE: The SONET/SDH OC3/STM1 (Multi-Rate) MIC with SFP, the Channelized SONET/SDH OC3/STM1 (Multi-Rate) MIC with SFP, and the DS3/E3 MIC do not support Ethernet over Frame Relay encapsulation.

ether-vpls-over-ppp—For E1, T1, E3, T3 and SONET interfaces only, use the Ethernet virtual private LAN service (VPLS) over point-to-point-protocol (PPP) encapsulation to support Bridged Ethernet over PPP encapsulated TDM interfaces for VPLS applications.

ethernet—Use Ethernet II encapsulation (as described in RFC 894, *A Standard for the Transmission of IP Datagrams over Ethernet Networks*).

ethernet-vpls—Use Ethernet VPLS encapsulation on Ethernet interfaces that have VPLS enabled and that must accept packets carrying standard Tag Protocol ID (TPID) values.



NOTE: The built-in Gigabit Ethernet PIC on an M7i router does not support extended VLAN VPLS encapsulation.

frame-relay-ccc—Use Frame Relay encapsulation on CCC circuits. When you use this encapsulation type, you can configure the **ccc** family only.

frame-relay-ppp—Use PPP over Frame Relay circuits. When you use this encapsulation type, you can configure the **ppp** family only. J Series routers do not support frame-relay-ppp encapsulation.

frame-relay-tcc—Use Frame Relay encapsulation on TCC circuits for connecting different media. When you use this encapsulation type, you can configure the **tcc** family only.

frame-relay-ether-type—Use Frame Relay ether type encapsulation for compatibility with Cisco Frame Relay. The physical interface must be configured with flexible-frame-relay encapsulation.

frame-relay-ether-type-tcc—Use Frame Relay ether type TCC for Cisco-compatible Frame Relay on TCC circuits to connect different media. The physical interface must be configured with flexible-frame-relay encapsulation.

multilink-frame-relay-end-to-end—Use MLFR FRF.15 encapsulation. This encapsulation is used only on multilink, link services, voice services interfaces and their constituent T1 or E1 interfaces, and is supported on LSQ and redundant LSQ interfaces.

multilink-ppp—Use MLPPP encapsulation. This encapsulation is used only on multilink, link services, and voice services interfaces and their constituent T1 or E1 interfaces.

ppp-over-ether—For underlying Ethernet interfaces on J Series Services Routers, use PPP over Ethernet encapsulation. When you use this encapsulation type, you cannot configure the interface address. Instead, configure the interface address on the PPP interface. You also use PPP over Ethernet encapsulation to configure an underlying Ethernet interface for a dynamic PPPoE logical interface on M120 and M320 Series routers with Intelligent Queuing 2 (IQ2) PICs, and on MX Series routers with Trio MPC/MIC interfaces.

ppp-over-ether-over-atm-llc—For underlying ATM interfaces on J Series Services Routers only, use PPP over Ethernet over ATM LLC encapsulation. When you use this encapsulation type, you cannot configure the interface address. Instead, configure the interface address on the PPP interface.

vlan-bridge—Use Ethernet VLAN bridge encapsulation on Ethernet interfaces that have IEEE 802.1Q tagging, flexible-ethernet-services, and bridging enabled and that must accept packets carrying TPID 0x8100 or a user-defined TPID.

vlan-ccc—Use Ethernet virtual LAN (VLAN) encapsulation on CCC circuits. When you use this encapsulation type, you can configure the **ccc** family only.

vlan-vci-ccc—Use ATM-to-Ethernet interworking encapsulation on CCC circuits. When you use this encapsulation type, you can configure the **ccc** family only.

vlan-tcc—Use Ethernet VLAN encapsulation on TCC circuits. When you use this encapsulation type, you can configure the **tcc** family only.

vlan-vpls—Use Ethernet VLAN encapsulation on VPLS circuits.

Required Privilege	interface—To view this statement in the configuration.
Level	interface-control—To add this statement to the configuration.

**Related
Documentation**

- [Configuring Interface Encapsulation on Logical Interfaces](#)
- [Circuit and Translational Cross-Connects Overview](#)
- [Identifying the Access Concentrator](#)
- [Configuring ATM Interface Encapsulation](#)
- [Configuring VLAN Encapsulation](#)
- [Configuring Extended VLAN Encapsulation](#)
- [Configuring ISDN Logical Interface Properties](#)
- [Configuring ATM-to-Ethernet Interworking](#)
- [Configuring Interface Encapsulation on PTX Series Packet Transport Switches on page 17](#)
- [Junos OS Services Interfaces Configuration Guide](#)

encapsulation (Physical Interface)

Syntax	encapsulation (atm-ccc-cell-relay atm-pvc cisco-hdlc cisco-hdlc-ccc cisco-hdlc-tcc ethernet-bridge ethernet-ccc ethernet-over-atm ethernet-tcc ethernet-vpls extended-frame-relay-ccc extended-frame-relay-ether-type-tcc extended-frame-relay-tcc extended-vlan-bridge extended-vlan-ccc extended-vlan-tcc extended-vlan-vpls flexible-ethernet-services flexible-frame-relay frame-relay frame-relay-ccc frame-relay-ether-type frame-relay-ether-type-tcc frame-relay-port-ccc frame-relay-tcc generic-services multilink-frame-relay-uni-nni ppp ppp-ccc ppp-tcc vlan-ccc vlan-vci-ccc vlan-vpls);
Hierarchy Level	[edit interfaces <i>interface-name</i>], [edit interfaces rlsq <i>number:number</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.1 for PTX Series Packet Transport Switches (flexible-ethernet-services, ethernet-ccc, and ethernet-tcc options only).
Description	Specify the physical link-layer encapsulation type.
Default	ppp—Use serial PPP encapsulation.
Options	<p>atm-ccc-cell-relay—Use ATM cell-relay encapsulation.</p> <p>atm-pvc—Use ATM PVC encapsulation.</p> <p>cisco-hdlc—Use Cisco-compatible High-Level Data Link Control (HDLC) framing.</p> <p>cisco-hdlc-ccc—Use Cisco-compatible HDLC framing on CCC circuits.</p> <p>cisco-hdlc-tcc—Use Cisco-compatible HDLC framing on TCC circuits for connecting different media.</p> <p>ethernet-bridge—Use Ethernet bridge encapsulation on Ethernet interfaces that have bridging enabled and that must accept all packets.</p> <p>ethernet-ccc—Use Ethernet CCC encapsulation on Ethernet interfaces that must accept packets carrying standard Tag Protocol ID (TPID) values. For 8-port, 12-port, and 48-port Fast Ethernet PICs, CCC is not supported</p> <p>ethernet-over-atm—For interfaces that carry IPv4 traffic, use Ethernet over ATM encapsulation. When you use this encapsulation type, you cannot configure multipoint interfaces. As defined in RFC 1483, <i>Multiprotocol Encapsulation over ATM Adaptation Layer 5</i>, this encapsulation type allows ATM interfaces to connect to devices that support only bridge protocol data units (BPDUs). The Junos OS does not completely support bridging, but accepts BPDU packets as a default gateway. If you use the router as an edge device, then the router acts as a default gateway. It accepts Ethernet LLC/SNAP frames with IP or ARP in the payload, and drops the rest. For packets destined to the Ethernet LAN, a route lookup is done using the destination IP address. If the route lookup yields a full address match, the packet is encapsulated with an LLC/SNAP and MAC header, and the packet is forwarded to the ATM interface.</p>

ethernet-tcc—For interfaces that carry IPv4 traffic, use Ethernet TCC encapsulation on interfaces that must accept packets carrying standard TPID values. For 8-port, 12-port, and 48-port Fast Ethernet PICs, TCC is not supported.

ethernet-vpls—Use Ethernet VPLS encapsulation on Ethernet interfaces that have VPLS enabled and that must accept packets carrying standard TPID values.

extended-frame-relay-ccc—Use Frame Relay encapsulation on CCC circuits. This encapsulation type allows you to dedicate DLCIs 1 through 1022 to CCC.

extended-frame-relay-ether-type-tcc—Use extended Frame Relay ether type TCC for Cisco-compatible Frame Relay for DLCIs 1 through 1022. This encapsulation is used for circuits with different media on either side of the connection.

extended-frame-relay-tcc—Use Frame Relay encapsulation on TCC circuits to connect different media. This encapsulation type allows you to dedicate DLCIs 1 through 1022 to TCC.

extended-vlan-bridge—Use extended VLAN bridge encapsulation on Ethernet interfaces that have IEEE 802.1Q VLAN tagging and bridging enabled and that must accept packets carrying TPID 0x8100 or a user-defined TPID.

extended-vlan-ccc—Use extended VLAN encapsulation on CCC circuits with Gigabit Ethernet and 4-port Fast Ethernet interfaces that must accept packets carrying 802.1Q values. For 8-port, 12-port, and 48-port Fast Ethernet PICs, extended VLAN CCC is not supported. For 4-port Gigabit Ethernet PICs, extended VLAN CCC is not supported.

extended-vlan-tcc—For interfaces that carry IPv4 traffic, use extended VLAN encapsulation on TCC circuits with Gigabit Ethernet interfaces on which you want to use 802.1Q tagging. For 4-port Gigabit Ethernet PICs, extended VLAN TCC is not supported.

extended-vlan-vpls—Use extended VLAN VPLS encapsulation on Ethernet interfaces that have VLAN 802.1Q tagging and VPLS enabled and that must accept packets carrying TPIDs 0x8100, 0x9100, and 0x9901.



NOTE: The built-in Gigabit Ethernet PIC on an M7i router does not support extended VLAN VPLS encapsulation.

flexible-ethernet-services—For Gigabit Ethernet IQ interfaces and Gigabit Ethernet PICs with small form-factor pluggable transceivers (SFPs) (except the 10-port Gigabit Ethernet PIC and the built-in Gigabit Ethernet port on the M7i router), use flexible Ethernet services encapsulation when you want to configure multiple per-unit Ethernet encapsulations. Aggregated Ethernet bundles can use this encapsulation type. This encapsulation type allows you to configure any combination of route, TCC, CCC, Layer 2 virtual private networks (VPNs), and VPLS encapsulations on a single physical port. If you configure flexible Ethernet services encapsulation on the physical interface, VLAN IDs from 1 through 511 are no longer reserved for normal VLANs.

flexible-frame-relay—For IQ interfaces only, use flexible Frame Relay encapsulation when you want to configure multiple per-unit Frame Relay encapsulations. This encapsulation type allows you to configure any combination of TCC, CCC, and standard Frame Relay encapsulations on a single physical port. Also, each logical interface can have any DLCI value from 1 through 1022.

frame-relay—Use Frame Relay encapsulation.

frame-relay-ccc—Use Frame Relay encapsulation on CCC circuits.

frame-relay-ether-type—Use Frame Relay ether type encapsulation for compatibility with Cisco Frame Relay.

frame-relay-ether-type-tcc—Use Frame Relay ether type TCC for Cisco-compatible Frame Relay on TCC circuits to connect different media.

frame-relay-port-ccc—Use Frame Relay port CCC encapsulation to transparently carry all the DLCIs between two customer edge (CE) routers without explicitly configuring each DLCI on the two provider edge (PE) routers with Frame Relay transport. When you use this encapsulation type, you can configure the **ccc** family only.

frame-relay-tcc—Use Frame Relay encapsulation on TCC circuits to connect different media.

generic-services—Use generic services encapsulation for services with a hierarchical scheduler.

multilink-frame-relay-uni-nni—Use MLFR UNI NNI encapsulation. This encapsulation is used on link services, voice services interfaces functioning as FRF.16 bundles, and their constituent T1 or E1 interfaces, and is supported on LSQ and redundant LSQ interfaces.

ppp—Use serial PPP encapsulation.

ppp-ccc—Use serial PPP encapsulation on CCC circuits. When you use this encapsulation type, you can configure the **ccc** family only.

ppp-tcc—Use serial PPP encapsulation on TCC circuits for connecting different media. When you use this encapsulation type, you can configure the **tcc** family only.

vlan-ccc—Use Ethernet VLAN encapsulation on CCC circuits.

vlan-vci-ccc—Use ATM-to-Ethernet interworking encapsulation on CCC circuits. When you use this encapsulation type, you can configure the **ccc** family only. All logical interfaces configured on the Ethernet interface must also have the encapsulation type set to **vlan-vci-ccc**.


vlan-vpls—Use VLAN VPLS encapsulation on Ethernet interfaces with VLAN tagging and VPLS enabled. Interfaces with VLAN VPLS encapsulation accept packets carrying standard TPID values only.

Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring Interface Encapsulation on Physical Interfaces• Defining the Encapsulation for Switching Cross-Connects• Configuring ATM Interface Encapsulation• Configuring VLAN Encapsulation• Configuring ATM-to-Ethernet Interworking• Configuring Extended VLAN Encapsulation• Configuring Encapsulation for Layer 2 Wholesale VLAN Interfaces• Configuring Interfaces for Layer 2 Circuits• Configuring Interfaces for Layer 2 Circuits• Configuring Interface Encapsulation on PTX Series Packet Transport Switches on page 17

flexible-vlan-tagging

Syntax	flexible-vlan-tagging;
Hierarchy Level	[edit interfaces <i>ge-fpc/pic/port</i>], [edit interfaces <i>et-fpc/pic/port</i>]
Release Information	Statement introduced in Junos OS Release 8.1. Support for aggregated Ethernet added in Junos OS Release 9.0. Statement introduced in Junos OS Release 12.1 for PTX Series Packet Transport Switches.
Description	<p>Simultaneously supports transmission of 802.1Q VLAN single-tag and dual-tag frames on logical interfaces on the same Ethernet port.</p> <p>This statement is supported on M Series and T Series routers, for Fast Ethernet and Gigabit Ethernet interfaces only on Gigabit Ethernet IQ2 and IQ2-E, IQ, and IQE PICs, and for aggregated Ethernet interfaces with member links in IQ2, IQ2-E, and IQ PICs or in MX Series DPCs, or on Ethernet interfaces for PTX Series Packet Transport Switches.</p> <p>The statements are explained separately.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring Mixed Tagging• Configuring Flexible VLAN Tagging on PTX Series Packet Transport Switches on page 16

forwarding-classes

Syntax	<pre>forwarding-classes { class queue-num <i>queue-number</i> priority (high low); queue <i>queue-number class-name</i> priority (high low) [policing-priority (premium normal)]; }</pre>
Hierarchy Level	[edit class-of-service]
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>policing-priority option introduced in Junos OS Release 9.5.</p> <p>Statement introduced on PTX Series Packet Transport Switches in Junos OS Release 12.1.</p>
Description	<p>Associate the forwarding class with a queue name and number. For M320, MX Series, and T Series routers only, you can configure fabric priority queuing by including the priority statement. For Enhanced IQ PICs, you can include the policing-priority option.</p>
<div style="display: flex; align-items: center;">  <div> <p>NOTE: The priority and policing-priority options are not supported on PTX Series Packet Transport Switches.</p> </div> </div>	
<p>The statements are explained separately.</p>	
Usage Guidelines	<p>See Configuring Forwarding Classes, Overriding Fabric Priority Queuing, and Example: Configuring CoS for a PBB Network on MX Series Routers. For the policing-priority option, see Configuring Layer 2 Policers on IQE PICs. For classification by egress interface, see Classifying Packets by Egress Interface.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>

fru-poweron-sequence

Syntax	<code>fru-poweron-sequence fru-poweron-sequence;</code>
Hierarchy Level	[edit chassis]
Release Information	Statement introduced in Junos OS Release 10.0. Command introduced in Junos OS Release 12.1 for PTX Series packet transport switches.
Description	(MX Series 3D Universal Edge Routers only) Configure the power-on sequence for the DPCs in the chassis for routers with the enhanced AC Power Entry Module (PEM). (PTX Series packet transport switches) Configure the power-on sequence for FPCs installed in the chassis.
Options	(MX Series 3D Universal Edge Routers only) <i>fru-poweron-sequence</i> —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.

.....

(PTX Series packet transport switches) *fru-poweron-sequence*—Power-on sequence for the FPCs in the chassis. The numbers indicate the slot number of the FPCs.



.....

NOTE: 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	<ul style="list-style-type: none">Configuring the Power-On Sequence for DPCs on MX Series Routers with the Enhanced AC PEMConfiguring the Power-On Sequence for FPCs on PTX Series Packet Transport Switches on page 29

hold-interval (OAM)

Syntax	<code>hold-interval <i>minutes</i>;</code>
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management maintenance-domain <i>domain-name</i> maintenance-association <i>ma-name</i> continuity-check]
Release Information	Statement introduced in Junos OS Release 8.4. Statement introduced in Junos OS Release 12.1 for PTX Series Packet Transport Switches.
Description	The time to wait before flushing the maintenance association end point (MEP) database, if no updates occur.
Options	<i>minutes</i> —Time to wait, in minutes.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> Continuity Check Protocol Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Switches on page 20

level

Syntax	<code>level <i>number</i>;</code>
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management maintenance-domain <i>domain-name</i>]
Release Information	Statement introduced in Junos OS Release 8.4. Statement introduced in Junos OS Release 12.1 for PTX Series Packet Transport Switches.
Description	A number used in CFM messages to identify the maintenance association.
Options	<i>number</i> —A number used to identify the maintenance domain to which the CFM message belongs. Range: 0 through 7
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> Configuring the Maintenance Domain Level Example: Configuring Connectivity Fault Management for a PBB Network on MX Series Routers Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Switches on page 20

loss-threshold

Syntax	<code>loss-threshold <i>number</i>;</code>
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management maintenance-domain <i>domain-name</i> maintenance-association <i>ma-name</i> continuity-check]
Release Information	Statement introduced in Junos OS Release 8.4. Statement introduced in Junos OS Release 12.1 for PTX Series Packet Transport Switches.
Description	Specify the number of continuity check messages lost before marking the remote MEP as down.
Options	<i>number</i> —The number of continuity check messages that can be lost before the remote MEP is considered down.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">Continuity Check ProtocolConfiguring Ethernet 802.1ag OAM on PTX Series Packet Transport Switches on page 20

maintenance-domain

Syntax `maintenance-domain domain-name {`
 `bridge-domain name <vlan-id [vlan-ids]>;`
 `instance vpls-instance-name;`
 `level number;`
 `maintenance-association ma-name {`
 `protect-maintenance-association protect-ma-name;`
 `remote-maintenance-association remote-ma-name;`
 `short-name-format (character-string | vlan | 2octet | rfc-2685-vpn-id);`
 `continuity-check {`
 `hold-interval minutes;`
 `interval (10m | 10s | 1m | 1s | 100ms);`
 `loss-threshold number`
 `}`
 `mep mep-id {`
 `auto-discovery;`
 `direction (up | down);`
 `interface interface-name (protect | working);`
 `lowest-priority-defect (all-defects | err-xcon | mac-rem-err-xcon | no-defect |`
 `rem-err-xcon | xcon);`
 `priority number;`
 `remote-mep mep-id {`
 `action-profile profile-name;`
 `sla-iterator-profile profile-name {`
 `data-tlv-size size;`
 `iteration-count count-value;`
 `priority priority-value;`
 `}`
 `}`
 `}`
 `mip-half-function(none | default | explicit);`
 `name-format (character-string | none | dns | mac+2oct);`
 `}`
 `virtual-switch name {`
 `bridge-domain name <vlan-id [vlan-ids]>;`
 `}`
 `}`

Hierarchy Level [edit protocols [oam](#) ethernet connectivity-fault-management]

Release Information Statement introduced in Junos OS Release 8.4.
 Statement introduced in Junos OS Release 12.1 for PTX Series Packet Transport Switches.

Description Configure the name of the maintenance domain in IEEE-compliant format.

Options *domain-name*—Name of the maintenance domain.
 The remaining statements are explained separately.

Required Privilege interface—To view this statement in the configuration.
Level interface-control—To add this statement to the configuration.

- Related Documentation**
- Creating the Maintenance Domain
 - Configuring a Maintenance Endpoint
 - Example: Configuring Connectivity Fault Management for a PBB Network on MX Series Routers
 - [Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Switches on page 20](#)

name-format

Syntax	name-format (character-string none dns mac+2oct);
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management maintenance-domain domain-name]
Release Information	Statement introduced in Junos OS Release 8.4. Statement introduced in Junos OS Release 12.1 for PTX Series Packet Transport Switches.
Description	Specify the format of the maintenance domain name.
Options	character-string —The name is an ASCII character string. none —The maintenance domain name is not used. dns —The name is in domain name service (DNS) format. For example: www.juniper.net. mac+2oct —Name is the MAC address plus a two-octet maintenance association identifier. For example: 08:00:22:33:44:55.100. Default: character-string
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Creating a Maintenance Association• Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Switches on page 20

oam

```

Syntax  oam {
    ethernet {
        connectivity-fault-management {
            action-profile profile-name {
                default-actions {
                    interface-down;
                }
            }
        }
        performance-monitoring {
            delegate-server-processing;
            hardware-assisted-timestamping;
            sla-iterator-profiles {
                profile-name {
                    disable;
                    calculation-weight {
                        delay delay-weight;
                        delay-variation delay-variation-weight;
                    }
                    cycle-time milliseconds;
                    iteration-period connections;
                    measurement-type (loss | statistical-frame-loss | two-way-delay);
                }
            }
        }
    }
    linktrace {
        age (30m | 10m | 1m | 30s | 10s);
        path-database-size path-database-size;
    }
    maintenance-domain domain-name {
        level number;
        name-format (character-string | none | dns | mac+2octet);
        maintenance-association ma-name {
            short-name-format (character-string | vlan | 2octet | rfc-2685-vpn-id);
            protect-maintenance-association protect-ma-name;
            remote-maintenance-association remote-ma-name;
            continuity-check {
                convey-loss-threshold;
                hold-interval minutes;
                interface-status-tlv;
                interval (10m | 10s | 1m | 1s | 100ms);
                loss-threshold number;
                port-status-tlv;
            }
        }
        mep mep-id {
            auto-discovery;
            direction (up | down);
            interface interface-name (protect | working);
            lowest-priority-defect (all-defects | err-xcon | mac-rem-err-xcon | no-defect |
                rem-err-xcon | xcon );
            priority number;
            remote-mep mep-id {
                action-profile profile-name;
            }
        }
    }
}

```

```
        sla-iterator-profile profile-name {
            data-tlv-size size;
            iteration-count count-value;
            priority priority-value;
        }
    }
}
}
}
link-fault-management {
    action-profile profile-name {
        action {
            link-down;
            send-critical-event;
            syslog;
        }
        event {
            link-adjacency-loss;
            link-event-rate {
                frame-error count;
                frame-period count;
                frame-period-summary count;
                symbol-period count;
            }
            protocol-down;
        }
    }
}
interface interface-name {
    apply-action-profile
    link-discovery (active | passive);
    pdu-interval interval;
    pdu-threshold threshold-value;
    remote-loopback;
    event-thresholds {
        frame-error count;
        frame-period count;
        frame-period-summary count;
        symbol-period count;
    }
    negotiation-options {
        allow-remote-loopback;
        no-allow-link-events;
    }
}
}
}
```

Hierarchy Level [edit protocols]

Release Information Statement introduced in Junos OS Release 8.2.
Statement introduced in Junos OS Release 12.1 for PTX Series Packet Transport Switches.

Description	For Ethernet interfaces on M320, M120, MX Series, and T Series routers and PTX Series Packet Transport Switches, provide IEEE 802.3ah Operation, Administration, and Maintenance (OAM) support. 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	<ul style="list-style-type: none"> IEEE 802.3ah OAM Link-Fault Management Overview Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Switches on page 20

protocol (Schedulers)

Syntax	protocol (any non-tcp tcp);
Hierarchy Level	[edit class-of-service schedulers <i>scheduler-name</i> drop-profile-map]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced on PTX Series Packet Transport Switches in Junos OS Release 12.1.
Description	Specify the protocol type for the specified scheduler.
Options	<p>any—Accept any protocol type.</p> <p>non-tcp—Accept any protocol type other than TCP/IP.</p> <p>tcp—Accept TCP/IP protocol type.</p>




NOTE: On MX Series routers, T4000 routers, and PTX Series Packet Transport Switches, you can configure only the any option.

Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> Configuring Schedulers

schedulers (Class-of-Service [PTX Series Packet Transport Switches])

Syntax	<pre>schedulers { <i>scheduler-name</i> { buffer-size (percent <i>percentage</i> remainder temporal <i>microseconds</i>); drop-profile-map loss-priority (any low medium-low medium-high high) drop-profile <i>profile-name</i>; priority <i>priority-level</i>; transmit-rate (percent <i>percentage</i> <i>rate</i> remainder) exact rate-limit; } }</pre>
Hierarchy Level	[edit class-of-service]
Release Information	Statement introduced on PTX Series Packet Transport Switches for Junos OS Release 12.1.
Description	Specify scheduler name and parameter values.
Options	<p><i>scheduler-name</i>—Name of the scheduler to be configured.</p> <p>rate-limit—Allowed only on the strict-high queue. buffer-size cannot be configured on rate-limited queues.</p> <p>exact—Allowed only on the non-strict-high (high, medium-high, medium-low, or low) queues.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">Configuring Schedulers

short-name-format

Syntax	short-name-format (character-string vlan 2octet rfc-2685-vpn-id);
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management maintenance-domain domain-name maintenance-association ma-name]
Release Information	Statement introduced in Junos OS Release 8.4. Statement introduced in Junos OS Release 12.1 for PTX Series Packet Transport Switches.
Description	Specify the name format of the maintenance association name.
Options	<p>character-string—The name is an ASCII character string.</p> <p>vlan—The primary VLAN identifier.</p> <p>2octet—A number in the range 0 through 65,535.</p> <p>rfc-2685-vpn-id—A VPN identifier that complies with RFC 2685.</p> <p>Default: character-string</p>
	<div>  <p>NOTE: The PTX Series Packet Transport Switches support the vlan and 2octet options only.</p> </div>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> Creating a Maintenance Association Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Switches on page 20

source-address-filter

Syntax	source-address-filter { <i>mac-address</i> ; }
Hierarchy Level	[edit interfaces <i>interface-name</i> aggregated-ether-options], [edit interfaces <i>interface-name</i> fastether-options], [edit interfaces <i>interface-name</i> gigether-options]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.1 for PTX Packet Transport Switches.
Description	For aggregated Ethernet, Fast Ethernet, Gigabit Ethernet, Gigabit Ethernet IQ interfaces, and Gigabit Ethernet PICs with SFPs (except the 10-port Gigabit Ethernet PIC and the built-in Gigabit Ethernet port on the M7i router), specify the MAC addresses from which the interface can receive packets. For this statement to have any effect, you must include the source-filtering statement in the configuration to enable source address filtering. This statement is not supported on the J Series Services Routers.
Options	<p>mac-address—MAC address filter. You can specify the MAC address as <i>nn:nn:nn:nn:nn:nn</i> or <i>nnnn.nnnn.nnnn</i>, where <i>n</i> is a decimal digit. To specify more than one address, include multiple mac-address options in the source-address-filter statement.</p> <p>If you enable the VRRP on a Fast Ethernet or Gigabit Ethernet interface, as described in VRRP and VRRP for IPv6 Overview, and if you enable MAC source address filtering on the interface, you must include the virtual MAC address in the list of source MAC addresses that you specify in the source-address-filter statement. MAC addresses ranging from 00:00:5e:00:01:00 through 00:00:5e:00:01:ff are reserved for VRRP, as defined in RFC 3768, <i>Virtual Router Redundancy Protocol</i>. When you configure the VRRP group, the group number must be the decimal equivalent of the last hexadecimal byte of the virtual MAC address.</p> <p>On untagged Gigabit Ethernet interfaces, you should not configure the source-address-filter statement and the accept-source-mac statement simultaneously. On tagged Gigabit Ethernet interfaces, you should not configure the source-address-filter statement and the accept-source-mac statement with an identical MAC address specified in both filters.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Enabling Ethernet MAC Address Filtering• Configuring MAC Filtering on PTX Series Packet Transport Switches on page 15• source-filtering on page 101

source-filtering

Syntax	(source-filtering no-source-filtering);
Hierarchy Level	[edit interfaces <i>interface-name</i> aggregated-ether-options], [edit interfaces <i>interface-name</i> fastether-options], [edit interfaces <i>interface-name</i> gigether-options]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.1 for PTX Packet Transport Switches.
Description	<p>For aggregated Ethernet, Fast Ethernet, Gigabit Ethernet, and Gigabit Ethernet IQ interfaces only, enable the filtering of MAC source addresses, which blocks all incoming packets to that interface. To allow the interface to receive packets from specific MAC addresses, include the source-address-filter statement.</p> <p>If the remote Ethernet card is changed, the interface is no longer able to receive packets from the new card because it has a different MAC address.</p>
Default	Source address filtering is disabled.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Enabling Ethernet MAC Address Filtering• Configuring MAC Filtering on PTX Series Packet Transport Switches on page 15• accept-source-mac on page 80• source-address-filter on page 100

synchronization (M Series, T Series, and PTX Series)

Syntax	<pre>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; }</pre>
Hierarchy Level	[edit chassis]
Release Information	<p>Statement introduced in Junos OS Release 7.6.</p> <p>Statement introduced on the M120 router in Junos OS Release 9.3.</p> <p>Statement introduced on the T320, T640, and T1600 routers in Junos OS Release 10.2.</p> <p>Statement introduced on the PTX Series Packet Transport Switches in Junos OS Release 12.1.</p>
Description	(M320, M40e, M120, T320, T640, and T1600 routers and PTX Series Packet Transport Switches 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	<p>primary—First external timing source specified in the configuration hierarchy. This statement has the following suboptions:</p> <ul style="list-style-type: none">• 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 Switch, replace <i>slot-number</i> 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. <p>secondary—Second external timing source specified in the configuration hierarchy.</p> <ul style="list-style-type: none">• 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 Switch, 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 Switches.

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	<ul style="list-style-type: none"> • Configuring the Junos OS to Support an External Clock Synchronization Interface for M Series and T Series Routers
------------------------------	---

vlan-tags (Stacked VLAN Tags)

Syntax	<code>vlan-tags inner <i>tpid.vlan-id</i> inner-range <i>vid1—vid2</i> outer <i>tpid.vlan-id</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.1 for PTX Series Packet Transport Switches.
Description	For Gigabit Ethernet IQ and IQE interfaces only, bind TPIDs and 802.1Q VLAN tag IDs to a logical interface.



NOTE: The inner-range *vid1—vid2* option is supported on MX Series with IQE PICs only.

Options	<p>inner <i>tpid.vlan-id</i>—A TPID and a valid VLAN identifier.</p> <p>Range: (most routers) For VLAN ID, 1 through 4094. VLAN ID 0 is reserved for tagging the priority of frames.</p> <p>Range: (PTX Series) For VLAN ID, 0 through 4094.</p> <p>inner-range <i>vid1—vid2</i>—For MX Series routers with Enhanced IQ (IQE) PICs only; specify a range of VLAN IDs where <i>vid1</i> is the start of the range and <i>vid2</i> is the end of the range.</p> <p>Range: For VLAN ID, 1 through 4094. VLAN ID 0 is reserved for tagging the priority of frames.</p> <p>outer <i>tpid.vlan-id</i>—A TPID and a valid VLAN identifier.</p> <p>Range: (most routers) For VLAN ID, 1 through 511 for normal interfaces, and 512 through 4094 for VLAN CCC interfaces. VLAN ID 0 is reserved for tagging the priority of frames.</p> <p>Range: (PTX Series) For VLAN ID, 0 through 511 for normal interfaces, and 512 through 4094 for VLAN CCC interfaces.</p>
----------------	---



NOTE: Configuring inner-range with the entire *vlan-id* range consumes system resources and is not a best practice. It should be used only when a subset of VLAN IDs of inner tag (not the entire range) needs to be associated with a logical interface. If you specify the entire range (1–4094), it has the same result as not specifying a range; however, it consumes Packet Forwarding Engine resources such as VLAN lookup table entries, and so on.

The following examples illustrate this further:

```
[edit interfaces interface-name]
```



```
stacked-vlan-tagging;  
unit number {  
    vlan-tags outer vid inner-range 1-4094;  
}  
  
[edit interfaces interface-name]  
vlan-tagging;  
unit number {  
    vlan-id vid;  
}
```

Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring Dual VLAN Tags• Configuring Flexible VLAN Tagging on PTX Series Packet Transport Switches on page 16• stacked-vlan-tagging

CHAPTER 9

Configuration Differences Between PTX Series and T Series

- [COS Feature Differences Between PTX Series Packet Transport Switches and T Series Matrix Routers on page 107](#)
- [Firewall and Policing Differences Between PTX Series Packet Transport Switches and T Series Matrix Routers on page 109](#)

COS Feature Differences Between PTX Series Packet Transport Switches and T Series Matrix Routers

This topic provides a list of Class of Service features available on PTX Packet Transport Switches and compares them with Class of Service features on T Series routers.

Classifiers

- T Series routers have a “Classifiers on routing instances not supported as Layer 3 VPN” feature. On PTX Series Packet Transport Switches, this feature is not supported.
- On T Series routers, IEEE 802.1 classifiers cannot co-exist with Layer 3 classifiers. On PTX Series Packet Transport Switches, these classifiers can co-exist.
- On T Series routers, IEEE classifiers are supported by using intelligent PICs. These PICs have the flexibility of classifying traffic based on inner or outer VLAN tags. On PTX Series Packet Transport Switches, IEEE classification is always based on outer VLAN tags.

Rewrite

On PTX Series Packet Transport Switches, **inet-precedence** rewrite is supported using:

- `exp protocol mpls-any`
- `exp protocol mpls-inet-both`
- `exp protocol mpls-inet-both-non-vpn`

PTX Series Packet Transport Switches also support the rewrite rule `dscp-ipv6` and rewrite rule `dscp-ipv6`. On T Series routers, support for rewrite rule `dscp-ipv6` and rewrite rule `dscp-ipv6` feature is not supported.

Forwarding Class

- On the PTX Series Packet Transport Switch, fabric priority queuing is not supported; therefore the **priority** statement for **forwarding-classes** is not supported.
- On T Series routers, you can override the default fabric priority queuing of egress traffic by including the **priority** statement at the following hierarchy level: .

```
[class-of-service forwarding-classes queue queue-number class-name]  
priority (high |low);
```

Tri-color Marking

On T Series routers, the **copy-plp** statement needs to be configured to support tricolor marking. On the PTX Series Packet Transport Switches, tricolor marking is enabled by default.

Schedulers

- T Series routers, which use egress queuing architecture, support chassis and fabric schedulers. Alternatively, PTX Series Packet Transport Switches support a Virtual Output Queuing (VOQ) architecture that does not require fabric schedulers. With the VOQ architecture, packets are queued and dropped in the ingress during congestion.
- On T Series routers, high priority queues have precedence to acquire excess bandwidth and may consume all excess bandwidth. On PTX Series Packet Transport Switches, excess bandwidth is shared based on the ratio of configured transfer rate. Therefore, all priority queues get a share of excess bandwidth.
- On T Series routers, strict-high priority queues and high priority queues are assigned the same hardware priority. On PTX Series Packet Transport Switches, strict-high priority queues and high priority queues are assigned different hardware priorities.
- On T Series routers, if a strict-high priority queue is oversubscribed, it can block all other queues except high priority queues. On PTX Series Packet Transport Switches, if a strict-high priority queue is oversubscribed, it can block all other queues including high priority queues.
- To restrict the bandwidth of strict-high **priority** queues, the **transmit-rate rate-limit** configuration statement has been implemented for PTX Series Packet Transport Switches.
- On both T Series routers and PTX Series Packet Transport Switches, if a strict-high priority queue is oversubscribed and results in oversubscription of the guaranteed bandwidth, the distribution of bandwidth that is not taken up by strict-high priority queues is undetermined. T Series routers and PTX Series Packet Transport Switches differently when distributing this unused bandwidth.

Buffer Size and Latency

- On T Series routers, memory allocation dynamic (MAD) is enabled by default and can be disabled. On PTX Series Packet Transport Switches, MAD cannot be disabled.
- On T Series routers, the maximum delay bandwidth buffering configured per queue is 50 MS. On the PTX, the maximum delay bandwidth buffering configured per queue is 100 MS.
- On T Series routers, the maximum latency associated with a packet is fairly consistent and independent of the number of sources sending the traffic to an interface. On the PTX Series Packet Transport Switch, over-provisioning is possible. When traffic is sent from multiple Packet Forwarding Engines, the latency is about 10%-15% higher than when traffic is sent from one Packet Forwarding Engine.
- On T Series routers, a high priority queue has lower latency than a low priority queue with the same configured transfer rate and same offered load. On PTX Series Packet Transport Switches, there is no latency difference.

Drop Profile

The Queuing and Memory Interfaces ASIC does not support drop-profile assignments for a queue based on the protocol. As a consequence, the **protocol (any-non-tcp-tcp)** option is not supported for the **drop-profile-map** configuration statement on PTX Series Packet Transport Switches.

Interface Queue Statistics (show interfaces queue output)

- On T Series routers, transmitted byte counters are computed using Layer 3 packet length. On PTX Series Packet Transport Switches, transmitted byte counters are computed using Layer 2 packet length (excluding CRC).
- On the PTX Series Packet Transport Switches, Tail-dropped counters are always zero. All the packet drops will be shown as random early detection (RED-dropped) in the output for the **show interfaces queue** CLI command.
- On T Series routers, the Tail-dropped counters and the RED-dropped counters are displayed separately in the output.

Related Documentation

- [Understanding CoS CLI Configuration Statements on PTX Series Packet Transport Switches on page 31](#)

Firewall and Policing Differences Between PTX Series Packet Transport Switches and T Series Matrix Routers

This topic provides a list of firewall and policier features available on PTX Packet Transport Switches and compares them with firewall and policing features on T Series routers.

Firewall Filters

Junos OS firewall and policing software on PTX Series Packet Transport Switches supports IPv4 filters, IPv6 filters, MPLS filters, CCC filters, interface policing, LSP policing, MAC filtering, ARP policing, L2 policing, and other features. Exceptions are noted below.

- PTX Series Packet Transport Switches do not support:
 - Filter Based Forwarding
 - Egress Forwarding Table Filters
 - Forwarding Table Filters for MPLS/CCC
 - Family VPLS
- PTX Series Packet Transport Switches do not support nested firewall filters. The **filter** statement at the **[edit firewall family *family-name* filter *filter-name* term *term-name*]** hierarchy level is disabled.
- Because no service PICs are present in PTX Series Packet Transport Switches, service filters are not supported for both IPv4 and IPv6 traffic. The **service-filter** statement at **[edit firewall family (inet | inet6)]** hierarchy level is disabled.
- The PTX Series Packet Transport Switches exclude simple filters. These filters are supported on Gigabit Ethernet intelligent queuing (IQ2) and Enhanced Queuing Dense Port Concentrator (EQ DPC) interfaces only. The **simple-filter** statement at the **[edit firewall family inet]** hierarchy level is disabled.
- Physical interface filtering is not supported. The **physical-interface-filter** statement at the **[edit firewall family *family-name* filter *filter-name*]** hierarchy level is disabled.
- The prefix action feature is not supported on PTX Series Packet Transport Switches. The **prefix-action** statement at **[edit firewall family inet]** hierarchy level is disabled.
- On T Series routers, you can collect a variety of information about traffic passing through the device by setting up one or more accounting profiles that specify some common characteristics of the data. The PTX Series Packet Transport Switches do not support accounting configurations for firewall filters. The **accounting-profile** statement at the **[edit firewall family *family-name* filter *filter-name*]** hierarchy level is disabled.
- The **reject** action is not supported on the loopback (**lo0**) interface. If you apply a filter to the **lo0** interface and the filter includes a **reject** action, an error message appears.
- PTX Series Packet Transport Switches do not support aggregated ethernet logical interface match conditions. However, child link interface matching is supported.
- PTX Series Packet Transport Switches displays both counts if two different terms in a filter have the same match condition but they have different counts. T Series routers display one count only.
- PTX Series Packet Transport Switches do not have separate policer instances when a filter is bound to multiple interfaces. Use the **interface-specific** configuration statement to create the configuration.

- On PTX Series Packet Transport Switches, when an ingress interface has CCC encapsulation, packets coming in through the ingress CCC interface will not be processed by the egress filters.
- For CCC encapsulation, the PTX Series Packet Transport Switches append an extra 8 bytes for egress Layer 2 filtering. The T Series routers do not. Therefore, egress counters on PTX Series Packet Transport Switches show an extra eight bytes for each packet which impacts policer accuracy.
- On PTX Series Packet Transport Switches, output for the **show pfe statistics traffic** CLI command includes the packets discarded by DMAC and SMAC filtering. On T Series routers, the command output does not include these discarded packets because MAC filters are implemented in the PIC and not in the FPC.
- The last-fragment packet that goes through a PTX firewall cannot be matched by the **is-fragment** matching condition. This feature is supported on T Series routers.

A possible workaround on PTX Series Packet Transport Switches is to configure two separate terms with same the actions: one term contains a match to **is-fragment** and the other term contains a match to **fragment-offset -except 0**.

- On PTX Series Packet Transport Switches, MAC pause frames are generated when packet discards exceed 100 Mbps. This occurs only for frame sizes that are less than 105 bytes.

Traffic Policiers

Junos OS firewall and policing software on PTX Series Packet Transport Switches supports IPv4 filters, IPv6 filters, MPLS filters, CCC filters, interface policing, LSP policing, MAC filtering, ARP policing, L2 policing, and other features. Exceptions are noted below.

- PTX Series Packet Transport Switches support ARP policing. T Series routers do not.
- PTX Series Packet Transport Switches do not support LSP policing.
- PTX Series Packet Transport Switches do not support the **hierarchical-policer** configuration statement. .
- PTX Series Packet Transport Switches do not support the **interface-set** configuration statement. This statement groups a number of interfaces into a single, named interface set.
- PTX Series Packet Transport Switches do not support the following policer types for both normal policers and three-color policers:
 - **logical-bandwidth-policer** — Policer uses logical interface bandwidth.
 - **physical-interface-policer** — Policer is a physical interface policer.
 - **shared-bandwidth-policer** — Share policer bandwidth among bundle links.
- When a policer action and forwarding-class, loss-priority actions are configured within the same rule (a *Multifield Classification*), the PTX Series Packet Transport Switches work differently than T Series routers. As shown below, you can configure two rules in the filter to make the PTX filter behave the same as the T Series filter:

PTX Series configuration:

```
rule-1 {  
  match: {x, y, z}  
  action: {forwarding-class, loss-prio, next}  
}  
rule-2 {  
  match: {x, y, z}  
  action: {policer}  
}
```

T Series configuration:

```
rule-1 {  
  match: {x, y, z}  
  action: {forwarding-class, loss-prio, policer}  
}
```

Related Documentation

- *Junos OS Firewall Filters and Traffic Policers Configuration Guide*

PART 3

Administration

- [Managing the PTX Series Packet Transport Switch on page 115](#)
- [Managing the Boot Sequence on page 123](#)
- [Monitoring Commands for the PTX Series Packet Transport Switch on page 127](#)

CHAPTER 10

Managing the PTX Series Packet Transport Switch

request chassis ccg

Syntax	<code>request chassis ccg (offline online) slot <i>slot-number</i></code>
Release Information	Command introduced in Junos OS 12.1 for the PTX Series Packet Transport Switches.
Description	(PTX Series Packet Transport Switches) Control the operation of the Centralized Clock Generator (CCG).
Options	<p>offline—Take the CCG offline.</p> <p>online—Bring the CCG online.</p> <p>slot <i>slot-number</i>—CCG slot number. Replace <i>slot-number</i> with a value from 0 through 1.</p>
Required Privilege Level	maintenance
List of Sample Output	request chassis ccg on page 116
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 clock master switch

Syntax	request chassis clock master switch
Release Information	Command introduced in Junos OS Release 12.1.
Description	(PTX Series Packet Transport Switches only) Control which Centralized Clock Generator (CCG) is the master.
Options	This command has no options.
Additional Information	<p>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 System Basics Configuration Guide.</p> <p>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.</p> <p>The switchover from the primary CCG to the backup CCG is immediate.</p>
Required Privilege Level	maintenance
Related Documentation	<ul style="list-style-type: none"> • show chassis environment on page 134
List of Sample Output	request chassis clock master switch on page 117
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 fpc

Syntax	request chassis fpc (offline online restart) slot <i>slot-number</i>
Syntax (TX Matrix and TX Matrix Plus Router)	request chassis fpc (offline online restart) slot <i>slot-number</i> <lcc <i>number</i> >
Syntax (MX Series Router)	request chassis fpc (offline online restart) slot <i>slot-number</i> <all-members> <local> <member <i>member-id</i> >
Syntax (QFX Series)	request chassis fpc <interconnect-device <i>name</i> slot <i>slot-number</i> (offline online)> <(offline online) interconnect-device <i>name</i> slot <i>slot-number</i> > <slot <i>slot-number</i> interconnect-device <i>name</i> (offline online)>
Syntax (PTX Series Packet Transport Switches)	request chassis fpc (offline online restart) slot <i>slot-number</i>
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 the QFX Series. Command introduced in Junos OS 12.1 for the PTX Series Packet Transport Switches.
Description	(M20, M40, M40e, M120, M160, M320, MX Series, and T Series routers; EX Series switches and PTX Series Packet Transport Switches only) Control the operation of the Flexible PIC Concentrator (FPC). For information about the meaning of “FPCs” on the switches, see EX Series Switches Hardware and CLI Terminology Mapping.
Options	offline —Take the FPC offline. online —Bring the FPC online. interconnect-device <i>name</i> —(QFX Series only) Bring the Flexible Port Concentrator (FPC) on the Interconnect device either offline or online: <ul style="list-style-type: none">(QFabric Switch) On a QFabric switch, specify the name of the Interconnect device containing the Flexible Port Concentrator (FPC) you want to bring either offline or online. restart —Restart the FPC. slot <i>slot-number</i> —FPC slot number: <ul style="list-style-type: none">M20 router—0 through 3.M120 router—0 through 5.MX240 router—0 through 2. On the MX240 router, slot-number corresponds to the Dense Port Concentrator (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 Dense Port Concentrator (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 Dense Port Concentrator (DPC) slot number. If an MPC is installed, slot-number corresponds to the MPC slot number.
- 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 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> request chassis fpc lcc 1 slot 1 offline
user@host> request chassis fpc slot 9 offline
```

- Other routers—0 through 7.
- QFabric Switch —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.
- PTX5000 Packet Transport Switch—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 and TX Matrix Plus routers only) (Optional) On a TX Matrix router, control the FPC in a specified T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, control the FPC in a specified T1600 router that is connected to the TX Matrix Plus router. Replace ***number*** with a value from 0 through 3.

Required Privilege Level maintenance

Related Documentation

- [show chassis fpc on page 303](#)
- show chassis fpc-feb-connectivity
- [show chassis fabric fpcs on page 256](#)
- Configuring the Junos OS to Make a Flexible PIC Concentrator Stay Offline
- Configuring the Junos OS to Resynchronize FPC Sequence Numbers with Active FPCs when an FPC Comes Online
- MX960 Flexible PIC Concentrator Description

List of Sample Output [request chassis fpc on page 120](#)

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 synchronization switch

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-0-10mhz gps-0-5mhz gps-1-10mhz gps-1-5mhz)
Release Information	<p>Command introduced in Junos OS Release 7.6.</p> <p>Command introduced in Junos OS Release 8.3 for M40e routers.</p> <p>Command introduced in Junos OS Release 9.3 for M120 routers.</p> <p>Command introduced in Junos OS Release 10.2 for T320, T640, and T1600 routers.</p> <p>Command introduced in Junos OS Release 12.1 for PTX Series Packet Transport Switches.</p>
Description	(M320, M40e, M120, T320, T640, and T1600 routers and PTX Packet Transport Switches only) Change the external clock source used for chassis synchronization.
Options	<p>external-a—(Routing matrix only) Change the synchronization source to external source A.</p> <p>external-b—(Routing matrix only) Change the synchronization source to external source B.</p> <p>bits-a—(PTX Series only) Change the synchronization source to the BITS external source A.</p> <p>bits-b—(PTX Series only) Change the synchronization source to the BITS external source B.</p> <p>fpc-slot-number—(PTX Series only) Change the synchronization source to an FPC in the slot specified. For the PTX5000 Packet Transport Switch, replace <i>slot-number</i> with a value from 0 through 7.</p> <p>gps-0-10mhz—(PTX Series only) Change the synchronization source to the 10 MHz GPS source on CCG port 0.</p> <p>gps-0-5mhz—(PTX Series only) Change the synchronization source to the 5 MHz GPS source on CCG port 0.</p> <p>gps-1-10mhz—(PTX Series only) Change the synchronization source to the 10 MHz GPS source on CCG port 1.</p> <p>gps-1-5mhz—(PTX Series only) Change the synchronization source to the 5 Hz GPS source on CCG port 1.</p>
Required Privilege Level	maintenance

- Related Documentation**
- [show chassis synchronization on page 415](#)
 - Configuring an External Clock Synchronization Interface for MX Series Routers
 - Supported Time Synchronization Standard

List of Sample Output [request chassis synchronization switch \(M Series, T Series\) on page 122](#)
[request chassis synchronization switch \(PTX Series\) on page 122](#)

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

Managing the Boot Sequence

- Boot Sequence (M Series, MX Series, T Series, TX Matrix, TX Matrix Plus, and PTX Series Routing Engines) on page 123

Boot Sequence (M Series, MX Series, T Series, TX Matrix, TX Matrix Plus, and PTX Series Routing Engines)



NOTE: For information about which Routing Engines are supported by each device, see http://www.juniper.net/techpubs/en_US/release-independent/junos/topics/reference/general/routing-engine-m-mx-t-series-support-by-chassis.html.

The M Series, MX Series (except for the MX80 routers), T Series, and TX Matrix routers with a Routing Engine that has a hard disk attempt to boot from the storage media in the following order:

1. Removable media emergency boot device, such as a PC Card (if present)
2. CompactFlash card (if present)
3. Hard disk

The M Series and MX Series with a Routing Engine that has a solid-state drive (SSD) attempt to boot from the storage media in the following order:

1. USB media emergency boot device (if present)
2. CompactFlash card
3. Solid-state drive (SSD) in the SSD slot 1 or SSD slot 2 (if present)

MX80 routers attempt to boot from the storage media in the following order:

1. USB media emergency boot device
2. Dual, internal NAND flash device (first **da0**, then **da1**)

The T series routers with a Routing Engine that has a solid-state drive (SSD) and TX Matrix Plus routers attempt to boot from the storage media in the following order:

1. USB media emergency boot device
2. CompactFlash card (if present)
3. Solid-state drive (SSD) in the Disk 1 slot (if present)



NOTE: The Disk 2 slot is not currently supported.

4. Storage media available on the LAN

The PTX Series Packet Transport Switches attempt to boot from the storage media in the following order:

1. USB media emergency boot device
2. CompactFlash card
3. Solid-state drive (SSD) in the Disk 1 slot (if present)
4. Storage media available on the LAN



NOTE: Do not insert an emergency boot device during normal operations. The router does not operate normally when it is booted from an emergency boot device.

If the router boots from an alternate boot device, the Junos OS displays a message indicating this when you log in to the router. For example, the following message shows that the software booted from the hard disk (`/dev/ad1s1a`):

```
login: username
Password: password
Last login: date on terminal
```

```
--- Junos 8.0 R1 built date
```

```
---
```

```
--- NOTICE: System is running on alternate media device (/dev/ad2s1a).
```

This situation results when the router detects a problem with the primary boot device—usually the CompactFlash card—that prevents it from booting, and consequently boots from the alternate boot device (the hard disk drive). When this happens, the primary boot device is removed from the list of candidate boot devices. The problem is usually a serious hardware error. We recommend you contact the Juniper Networks Technical Assistance Center (JTAC).

When the router boots from the alternate boot device, the software and configuration are only as current as the most recent **request system snapshot** command. However, if the **mirror-flash-on-disk** command was enabled, then the hard disk drive contains a synchronized, mirror image of the compact flash drive and therefore the current software and configuration.

- Related Documentation**
- Router Architecture for M-series Routers and T-series Platforms
 - Hardware Components

CHAPTER 12

Monitoring Commands for the PTX Series Packet Transport Switch

show chassis alarms

Syntax	show chassis alarms
Syntax (TX Matrix Router)	show chassis alarms <lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show chassis alarms <lcc <i>number</i> sfc <i>number</i> >
Syntax (MX Series Router)	show chassis alarms <all-members> <local> <member <i>member-id</i> >
Syntax (QFX Series)	show chassis alarms <interconnect-device <i>name</i> > <node-device <i>name</i> >
Syntax (PTX Series Packet Transport Switches)	show chassis alarms
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 the TX Matrix Plus router 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 12.1 for the PTX Series Packet Transport Switches.
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 <i>name</i> —(QFabric switches only) (Optional) Display information about alarm conditions for the Interconnect device. lcc <i>number</i> — (TX Matrix and TX Matrix Plus routers only) (Optional) On the TX Matrix router, show information about a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On the TX Matrix Plus router, show information about a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3. 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* with a value of 0 or 1.

node-device *name*—(QFabric switches only) (Optional) Display information about alarm conditions for the Node device.

scc—(TX Matrix router only) (Optional) Show information about the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus router only) (Optional) Show information about the TX Matrix Plus router (or switch-fabric chassis). Replace *number* with 0.

Additional Information You cannot clear the alarms for chassis components. Instead, you must remedy the cause of the alarm. When a chassis alarm 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.

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 sonic clock generator (SCG) that is offline or absent.

Required Privilege Level view

Related Documentation

- [Configuring an Alarm Entry and Its Attributes](#)
- [Chassis Conditions That Trigger Alarms](#)

List of Sample Output

- [show chassis alarms \(Alarms Active\) on page 130](#)
- [show chassis alarms \(No Alarms Active\) on page 130](#)
- [show chassis alarms \(Fan Tray\) on page 130](#)
- [show chassis alarms \(T4000 Router\) on page 130](#)
- [show chassis alarms \(Unreachable Destinations Present on a T Series Router\) on page 130](#)
- [show chassis alarms \(FPC Offline Due to Unreachable Destinations on a T Series Router\) on page 131](#)
- [show chassis alarms \(SCG Absent on a T Series Router\) on page 131](#)
- [show chassis alarms \(Alarms Active on a TX Matrix Router\) on page 131](#)
- [show chassis alarms \(Backup Routing Engine\) on page 132](#)
- [show chassis alarms \(Alarms Active on the QFX Series\) on page 132](#)

[show chassis alarms node-device \(Alarms Active on the QFabric Switch\) on page 132](#)
[show chassis alarms \(Alarms Active on the QFabric Switch\) on page 132](#)
[show chassis alarms \(Alarms Active on an EX8200 Switch\) on page 132](#)
[show chassis alarms \(Alarms Active on a PTX5000 Packet Transport Switch\) on page 133](#)

Output Fields Table 14 on page 130 lists the output fields for the **show chassis alarms** command. Output fields are listed in the approximate order in which they appear.

Table 14: 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 (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) user@host> show chassis alarms
10 alarms currently active
Alarm time          Class  Description
```

```

Destinations Present 2011-08-30 18:43:53 PDT Major FPC 7 has unreachable destinations
on a T Series Router 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 user@host> show chassis alarms
(FPC Offline Due to 10 alarms currently active
Unreachable          Alarm time      Class  Description
Destinations on a T 2011-08-30 18:43:53 PDT Major FPC 7 offline due to unreachable destinations
Series Router)      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 user@host> show chassis alarms
(SCG Absent on a T 4 alarms currently active
Series Router)      Alarm time      Class  Description
2011-01-23 21:42:46 PST Major SCG 0 NO EXT CLK MEAS-BKUP SCG ABS

```

```

show chassis alarms user@host> show chassis alarms
(Alarms Active on a TX scc-re0:
Matrix Router)      -----
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 (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 (Alarms Active on the QFX Series) 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 Switch) user@switch> show chassis alarms node-device ED3691
node-device ED3694
3 alarms currently active
Alarm time          Class Description
2011-08-24 16:04:15 UTC Major ED3694:fte-0/1/2: Link down
2011-08-24 16:04:14 UTC Major ED3694:fte-0/1/0: Link down
2011-08-24 14:21:14 UTC Major ED3694 PEM 0 is not supported/powered

show chassis alarms (Alarms Active on the QFabric Switch) user@switch> show chassis alarms
IC-A0001:
-----
1 alarms currently active
Alarm time          Class Description
2011-08-24 16:04:15 UTC Minor Backup RE Active

ED3694:
-----
3 alarms currently active
Alarm time          Class Description
2011-08-24 16:04:15 UTC Major ED3694:fte-0/1/2: Link down
2011-08-24 16:04:14 UTC Major ED3694:fte-0/1/0: Link down
2011-08-24 14:21:14 UTC Major ED3694 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 ED3691 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
(Alarms Active on a
PTX5000 Packet
Transport Switch)

```
user@switch> 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 environment

Syntax	show chassis environment
Syntax (T4000 Router)	show chassis environment <cb <i>cb-slot-number</i> > <fpc <i>fpc-slot-number</i> > <fpm> <pem <i>pem-slot-number</i> > <routing-engine <i>name</i> > <scg <i>scg-slot-number</i> > <sib <i>sib-slot-number</i> >
Syntax (TX Matrix Router)	show chassis environment <lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show chassis environment <lcc <i>number</i> sfc <i>number</i> >
Syntax (MX Series Router)	show chassis environment <all-members> <local> <member <i>member-id</i> >
Syntax (QFX Series)	show chassis environment <cb <i>slot-number</i> <interconnect-device <i>name</i> >> <fpc <i>slot-number</i> <interconnect-device <i>name</i> >> <interconnect-device <i>name</i> <slot-number> <node-device <i>name</i> > <pem <i>slot-number</i> (interconnect-device <i>name</i> <i>slot-number</i>) (node-device <i>name</i>)> <routing-engine <i>name</i> <interconnect-device <i>name</i> <i>slot-number</i> >>
Syntax (PTX Series Packet Transport Switches)	show chassis environment <cb <i>cb-slot-number</i> > <ccg <i>ccg-slot-number</i> > <fpc <i>fpc-slot-number</i> > <fpm> <monitored> <pdu <i>pdu-slot-number</i> > <routing-engine <i>re-slot-number</i> > <sib <i>sib-slot-number</i> >
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 12.1 for the PTX Series Packet Transport Switches. monitored option added in Junos OS Release 12.1 for the PTX Series Packet Transport Switches. Command introduced in Junos OS Release 12.1 for the T4000 Core Routers.

- Description** Display environmental information about the router or switch chassis, including the temperature and information about the fans, power supplies, and Routing Engine.
- 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 T1600 routers.
 - all-members**—(MX Series routers only) (Optional) Display chassis environmental information for all the members of the Virtual Chassis configuration.
 - cb *cb-slot-number***—(PTX Series, T4000 Core Routers) (Optional) Display chassis environmental information for the Control Board. Replace ***cb-slot*** with **0** or **1**.
 - cb interconnect-device *name***—(QFabric switches only) (Optional) Display chassis environmental information for the Control Board on an Interconnect device.
 - cgc *cgc-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**.
 - fpc *fpc-slot***—(QFX3500 switches and QFabric Switches) (Optional) On the QFX3500 switch, display chassis environmental information for a specified Flexible PIC Concentrator. On a QFabric switch, display chassis environment information for a specified Flexible PIC Concentrator on an Interconnect device.
 - fpc *fpc-slot***—(PTX Series, T4000 Core Routers) (Optional) Display chassis environmental information for a specified Flexible PIC Concentrator. For T4000 Core Routers, replace ***fpc-slot*** with a value from **0** through **7**.
 - fpm**—(PTX Series only, T4000 Core Routers) (Optional) Display chassis environmental information for the craft interface (FPM).
 - interconnect-device *name***—(QFabric switches only) (Optional) Display chassis environmental information for the Interconnect device.
 - monitored**—(PTX Series only) (Optional) Display chassis environmental information for monitored temperatures only. Temperatures that are not included in temperature alarm computations are not displayed.
 - lcc *number***—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display chassis environmental 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 chassis environmental information for a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace ***number*** with a value from **0** through **3**.
 - local**—(MX Series routers only) (Optional) Display chassis environmental information for the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display chassis environmental information for the specified member of the Virtual Chassis configuration. Replace *member-id* with a value of **0** or **1**.

node-device *name*—(QFabric switches 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 Switches) (Optional) Display chassis environmental information for the Power Entry Module on the specified Interconnect device or Node device.

pem *pem-slot-number*—(T4000 Core Routers) (Optional) Display chassis environmental information for the Power Entry Module on the specified Power Entry Module. Replace *pem-slot-number* with a value of **0** or **1**.

routing-engine—(QFX3500 switches and QFabric Switches) (Optional) Display chassis environmental information for the Routing Engine on the specified Interconnect device.

routing-engine *re-slot-number*—(PTX Series, T4000 Core Routers) (Optional) Display chassis environmental information for the specified Routing Engine. Replace *re-slot-number* with a value of **0** or **1**.

scg—(T4000 Core Routers) (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 (or switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) Display chassis environmental information about the TX Matrix Plus router (or switch-fabric chassis). Replace *number* with **0**.

sib *sib-slot-number*—(PTX Series, T4000 Core Routers) (Optional) Display chassis environmental information about the specified switch interface board. For T4000 Core Routers, replace *sib-slot-number* with a value from **0** through **4**.

Required Privilege Level

view

Related Documentation

- [show chassis environment cb on page 162](#)
- [show chassis environment ccg on page 177](#)
- [show chassis environment cip](#)
- [show chassis environment fpc on page 179](#)
- [show chassis environment fpm on page 197](#)
- [show chassis environment mcs](#)

- [show chassis environment monitored on page 202](#)
- [show chassis environment pcg](#)
- [show chassis environment pdu on page 203](#)
- [show chassis environment pem](#)
- [show chassis environment routing-engine on page 206](#)
- [show chassis environment scg](#)
- [show chassis environment sib on page 210](#)

List of Sample Output	show chassis environment (J2300 Router) on page 138
	show chassis environment (J4300 or J6300 Router) on page 138
	show chassis environment (M5 Router) on page 138
	show chassis environment (M7i Router) on page 139
	show chassis environment (M10 Router) on page 139
	show chassis environment (M10i Router) on page 139
	show chassis environment (M20 Router) on page 140
	show chassis environment (M40 Router) on page 140
	show chassis environment (M40e Router) on page 140
	show chassis environment (M120 Router) on page 141
	show chassis environment (M160 Router) on page 142
	show chassis environment (M320 Router) on page 142
	show chassis environment (MX240 Router) on page 143
	show chassis environment (MX240 Router with Enhanced MX SCB) on page 144
	show chassis environment (MX480 Router) on page 145
	show chassis environment (MX480 Router with Enhanced MX SCB) on page 146
	show chassis environment (MX960 Router) on page 147
	show chassis environment (MX960 Router with Enhanced MX SCB) on page 147
	show chassis environment (T320 Router) on page 150
	show chassis environment (T640 Router) on page 151
	show chassis environment (T4000 Router) on page 151
	show chassis environment (TX Matrix Router) on page 153
	show chassis environment (T1600 Router) on page 155
	show chassis environment (TX Matrix Plus Router) on page 155
	show chassis environment (EX4200 Standalone Switch) on page 158
	show chassis environment (QFX Series) on page 158
	show chassis environment node-device (QFabric Switch) on page 158
	show chassis environment pem (QFX Series) on page 158
	show chassis environment (PTX5000 Packet Transport Switch) on page 159

Output Fields [Table 15 on page 138](#) lists the output fields for the **show chassis environment** command. Output fields are listed in the approximate order in which they appear.

Table 15: show chassis environment Output Fields

Field Name	Field Description
Power	<p>Power information:</p> <ul style="list-style-type: none"> (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	<p>Temperature of air flowing through the chassis in degrees Celsius (C) and Fahrenheit (F).</p> <p>On PTX Series Packet Transport Switches, multiple cooling zones are supported. FRU temperatures in each zone are coordinated with the fan speed of fan trays in those zones.</p>
Fan	<p>Fan status: OK, Testing (during initial power-on), Failed, or Absent.</p> <p>On PTX Series Packet Transport Switches, multiple fan trays are supported. Fan status is reported in Fan Tray or Fan combinations. Measurement indicates actual fan RPM (PTX only).</p>
Misc	<p>Information about other components of the chassis:</p> <ul style="list-style-type: none"> On some routers, this field indicates the status of one or more additional components. On the M160 router, Misc includes CIP (Connector Interface Panel). OK indicates that the CIP is present. On the T640 router, Misc includes CIP and SPMB (Switch Processor Mezzanine Board). OK indicates that the item is present. On PTX Series Packet Transport Switches, Misc includes the SPMB (Switch Processor Mezzanine Board). OK indicates that the item is present.

Sample Output

```

show chassis environment (J2300 Router) user@host> show chassis environment
Class Item Status Measurement
Temp Routing Engine OK 40 degrees C / 104 degrees F
Fan Fan OK

show chassis environment (J4300 or J6300 Router) user@host> show chassis environment
Class Item Status Measurement
Temp Routing Engine OK 41 degrees C / 105 degrees F
Fan Fan 0 OK
Fan Fan 1 OK

show chassis environment (M5 Router) user@host> show chassis environment
Class Item Status Measurement
Power Power Supply A OK
Power 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 user@host> show chassis environment
environment (M7i)
Router)
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 user@host> show chassis environment
environment (M10i)
Router)
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 user@host> show chassis environment
environment (M10i)
Router)
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 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 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
Power 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
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 (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 Enhanced
MX SCB)**

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 Enhanced
MX SCB)**

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 Enhanced MX SCB) 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 (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	

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SPMB 0          OK
SPMB 1          OK

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show chassis user@host> show chassis environment
environment (T640 Router)
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 user@host> show chassis environment
environment (T4000 Router)
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
scc-re0:

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	

1cc0-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

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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
sfc0-re0:
-----
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

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	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 (EX4200 Standalone Switch)
user@host> 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 (QFX Series)
user@switch> show chassis environment
Class Item              Status      Measurement
Power FPC 0 Power Supply 0 OK
      FPC 0 Power Supply 1 OK
Temp  FPC 0 Sensor TopLeft I OK          26 degrees C / 78 degrees F
      FPC 0 Sensor TopRight I OK          24 degrees C / 75 degrees F
      FPC 0 Sensor TopLeft E OK          30 degrees C / 86 degrees F
      FPC 0 Sensor TopRight E OK          30 degrees C / 86 degrees F
      FPC 0 Sensor TopMiddle I OK          30 degrees C / 86 degrees F
      FPC 0 Sensor TopMiddle E OK          38 degrees C / 100 degrees F
      FPC 0 Sensor Bottom I OK          34 degrees C / 93 degrees F
      FPC 0 Sensor Bottom E OK          38 degrees C / 100 degrees F
      FPC 0 Sensor Die Temp OK          38 degrees C / 100 degrees F
      FPC 0 Sensor Mgmt Brd I OK          24 degrees C / 75 degrees F
      FPC 0 Sensor Switch I OK          28 degrees C / 82 degrees F
Fans  FPC 0 Fan 1 (left)   Failed
      FPC 0 Fan 2 (right) OK          Spinning at normal speed
      FPC 0 Fan 3 (middle) OK          Spinning at normal speed

show chassis environment node-device node1 (QFabric Switch)
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 (QFX Series)
user@switch> show chassis environment pem
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 user@switch> show chassis environment
environment
(PTX5000 Packet Transport Switch)
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 Intake    OK          39 degrees C / 102 degrees F
      SIB 0 Exhaust   OK          37 degrees C / 98 degrees F
      SIB 0 Junction  OK          43 degrees C / 109 degrees F
      SIB 1 Intake    OK          39 degrees C / 102 degrees F
      SIB 1 Exhaust   OK          36 degrees C / 96 degrees F
      SIB 1 Junction  OK          46 degrees C / 114 degrees F
      SIB 2 Intake    OK          37 degrees C / 98 degrees F
      SIB 2 Exhaust   OK          37 degrees C / 98 degrees F
      SIB 2 Junction  OK          42 degrees C / 107 degrees F
      SIB 3 Intake    OK          40 degrees C / 104 degrees F
      SIB 3 Exhaust   OK          40 degrees C / 104 degrees F
      SIB 3 Junction  OK          45 degrees C / 113 degrees F
      SIB 4 Intake    OK          47 degrees C / 116 degrees F
      SIB 4 Exhaust   OK          44 degrees C / 111 degrees F
      SIB 4 Junction  OK          58 degrees C / 136 degrees F
      SIB 5 Intake    OK          58 degrees C / 136 degrees F
      SIB 5 Exhaust   OK          43 degrees C / 109 degrees F
      SIB 5 Junction  OK          71 degrees C / 159 degrees F
      SIB 6 Intake    OK          57 degrees C / 134 degrees F
      SIB 6 Exhaust   OK          42 degrees C / 107 degrees F
      SIB 6 Junction  OK          65 degrees C / 149 degrees F
      SIB 7 Intake    OK          58 degrees C / 136 degrees F
      SIB 7 Exhaust   OK          42 degrees C / 107 degrees F
      SIB 7 Junction  OK          66 degrees C / 150 degrees F
      SIB 8 Intake    OK          57 degrees C / 134 degrees F
      SIB 8 Exhaust   OK          42 degrees C / 107 degrees F
      SIB 8 Junction  OK          70 degrees C / 158 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 cb

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 Router)	show chassis environment cb <slot> <all-members> <local> <member member-id>
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 12.1 for PTX Series Packet Transport Switches. Command introduced in Junos OS Release 12.1 for T4000 Core Routers. sfc option introduced for the TX Matrix Plus router in Junos Release 9.6.
Description	(M120, M320, MX Series, and T Series routers, EX8200 switches, and PTX Series Packet Transport Switches only) Display environmental information about the Control Boards (CBs). For information about the meaning of "CBs" on the switches, see EX Series Switches Hardware and CLI Terminology Mapping.
Options	<p>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 routers.</p> <p>all-members—(MX Series routers only) (Optional) Display environmental information about the CBs on all the members of the Virtual Chassis configuration.</p> <p>lcc number—(TX Matrix and TX Matrix Plus routers only) (Optional) For a TX Matrix router, display environmental information about the CBs in a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. For a TX Matrix Plus router, display environmental information about the CBs in a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace number with a value from 0 through 3.</p> <p>local—(MX Series routers only) (Optional) Display environmental information about the CBs on the local Virtual Chassis member.</p> <p>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.</p>

scc—(TX Matrix router only) (Optional) Display environmental information about the CBs in the TX Matrix router (or 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 switches, replace **slot** with **0** or **1**. On EX series switches, replace **slot** with **0**, **1**, or **2**.

Required Privilege Level

view

Related Documentation

- request chassis cb
- Switching Control Board Redundancy
- Routing Engine and Switching Control Board Redundancy Configuration Statements

List of Sample Output

[show chassis environment cb \(M120 Router\) on page 164](#)
[show chassis environment cb \(M320 Router\) on page 165](#)
[show chassis environment cb \(MX80 Router\) on page 165](#)
[show chassis environment cb \(MX240 Router\) on page 165](#)
[show chassis environment cb \(MX240 Router with Enhanced MX SCB\) on page 166](#)
[show chassis environment cb \(MX480 Router\) on page 166](#)
[show chassis environment cb \(MX480 Router with Enhanced MX SCB\) on page 167](#)
[show chassis environment cb \(MX960 Router\) on page 167](#)
[show chassis environment cb \(MX960 Router with Enhanced MX SCB\) on page 167](#)
[show chassis environment cb \(T4000 Core Router\) on page 168](#)
[show chassis environment cb \(TX Matrix Router\) on page 169](#)
[show chassis environment cb \(TX Matrix Plus Router\) on page 169](#)
[show chassis environment cb \(EX8200 Switch\) on page 173](#)
[show chassis environment cb \(EX8208 Switch\) on page 174](#)
[show chassis environment cb \(PTX5000 Packet Transport Switch\) on page 175](#)

Output Fields

Table 16 on page 163 lists the output fields for the **show chassis environment cb** command. Output fields are listed in the approximate order in which they appear.

Table 16: show chassis environment cb Output Fields

Field Name	Field Description
State	<p>Status of the CB. If two CBs are installed and online, one is functioning as the master, and the other is the standby.</p> <ul style="list-style-type: none"> • Online—CB is online and running. • Offline— CB is powered down. <p>NOTE: On the EX8208 switch, the installation can include three CBs. See EX Series Switches Hardware and CLI Terminology Mapping.</p>

Table 16: show chassis environment cb Output Fields (*continued*)

Field Name	Field Description
Temperature	<p>Temperature in Celsius (C) and Fahrenheit (F) of the air flowing past the CB.</p> <ul style="list-style-type: none"> • Temperature Intake—Measures the temperature of the air intake to cool the power supplies. • Temperature Exhaust—Measures the temperature of the hot air exhaust.
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)	<p>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:</p> <ul style="list-style-type: none"> • 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 (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
device                Expected Measured Measured Calculated
                        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
(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
user@host> show chassis environment cb
(EX8200 Switch)

```

```

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

```

**show chassis
environment cb
(EX8208 Switch)**

```

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

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
(PTX5000 Packet
Transport Switch)**

```

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 ccg

Syntax	<code>show chassis environment ccg</code> <code><slot></code>
Release Information	Command introduced in Junos OS Release 12.1.
Description	(PTX Series Packet Transport Switches only) Display environmental information about the Centralized Clock Generators (CCGs).
Options	<p>none—Display environmental information about all CCGs on the PTX Packet Transport Switch.</p> <p>slot —(Optional) Display environmental information about the specified CCG. Replace <i>slot</i> with 0 or 1.</p>
Required Privilege Level	view
List of Sample Output	show chassis environment ccg (PTX5000) on page 177
Output Fields	Table 17 on page 177 lists the output fields for the show chassis environment ccg command. Output fields are listed in the approximate order in which they appear.

Table 17: 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.
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 fpc

Syntax	show chassis environment fpc <slot>
Syntax (TX Matrix and TX Matrix Plus Router)	show chassis environment fpc <fcc number> <slot>
Syntax (MX Series Router)	show chassis environment fpc <slot> <all-members> <local> <member member-id>
Syntax (QFX Series)	show chassis environment fpc <fpc-slot> interconnect-device <i>name</i>
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 the QFX Series. Command introduced in Junos OS Release 12.1 for the PTX Series Packet Transport Switches. Command introduced in Junos OS Release 12.1 for the T4000 Core Routers.
Description	(M40e, M120, M160, M320, MX Series, and T Series routers; EX Series, QFX Series, and PTX Series switches only) Display environmental information about Flexible PIC Concentrators (FPCs).
Options	<p>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 T1600 routers.</p> <p>all-members—(MX Series routers only) (Optional) Display environmental information for the FPCs in all the members of the Virtual Chassis configuration.</p> <p>interconnect-device <i>name</i>—(QFabric switches only) (Optional) Display chassis environmental information for the Interconnect device.</p> <p>fcc number—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display environmental information about the FPC in a T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display environmental information about the FPC in a T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>local—(MX Series routers only) (Optional) Display environmental information for the FPCs in the local Virtual Chassis member.</p>

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.

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 T1600 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.
- 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.
 - EX6210 switches—Replace **slot** with a value from 0 through 9.
 - EX8208 switches—Replace **slot** with a value from 0 through 7.
 - EX8216 switches—Replace **slot** with a value from 0 through 15.
- QFX3500 switches —Replace ***fpc-slot*** with 0 through 15.
- PTX5000 Packet Transport Switch—Replace ***fpc-slot*** with 0 through 7.

Required Privilege Level view

- Related Documentation**
- [request chassis fpc on page 118](#)
 - [show chassis fpc on page 303](#)
 - show chassis fpc-feb-connectivity
 - Configuring the Junos OS to Resynchronize FPC Sequence Numbers with Active FPCs when an FPC Comes Online
 - MX960 Flexible PIC Concentrator Description

- List of Sample Output**
- [show chassis environment fpc \(M120 Router\) on page 182](#)
 - [show chassis environment fpc \(M160 Router\) on page 183](#)
 - [show chassis environment fpc \(M320 Router\) on page 183](#)
 - [show chassis environment fpc \(MX240 Router\) on page 184](#)
 - [show chassis environment fpc \(MX480 Router\) on page 185](#)
 - [show chassis environment fpc \(MX960 Router\) on page 186](#)
 - [show chassis environment fpc \(MX480 Router with 100-Gigabit Ethernet CFP\) on page 187](#)
 - [show chassis environment fpc \(T320, T640, and T1600 Routers\) on page 188](#)
 - [show chassis environment fpc \(T4000 Router\) on page 189](#)
 - [show chassis environment fpc lcc \(TX Matrix Router\) on page 193](#)
 - [show chassis environment fpc lcc \(TX Matrix Plus Router\) on page 194](#)
 - [show chassis environment fpc \(QFX Series\) on page 195](#)
 - [show chassis environment fpc interconnect-device \(QFabric Switches\) on page 195](#)
 - [show chassis environment fpc 0 \(PTX5000 Packet Transport Switch\) on page 195](#)

Output Fields Table 18 on page 181 lists the output fields for the **show chassis environment fpc** command. Output fields are listed in the approximate order in which they appear.

Table 18: show chassis environment fpc Output Fields

Field Name	Field Description
State	<p>Status of the FPC:</p> <ul style="list-style-type: none"> • 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 chassis 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.
PMB Temperature	(PTX Series only) Temperature of the air flowing past the PMB (bottom of the FPC).
Temperature Intake	(M320 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	<p>(M120 and M320 routers and PTX Series only) Temperature of the air flowing out of the chassis.</p> <p>The PTX Series Packet Transport Switches include exhaust temperatures for multiple zones (Exhaust A and Exhaust B).</p>
Temperature Bottom	(T Series routers only) Temperature of the air flowing past the bottom of the FPC.

Table 18: show chassis environment fpc Output Fields (*continued*)

Field Name	Field Description
TL <i>n</i> Temperature	(PTX Series only) Temperature of the air flowing past the specified TL area of the Packet Forwarding Engine on the FPC.
TQ <i>n</i> Temperature	(PTX Series only) Temperature of the air flowing past the specified TQ area of the Packet Forwarding Engine 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 user@host> show chassis environment fpc
environment fpc (M160 Router)
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 user@host> show chassis environment fpc
environment fpc (M320 Router)
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
(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)**

```
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 1 status:
```

```

State                Online
Temperature Intake    40 degrees C / 104 degrees F
Temperature Exhaust A 42 degrees C / 107 degrees F
Temperature Exhaust B 52 degrees C / 125 degrees F
Temperature LU 0 TSen 46 degrees C / 114 degrees F
Temperature LU 0 Chip 55 degrees C / 131 degrees F
Temperature LU 1 TSen 46 degrees C / 114 degrees F
Temperature LU 1 Chip 48 degrees C / 118 degrees F
Temperature LU 2 TSen 46 degrees C / 114 degrees F
Temperature LU 2 Chip 61 degrees C / 141 degrees F
Temperature LU 3 TSen 46 degrees C / 114 degrees F
Temperature LU 3 Chip 69 degrees C / 156 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 77 degrees C / 170 degrees F

```

```
Power
```

```

MPC-BIAS3V3-z12105    3285 mV
MPC-VDD3V3-z16100     3305 mV
MPC-VDD2V5-z16100     2500 mV
MPC-VDD1V8-z12004     1801 mV
MPC-AVDD1V0-z12004     996 mV
MPC-VDD1V2-z16100     1199 mV
MPC-VDD1V5A-z12004    1492 mV
MPC-VDD1V5B-z12004    1499 mV
MPC-XF_0V9-z12004     995 mV
MPC-PCIE_1V0-z16100    1000 mV
MPC-LU0_1V0-z12004     995 mV
MPC-LU1_1V0-z12004     995 mV
MPC-LU2_1V0-z12004     991 mV
MPC-LU3_1V0-z12004     993 mV
MPC-12VA-BMR453        12019 mV
MPC-12VB-BMR453        12060 mV
MPC-PMB_1V1-z12006     1091 mV
MPC-PMB_1V2-z12106     1198 mV
MPC-XM_0V9-vt273m      899 mV

```

```
I2C Slave Revision    106
```

```
FPC 2 status:
```

```

State                Online
Temperature Intake    31 degrees C / 87 degrees F
Temperature Exhaust A 38 degrees C / 100 degrees F
Temperature Exhaust B 48 degrees C / 118 degrees F
Temperature I3 0 TSensor 47 degrees C / 116 degrees F
Temperature I3 0 Chip 51 degrees C / 123 degrees F
Temperature I3 1 TSensor 45 degrees C / 113 degrees F
Temperature I3 1 Chip 50 degrees C / 122 degrees F
Temperature I3 2 TSensor 42 degrees C / 107 degrees F
Temperature I3 2 Chip 48 degrees C / 118 degrees F
Temperature I3 3 TSensor 40 degrees C / 104 degrees F
Temperature I3 3 Chip 43 degrees C / 109 degrees F
Temperature IA 0 TSensor 46 degrees C / 114 degrees F
Temperature IA 0 Chip 44 degrees C / 111 degrees F

```

```

Temperature IA 1 TSensor 44 degrees C / 111 degrees F
Temperature IA 1 Chip    48 degrees C / 118 degrees F
Power
  1.2 V PFE 0            1231 mV
  1.2 V PFE 1            1227 mV
  1.2 V PFE 2            1243 mV
  1.2 V PFE 3            1211 mV
  1.5 V                  1511 mV
  1.8 V PFE 0            1811 mV
  1.8 V PFE 1            1820 mV
  1.8 V PFE 2            1804 mV
  1.8 V PFE 3            1817 mV
  2.5 V                  2475 mV
  3.3 V                  3300 mV
I2C Slave Revision      42

```

**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)
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 Switches)
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 0 (PTX5000 Packet Transport Switch)
user@switch> 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 fpm

Syntax	show chassis environment fpm
Syntax (TX Matrix Router)	show chassis environment fpm <lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show chassis environment fpm <lcc <i>number</i> sfc <i>number</i> >
Release Information	<p>Command introduced before Junos OS Release 7.4.</p> <p>sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.</p> <p>Command introduced in Junos OS Release 12.1 for the PTX Series Packet Transport Switches.</p> <p>Command introduced in Junos OS Release 12.1 for the T4000 Core Routers.</p>
Description	(M40e, M120, M160, M320, MX Series, and T Series routers and the PTX Series Packet Transport Switches only) Display environmental information about the front panel module in the router.
Options	<p>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 T1600 routers.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display environmental information about the front panel module (craft interface) on a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display environmental information about the front panel module (craft interface) on a specified T1600 router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>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).</p> <p>sfc <i>number</i>—(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).</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> request chassis fpm resync
List of Sample Output	<p>show chassis environment fpm (M40e and M160 Routers) on page 199</p> <p>show chassis environment fpm (M320 Router) on page 199</p> <p>show chassis environment fpm (MX240 Router) on page 199</p>

[show chassis environment fpm \(MX480 Router\) on page 199](#)
[show chassis environment fpm \(T Series Routers\) on page 199](#)
[show chassis environment fpm lcc \(TX Matrix Router\) on page 199](#)
[show chassis environment fpm scc \(TX Matrix Router\) on page 200](#)
[show chassis environment fpm sfc \(TX Matrix Plus Router\) on page 200](#)
[show chassis environment fpm \(T4000 Core Router\) on page 201](#)
[show chassis environment fpm \(PTX5000 Packet Transport Switch\) on page 201](#)

Output Fields [Table 19 on page 198](#) lists the output fields for the **show chassis environment fpm** command. Output fields are listed in the approximate order in which they appear.

Table 19: show chassis environment fpm Output Fields

Field Name	Field Description
State	FPM status: <ul style="list-style-type: none"> • 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	(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
(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
regress@stymphalian# run show chassis environment fpm
FPM status:
State          Online
FPM GBUS Voltage:
  1.8 V bias    1792 mV
  3.3 V bias    3299 mV
  5.0 V bias    5001 mV
  8.0 V bias    7238 mV
FPM Display Voltage:
  5.0 V        4998 mV
FPM GBUS temperature 25 degrees C / 77 degrees F
FPM Display temperature 27 degrees C / 80 degrees F
GBUS Revision      37

```

**show chassis
environment fpm
(PTX5000 Packet
Transport Switch)**

```

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

Syntax	show chassis environment monitored
Release Information	Command introduced in Junos OS Release 12.1 for PTX Series Packet Transport Switches.
Description	<p>(PTX Series Packet Transport Switches only) Display status information for monitored temperatures.</p> <p>On the PTX Series Packet Transport Switches, 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.</p>
Options	This command has no options.
Required Privilege Level	view
List of Sample Output	show chassis environment monitored (PTX5000 Packet Transport Switch) on page 202
Output Fields	Table 20 on page 202 lists the output fields for the show chassis environment monitored command. Output fields are listed in the approximate order in which they appear.

Table 20: show chassis environment monitored Output Fields

Field Name	Field Description
Item	<p>Chassis component:</p> <ul style="list-style-type: none"> PTX Series Packet Transport Switches—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. Status can be OK or Alarm .
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 (PTX5000 Packet Transport Switch)
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 pdu

Syntax	<code>show chassis environment pdu</code> <code><slot></code>
Release Information	Command introduced in Junos OS Release 12.1 for PTX Series packet transport switches.
Description	<p>(PTX Series packet transport switches only) Display power distribution unit (PDU) environmental status information.</p> <p>On the PTX Series packet transport switches, the power supply consists of power distribution units (PDUs) that contain Power Supply Modules (PSMs). There are four PSMs for each PDU and each PSM provides power to a specific set of FRUs.</p> <ul style="list-style-type: none"> • PSM 0: Fan Trays • PSM 1: Routing Engines, CBs, SIBs, FPD, and CCGs • PSM 2: FPCs • PSM 3: FPCs <p>This arrangement of PDUs and PSMs provide a modular power management design. Depending on which FRUs are present in the chassis, the required number of PSMs change enabling you to use only as much power as required to power the chassis.</p>
Options	<p>none—Display environmental information about all PDUs.</p> <p>slot —(Optional) Display environmental information about an individual PDU. For the PTX5000 packet transport switch, replace slot with 0 or 1.</p>
Required Privilege Level	view
List of Sample Output	show chassis environment pdu (PTX5000 Packet Transport Switch) on page 204
Output Fields	Table 21 on page 203 lists the output fields for the show chassis environment pdu command. Output fields are listed in the approximate order in which they appear.

Table 21: 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 - 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 .

Table 21: show chassis environment pdu Output Fields (*continued*)

Field Name	Field Description
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 - Hours Used	Number of hours the PSM has been operational.
PSM - Firmware Version	Version level of the firmware running on the PSM.

Sample Output

```

show chassis environment pdu (PTX5000 Packet Transport Switch)
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 routing-engine

Syntax	show chassis environment routing-engine <slot>
Syntax (TX Matrix Routers)	show chassis environment routing-engine <fcc number scc> <slot>
Syntax (TX Matrix Plus Routers)	show chassis environment routing-engine <fcc number sfc number> <slot>
Syntax (MX Series Routers)	show chassis environment routing-engine <slot> <all-members> <local> <member member-id>
Syntax (QFX Series)	show chassis environment routing-engine interconnect-device <i>name</i>
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 12.1 for the PTX Series Packet Transport Switches. Command introduced in Junos OS Release 12.1 for the T4000 Core Routers.
Description	Display Routing Engine environmental status information.
Options	<p>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 T1600 routers.</p> <p>all-members—(MX Series routers only) (Optional) Display environmental information about the Routing Engines in all member routers in the Virtual Chassis configuration.</p> <p>interconnect-device <i>name</i>—(QFabric switches only) (Optional) Display environmental information about the Routing Engines for the Interconnect device.</p> <p>fcc number—(TX Matrix and TX Matrix routers only) (Optional) On a TX Matrix router, display environmental information about the Routing Engine in a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display environmental information about the Routing Engine in a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p>

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.

scc—(TX Matrix router only) (Optional) Display environmental information about the Routing Engine in the TX Matrix router (or 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, and T Series routers, replace **slot** with 0 or 1. On M5, M7i, M10, and M40 routers and on the J Series router, 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 Switches, replace **slot** with 0 or 1.

Required Privilege Level view

List of Sample Output [show chassis environment routing-engine \(Nonredundant\) on page 208](#)
[show chassis environment routing-engine \(Redundant\) on page 208](#)
[show chassis environment routing-engine \(TX Matrix Plus Router\) on page 208](#)
[show chassis environment routing-engine \(T4000 Core Router\) on page 208](#)
[show chassis environment routing-engine \(QFX Series\) on page 208](#)
[show chassis environment routing-engine interconnect-device \(QFabric Switch\) on page 209](#)
[show chassis environment routing-engine \(PTX5000 Packet Transport Switch\) on page 209](#)

Output Fields [Table 22 on page 207](#) 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 22: show chassis environment routing-engine Output Fields

Field Name	Field Description
Routing engine <i>slot</i> status	Number of the Routing Engine slot: 0 or 1.
State	Status of the Routing Engine: <ul style="list-style-type: none"> • Online Master—Routing Engine is online, operating as Master. • Online Standby—Routing Engine is online, operating as Standby. • Offline—Routing Engine is offline.
Temperature	Temperature of the air flowing past the Routing Engine.

Table 22: show chassis environment routing-engine Output Fields (*continued*)

Field Name	Field Description
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 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
user@switch> show chassis environment routing-engine
Routing Engine 0 status:
  State          Online Master
  Temperature     42 degrees C / 107 degrees F

```


**routing-engine (QFX
Series)**

```
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
routing-engine
(PTX5000 Packet Transport Switch)
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 sib

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 <lcc number sfc number> <slot> <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 12.1 for the PTX Series Packet Transport Switches. Command introduced in Junos OS 12.1 for the T4000 Core Routers.
Description	(M320, T Series, TX Matrix, and TX Matrix Plus routers, and PTX Packet Transport Switches only) Display Switch Interface Boards (SIB) environmental information.
Options	<p>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 T1600 routers.</p> <p>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.</p> <p>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.</p> <p>lcc number—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display environmental information about the SIB in a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display environmental information about the SIB in a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace number with a value from 0 through 4.</p> <p>scc—(TX Matrix routers only) (Optional) Display environmental information about the SIB in the TX Matrix router (or switch-card chassis).</p> <p>sfc—(TX Matrix Plus routers only) (Optional) Display environmental information about the SIB in the TX Matrix Plus router (or switch-fabric chassis).</p> <p>slot—(Optional) Display environmental information about the specified SIB. For the M320 router, replace slot with a value from 0 through 3. For the T640, T1600, T4000, and</p>

TX Matrix routers, replace **slot** with a value from **0** through **4**. For the TX Matrix Plus router, replace **slot** with a value from **0** through **15**. For the T320 router, replace **slot** with a value from **0** through **2**. For the PTX5000 Packet Transport Switch, replace **slot** with a value from **0** through **8**.

Required Privilege Level view

- Related Documentation**
- request chassis sib
 - [show chassis sibs on page 408](#)
 - Configuring the 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 212](#)
[show chassis environment sib 1 \(T640 Router\) on page 213](#)
[show chassis environment sib 1 \(T4000 Router\) on page 213](#)
[show chassis environment sib scc \(TX Matrix Router\) on page 214](#)
[show chassis environment sib \(TX Matrix Plus Router\) on page 214](#)
[show chassis environment sib sfc \(TX Matrix Plus Router\) on page 224](#)
[show chassis environment sib f13 \(TX Matrix Plus Router\) on page 229](#)
[show chassis environment sib f2s \(TX Matrix Plus Router\) on page 230](#)
[show chassis environment sib \(PTX5000 Packet Transport Switch\) on page 230](#)

Output Fields [Table 23 on page 211](#) lists the output fields for the **show chassis environment sib** command. Output fields are listed in the approximate order in which they appear.

Table 23: show chassis environment sib Output Fields

Field Name	Field Description
SIB slot status	<p>SIB slot number:</p> <ul style="list-style-type: none"> 0 through 3 on an M320 router. 0 or 2 on a T320 router. 0 through 4 on a T640, or T1600, T4000, or TX Matrix router. 0 through 15 on a TX Matrix Plus router (Slots 2, 5, 10, 13, 14, and 15 are unused). 0, 1, 3, 4, 6, 7, 8, 9, 11, or 12 for F13 SIBs on a TX Matrix Plus router. 0 through 4, followed by 0, 2, 4, or 6 for an F2S SIB on a TX Matrix Plus router. For example, SIB F2S 0/4. 0 through 8 on a PTX5000 Packet Transport Switch.

Table 23: show chassis environment sib Output Fields (*continued*)

Field Name	Field Description
State	<p>Status of the SIB:</p> <ul style="list-style-type: none"> • 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. <p>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.</p> <p>Online standby (TX Matrix Plus router only).</p>
Temperature	<p>Temperature of the air flowing past the SIB.</p> <p>On PTX Series Packet Transport Switches, separate temperatures are displayed for Intake, Exhaust, and Junction.</p>
Power	<p>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.</p>

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

**show chassis
environment sib sfc
(TX Matrix Plus
Router)**

```

    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
...

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
(PTX5000 Packet
Transport Switch)**

```
user@host> show chassis environment sib
SIB 0 status:
State                               Online
Intake Temperature                  39 degrees C / 102 degrees F
Exhaust Temperature                 37 degrees C / 98 degrees F
Junction Temperature                43 degrees C / 109 degrees F
Power
  1.0 V                             1000 mV
  1.5 V                             1499 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                        3298 mV
SIB 1 status:
State                               Online
Intake Temperature                  39 degrees C / 102 degrees F
Exhaust Temperature                 36 degrees C / 96 degrees F
Junction Temperature                45 degrees C / 113 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                             900 mV
  2.5 V                             2499 mV
  3.3 V bias                        3321 mV
SIB 2 status:
State                               Online
Intake Temperature                  37 degrees C / 98 degrees F
```

```

Exhaust Temperature      37 degrees C / 98 degrees F
Junction Temperature     41 degrees C / 105 degrees F
Power
  1.0 V                  999 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             3339 mV
SIB 3 status:
State                    Online
Intake Temperature       40 degrees C / 104 degrees F
Exhaust Temperature      40 degrees C / 104 degrees F
Junction Temperature     45 degrees C / 113 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                  2500 mV
  3.3 V bias             3328 mV
SIB 4 status:
State                    Online
Intake Temperature       47 degrees C / 116 degrees F
Exhaust Temperature      45 degrees C / 113 degrees F
Junction Temperature     57 degrees C / 134 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             3333 mV
SIB 5 status:
State                    Online
Intake Temperature       57 degrees C / 134 degrees F
Exhaust Temperature      43 degrees C / 109 degrees F
Junction Temperature     71 degrees C / 159 degrees F
Power
  1.0 V                  1000 mV
  1.5 V                  1499 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
SIB 6 status:
State                    Online
Intake Temperature       57 degrees C / 134 degrees F
Exhaust Temperature      42 degrees C / 107 degrees F
Junction Temperature     66 degrees C / 150 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                  899 mV
  2.5 V                  2500 mV

```

3.3 V bias	3311 mV
SIB 7 status:	
State	Online
Intake Temperature	58 degrees C / 136 degrees F
Exhaust Temperature	42 degrees C / 107 degrees F
Junction Temperature	67 degrees C / 152 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	900 mV
2.5 V	2499 mV
3.3 V bias	3307 mV
SIB 8 status:	
State	Online
Intake Temperature	57 degrees C / 134 degrees F
Exhaust Temperature	43 degrees C / 109 degrees F
Junction Temperature	71 degrees C / 159 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	2500 mV
3.3 V bias	3332 mV

show chassis ethernet-switch

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 (PTX Series Packet Transport Switches)	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 12.1 for the PTX Series Packet Transport Switches.
Description	(M10i, M40e, M120, M160, M320, MX Series, and T Series routers and EX8200 and PTX Series switches only) Display information about the ports on the Control Board (CB) Ethernet switch.
Options	<p>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 T1600 routers.</p> <p>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.</p>

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 Switches, replace ***port*** with a value from 0 through 25. On the T4000 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 and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display information about the ports on the CB's Ethernet switch on a specified T640 router (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display information about the ports on the CB's Ethernet switch on a specified T1600 router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace ***number*** with a value from 0 through 3.

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.

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 (or 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 Switches, replace ***port*** with a value from 0 through 25. On the T4000 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 237](#)
- [show chassis ethernet-switch \(TX Matrix Router\) on page 238](#)
- [show chassis ethernet-switch errors on page 239](#)
- [show chassis ethernet-switch statistics on page 240](#)
- [show chassis ethernet-switch errors \(TX Matrix Plus Router\) on page 241](#)
- [show chassis ethernet-switch sfc errors \(TX Matrix Plus Router\) on page 241](#)
- [show chassis ethernet-switch statistics \(TX Matrix Plus Router\) on page 242](#)
- [show chassis ethernet-switch \(T4000 Router\) on page 247](#)
- [show chassis ethernet-switch errors \(T4000 Router\) on page 247](#)
- [show chassis ethernet-switch \(PTX5000 Packet Transport Switch\) on page 248](#)
- [show chassis ethernet-switch statistics \(PTX5000 Packet Transport Switch\) on page 249](#)
- [show chassis ethernet-switch port-state \(PTX5000 Packet Transport Switch\) on page 252](#)

Output Fields Table 24 on page 235 lists the output fields for the **show chassis ethernet-switch** command. Output fields are listed in the approximate order in which they appear.

Table 24: show chassis ethernet-switch Output Fields

Field Name	Field Description
Link is good on port n connected to device	Information about the link between each port on the CB's Ethernet switch and one of the following devices:
or	<ul style="list-style-type: none"> FPC0 (Flexible PIC Concentrator 0) through FPC7 Local controller
Link is good on Fast Ethernet port n connected to device	<ul style="list-style-type: none"> 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 .
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 <i>Junos OS System Basics Configuration Guide</i>).
Flow Control TX is Enabled (or Disabled)	(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)	(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.
MLT3	Number of multilevel threshold-3 (MLT-3) Fast Ethernet errors detected.

Table 24: show chassis ethernet-switch Output Fields (*continued*)

Field Name	Field Description
Accumulated error counts for port n connected to device FPCn: (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.
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 FPCn (statistics output only)	
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 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.
TX Packet OK Counter	Number of viable packets sent.
TX Pause Packet Counter	Number of PAUSE packets sent.
RX Octets	Number of octets received.

Table 24: show chassis ethernet-switch Output Fields (*continued*)

Field Name	Field Description
RX Unicast packets	Number of unicast packets received.
RX Multicast packets	Number of multicast packets received.
RX Broadcast packets	Number of broadcast packets received.
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 (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
```

```
1cc2-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 statistics
user@host> show chassis ethernet-switch statistics
Statistics for port 0 connected to device FPC0:
TX Unicast packets      68113
TX Multicast packets    0
TX Broadcast packets    20851
TX Late collisions      0
TX Excessive collisions 0
TX Dropped packets      0

RX Unicast packets      67410
RX Multicast packets    0
RX Broadcast packets    20852
RX FCS Errors           0
RX Alignment Errors     0
RX Dropped Packets      0
RX Fragments            0
RX Symbol Errors        0

Statistics for port 1 connected to device FPC1:
TX Unicast packets      66496
TX Multicast packets    0
TX Broadcast packets    20080
TX Late collisions      0
TX Excessive collisions 0
TX Dropped packets      0

RX Unicast packets      66037
RX Multicast packets    0
RX Broadcast packets    20080
RX FCS Errors           0
RX Alignment Errors     0
RX Dropped Packets      0
RX Fragments            0
RX Symbol Errors        0

Statistics for port 2 connected to device FPC2:
TX Unicast packets      64206
TX Multicast packets    0
TX Broadcast packets    21183
TX Late collisions      0
TX Excessive collisions 0
TX Dropped packets      0

RX Unicast packets      63671
RX Multicast packets    0
RX Broadcast packets    21183
RX FCS Errors           0
RX Alignment Errors     0
RX Dropped Packets      0
RX Fragments            0
RX Symbol Errors        0
```



```

Statistics for port 3 connected to device FPC3:
...

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 Xmsns    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 Xmsns    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 Switch)**

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
 Switch)**

```
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
port-state (PTX5000 Packet Transport Switch)
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 errors

Syntax	show chassis fabric errors <fpc <i>slot-number</i> lcc <i>number</i> > <sib (<i>slot</i> f13 <i>sib-slot</i> f2s <i>sib-slot/sib-f2s-slot-number</i> lcc <i>number</i>)>
Syntax (PTX Series Packet Transport Switches)	show chassis fabric errors <sib <i>sib-slot</i> >
Release Information	Command introduced in Junos OS Release 10.0. Command introduced in Junos OS Release 12.1 for the PTX Series Packet Transport Switches.
Description	(TX Matrix Plus routers and PTX Series Packet Transport Switches) 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 **fpc *slot-number***—Show error log of the first ten and last ten errors for the specified FPC. (PTX5000 Packet Transport Switches only)—Replace ***slot-number*** with a value from 0 through 7.

(TX Matrix Plus routers only)—Replace ***slot-number*** with a value from 0 through 31. This option has the following suboptions:

- **lcc *number***—Show error log of the first ten and last ten errors for the specified FPC on a specific network device (or line-card chassis) that is part of the routing matrix. Replace ***number*** with a value from 0 through 3.

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)***sib-slot***—Replace ***sib-slot*** with a value ranging from 0 through 4.

(PTX Series Packet Transport Switches)—Replace ***sib-slot*** with a value ranging from 0 through 8.

- **f13 *sib-slot***—(Optional) Show SIB F13 errors. Replace ***sib-slot*** with a valid SIB value number: 0, 1, 3, 4, 6, 7, 8, 9, 11, or 12.

- **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.
- **lcc number**—(Optional) Show error log of the first ten and last ten SIB errors for the specified network device (or line-card chassis). Replace **number** with a value from 0 through 3.



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 255](#)
[show chassis fabric errors \(F2S SIB Errors on a TX Matrix Plus Router\) on page 255](#)
[show chassis fabric errors \(SIB Errors Specific to an LCC Connected to a TX Matrix Plus Router\) on page 255](#)
[show chassis fabric errors \(FPC Errors Specific to an LCC Connected to a TX Matrix Plus Router\) on page 255](#)
[show chassis fabric errors \(PTX Series Packet Transport Switches\) on page 255](#)

Output Fields [Table 25 on page 254](#) lists the output fields for the **show chassis fabric errors** command. Output fields are listed in the approximate order in which they appear.

Table 25: show chassis fabric errors Output Fields

Field Name	Field Description
Time	Time the error was logged.
Error log of first 10 errors	List of the first ten errors.
Error log of last 10 errors	List of the last ten errors.
fpc slot number	(PTX5000 Packet Transport Switch only)—Range is 0 through 7.
sib slot number	(PTX Series Packet Transport Switches only)—Range is 0 through 8.
lcc number	Not supported on PTX Series Packet Transport Switches.

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 (PTX Series Packet Transport Switches)
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
2012-01-06 15:34:33 PST            Link errs on PFE 0, FPC 0, Plane 2

```

show chassis fabric fpcs

Syntax	show chassis fabric fpcs <fcc <i>number</i> >
Syntax (MX Series Router)	show chassis fabric fpcs <all-members> <local> <member <i>member-id</i> >
Syntax (T4000 Core Router)	show chassis fabric fpcs
Syntax (PTX Series Packet Transport Switches)	show chassis fabric fpcs <slot <i>fpc-slot</i> >
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 12.1 for PTX Series Packet Transport Switches.
Description	(M320, MX Series, and T Series routers, EX8200 switches, and PTX Series Packet Transport Switches only) Display the state of the electrical switch fabric links between the Flexible PIC Concentrators (FPCs) and the Switch Interface Boards (SIBs).
Options	<p>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 T1600 routers connected to the TX Matrix Plus router.</p> <p>all-members—(MX Series routers only) (Optional) Display the switching fabric link states for the FPCs in all members of the Virtual Chassis configuration.</p> <p>fcc <i>number</i>—(TX Matrix 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 (or 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 T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>local—(MX Series routers only) (Optional) Display the switching fabric link states for the FPCs in the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(MX Series routers only) (Optional) Display the switching fabric link states for the FPCs in the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value of 0 or 1.</p> <p>slot <i>fpc-slot</i>—(PTX Series Packet Transport Switches only) (Optional) Display the fabric state of the specified FPC slot. If no value is provided, display the status of all FPCs.</p>

Required Privilege Level	view
List of Sample Output	show chassis fabric fpcs (M320 Router) on page 258 show chassis fabric fpcs (MX240 Router) on page 259 show chassis fabric fpcs (MX480 Router) on page 259 show chassis fabric fpcs (MX960 Router) on page 260 show chassis fabric fpcs (T320 Router) on page 261 show chassis fabric fpcs (T640 Router) on page 262 show chassis fabric fpcs (TX Matrix Router) on page 262 show chassis fabric fpcs (TI600 Router) on page 263 show chassis fabric fpcs (T4000 Core Router) on page 265 show chassis fabric fpcs (TX Matrix Plus Router) on page 266 show chassis fabric fpcs lcc (TX Matrix Plus Router) on page 273 show chassis fabric fpcs (EX8200 Switch) on page 274 show chassis fabric fpcs (PTX Series Packet Transport Switches) on page 275
Output Fields	Table 26 on page 258 lists the output fields for the show chassis fabric fpcs command. Output fields are listed in the approximate order in which they appear.

Table 26: show chassis fabric fpcs Output Fields

Field Name	Field Description
Fabric management FPC state	<p>Switching fabric link (link from SIB to FPC) state for each FPC:</p> <ul style="list-style-type: none"> • Unused—FPC is not present. • Destination error on PFEs <i>list of PFE numbers</i>—Destination errors to the listed Packet Forwarding Engines. Indicates that the link is not carrying traffic to the listed Packet Forwarding Engines. <p>NOTE: In Junos OS Release 9.6 and later, the list of Packet Forwarding Engines with destination errors is displayed in the output.</p> <p>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.</p> <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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 Switches only)—The plane is disabled because of link errors detected at the FPC RX. • Plane Disabled, Links Down (PTX Series Packet Transport 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. <p>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.</p> <ul style="list-style-type: none"> • Plane Enabled, Links OK (PTX Series Packet Transport Switches only)—The FPC CCL 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 (MX240 Router) 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: Links ok
Plane 5: Links ok
Plane 6: Links ok
Plane 7: 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
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
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
Plane 6: Links ok
Plane 7: Links ok

show chassis fabric fpcs (MX480 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
Plane 6: Links ok
Plane 7: 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
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
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
Plane 6: Links ok
Plane 7: 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
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
```

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 (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 (T640 Router) user@host> **show chassis fabric fpcs**
 Fabric management FPC state:

```

FPC #2
  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
      8   9  10  11  12  13  14  15  16  17  18  19  20  21
    SIB #4
      Destination error on PFES
      8   9  10  11  12  13  14  15  16  17  18  19  20  21
...

```

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
      8   9  10  11  12  13  14  15  16  17  18  19  20  21
SIB #4
    Destination error on PFEs
      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 (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
      8   9   10  11  12  13  14  15  16  17  18  19  20  21
    SIB #4
      Destination error on PFES
      8   9   10  11  12  13  14  15  16  17  18  19  20  21

```

```

show chassis fabric Fabric management FPC state:
fpcs (T4000 Core
Router)

```

```

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
1cc0-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
      8   9   10  11  12  13  14  15  16  17  18  19  20  21
      0   1   2   3   4   5   6   7
    SIB #4
      Destination error on PFes
      8   9   10  11  12  13  14  15  16  17  18  19  20  21
      0   1   2   3   4   5   6   7
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
```

```

SIB #1 Links ok
SIB #2 Links ok
SIB #3 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
```

```

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 lcc (TX Matrix
Plus Router)**

```

user@host> show chassis fabric fpcs lcc 0
lcc0-re1:
-----
Fabric management FPC state:
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 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 (PTX Series
Packet Transport
Switches)**

user@host> show chassis fabric fpcs slot 0

Fabric management FPC state:

FPC #0

PFE #0

SIB0_Fcore0 (plane 0)	Plane Enabled, Links OK
SIB0_Fcore1 (plane 1)	Plane Enabled, Links OK
SIB1_Fcore0 (plane 2)	Plane Disabled, Links Down
SIB1_Fcore1 (plane 3)	Plane Enabled, Links OK
SIB2_Fcore0 (plane 4)	Plane Enabled, Links OK
SIB2_Fcore1 (plane 5)	Plane Enabled, Links OK
SIB3_Fcore0 (plane 6)	Plane Enabled, Links OK
SIB3_Fcore1 (plane 7)	Plane Enabled, Links OK
SIB5_Fcore0 (plane 10)	Plane Enabled, Links OK
SIB5_Fcore1 (plane 11)	Plane Enabled, Links OK
SIB6_Fcore0 (plane 12)	Plane Enabled, Links OK
SIB6_Fcore1 (plane 13)	Plane Enabled, Links OK
SIB7_Fcore0 (plane 14)	Plane Enabled, Links OK
SIB7_Fcore1 (plane 15)	Plane Enabled, Links OK
SIB8_Fcore0 (plane 16)	Plane Enabled, Links OK
SIB8_Fcore1 (plane 17)	Plane Enabled, Links OK

show chassis fabric plane-location

Syntax	show chassis fabric plane-location
Syntax (MX Series Router)	show chassis fabric plane-location <all-members> <local> <member <i>member-id</i> >
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 12.1 for PTX Series Packet Transport 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 EX Series Switches Hardware and CLI Terminology Mapping. (TX Matrix Plus routers only) Display the SIB location of each fabric plane. (PTX Series Packet Transport Switches only) Display the fabric plane location of each SIB.
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 <i>member-id</i> —(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 <i>member-id</i> with a value of 0 or 1.
Required Privilege Level	view
List of Sample Output	show chassis fabric plane-location (M120 Router) on page 277 show chassis fabric plane-location (MX240 and MX480 Routers) on page 277 show chassis fabric plane-location (MX960 Router) on page 277 show chassis fabric plane-location (TX Matrix Plus Router) on page 277 show chassis fabric plane-location (EX8200 Switch) on page 278 show chassis fabric plane-location (PTX Series Packet Transport Switches) on page 278
Output Fields	Table 27 on page 277 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 27: show chassis fabric plane-location Output Fields

Field Name	Field Description
Plane <i>n</i>	Plane number. (PTX Series Packet Transport Switches only) Plane numbers associated with the SIB.
Control Board <i>n</i>	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.
LCC ST-SIB-L	(TX Matrix Plus routers only) Line-card chassis (LCC) SIB slot number.
SIB	(PTX Series Packet Transport Switches only) SIB 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 (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 (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 (PTX Series Packet Transport Switches) 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 summary

Syntax	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 12.1 for the PTX Series Packet Transport Switches.
Description	(MX Series routers and EX8200 switches only) Display the state of all fabric planes and the elapsed uptime.
Options	This command has no options.
Required Privilege Level	view
List of Sample Output	show chassis fabric summary (MX240 Router) on page 281 show chassis fabric summary (MX480 Router) on page 281 show chassis fabric summary (MX960 Router) on page 281 show chassis fabric summary (EX8200 Switch) on page 281 show chassis fabric summary (PTX Series Packet Transport Switch) on page 281
Output Fields	Table 28 on page 279 lists the output fields for the show chassis fabric summary command. Output fields are listed in the approximate order in which they appear.

Table 28: show chassis fabric summary Output Fields

Field Name	Field Description
Plane	Plane number.

Table 28: show chassis fabric summary Output Fields (*continued*)

Field Name	Field Description
State	<p>State of the SIB or FPC:</p> <ul style="list-style-type: none"> • Online—Switch Interface Board (SIB) is operational and running. <p>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.</p> <ul style="list-style-type: none"> • Empty—SIB is powered down. • Check—SIB is in the Check state because of the following reasons: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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. <p>NOTE: The Check state does not apply to PTX Series Packet Transport Switches because there are no SIBs in the Check state.</p> <p>For information about link and destination errors, issue the show chassis fabric fpcs commands.</p> <ul style="list-style-type: none"> • Spare—SIB is redundant and will move to active state if one of the working SIBs fails. <p>NOTE: Spare does not apply to PTX Series Packet Transport Switches because there are no spare SIBs in the device.</p>
Errors	<p>Indicates whether there is any error on the SIB.</p> <ul style="list-style-type: none"> • 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. <p>NOTE: The Errors column is empty only when the FPC or SIB is offline.</p>
Uptime	Elapsed time the plane has been online.

Sample Output

```
show chassis fabric summary (MX240 Router) user@host> show chassis fabric summary
Plane  State  Uptime
0      Online 23 hours, 26 minutes, 54 seconds
1      Online 23 hours, 26 minutes, 54 seconds
2      Check 18 hours, 33 minutes, 42 seconds
3      Online 23 hours, 26 minutes, 54 seconds
4      Spare 23 hours, 26 minutes, 54 seconds
5      Spare 23 hours, 26 minutes, 54 seconds
6      Spare 23 hours, 26 minutes, 54 seconds
7      Spare 23 hours, 26 minutes, 54 seconds
```

```
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 (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 (EX8200 Switch) user@host> show chassis fabric summary
Plane  State  Uptime
0      Online 12 days, 50 minutes, 54 seconds
1      Online 12 days, 50 minutes, 53 seconds
2      Online 12 days, 50 minutes, 53 seconds
3      Online 12 days, 50 minutes, 52 seconds
4      Spare 12 days, 50 minutes, 49 seconds
5      Spare 12 days, 50 minutes, 47 seconds
6      Spare 12 days, 50 minutes, 47 seconds
7      Spare 12 days, 50 minutes, 46 seconds
8      Online 12 days, 50 minutes, 52 seconds
9      Online 12 days, 50 minutes, 50 seconds
10     Online 12 days, 50 minutes, 50 seconds
11     Online 12 days, 50 minutes, 49 seconds
```

```
show chassis fabric summary (PTX Series Packet Transport Switch) 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 topology

Syntax	show chassis fabric topology <fcc <i>number</i> scc> <sib-slot>
Syntax (TX Matrix Router)	show chassis fabric topology <fcc <i>number</i> scc> <sib-slot>
Syntax (TX Matrix Plus Router)	show chassis fabric topology <fcc <i>number</i> sfc <i>number</i> > <sib-slot>
Syntax (T4000 Core Router)	show chassis fabric topology <sib-slot>
Syntax (PTX Series Packet Transport 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 Switches.
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 T1600 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 Switches only) 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 T1600 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. fcc <i>number</i> —(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display the fabric topology state for a specified T640 router (or 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 T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.

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 TX Matrix Plus router (or 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 287](#)
[show chassis fabric topology lcc on page 289](#)
[show chassis fabric topology \(TX Matrix Plus Router\) on page 291](#)
[show chassis fabric topology sfc \(TX Matrix Plus Router\) on page 293](#)
[show chassis fabric topology lcc \(TX Matrix Plus Router\) on page 294](#)
[show chassis fabric topology \(T4000 Core Router\) on page 295](#)
[show chassis fabric topology \(PTX Series Packet Transport Switches\) on page 296](#)

Output Fields [Table 29 on page 284](#) lists the output fields for the **show chassis fabric topology** command. Output fields are listed in the approximate order in which they appear.

Table 29: 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 29: show chassis fabric topology Output Fields (*continued*)

Field Name	Field Description
state	<p>State of the fabric link:</p> <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • On-board F-chip is not operational. • Fiber-optic connector faults. • FPC connector faults. • SIB midplane connector faults. <p>NOTE: The following state descriptions are applicable only to PTX Series Packet Transport Switches.</p> <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • FPC midplane connector failure. • SIB midplane connector failure. • CCL link CRC error.

Table 29: 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:
	<hr/> <ul style="list-style-type: none"> • VCSEL Status—Optical (VCSEL channel) link status for the corresponding electrical (HSL2) link. The states include: <ul style="list-style-type: none"> • 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. <hr/> <ul style="list-style-type: none"> • HSL2 Status —The status of the HSL2 Channel. Includes the following states: <ul style="list-style-type: none"> • Up—Channel is up. • Down—Channel is down. • Reset—Channel has been reset. • Fault—Channel has faults.
	The following is a sample output with description of the fields displayed in the output for Out-Links:
	<pre> Out-Links: ===== SF_3_13_FB_A(21,09) -> FPC7_B_SG(3,3,6)_FB_A(18,09) OK 203 Up </pre> <hr/>

Table 29: show chassis fabric topology Output Fields (*continued*)

- **SF_3_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. 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 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_1_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.
- **FB_D (04,11)**—Fiber Bundle D with VCSEL 4, channel 11.
- **SF_1**—Indicates F1 mode and Rx path.
- **SF_1_00_FB_D(01,11)** —Indicates F1 mode and Rx path with port 0, fiber bundle D, with VCSEL 1, channel 11.

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

```

user@host> show chassis fabric topology lcc 0
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 :
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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

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show chassis fabric
topology (TX Matrix
Plus Router)

user@host> show chassis fabric topology
sfc0-re0:

1cc0-re0:

SIB0

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Out-Links:

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LCC00_ST_SIB_L00	-> SFC0_F13_SIB_00	VCSEL Status	HSL2 Channel	HSL2 Status
FPC0_T_SG(0,0,0)_FB_D(04,11)	-> SF_1_00_FB_D(01,11)	OK	12	Up
FPC0_T_SG(0,0,1)_FB_D(04,10)	-> SF_1_00_FB_D(01,10)	OK	12	Up
FPC0_T_SG(0,0,2)_FB_D(04,09)	-> SF_1_00_FB_D(01,09)	OK	12	Up
FPC0_T_SG(0,0,3)_FB_D(04,08)	-> SF_1_00_FB_D(01,08)	OK	12	Up
FPC0_T_SG(0,0,4)_FB_D(04,07)	-> SF_1_00_FB_D(01,07)	OK	12	Up
FPC0_T_SG(0,0,5)_FB_D(04,06)	-> SF_1_00_FB_D(01,06)	OK	12	Up
FPC0_T_SG(0,0,6)_FB_D(04,05)	-> SF_1_00_FB_D(01,05)	OK	12	Up
FPC0_T_SG(0,0,7)_FB_D(04,04)	-> SF_1_00_FB_D(01,04)	OK	12	Up
FPC0_B_SG(0,1,0)_FB_D(03,07)	-> SF_1_10_FB_D(00,07)	OK	15	Up
FPC0_B_SG(0,1,1)_FB_D(03,06)	-> SF_1_10_FB_D(00,06)	OK	15	Up
FPC0_B_SG(0,1,2)_FB_D(03,05)	-> SF_1_10_FB_D(00,05)	OK	15	Up
FPC0_B_SG(0,1,3)_FB_D(03,04)	-> SF_1_10_FB_D(00,04)	OK	15	Up
FPC0_B_SG(0,1,4)_FB_D(03,03)	-> SF_1_10_FB_D(00,03)	OK	15	Up
FPC0_B_SG(0,1,5)_FB_D(03,02)	-> SF_1_10_FB_D(00,02)	OK	15	Up
FPC0_B_SG(0,1,6)_FB_D(03,01)	-> SF_1_10_FB_D(00,01)	OK	15	Up
FPC0_B_SG(0,1,7)_FB_D(03,00)	-> SF_1_10_FB_D(00,00)	OK	15	Up
FPC1_T_SG(0,2,0)_FB_D(05,08)	-> SF_1_02_FB_D(02,08)	OK	18	Up
FPC1_T_SG(0,2,1)_FB_D(05,07)	-> SF_1_02_FB_D(02,07)	OK	18	Up
FPC1_T_SG(0,2,2)_FB_D(05,06)	-> SF_1_02_FB_D(02,06)	OK	18	Up
FPC1_T_SG(0,2,3)_FB_D(05,05)	-> SF_1_02_FB_D(02,05)	OK	18	Up
FPC1_T_SG(0,2,4)_FB_D(05,03)	-> SF_1_02_FB_D(02,03)	OK	18	Up
FPC1_T_SG(0,2,5)_FB_D(05,02)	-> SF_1_02_FB_D(02,02)	OK	18	Up
FPC1_T_SG(0,2,6)_FB_D(05,01)	-> SF_1_02_FB_D(02,01)	HIGH	CUR	18
FPC1_T_SG(0,2,7)_FB_D(05,00)	-> SF_1_02_FB_D(02,00)	OK	18	Up
FPC1_B_SG(0,3,0)_FB_D(04,03)	-> SF_1_11_FB_D(01,03)	OK	21	Up
FPC1_B_SG(0,3,1)_FB_D(04,02)	-> SF_1_11_FB_D(01,02)	OK	21	Up
FPC1_B_SG(0,3,2)_FB_D(04,01)	-> SF_1_11_FB_D(01,01)	OK	21	Up
FPC1_B_SG(0,3,3)_FB_D(04,00)	-> SF_1_11_FB_D(01,00)	OK	21	Up
FPC1_B_SG(0,3,4)_FB_D(03,11)	-> SF_1_11_FB_D(00,11)	OK	21	Up
FPC1_B_SG(0,3,5)_FB_D(03,10)	-> SF_1_11_FB_D(00,10)	OK	21	Up
FPC1_B_SG(0,3,6)_FB_D(03,09)	-> SF_1_11_FB_D(00,09)	OK	21	Up
FPC1_B_SG(0,3,7)_FB_D(03,08)	-> SF_1_11_FB_D(00,08)	OK	21	Up
FPC2_T_SG(1,0,0)_FB_C(10,11)	-> SF_1_04_FB_C(07,11)	OK	12	Up
FPC2_T_SG(1,0,1)_FB_C(10,10)	-> SF_1_04_FB_C(07,10)	OK	12	Up
FPC2_T_SG(1,0,2)_FB_C(10,09)	-> SF_1_04_FB_C(07,09)	OK	12	Up
FPC2_T_SG(1,0,3)_FB_C(10,08)	-> SF_1_04_FB_C(07,08)	OK	12	Up
FPC2_T_SG(1,0,4)_FB_C(10,07)	-> SF_1_04_FB_C(07,07)	OK	12	Up
FPC2_T_SG(1,0,5)_FB_C(10,06)	-> SF_1_04_FB_C(07,06)	OK	12	Up
FPC2_T_SG(1,0,6)_FB_C(10,05)	-> SF_1_04_FB_C(07,05)	OK	12	Up
FPC2_T_SG(1,0,7)_FB_C(10,04)	-> SF_1_04_FB_C(07,04)	OK	12	Up
FPC2_B_SG(1,1,0)_FB_C(09,07)	-> SF_1_14_FB_C(06,07)	OK	15	Up
FPC2_B_SG(1,1,1)_FB_C(09,06)	-> SF_1_14_FB_C(06,06)	OK	15	Up
FPC2_B_SG(1,1,2)_FB_C(09,05)	-> SF_1_14_FB_C(06,05)	OK	15	Up
FPC2_B_SG(1,1,3)_FB_C(09,04)	-> SF_1_14_FB_C(06,04)	OK	15	Up
FPC2_B_SG(1,1,4)_FB_C(09,03)	-> SF_1_14_FB_C(06,03)	OK	15	Up
FPC2_B_SG(1,1,5)_FB_C(09,02)	-> SF_1_14_FB_C(06,02)	OK	15	Up

FPC2_B_SG(1,1,6)_FB_C(09,01)	-> SF_1_14_FB_C(06,01)	OK	15	Up
FPC2_B_SG(1,1,7)_FB_C(09,00)	-> SF_1_14_FB_C(06,00)	OK	15	Up
FPC3_T_SG(1,2,0)_FB_C(11,08)	-> SF_1_06_FB_C(08,08)	OK	18	Up
FPC3_T_SG(1,2,1)_FB_C(11,07)	-> SF_1_06_FB_C(08,07)	OK	18	Up
FPC3_T_SG(1,2,2)_FB_C(11,06)	-> SF_1_06_FB_C(08,06)	OK	18	Up
FPC3_T_SG(1,2,3)_FB_C(11,05)	-> SF_1_06_FB_C(08,05)	OK	18	Up
FPC3_T_SG(1,2,4)_FB_C(11,03)	-> SF_1_06_FB_C(08,03)	OK	18	Up
FPC3_T_SG(1,2,5)_FB_C(11,02)	-> SF_1_06_FB_C(08,02)	OK	18	Up
FPC3_T_SG(1,2,6)_FB_C(11,01)	-> SF_1_06_FB_C(08,01)	OK	18	Up
FPC3_T_SG(1,2,7)_FB_C(11,00)	-> SF_1_06_FB_C(08,00)	OK	18	Up
FPC3_B_SG(1,3,0)_FB_C(10,03)	-> SF_1_15_FB_C(07,03)	OK	21	Up
FPC3_B_SG(1,3,1)_FB_C(10,02)	-> SF_1_15_FB_C(07,02)	OK	21	Up
FPC3_B_SG(1,3,2)_FB_C(10,01)	-> SF_1_15_FB_C(07,01)	HIGH	CUR	21
FPC3_B_SG(1,3,3)_FB_C(10,00)	-> SF_1_15_FB_C(07,00)	OK	21	Up
FPC3_B_SG(1,3,4)_FB_C(09,11)	-> SF_1_15_FB_C(06,11)	OK	21	Up
FPC3_B_SG(1,3,5)_FB_C(09,10)	-> SF_1_15_FB_C(06,10)	OK	21	Up
FPC3_B_SG(1,3,6)_FB_C(09,09)	-> SF_1_15_FB_C(06,09)	OK	21	Up
FPC3_B_SG(1,3,7)_FB_C(09,08)	-> SF_1_15_FB_C(06,08)	OK	21	Up
FPC4_T_SG(2,0,0)_FB_B(16,11)	-> SF_1_01_FB_B(13,11)	OK	12	Up
FPC4_T_SG(2,0,1)_FB_B(16,10)	-> SF_1_01_FB_B(13,10)	OK	12	Up
FPC4_T_SG(2,0,2)_FB_B(16,09)	-> SF_1_01_FB_B(13,09)	OK	12	Up
FPC4_T_SG(2,0,3)_FB_B(16,08)	-> SF_1_01_FB_B(13,08)	OK	12	Up
FPC4_T_SG(2,0,4)_FB_B(16,07)	-> SF_1_01_FB_B(13,07)	OK	12	Up
FPC4_T_SG(2,0,5)_FB_B(16,06)	-> SF_1_01_FB_B(13,06)	OK	12	Up
FPC4_T_SG(2,0,6)_FB_B(16,05)	-> SF_1_01_FB_B(13,05)	OK	12	Up
FPC4_T_SG(2,0,7)_FB_B(16,04)	-> SF_1_01_FB_B(13,04)	OK	12	Up
FPC4_B_SG(2,1,0)_FB_B(15,07)	-> SF_1_08_FB_B(12,07)	OK	15	Up
FPC4_B_SG(2,1,1)_FB_B(15,06)	-> SF_1_08_FB_B(12,06)	OK	15	Up
FPC4_B_SG(2,1,2)_FB_B(15,05)	-> SF_1_08_FB_B(12,05)	OK	15	Up
FPC4_B_SG(2,1,3)_FB_B(15,04)	-> SF_1_08_FB_B(12,04)	OK	15	Up
FPC4_B_SG(2,1,4)_FB_B(15,03)	-> SF_1_08_FB_B(12,03)	OK	15	Up
FPC4_B_SG(2,1,5)_FB_B(15,02)	-> SF_1_08_FB_B(12,02)	OK	15	Up
FPC4_B_SG(2,1,6)_FB_B(15,01)	-> SF_1_08_FB_B(12,01)	OK	15	Up
FPC4_B_SG(2,1,7)_FB_B(15,00)	-> SF_1_08_FB_B(12,00)	OK	15	Up
FPC5_T_SG(2,2,0)_FB_B(17,08)	-> SF_1_03_FB_B(14,08)	OK	18	Up
FPC5_T_SG(2,2,1)_FB_B(17,07)	-> SF_1_03_FB_B(14,07)	OK	18	Up
FPC5_T_SG(2,2,2)_FB_B(17,06)	-> SF_1_03_FB_B(14,06)	OK	18	Up
FPC5_T_SG(2,2,3)_FB_B(17,05)	-> SF_1_03_FB_B(14,05)	OK	18	Up
FPC5_T_SG(2,2,4)_FB_B(17,03)	-> SF_1_03_FB_B(14,03)	OK	18	Up
FPC5_T_SG(2,2,5)_FB_B(17,02)	-> SF_1_03_FB_B(14,02)	OK	18	Up
FPC5_T_SG(2,2,6)_FB_B(17,01)	-> SF_1_03_FB_B(14,01)	OK	18	Up
FPC5_T_SG(2,2,7)_FB_B(17,00)	-> SF_1_03_FB_B(14,00)	OK	18	Up
FPC5_B_SG(2,3,0)_FB_B(16,03)	-> SF_1_09_FB_B(13,03)	OK	21	Up
FPC5_B_SG(2,3,1)_FB_B(16,02)	-> SF_1_09_FB_B(13,02)	OK	21	Up
FPC5_B_SG(2,3,2)_FB_B(16,01)	-> SF_1_09_FB_B(13,01)	OK	21	Up
FPC5_B_SG(2,3,3)_FB_B(16,00)	-> SF_1_09_FB_B(13,00)	OK	21	Up
FPC5_B_SG(2,3,4)_FB_B(15,11)	-> SF_1_09_FB_B(12,11)	OK	21	Up
FPC5_B_SG(2,3,5)_FB_B(15,10)	-> SF_1_09_FB_B(12,10)	OK	21	Up
FPC5_B_SG(2,3,6)_FB_B(15,09)	-> SF_1_09_FB_B(12,09)	OK	21	Up
FPC5_B_SG(2,3,7)_FB_B(15,08)	-> SF_1_09_FB_B(12,08)	OK	21	Up
FPC6_T_SG(3,0,0)_FB_A(22,11)	-> SF_1_05_FB_A(19,11)	OK	12	Up
FPC6_T_SG(3,0,1)_FB_A(22,10)	-> SF_1_05_FB_A(19,10)	OK	12	Up
FPC6_T_SG(3,0,2)_FB_A(22,09)	-> SF_1_05_FB_A(19,09)	OK	12	Up
FPC6_T_SG(3,0,3)_FB_A(22,08)	-> SF_1_05_FB_A(19,08)	OK	12	Up
FPC6_T_SG(3,0,4)_FB_A(22,07)	-> SF_1_05_FB_A(19,07)	OK	12	Up
FPC6_T_SG(3,0,5)_FB_A(22,06)	-> SF_1_05_FB_A(19,06)	OK	12	Up
FPC6_T_SG(3,0,6)_FB_A(22,05)	-> SF_1_05_FB_A(19,05)	OK	12	Up
FPC6_T_SG(3,0,7)_FB_A(22,04)	-> SF_1_05_FB_A(19,04)	OK	12	Up
FPC6_B_SG(3,1,0)_FB_A(21,07)	-> SF_1_12_FB_A(18,07)	OK	15	Up
FPC6_B_SG(3,1,1)_FB_A(21,06)	-> SF_1_12_FB_A(18,06)	OK	15	Up
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show chassis fabric topology sfc (TX Matrix Plus Router)

user@host> show chassis fabric topology sfc 0
sfc0-re0:

F13_SIB0

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Out-Links:

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SFC0_F13_SIB_00	-> LCC00_ST_SIB_L00	VCSEL Status	HSL2 Channel	HSL2 Status
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SF_3_00_FB_D(04,11)	-> FPC0_T_SG(0,0,0)_FB_D(01,11)	OK	112	Up
SF_3_00_FB_D(04,10)	-> FPC0_T_SG(0,0,1)_FB_D(01,10)	OK	112	Up
SF_3_00_FB_D(04,09)	-> FPC0_T_SG(0,0,2)_FB_D(01,09)	OK	112	Up
SF_3_00_FB_D(04,08)	-> FPC0_T_SG(0,0,3)_FB_D(01,08)	OK	112	Up
SF_3_00_FB_D(04,07)	-> FPC0_T_SG(0,0,4)_FB_D(01,07)	OK	112	Up
SF_3_00_FB_D(04,06)	-> FPC0_T_SG(0,0,5)_FB_D(01,06)	OK	112	Up
SF_3_00_FB_D(04,05)	-> FPC0_T_SG(0,0,6)_FB_D(01,05)	OK	112	Up
SF_3_00_FB_D(04,04)	-> FPC0_T_SG(0,0,7)_FB_D(01,04)	OK	112	Up
SF_3_01_FB_B(16,11)	-> FPC4_T_SG(2,0,0)_FB_B(13,11)	OK	119	Up
SF_3_01_FB_B(16,10)	-> FPC4_T_SG(2,0,1)_FB_B(13,10)	OK	119	Up
SF_3_01_FB_B(16,09)	-> FPC4_T_SG(2,0,2)_FB_B(13,09)	OK	119	Up
SF_3_01_FB_B(16,08)	-> FPC4_T_SG(2,0,3)_FB_B(13,08)	OK	119	Up
SF_3_01_FB_B(16,07)	-> FPC4_T_SG(2,0,4)_FB_B(13,07)	OK	119	Up
SF_3_01_FB_B(16,06)	-> FPC4_T_SG(2,0,5)_FB_B(13,06)	OK	119	Up
SF_3_01_FB_B(16,05)	-> FPC4_T_SG(2,0,6)_FB_B(13,05)	OK	119	Up
SF_3_01_FB_B(16,04)	-> FPC4_T_SG(2,0,7)_FB_B(13,04)	OK	119	Up
SF_3_02_FB_D(05,08)	-> FPC1_T_SG(0,2,0)_FB_D(02,08)	OK	126	Up
SF_3_02_FB_D(05,07)	-> FPC1_T_SG(0,2,1)_FB_D(02,07)	OK	126	Up
SF_3_02_FB_D(05,06)	-> FPC1_T_SG(0,2,2)_FB_D(02,06)	OK	126	Up
SF_3_02_FB_D(05,05)	-> FPC1_T_SG(0,2,3)_FB_D(02,05)	OK	126	Up
SF_3_02_FB_D(05,03)	-> FPC1_T_SG(0,2,4)_FB_D(02,03)	OK	126	Up
SF_3_02_FB_D(05,02)	-> FPC1_T_SG(0,2,5)_FB_D(02,02)	OK	126	Up
SF_3_02_FB_D(05,01)	-> FPC1_T_SG(0,2,6)_FB_D(02,01)	OK	126	Up
SF_3_02_FB_D(05,00)	-> FPC1_T_SG(0,2,7)_FB_D(02,00)	OK	126	Up
SF_3_03_FB_B(17,08)	-> FPC5_T_SG(2,2,0)_FB_B(14,08)	OK	133	Up
SF_3_03_FB_B(17,07)	-> FPC5_T_SG(2,2,1)_FB_B(14,07)	OK	133	Up
SF_3_03_FB_B(17,06)	-> FPC5_T_SG(2,2,2)_FB_B(14,06)	OK	133	Up
SF_3_03_FB_B(17,05)	-> FPC5_T_SG(2,2,3)_FB_B(14,05)	OK	133	Up
SF_3_03_FB_B(17,03)	-> FPC5_T_SG(2,2,4)_FB_B(14,03)	OK	133	Up
SF_3_03_FB_B(17,02)	-> FPC5_T_SG(2,2,5)_FB_B(14,02)	OK	133	Up
SF_3_03_FB_B(17,01)	-> FPC5_T_SG(2,2,6)_FB_B(14,01)	OK	133	Up
SF_3_03_FB_B(17,00)	-> FPC5_T_SG(2,2,7)_FB_B(14,00)	OK	133	Up
SF_3_04_FB_C(10,11)	-> FPC2_T_SG(1,0,0)_FB_C(07,11)	OK	140	Up
SF_3_04_FB_C(10,10)	-> FPC2_T_SG(1,0,1)_FB_C(07,10)	OK	140	Up
SF_3_04_FB_C(10,09)	-> FPC2_T_SG(1,0,2)_FB_C(07,09)	OK	140	Up
SF_3_04_FB_C(10,08)	-> FPC2_T_SG(1,0,3)_FB_C(07,08)	OK	140	Up
SF_3_04_FB_C(10,07)	-> FPC2_T_SG(1,0,4)_FB_C(07,07)	OK	140	Up
SF_3_04_FB_C(10,06)	-> FPC2_T_SG(1,0,5)_FB_C(07,06)	OK	140	Up
SF_3_04_FB_C(10,05)	-> FPC2_T_SG(1,0,6)_FB_C(07,05)	OK	140	Up
SF_3_04_FB_C(10,04)	-> FPC2_T_SG(1,0,7)_FB_C(07,04)	OK	140	Up
SF_3_05_FB_A(22,11)	-> FPC6_T_SG(3,0,0)_FB_A(19,11)	OK	147	Up
SF_3_05_FB_A(22,10)	-> FPC6_T_SG(3,0,1)_FB_A(19,10)	OK	147	Up
SF_3_05_FB_A(22,09)	-> FPC6_T_SG(3,0,2)_FB_A(19,09)	OK	147	Up
SF_3_05_FB_A(22,08)	-> FPC6_T_SG(3,0,3)_FB_A(19,08)	OK	147	Up
SF_3_05_FB_A(22,07)	-> FPC6_T_SG(3,0,4)_FB_A(19,07)	OK	147	Up
SF_3_05_FB_A(22,06)	-> FPC6_T_SG(3,0,5)_FB_A(19,06)	OK	147	Up
SF_3_05_FB_A(22,05)	-> FPC6_T_SG(3,0,6)_FB_A(19,05)	HIGH	CUR	147
SF_3_05_FB_A(22,04)	-> FPC6_T_SG(3,0,7)_FB_A(19,04)	OK	147	Up
SF_3_06_FB_C(11,08)	-> FPC3_T_SG(1,2,0)_FB_C(08,08)	OK	154	Up

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SF_3_06_FB_C(11,07) -> FPC3_T_SG(1,2,1)_FB_C(08,07)    OK      154    Up
SF_3_06_FB_C(11,06) -> FPC3_T_SG(1,2,2)_FB_C(08,06)    OK      154    Up
SF_3_06_FB_C(11,05) -> FPC3_T_SG(1,2,3)_FB_C(08,05)    OK      154    Up
SF_3_06_FB_C(11,03) -> FPC3_T_SG(1,2,4)_FB_C(08,03)    OK      154    Up
SF_3_06_FB_C(11,02) -> FPC3_T_SG(1,2,5)_FB_C(08,02)    OK      154    Up
SF_3_06_FB_C(11,01) -> FPC3_T_SG(1,2,6)_FB_C(08,01)    OK      154    Up
...

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show chassis fabric topology lcc (TX Matrix Plus Router)

user@host> show chassis fabric topology lcc 0
lcc0-re0:

SIB0

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Out-Links:

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LCC00_ST_SIB_L00	-> SFC0_F13_SIB_00	VCSEL Status	HSL2 Channel	HSL2 Status
FPC0_T_SG(0,0,0)_FB_D(04,11)	-> SF_1_00_FB_D(01,11)	OK	12	Up
FPC0_T_SG(0,0,1)_FB_D(04,10)	-> SF_1_00_FB_D(01,10)	OK	12	Up
FPC0_T_SG(0,0,2)_FB_D(04,09)	-> SF_1_00_FB_D(01,09)	OK	12	Up
FPC0_T_SG(0,0,3)_FB_D(04,08)	-> SF_1_00_FB_D(01,08)	OK	12	Up
FPC0_T_SG(0,0,4)_FB_D(04,07)	-> SF_1_00_FB_D(01,07)	OK	12	Up
FPC0_T_SG(0,0,5)_FB_D(04,06)	-> SF_1_00_FB_D(01,06)	OK	12	Up
FPC0_T_SG(0,0,6)_FB_D(04,05)	-> SF_1_00_FB_D(01,05)	OK	12	Up
FPC0_T_SG(0,0,7)_FB_D(04,04)	-> SF_1_00_FB_D(01,04)	OK	12	Up
FPC0_B_SG(0,1,0)_FB_D(03,07)	-> SF_1_10_FB_D(00,07)	OK	15	Up
FPC0_B_SG(0,1,1)_FB_D(03,06)	-> SF_1_10_FB_D(00,06)	OK	15	Up
FPC0_B_SG(0,1,2)_FB_D(03,05)	-> SF_1_10_FB_D(00,05)	OK	15	Up
FPC0_B_SG(0,1,3)_FB_D(03,04)	-> SF_1_10_FB_D(00,04)	OK	15	Up
FPC0_B_SG(0,1,4)_FB_D(03,03)	-> SF_1_10_FB_D(00,03)	OK	15	Up
FPC0_B_SG(0,1,5)_FB_D(03,02)	-> SF_1_10_FB_D(00,02)	OK	15	Up
FPC0_B_SG(0,1,6)_FB_D(03,01)	-> SF_1_10_FB_D(00,01)	OK	15	Up
FPC0_B_SG(0,1,7)_FB_D(03,00)	-> SF_1_10_FB_D(00,00)	OK	15	Up
FPC1_T_SG(0,2,0)_FB_D(05,08)	-> SF_1_02_FB_D(02,08)	OK	18	Up
FPC1_T_SG(0,2,1)_FB_D(05,07)	-> SF_1_02_FB_D(02,07)	OK	18	Up
FPC1_T_SG(0,2,2)_FB_D(05,06)	-> SF_1_02_FB_D(02,06)	OK	18	Up
FPC1_T_SG(0,2,3)_FB_D(05,05)	-> SF_1_02_FB_D(02,05)	OK	18	Up
FPC1_T_SG(0,2,4)_FB_D(05,03)	-> SF_1_02_FB_D(02,03)	OK	18	Up
FPC1_T_SG(0,2,5)_FB_D(05,02)	-> SF_1_02_FB_D(02,02)	OK	18	Up
FPC1_T_SG(0,2,6)_FB_D(05,01)	-> SF_1_02_FB_D(02,01)	HIGH	CUR	18
FPC1_T_SG(0,2,7)_FB_D(05,00)	-> SF_1_02_FB_D(02,00)	OK	18	Up
FPC1_B_SG(0,3,0)_FB_D(04,03)	-> SF_1_11_FB_D(01,03)	OK	21	Up
FPC1_B_SG(0,3,1)_FB_D(04,02)	-> SF_1_11_FB_D(01,02)	OK	21	Up
FPC1_B_SG(0,3,2)_FB_D(04,01)	-> SF_1_11_FB_D(01,01)	OK	21	Up
FPC1_B_SG(0,3,3)_FB_D(04,00)	-> SF_1_11_FB_D(01,00)	OK	21	Up
FPC1_B_SG(0,3,4)_FB_D(03,11)	-> SF_1_11_FB_D(00,11)	OK	21	Up
FPC1_B_SG(0,3,5)_FB_D(03,10)	-> SF_1_11_FB_D(00,10)	OK	21	Up
FPC1_B_SG(0,3,6)_FB_D(03,09)	-> SF_1_11_FB_D(00,09)	OK	21	Up
FPC1_B_SG(0,3,7)_FB_D(03,08)	-> SF_1_11_FB_D(00,08)	OK	21	Up
FPC2_T_SG(1,0,0)_FB_C(10,11)	-> SF_1_04_FB_C(07,11)	OK	12	Up
FPC2_T_SG(1,0,1)_FB_C(10,10)	-> SF_1_04_FB_C(07,10)	OK	12	Up
FPC2_T_SG(1,0,2)_FB_C(10,09)	-> SF_1_04_FB_C(07,09)	OK	12	Up
FPC2_T_SG(1,0,3)_FB_C(10,08)	-> SF_1_04_FB_C(07,08)	OK	12	Up
FPC2_T_SG(1,0,4)_FB_C(10,07)	-> SF_1_04_FB_C(07,07)	OK	12	Up
FPC2_T_SG(1,0,5)_FB_C(10,06)	-> SF_1_04_FB_C(07,06)	OK	12	Up
FPC2_T_SG(1,0,6)_FB_C(10,05)	-> SF_1_04_FB_C(07,05)	OK	12	Up
FPC2_T_SG(1,0,7)_FB_C(10,04)	-> SF_1_04_FB_C(07,04)	OK	12	Up
FPC2_B_SG(1,1,0)_FB_C(09,07)	-> SF_1_14_FB_C(06,07)	OK	15	Up

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FPC2_B_SG(1,1,1)_FB_C(09,06) -> SF_1_14_FB_C(06,06)    OK      15      Up
FPC2_B_SG(1,1,2)_FB_C(09,05) -> SF_1_14_FB_C(06,05)    OK      15      Up
FPC2_B_SG(1,1,3)_FB_C(09,04) -> SF_1_14_FB_C(06,04)    OK      15      Up
FPC2_B_SG(1,1,4)_FB_C(09,03) -> SF_1_14_FB_C(06,03)    OK      15      Up
FPC2_B_SG(1,1,5)_FB_C(09,02) -> SF_1_14_FB_C(06,02)    OK      15      Up
FPC2_B_SG(1,1,6)_FB_C(09,01) -> SF_1_14_FB_C(06,01)    OK      15      Up
FPC2_B_SG(1,1,7)_FB_C(09,00) -> SF_1_14_FB_C(06,00)    OK      15      Up
FPC3_T_SG(1,2,0)_FB_C(11,08) -> SF_1_06_FB_C(08,08)    OK      18      Up
FPC3_T_SG(1,2,1)_FB_C(11,07) -> SF_1_06_FB_C(08,07)    OK      18      Up
FPC3_T_SG(1,2,2)_FB_C(11,06) -> SF_1_06_FB_C(08,06)    OK      18      Up
FPC3_T_SG(1,2,3)_FB_C(11,05) -> SF_1_06_FB_C(08,05)    OK      18      Up
FPC3_T_SG(1,2,4)_FB_C(11,03) -> SF_1_06_FB_C(08,03)    OK      18      Up
FPC3_T_SG(1,2,5)_FB_C(11,02) -> SF_1_06_FB_C(08,02)    OK      18      Up
FPC3_T_SG(1,2,6)_FB_C(11,01) -> SF_1_06_FB_C(08,01)    OK      18      Up
...

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**show chassis fabric
topology (T4000 Core
Router)**

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user@host> show chassis fabric topology 0
fchip (mode)

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In-links	State	Out-links	State
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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

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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

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**show chassis fabric
topology (PTX Series
Packet Transport
Switches)**

```

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 :

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
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 fan

Syntax	show chassis fan
Syntax (MX Series Router)	show chassis fan <all-members> <local> <member <i>member-id</i> >
Syntax (QFabric Switches)	show chassis fan <interconnect-device <i>name</i> >
Release Information	Command introduced in Junos OS Release 10.0 on MX Series 3D Universal Edge Routers, M120 routers, and M320 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 PTX Series Packet Transport Switches. Command introduced in Junos OS Release 12.1 for T4000 routers.
Description	(T Series routers, M120 routers, M320 routers, MX Series 3D Universal Edge Routers, QFX3108 Interconnect devices, EX Series switches, and PTX Series Packet Transport Switches 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 <i>member-id</i> —(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 <i>member-id</i> with a value of 0 or 1.
Required Privilege Level	view
List of Sample Output	show chassis fan on page 300 show chassis fan (QFabric Switches) on page 300 show chassis fan (EX Series Switches) on page 301 show chassis fan (T4000 Core Router) on page 301 show chassis fan (PTX5000 Packet Transport Switch) on page 301
Output Fields	Table 30 on page 299 lists the output fields for the show chassis fan command. Output fields are listed in the approximate order in which they appear.

Table 30: show chassis fan Output Fields

Field Name	Field Description
Item	Fan item identifier.

Table 30: show chassis fan Output Fields (*continued*)

Field Name	Field Description
Status	Status of the fan: <ul style="list-style-type: none"> • 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, MX Series 3D Universal Edge Routers, QFX3108 Interconnect devices, and EX Series switches only) Fan speed in revolutions per minute (RPM).
% RPM	(PTX Series Packet Transport Switches only) Percentage of the fan speed being used.
Measurement	(T Series routers, MX Series 3D Universal Edge Routers, QFX3108 Interconnect devices, and EX Series switches only) Fan speed status based on different chassis cooling requirements: <ul style="list-style-type: none"> • Spinning at high speed • Spinning at intermediate speed • Spinning at normal speed • Spinning at low speed (except EX Series switches) (PTX Series Packet Transport Switches 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
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 user@host> show chassis fan interconnect-device interconnect1
(QFabric Switches) user@host> show chassis fan interconnect1
    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 (EX Series Switches)

```
user@host> show chassis fan
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 (PTX5000 Packet Transport Switch)

```
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 fpc

Syntax	show chassis fpc <detail <slot>> <pic-status <slot>>
Syntax (EX Series Switches)	show chassis fpc <detail <fpc-slot>> <pic-status <fpc-slot>> <fpc-slot>
Syntax (T4000 router)	show chassis fpc <detail <fpc-slot>> <pic-status <fpc-slot>>
Syntax (TX Matrix and TX Matrix Plus Router)	show chassis fpc <detail <fpc-slot>> <pic-status <fpc-slot>> <slot>
Syntax (MX Series Router)	show chassis fpc <detail <slot>> <pic-status <slot>> <all-members> <local> <member <i>member-id</i> >
Syntax (QFX Series)	show chassis fpc <detail> <interconnect-device <i>name</i> <fpc-slot fpc-slot>> <node-device <i>name</i> >
Syntax (PTX Series Packet Transport Switches)	show chassis fpc <detail <fpc-slot>> <pic-status <fpc-slot>> <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 the QFX Series. Command introduced in Junos OS Release 12.1 for PTX Series Packet Transport 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 T1600 routers in the routing matrix.



NOTE: In EX8200 switches, line cards initialize Packet Forwarding Engine during start up. 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
Buffer			DRAM (MB) Heap
0 Empty			
1 Empty			
2 Empty			
3 Empty			
4 Empty			
5 Offline	---	Hard FPC error---	
6 Empty			
7 Online	26	4	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

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 only) (Optional) Display status information for all FPCs on all members of the Virtual Chassis configuration.

interconnect-device *name*—(QFabric switches only) (Optional) Display status information for all FPCs on the Interconnect device.

fpc-slot—(Optional) FPC slot number:

- (TX Matrix and TX Matrix Plus router only)—On a TX Matrix router, if you specify the number of the T640 router (or 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 T1600 router (or 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.
- 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.
- 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.
- QFX Series:
 - QFX3500 switches—Replace *fpc-slot* with 0.
 - QFabric switches—Replace *fpc-slot* with 0 through 31 on the Interconnect device.
- PTX Series Packet Transport Switches:
 - PTX5000 Packet Transport Switch—Replace *fpc-slot* a value from with 0 through 7.

local—(MX Series routers only) (Optional) Display status information for all FPCs on the local Virtual Chassis member.

member *member-id*—(MX Series routers 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 switches 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
```

lcc number—(TX Matrix and TX Matrix Plus router only) (Optional) On a TX Matrix router, display status information for a T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display status information for a T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace **number** with a value from 0 through 3.

Required Privilege Level view

- Related Documentation**
- [request chassis fpc on page 118](#)
 - [show chassis fpc-feb-connectivity](#)
 - [show chassis fabric fpcs on page 256](#)
 - [Configuring the Junos OS to Resynchronize FPC Sequence Numbers with Active FPCs when an FPC Comes Online](#)

- MX960 Flexible PIC Concentrator Description

List of Sample Output	show chassis fpc (EX6210 Switch) on page 309
	show chassis fpc (M10 Router) on page 309
	show chassis fpc (M20 Router) on page 309
	show chassis fpc detail (M Series Routers) on page 310
	show chassis fpc detail (MX80 Router) on page 310
	show chassis fpc (MX240 Router) on page 310
	show chassis fpc (MX480 Router) on page 310
	show chassis fpc (MX480 Router with 100-Gigabit Ethernet CFP) on page 310
	show chassis fpc pic-status (MX480 Router with 100-Gigabit Ethernet CFP) on page 311
	show chassis fpc (MX960 Router) on page 311
	show chassis fpc detail (MX Series Routers) on page 311
	show chassis fpc (Hardware Not Supported) on page 311
	show chassis fpc detail (Hardware Not Supported) on page 312
	show chassis fpc pic-status on page 312
	show chassis fpc pic-status (M Series Routers) on page 312
	show chassis fpc pic-status (M120 Router) on page 313
	show chassis fpc lcc (TX Matrix Router) on page 313
	show chassis fpc pic-status (TX Matrix Router) on page 313
	show chassis fpc pic-status lcc (TX Matrix Router) on page 314
	show chassis fpc (TX Matrix Plus Router) on page 314
	show chassis fpc lcc (TX Matrix Plus Router) on page 314
	show chassis fpc detail (TX Matrix Plus Router) on page 315
	show chassis fpc pic-status (TX Matrix Plus Router) on page 317
	show chassis fpc (T1600 Router) on page 318
	show chassis fpc detail (T1600 Router) on page 318
	show chassis fpc slot (T1600 Router) on page 319
	show chassis fpc pic-status (T1600 Router) on page 319
	show chassis fpc (T4000 Router) on page 319
	show chassis fpc detail (T4000 Router) on page 319
	show chassis fpc pic-status (T4000 Router) on page 320
	show chassis fpc (QFX Series) on page 320
	show chassis fpc detail (QFX3500 Switches) on page 320
	show chassis fpc pic-status (QFX3500 Switches) on page 320
	show chassis fpc interconnect-device (QFabric Switch) on page 320
	show chassis fpc interconnect-device (QFabric Switch) on page 321
	show chassis fpc interconnect-device detail (QFabric Switch) on page 321
	show chassis fpc pic-status interconnect-device (QFabric Switch) on page 321
	show chassis fpc pic-status node-device (QFabric Switch) on page 322
	show chassis fpc (PTX5000 Packet Transport Switch) on page 322
	show chassis fpc detail (PTX5000 Packet Transport Switch) on page 322
	show chassis fpc pic-status (PTX5000 Packet Transport Switch) on page 323

Output Fields [Table 31 on page 308](#) lists the output fields for the **show chassis fpc** command. Output fields are listed in the approximate order in which they appear.

Table 31: 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: <ul style="list-style-type: none"> • 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. • Probe-wait—Waiting to be probed. 	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
Temperature (PTX Series)	On, PTX Series Packet Transport Switches, temperature details are provided in degrees Celsius and Fahrenheit. Output includes: <ul style="list-style-type: none"> • 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 (TLn)—Temperature of the specified Lookup ASIC (TL) of the packet forwarding engine on the FPC. • Temperature (TQn)—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
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).	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

Table 31: show chassis fpc Output Fields (*continued*)

Field Name	Field Description	Level of Output
Total RDRAM	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
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

Sample Output

```

show chassis fpc user@switch> show chassis fpc
(EX6210 Switch)
Slot State      Temp  CPU Utilization (%)  Memory  Utilization (%)
              (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 (M10 user@host> show chassis fpc
Router)
FPC status:
              Temp
Slot State   (C)
0 Online    27
1 Online    28

show chassis fpc (M20 user@host> show chassis fpc
Router)
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 user@host> show chassis fpc detail 1
(M Series Routers) 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 user@host> show chassis fpc detail
(MX80 Router) Slot 0 information:
State Online
Temperature 47 degrees C / 116 degrees F
Total CPU DRAM 1024 MB
Total SRAM 331 MB
Total SDRAM 1280 MB
Start time 2010-02-08 12:25:33 PST
Uptime 2 hours, 13 minutes, 19 seconds
Slot 1 information:
State Online
Temperature 47 degrees C / 116 degrees F
Total CPU DRAM 1024 MB
Total SRAM 331 MB
Total SDRAM 1280 MB
Start time 2010-02-08 12:25:33 PST
Uptime 2 hours, 13 minutes, 19 seconds

```

```

show chassis fpc user@host> show chassis fpc
(MX240 Router)

```

Slot	State	Temp (C)	CPU Utilization (%)	Memory Utilization (%)
			Total	DRAM (MB) Heap Buffer
0	Empty			
1	Online	34	6	0
2	Online	33	9	0

```

show chassis fpc user@host> show chassis fpc
(MX480 Router)

```

Slot	State	Temp (C)	CPU Utilization (%)	Memory Utilization (%)
			Total	DRAM (MB) Heap Buffer
0	Empty			
1	Online	36	9	0
2	Empty			
3	Empty			
4	Empty			
5	Empty			

```

show chassis fpc user@host> show chassis fpc
(MX480 Router with 100-Gigabit Ethernet CFP)

```

Slot	State	Temp (C)	CPU Utilization (%)	Memory Utilization (%)
			Total	DRAM (MB) Heap Buffer
0	Online	33	4	0
1	Online	36	7	0
2	Online	29	6	0
3	Online	33	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 (MX960 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 Empty
3 Online    25    19         0    1024    15    57
4 Empty
5 Online    26    27         0    1024    15    57
6 Empty
7 Empty
8 Empty
9 Empty
10 Empty
11 Empty

```

```

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 RDRAM 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 (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 user@host> show chassis fpc detail
(Hardware Not Supported) 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 user@host> show chassis fpc pic-status
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 user@host> show chassis fpc pic-status
pic-status (M Series Routers) 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 lcc (TX Matrix Router)
user@host> show chassis fpc lcc 0
lcc0-re0:
-----
Slot State      Temp CPU      Utilization (%) Memory Utilization (%)
      (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 user@host> **show chassis fpc pic-status lcc 0**
pic-status lcc (TX lcc0-re0:
Matrix Router)

```

-----
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 user@host> **show chassis fpc**
Matrix Plus Router) lcc0-re0:

```

-----
Slot State      Temp  CPU Utilization (%)  Memory  Utilization (%)
              (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:

```

-----
Slot State      Temp  CPU Utilization (%)  Memory  Utilization (%)
              (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:

```

-----
Slot State      Temp  CPU Utilization (%)  Memory  Utilization (%)
              (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 user@host> **show chassis fpc lcc 0**
(TX Matrix Plus lcc0-re0:
Router)

```

-----
Slot State      Temp  CPU Utilization (%)  Memory  Utilization (%)
              (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
```

```
1cc0-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

```

```
1cc2-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

```

```
1cc3-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

```

Slot	State	Temp (C)	CPU Utilization (%) Total Interrupt	Memory DRAM (MB)	Utilization (%) 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 slot user@host> **show chassis fpc slot 2**
(T1600 Router)

Slot	State	Temp (C)	CPU Utilization (%) Total Interrupt	Memory DRAM (MB)	Utilization (%) Heap Buffer
2	Online	49	3 0	2048	3 24

show chassis fpc user@host> **show chassis fpc pic-status**
pic-status (T1600
Router)

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 user@host> **show chassis fpc**
(T4000 Router)

```
regress@stymphalian# run show chassis fpc
```

Slot	State	Temp (C)	CPU Utilization (%) Total Interrupt	Memory DRAM (MB)	Utilization (%) 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 user@host> **show chassis fpc detail**
(T4000 Router)

```
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)
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 Switch)
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 user@switch> show chassis fpc interconnect-device interconnect1 3
interconnect-device FPC status:
(QFabric Switch) Slot State Temp
                   (C)
                   3 Online 0

show chassis fpc user@switch> show chassis fpc interconnect-device interconnect1 3 detail
interconnect-device Slot 3 information:
detail (QFabric Switch) 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 user@switch> show chassis fpc pic-status interconnect-device interconnect1
pic-status Slot 0 Online QFX 16-port QSFP+ Front Card
interconnect-device PIC 0 Online 16x 40G-QSFP+
(QFabric Switch) 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    user@switch> show chassis fpc pic-status node-device node1
pic-status node-device
(QFabric Switch)   Slot node1 Online      QFX 48x10G 4x40G Switch
                   PIC 0 Online       48x 10G-SFP+
                   PIC 1 Online       4x 40G-QSFP+

show chassis fpc    user@host> show chassis fpc
(PTX5000 Packet    Temp CPU Utilization (%) Memory Utilization (%)
Transport Switch)   (C) Total Interrupt DRAM (MB) Heap Buffer

Slot State
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 user@host> show chassis fpc detail
(PTX5000 Packet      Slot 2 information:
Transport Switch)    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 user@host> show chassis fpc pic-status
pic-status (PTX5000
Packet Transport
Switch)
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 hardware

Syntax	show chassis hardware <detail extensive> <clei-models> <models>
Syntax (EX Series)	show chassis hardware <clei-models> <detail extensive> <models>
Syntax (T4000 Router)	show chassis hardware <clei-models> <detail extensive> <models>
Syntax (TX Matrix Router)	show chassis hardware <clei-models> <detail extensive> <models> <lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show chassis hardware <clei-models> <detail extensive> <models> <lcc <i>number</i> sfc <i>number</i> >
Syntax (MX Series Router)	show chassis hardware <detail extensive> <clei-models> <models> <all-members> <local> <member <i>member-id</i> >
Syntax (QFX Series)	show chassis hardware <detail extensive> <clei-models> <interconnect-device <i>name</i> > <node-device <i>name</i> > <models>
Syntax (PTX Series Packet Transport Switches)	show chassis hardware <clei-models> <detail extensive> <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 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 12.1 for the PTX Series Packet Transport Switches.

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 a QFX3500 standalone switch, both the FPC and FPC **number** are always 0.

On Type 5 FPC on T4000 routers, there are no **top temperature sensor** or **bottom temperature sensor** parameters. Instead, **fan intake temperature sensor** and **fan exhaust temperature sensors** parameters are displayed.

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 T1600 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 switches only) (Optional) Display hardware-specific information for the Interconnect device.

lcc number—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display hardware 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 hardware information for a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace **number** with a value from 0 through 3.

local—(MX Series routers only) (Optional) Display hardware-specific information for the local Virtual Chassis members.

member *member-id*—(MX Series routers only) (Optional) Display hardware-specific information for the specified member of the Virtual Chassis configuration. Replace *member-id* with a value of 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 switches only) (Optional) Display hardware-specific information for the Node device.

scc—(TX Matrix router only) (Optional) Display hardware information for the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus router only) (Optional) Display hardware information for the TX Matrix Plus router (or switch-fabric chassis). Replace *number* with 0.

Additional Information The **show chassis hardware detail** command now displays DIMM information for the following Routing Engines:

Table 32: 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

Required Privilege Level view

Related Documentation • [show chassis power on page 386](#)

List of Sample Output

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- [show chassis hardware clei-models \(EX8216 Switch\) on page 331](#)
- [show chassis hardware clei-models \(T1600 Router\) on page 332](#)
- [show chassis hardware detail \(EX4200 Switch\) on page 332](#)
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[show chassis hardware \(16-Port 10-Gigabit Ethernet MPC with SFP+ Optics \[MX Series Routers\]\) on page 377](#)
[show chassis hardware \(MPC3E \[MX Series Routers\]\) on page 378](#)
[show chassis hardware \(QFX3500 Switches\) on page 379](#)
[show chassis hardware detail \(QFX3500 Switches\) on page 379](#)
[show chassis hardware models \(QFX3500 Switches\) on page 380](#)
[show chassis hardware clei-models \(QFX3500 Switches\) on page 380](#)
[show chassis hardware interconnect-device \(QFabric Switches\) on page 381](#)
[show chassis hardware node-device \(QFabric Switches\) on page 381](#)
[show chassis hardware \(PTX5000 Packet Transport Switch\) on page 381](#)
[show chassis hardware clei-models \(PTX5000 Packet Transport Switch\) on page 382](#)
[show chassis hardware detail \(PTX5000 Packet Transport Switch\) on page 383](#)

[show chassis hardware models \(PTX5000 Packet Transport Switch\) on page 384](#)
[show chassis hardware extensive \(PTX5000 Packet Transport Switch\) on page 385](#)

Output Fields [Table 33 on page 328](#) lists the output fields for the **show chassis hardware** command. Output fields are listed in the approximate order in which they appear.

Table 33: show chassis hardware Output Fields

Field Name	Field Description	Level of Output
Item	Chassis component: <ul style="list-style-type: none"> (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. See EX Series Switches Hardware and CLI Terminology Mapping. (MX Series routers)—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). (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, 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). 	All levels
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 or switch 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

Table 33: show chassis hardware Output Fields (*continued*)

Field Name	Field Description	Level of Output
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	<p>Brief description of the hardware item:</p> <ul style="list-style-type: none"> • 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. • Type of FPC: FPC Type 1, FPC Type 2, FPC Type 3, FPC Type 4, or FPC TypeOC192. <p>On EX Series switches, a brief description of the FPC.</p> <p>On the J Series routers, the FPC type corresponds to the Physical Interface Module (PIM). The following list shows the PIM abbreviation in the output and the corresponding PIM name.</p> <ul style="list-style-type: none"> • 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) • 4x GE Base PIC—Four built-in Gigabit Ethernet ports on a J4350 or J6350 chassis (fixed PIM) • 2x Serial—Dual-port serial PIM • 2x T1—Dual-port T1 PIM • 2x E1—Dual-port E1 PIM • 2x CTIE1—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) 	All levels

Table 33: show chassis hardware Output Fields (*continued*)

Field Name	Field Description	Level of Output
	<ul style="list-style-type: none"> • 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, 4x FXO, 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 • MPC M16x10GE—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). • 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). • LCD description for MX Series routers 	

Sample Output

```

user@host> show chassis hardware
show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis       REV 06   710-016845   CY0109220035   EX8216
Midplane      REV 06   710-016845   BA0909120112   EX8216-MP
CB 0          REV 22   710-020771   AX0109197723   EX8216-RE320
CB 1          REV 22   710-020771   AX0109197726   EX8216-RE320
Routing Engine 1    BUILTIN   BUILTIN       RE-EX8216
FPC 3         REV 19   710-020683   BC0109083125   EX8200-48F
CPU           REV 13   710-020598   BF0109144549   EX8200-CPU
FPC 4         REV 17   710-020683   BC0108500127   EX8200-48F
CPU           REV 10   710-020598   BF0108460510   EX8200-CPU
PIC 0         BUILTIN   BUILTIN       48x 100 Base-QFX/1000
Base-X
Xcvr 1        REV 01   740-011613   PE70V89        SFP-SX
Xcvr 11       REV 01   740-011613   PE70YCE        SFP-SX
Xcvr 12       REV 01   740-011613   PE70VSH        SFP-SX
Xcvr 13       REV 01   740-011613   E08C02063     SFP-SX

```

Xcvr 14	REV 01	740-011613	PE70VKU	SFP-SX
Xcvr 15	REV 01	740-011613	E08E03372	SFP-SX
Xcvr 21	REV 01	740-011613	PE70VAD	SFP-SX
Xcvr 22	REV 01	740-011613	E08E01228	SFP-SX
Xcvr 23	REV 01	740-011613	PE70VSL	SFP-SX
Xcvr 24	REV 01	740-011613	E08E03409	SFP-SX
Xcvr 25	REV 01	740-011613	PE70VL4	SFP-SX
Xcvr 26	REV 01	740-011613	PDQ4L2Z	SFP-SX
Xcvr 27	REV 01	740-011613	PE70WFK	SFP-SX
Xcvr 28	REV 01	740-011782	PBD2B5U	SFP-SX
Xcvr 29	REV 01	740-011613	PE70UQX	SFP-SX
Xcvr 30	REV 01	740-011613	PE70VL5	SFP-SX
Xcvr 31	REV 01	740-011613	PE70V0F	SFP-SX
Xcvr 32	REV 01	740-011613	E08C02052	SFP-SX
Xcvr 33	REV 01	740-011613	E08C02197	SFP-SX
Xcvr 34	REV 01	740-011613	PE70V0L	SFP-SX
Xcvr 35	REV 01	740-011613	E08E03390	SFP-SX
Xcvr 36	REV 01	740-011613	PDQ4VL9	SFP-SX
Xcvr 37	REV 01	740-011613	E08E03370	SFP-SX
Xcvr 38	REV 01	740-011613	E08E03362	SFP-SX
Xcvr 39	REV 01	740-011613	E08C02065	SFP-SX
Xcvr 40	REV 01	740-011613	E08E03405	SFP-SX
Xcvr 41	REV 01	740-011613	E08E03411	SFP-SX
Xcvr 43	REV 01	740-011613	E08C02171	SFP-SX
Xcvr 45	REV 01	740-011613	E08E03410	SFP-SX
FPC 13	REV 16	710-016837	BB0109051344	EX8200-8XS
CPU				
SIB 0	REV 10	710-021613	AY0109166244	EX8216-SF320
SIB 1	REV 10	710-021613	AY0109166357	EX8216-SF320
SIB 2	REV 10	710-021613	AY0109166362	EX8216-SF320
SIB 3	REV 10	710-021613	AY0109166338	EX8216-SF320
SIB 4	REV 10	710-021613	AY0109166350	EX8216-SF320
SIB 5	REV 10	710-021613	AY0109166365	EX8216-SF320
SIB 6	REV 10	710-021613	AY0109166361	EX8216-SF320
SIB 7	REV 10	710-021613	AY0109166399	EX8216-SF320
PSU 0	REV 17	740-021466	BG0709170003	EX8200-AC2K
PSU 1	REV 17	740-021466	BG0709170004	EX8200-AC2K
PSU 2	REV 17	740-021466	BG0709170020	EX8200-AC2K
PSU 3	REV 17	740-021466	BG0709170017	EX8200-AC2K
PSU 4	REV 17	740-021466	BG0709170008	EX8200-AC2K
PSU 5	REV 17	740-021466	BG0709170018	EX8200-AC2K
Top Fan Tray				
FTC 0	REV 4	760-022620	CX1209140212	EX8216-FT
FTC 1	REV 4	760-022620	CX1209140212	EX8216-FT
Bottom Fan Tray				
FTC 0	REV 4	760-022620	CX1209140211	EX8216-FT
FTC 1	REV 4	760-022620	CX1209140211	EX8216-FT
LCD 0	REV 04	710-025742	CE0109186919	EX8200 LCD

show chassis hardware user@host> **show chassis hardware clei-models**

clei-models (EX8216 Switch)

Hardware inventory:

Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 08	710-016845		
PSU 0	REV 05	740-023002	COUPAEAEAA	EX8200-PWR-AC3KR
PSU 1	REV 05	740-023002	COUPAEAEAA	EX8200-PWR-AC3KR
PSU 2	REV 05	740-023002	COUPAEAEAA	EX8200-PWR-AC3KR
PSU 3	REV 05	740-023002	COUPAEAEAA	EX8200-PWR-AC3KR
PSU 4	REV 05	740-023002	COUPAEAEAA	EX8200-PWR-AC3KR
PSU 5	REV 05	740-023002	COUPAEAEAA	EX8200-PWR-AC3KR

Top Fan Tray
Bottom Fan Tray

**show chassis hardware
clei-models (T1600
Router)**

user@host> show chassis hardware clei-models

Hardware inventory:

Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 03	710-005608		CHAS-BP-T640-S
FPM Display	REV 05	710-002897		CRAFT-T640-S
CIP	REV 06	710-002895		CIP-L-T640-S
PEM 0	Rev 07	740-017906	IPUPAC7KTA	PWR-T1600-3-80-DC-S
PEM 1	Rev 18	740-002595		PWR-T-DC-S
SCG 0	REV 15	710-003423		SCG-T-S
Routing Engine 0	REV 08	740-014082		RE-A-2000-4096-S
Routing Engine 1	REV 07	740-014082		RE-A-2000-4096-S
CB 0	REV 05	710-007655		CB-T-S
CB 1	REV 03	710-017707		CB-T-S
FPC 0	REV 07	710-013558		T640-FPC2-E2
PIC 0	REV 01	750-010618		PB-4GE-SFP
PIC 1	REV 06	750-001900		PB-10C48-SON-SMSR
PIC 2	REV 14	750-001901		PB-40C12-SON-SMIR
PIC 3	REV 07	750-001900		PB-10C48-SON-SMSR
FPC 1	REV 06	710-013553		T640-FPC1-E2
PIC 0	REV 08	750-001072		P-1GE-SX
PIC 1	REV 10	750-012266		PB-4GE-TYPE1-SFP-IQ2
PIC 2	REV 22	750-005634		PB-1CHOC12SMIR-QPP
FPC 2				
PIC 0	REV 16	750-007141		PC-10GE-SFP
PIC 1	REV 06	750-015217		PC-8GE-TYPE3-SFP-IQ2
PIC 2	REV 05	750-004695		PC-TUNNEL
PIC 3	REV 17	750-009553		PC-40C48-SON-SFP
FPC 3	REV 01	710-010154		T640-FPC3-E
PIC 0	REV 07	750-012793		PC-1XGE-TYPE3-XFP-IQ2
PIC 1	REV 25	750-007141		PC-10GE-SFP
PIC 2	REV 17	750-009553		PC-40C48-SON-SFP
PIC 3	REV 32	750-003700		PC-10C192-SON-VSR
FPC 4	REV 16	710-013037		T1600-FPC4-ES
PIC 1	REV 06	750-034781		PD-1CE-CFP
FPC 5	REV 02	710-013037		T1600-FPC4-ES
PIC 0	REV 16	750-012518		PD-40C192-SON-XFP
PIC 1	REV 01	750-010850		PD-10C768-SON-SR
FPC 6	REV 14	710-013037		T1600-FPC4-ES
PIC 0	REV 11	750-017405		PD-4XGE-XFP
PIC 1	REV 13	750-017405		PD-4XGE-XFP
FPC 7	REV 09	710-007529		T640-FPC3
PIC 0	REV 10	750-012793		PC-1XGE-TYPE3-XFP-IQ2
PIC 1	REV 01	750-015217		PC-8GE-TYPE3-SFP-IQ2
PIC 2	REV 01	750-015217		PC-8GE-TYPE3-SFP-IQ2
PIC 3	REV 15	750-009450		PC-10C192-SON-SR2
SIB 0	REV 07	710-013074		SIB-I-T1600-S
SIB 1	REV 07	710-013074		SIB-I-T1600-S
SIB 2	REV 07	710-013074		SIB-I-T1600-S
SIB 3	REV 07	710-013074		SIB-I-T1600-S
SIB 4	REV 07	710-013074		SIB-I-T1600-S
Fan Tray 0				FANTRAY-T-S
Fan Tray 1				FANTRAY-T-S
Fan Tray 2				FAN-REAR-TX-T640-S

**show chassis hardware
detail (EX4200
Switch)**

user@host> show chassis hardware detail

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			BM0208327733	EX4200-24T

Routing Engine 0	REV 11	750-021256	BM0208327733	EX4200-24T, 8 POE
Routing Engine 0			BM0208327733	EX4200-24T, 8 POE
FPC 0	REV 11	750-021256	BM0208327733	EX4200-24T, 8 POE
CPU		BUILTIN	BUILTIN	FPC CPU
PIC 0		BUILTIN	BUILTIN	24x 10/100/1000 Base-T
PIC 1	REV 03B	711-021270	AR0208162285	4x GE SFP
BRD	REV 08	711-021264	AK0208328289	EX4200-24T, 8 POE
Power Supply 0	REV 03	740-020957	AT0508346354	PS 320W AC
Fan Tray				Fan Tray

show chassis hardware user@host> **show chassis hardware models**

models (EX4500

Switch)

Hardware inventory:

Item	Version	Part number	Serial number	FRU model number
Routing Engine 0	REV 01	750-035700	GG0210271867	EX4500-40F-FB-C
FPC 0	REV 01	750-035700	GG0210271867	EX4500-40F-FB-C
PIC 0		BUILTIN	BUILTIN	EX4500-40F-FB-C
Power Supply 1	REV 01	740-029654	H884FS00JC09	EX4500-PWR1-AC-FB

show chassis hardware user@host> **show chassis hardware**

(J6350 Router)

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN1090E07ADB	JSR6350
Midplane	REV 03	710-014593	NP1265	
System IO	REV 01	710-016210	NN9950	JX350 System IO
Crypto Module				Crypto Acceleration
Routing Engine	REV 08	710-015273	NM6509	RE-J6350-3400
ad0	248 MB	256MB	CKS	00102006C24A00000039 Compact
Flash				
FPC 0				FPC
PIC 0				4x GE Base PIC
FPC 1	REV 06	750-010355	AI07030023	FPC
PIC 0				2x T1
FPC 3	REV 06	750-011148	AJ06520151	FPC
PIC 0				2x E1
FPC 6	REV 06	750-013492	NC4170	FPC
PIC 0				4x FE
Power Supply 0				

show chassis hardware user@host> **show chassis hardware**

(J6300 Router)

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN000164AB	J6300
Midplane	REV 02.04	710-010001	CORE99570	
System IO	REV 02.00	710-010003	CORE100848	System IO board
Routing Engine	RevX2.6	750-010006	IWGS40735390	RE-J.3
FPC 0				FPC
PIC 0				2x FE
FPC 1	RevX2.0	750-011380	N3960005	FPC
PIC 0				1xADSL pic Annex A
FPC 2	RevX2.0	750-011380	N3960002	FPC
PIC 0				1xADSL pic Annex B
FPC 3	REV 03	750-010354	N0780028	FPC
PIC 0				1x T3

show chassis hardware user@host> **show chassis hardware**

(M7i Router)

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			31959	M7i
Midplane	REV 02	710-008761	CA0209	M7i Midplane
Power Supply 0	Rev 04	740-008537	PD10272	AC Power Supply

Routing Engine	REV 01	740-008846	1000396803	RE-5.0
CFEB	REV 02	750-009492	CA0166	Internet Processor IIv1
FPC 0				E-FPC
PIC 0	REV 04	750-003163	HJ6416	1x G/E, 1000 BASE-SX
PIC 1	REV 04	750-003163	HJ6423	1x G/E, 1000 BASE-SX
PIC 2	REV 04	750-003163	HJ6421	1x G/E, 1000 BASE-SX
PIC 3	REV 02	750-003163	HJ0425	1x G/E, 1000 BASE-SX
FPC 1				E-FPC
PIC 2	REV 01	750-009487	HM2275	ASP - Integrated
PIC 3	REV 01	750-009098	CA0142	2x F/E, 100 BASE-TX

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			B1157	M7i
Midplane	REV 05	710-008761	DM0840	M7i Midplane
Power Supply 0	Rev 08	740-008537	TE53755	AC Power Supply
Routing Engine	REV 07	740-011202	1000736567	RE-850
CFEB	REV 09	750-010463	DK6952	Internet Processor II
FPC 0				E-FPC
PIC 0	REV 12	750-012838	DL7993	4x 1GE(LAN), IQ2
Xcvr 0	REV 01	740-011614	PD94TDJ	SFP-LX10
Xcvr 1	REV 01	740-011615	PAD5EER	UNSUPPORTED
Xcvr 2	REV 01	740-011614	PD94THU	SFP-LX10
Xcvr 3		NON-JNPR	PDC2E7A	SFP-LX10
PIC 1	REV 03	750-023116	JT0203	4x CHSTM1 SDH CE SFP
Xcvr 0	REV 01	740-012434	AGT063832PS	SFP-SR
Xcvr 1	REV 01	740-012434	AGT063832LY	SFP-SR
Xcvr 3	REV 01	740-016064	C06J19018	SFP-LR
PIC 2	REV 15	750-014895	DM5757	MultiServices 100
PIC 3	REV 01	750-025390	JW9448	12x T1/E1 CE
FPC 1				E-FPC
PIC 2		BUILTIN	BUILTIN	1x Tunnel
PIC 3	REV 09	750-009099	DM0899	1x G/E, 1000 BASE
Xcvr 0	REV 01	740-012434	AGT07150HGJ	UNSUPPORTED
Fan Tray				Rear Fan Tray

show chassis hardware
(M10 Router)

user@host> show chassis hardware				
Hardware inventory:				
Item	Version	Part number	Serial number	Description
Chassis			1122	M10
Midplane	REV 1.1	710-001950	S/N AC6626	
Power supply A	Rev 01	740-002497	S/N LC36095	AC
Power supply B	Rev 01	740-002497	S/N LC36100	AC
Display	REV 1.2	710-001995	S/N AC6656	
Host			18000005dfb3fb01	teknor
FEB	REV 01	710-001948	S/N AC6632	Internet Processor II
FPC 0				
PIC 0	REV 08	750-001072	S/N AB2485	1x G/E, 1000 BASE-SX
PIC 1	REV 01	750-000613	S/N AA1048	1x OC-12 SONET, SMIR
FPC 1				
Fan Tray 0				FANTRAY-M10I-S
Fan Tray 1				FANTRAY-M10I-S

show chassis hardware
models (M10 Router)

user@host> show chassis hardware models				
Hardware inventory:				
Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 04	710-008920		CHAS-MP-M10i-S
Power Supply 0	Rev 06	740-008537		PWR-M10i-M7i-AC-S
Power Supply 1	Rev 06	740-008537		PWR-M10i-M7i-AC-S
HCM 0	REV 03	710-010580		HCM-M10i-S
HCM 1	REV 03	710-010580		HCM-M10i-S

Routing Engine 0	REV 09	740-009459	RE-400-256-S
CFEB 0	REV 05	750-010465	FEB-M10i-M7i-S
FPC 0			
PIC 0	REV 10	750-002971	PE-40C3-SON-MM
PIC 1	REV 11	750-002992	PE-4FE-TX
PIC 2	REV 03	750-002977	PE-20C3-ATM-MM
PIC 3	REV 08	750-005724	PE-20C3-ATM2-MM
FPC 1			
PIC 2	REV 12	750-008425	PE-AS
PIC 3	REV 13	750-005636	PE-4CHDS3-QPP
Fan Tray 0			FANTRAY-M10I-S
Fan Tray 1			FANTRAY-M10I-S

show chassis hardware user@host> **show chassis hardware**
(M20 Router) Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			20033	M20
Backplane	REV 07	710-001517	S/N AA7940	
Power supply B	Rev 01	740-001465	S/N 000001	AC
Display	REV 02	710-001519	S/N AA9704	
Host 0			98000004f8f27501	teknor
SSB slot 0	REV 01	710-001951	S/N AD5905	Internet Processor II
SSRAM bank 0	REV 01	710-001385	S00480	2 MB
SSRAM bank 1	REV 01	710-001385	S00490	2 MB
SSRAM bank 2	REV 01	710-001385	S001:?	2 MB
SSRAM bank 3	REV 01	710-001385	S00483	2 MB
SSB slot 1	N/A	N/A	N/A	Backup
FPC 1	REV 01	710-001292	S/N AB7528	
SSRAM	REV 01	710-000077	S/N 304209	1 MB
SDRAM bank 0	REV 01	710-000099	S/N 000603	64 MB
SDRAM bank 1	REV 01	710-000099	S/N 000414	64 MB
PIC 0	REV 03	750-000612	S/N AB8433	2x OC-3 ATM, MM
PIC 1	REV 01	750-000616	S/N AA1168	1x OC-12 ATM, MM
PIC 2	REV 01	750-000613	S/N AA1008	1x OC-12 SONET, SMIR
PIC 3	REV 01	750-002501	S/N AD5810	4x E3
FPC 2	REV 01	710-001292	S/N AC0119	
SSRAM	REV 01	710-000077	S/N 503241	1 MB
SDRAM bank 0	REV 01	710-000099	S/N 306835	64 MB
SDRAM bank 1	REV 01	710-000099	S/N 306832	64 MB
Fan Tray 0				Front Upper Fan Tray
Fan Tray 1				Front Middle Fan Tray
Fan Tray 2				Front Bottom Fan Tray
Fan Tray 3				Rear Fan Tray

show chassis hardware user@host> **show chassis hardware models**
models (M20 Router) Hardware inventory:

Item	Version	Part number	CLEI code	FRU model number
Backplane	REV 03	710-002334		CHAS-MP-M20-S
Power Supply A	REV 06	740-001465		PWR-M20-AC-S
Display	REV 04	710-001519		CRAFT-M20-S
Routing Engine 0	REV 06	740-003239		RE-333-768-S
Routing Engine 1	REV 06	740-003239		RE-333-768-S
SSB 0	REV 02	710-001951		SSB-E-M20
SSB 1	N/A	N/A		
FPC 0	REV 03	710-003308		FPC-E
PIC 0	REV 08	750-002303		P-4FE-TX
PIC 1	REV 07	750-004745		P-2MCDS3
PIC 2	REV 03	750-002965		PE-4CHDS3
FPC 1	REV 03	710-003308		FPC-E
PIC 0	REV 03	750-002914		P-20C3-ATM-MM
Fan Tray 0				FANTRAY-F-M20-S

```

Fan Tray 1
Fan Tray 2
Fan Tray 3
FANTRAY-F-M20-S
FANTRAY-F-M20-S
FANTRAY-R-M20-S

```

show chassis hardware
(M40 Router)

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user@host> show chassis hardware
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Hardware inventory:
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Item	Version	Part number	Serial number	Description
Backplane	REV 02	710-000073	S/N AA0053	
Power supply A	Rev 2	740-000235	S/N 000042	DC
Maxicab	REV X1	710-000229	S/N AA0139	
Minicab	REV X1	710-000482	S/N AA0201	
Display	REV 06	710-000150	S/N AA0905	
Host				cpv5000
SCB	REV X1	710-000075	S/N AA0158	Internet Processor I
SSRAM bank 0	REV 02	710-000077	S/N AA2267	1 MB
SSRAM bank 1	REV 02	710-000077	S/N AA2270	1 MB
SSRAM bank 2	REV 02	710-000077	S/N AA2269	1 MB
SSRAM bank 3	REV 02	710-000077	S/N AA2268	1 MB
FPC 0	REV 01	710-000175	S/N AA0048	
SSRAM	REV 01	710-000077	S/N AA2333	1 MB
SDRAM bank 0	REV 01	710-000099	S/N AA2332	64 MB
SDRAM bank 1	REV X1	710-000099	S/N AA2337	64 MB
PIC 0	REV 04	750-000613	S/N aa0343	1x OC-12 SONET, SMIR
PIC 1	REV 04	750-000613	S/N AA0379	1x OC-12 SONET, SMIR
PIC 2	REV 04	750-000613	S/N AA0377	1x OC-12 SONET, SMIR
PIC 3	REV 04	750-000613	S/N AA0378	1x Tunnel
FPC 2	REV 01	710-000175	S/N AA0042	
SSRAM	REV 02	710-000077	S/N AA2288	1 MB
SDRAM bank 0	REV 01	710-000099	S/N AA2331	64 MB
SDRAM bank 1	REV 01	710-000099	S/N AA2330	64 MB
PIC 0	REV X1	750-000603	S/N AA0143	4x OC-3 SONET, SMIR
PIC 1	REV X1	750-000615	S/N AA0149	4x OC-3 SONET, MM
PIC 2	REV X1	750-000611	S/N AA0148	4x OC-3 SONET, MM
PIC 3	REV 04	750-000613	S/N AA0330	1x OC-12 SONET, SMIR
FPC 4	REV 01	710-000175	S/N AA0050	
SSRAM	REV 01	710-000077	S/N AA2327	1 MB
SDRAM bank 0	REV 01	710-000099	S/N AA2329	64 MB
SDRAM bank 1	REV 01	710-000099	S/N AA2328	64 MB
PIC 0	REV 04	750-000613	S/N AA0320	1x OC-12 SONET, SMIR
PIC 2	REV 05	750-000616	S/N AA1341	1x OC-12 ATM, MM
PIC 3	REV 08	750-001072	S/N AB2462	1x G/E, 1000 BASE-SX
FPC 5	REV 10	710-000175	S/N AA7663	
SSRAM	REV 01	710-000077	S/N 501590	1 MB
SDRAM bank 0	REV 01	710-000099	S/N 300949	64 MB
SDRAM bank 1	REV 01	710-000099	S/N 300868	64 MB
PIC 1	REV 01	750-001323	S/N AB1670	1x Tunnel

show chassis hardware
(M40e Router)

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user@host> show chassis hardware
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Hardware inventory:
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Item	Version	Part number	Serial number	Description
Chassis				m40e
Midplane	REV 01	710-005071	AX3671	
FPM CMB	REV 03	710-001642	AR9074	
FPM Display	REV 03	710-001647	AR7331	
CIP	REV 04	710-002649	BB4449	
PEM 0	Rev 01	740-003787	MC12364	Power Entry Module
PEM 1	Rev 01	740-003787	MC12383	Power Entry Module
PCG 0	REV 07	710-001568	AG1332	
PCG 1	REV 07	710-001568	AR3789	
Host 0			3e000007c8176601	Present
MCS 0	REV 11	710-001226	AN5813	

SFM 0 SPP	REV 07	710-001228	AG4676	
SFM 0 SPR	REV 05	710-002189	AE4735	Internet Processor II
SFM 1 SPP	REV 07	710-001228	AP1347	
SFM 1 SPR	REV 05	710-002189	BE0063	Internet Processor II
FPC 0	REV 01	710-011725	BE0669	M40e-EP-FPC Type 1
CPU	REV 01	710-004600	BD9504	
PIC 0	REV 03	750-003737	AY3991	4x G/E, 1000 BASE-SX
FPC 1	REV 01	710-005197	BD9842	M40e-FPC Type 2
CPU	REV 01	710-004600	BB4869	
PIC 0	REV 07	750-001900	AR8278	1x OC-48 SONET, SMSR
FPC 2	REV 02	710-005197	BD9824	M40e-FPC Type 2
CPU	REV 01	710-004600	BD9531	
PIC 0	REV 03	750-003737	AY3986	4x G/E, 1000 BASE-SX
FPC 4	REV 02	710-005078	BE0664	M40e-FPC Type 1
CPU	REV 01	710-004600	BD9559	
PIC 0	REV 03	750-001894	AG7963	1x G/E, 1000 BASE-SX
PIC 2	REV 01	750-002575	AF2472	4x OC-3 SONET, SMIR
FPC 6	REV 02	710-005078	BE0652	M40e-FPC Type 1
CPU	REV 01	710-004600	BD9607	
PIC 0	REV 02	750-002911	AN2286	4x F/E, 100 BASE-TX
PIC 2	REV 01	750-002577	AP6345	4x OC-3 SONET, MM

show chassis hardware user@host> **show chassis hardware**
(M120 Router) Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN000054AC	M120
Midplane	REV 01	710-013667	RB4170	M120 Midplane
FPM Board	REV 02	710-011407	CJ9186	M120 FPM Board
FPM Display	REV 02	710-011405	CJ9173	M120 FPM Display
FPM CIP	REV 02	710-011410	CJ9221	M120 FPM CIP
PEM 0	Rev 05	740-011936	RM28320	AC Power Entry Module
PEM 1	Rev 05	740-011936	RM28321	AC Power Entry Module
Routing Engine 0	REV 03	740-014080	1000642883	RE-A-1000
CB 0	REV 03	710-011403	CM8346	M120 Control Board
CB 1	REV 06	710-011403	CP6728	M120 Control Board
FPC 1	REV 02	710-015908	CP6925	M120 CFPC 10GE
PIC 0		BUILTIN	BUILTIN	1x 10GE(LAN/WAN) XFP
Xcvr 0	REV 01	740-014279	62E204N00007	XFP-10G-LR
FPC 3	REV 03	710-011393	CJ9234	M120 FPC Type 2
PIC 0	REV 16	750-008155	NB5229	2x G/E IQ, 1000 BASE
Xcvr 0	REV 01	740-011613	P9F15JB	SFP-SX
Xcvr 1	REV 01	740-007326	P4Q0R9G	SFP-SX
PIC 1	REV 09	750-007745	CG4360	4x OC-3 SONET, SMIR
PIC 2	REV 16	750-008155	ND7787	2x G/E IQ, 1000 BASE
Xcvr 0	REV 01	740-011613	P9F12AS	SFP-SX
Xcvr 1	REV 01	740-011613	P9F1ALU	SFP-SX
PIC 3	REV 07	750-011800	JW1284	8x 1GE(LAN), IQ2
Xcvr 0	REV 01	740-011613	P9F1AM6	SFP-SX
Xcvr 6	REV 01	740-011613	P9F16NN	SFP-SX
Xcvr 7	REV 01	740-011782	P8C29Y7	SFP-SX
Board B	REV 02	710-011395	CN3754	M120 FPC Mezz
FPC 4	REV 02	710-011398	CP6741	M120 FPC Type 3
PIC 0	REV 16	750-007141	NB2855	10x 1GE(LAN), 1000 BASE
Xcvr 0	REV 01	740-011782	P922A1F	SFP-SX
Xcvr 1	REV 01	740-011782	P922A16	SFP-SX
Xcvr 2	REV 01	740-011782	P922A0U	SFP-SX
Xcvr 3	REV 01	740-011782	P9229UZ	SFP-SX
Xcvr 4	REV 01	740-009029	P11JXWP	SFP-LX
Xcvr 6	REV 01	740-011613	P9F1ALW	SFP-SX
FPC 5	REV 01	710-011388	CJ9088	M120 FPC Type 1

```

PIC 0          *** Hardware Not Supported ***
PIC 1          REV 05   750-012052   NB0410          1x CHOC3 IQ SONET, SMLR

PIC 2          REV 01   750-013167   CM3824          4x CHDS3 IQ
PIC 3          REV 01   750-010240   CB5366          1x G/E SFP, 1000 BASE
Board B        REV 01   710-011390   CJ9103          M120 FPC Mezz Board
FEB 3          REV 04   710-011663   CP6673          M120 FEB
FEB 4          REV 04   710-011663   CJ9368          M120 FEB
FEB 5          REV 04   710-011663   CJ9386          M120 FEB
Fan Tray 0     Front Top Fan Tray
Fan Tray 1     Front Bottom Fan Tray
Fan Tray 2     Rear Top Fan Tray
Fan Tray 3     Rear Bottom Fan Tray

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show chassis hardware detail (M120 Router) user@host> show chassis hardware detail
Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN000054AC	M120
Midplane	REV 01	710-013667	RB4170	M120 Midplane
FPM Board	REV 02	710-011407	CJ9186	M120 FPM Board
FPM Display	REV 02	710-011405	CJ9173	M120 FPM Display
FPM CIP	REV 02	710-011410	CJ9221	M120 FPM CIP
PEM 0	Rev 05	740-011936	RM28320	AC Power Entry Module
PEM 1	Rev 05	740-011936	RM28321	AC Power Entry Module
Routing Engine 0	REV 03	740-014080	1000642883	RE-A-1000
ad0 248 MB		SILICONSYSTEMS INC	256M 126CT505S0763SC00110	Compact Flash
ad2 38154 MB		HTE541040G9SA00	MPBBT0X2HS2E3M	Hard Disk
CB 0	REV 03	710-011403	CM8346	M120 Control Board
CB 1	REV 06	710-011403	CP6728	M120 Control Board
FPC 1	REV 02	710-015908	CP6925	M120 CFPC 10GE
PIC 0		BUILTIN	BUILTIN	1x 10GE(LAN/WAN) XFP
Xcvr 0	REV 01	740-014279	62E204N00007	XFP-10G-LR
FPC 3	REV 03	710-011393	CJ9234	M120 FPC Type 2
PIC 0	REV 16	750-008155	NB5229	2x G/E IQ, 1000 BASE
Xcvr 0	REV 01	740-011613	P9F15JB	SFP-SX
Xcvr 1	REV 01	740-007326	P4Q0R9G	SFP-SX
PIC 1	REV 09	750-007745	CG4360	4x OC-3 SONET, SMIR
PIC 2	REV 16	750-008155	ND7787	2x G/E IQ, 1000 BASE
Xcvr 0	REV 01	740-011613	P9F12AS	SFP-SX
Xcvr 1	REV 01	740-011613	P9F1ALU	SFP-SX
PIC 3	REV 07	750-011800	JW1284	8x 1GE(LAN), IQ2
Xcvr 0	REV 01	740-011613	P9F1AM6	SFP-SX
Xcvr 6	REV 01	740-011613	P9F16NN	SFP-SX
Xcvr 7	REV 01	740-011782	P8C29Y7	SFP-SX
Board B	REV 02	710-011395	CN3754	M120 FPC Mezz
FPC 4	REV 02	710-011398	CP6741	M120 FPC Type 3
PIC 0	REV 16	750-007141	NB2855	10x 1GE(LAN), 1000 BASE
Xcvr 0	REV 01	740-011782	P922A1F	SFP-SX
Xcvr 1	REV 01	740-011782	P922A16	SFP-SX
Xcvr 2	REV 01	740-011782	P922A0U	SFP-SX
Xcvr 3	REV 01	740-011782	P9229UZ	SFP-SX
Xcvr 4	REV 01	740-009029	P11JXWP	SFP-LX
Xcvr 6	REV 01	740-011613	P9F1ALW	SFP-SX
FPC 5	REV 01	710-011388	CJ9088	M120 FPC Type 1
PIC 0	*** Hardware Not Supported ***			
PIC 1	REV 05	750-012052	NB0410	1x CHOC3 IQ SONET, SMLR
PIC 2	REV 01	750-013167	CM3824	4x CHDS3 IQ
PIC 3	REV 01	750-010240	CB5366	1x G/E SFP, 1000 BASE
Board B	REV 01	710-011390	CJ9103	M120 FPC Mezz Board

FEB 3	REV 04	710-011663	CP6673	M120 FEB
FEB 4	REV 04	710-011663	CJ9368	M120 FEB
FEB 5	REV 04	710-011663	CJ9386	M120 FEB
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Top Fan Tray
Fan Tray 3				Rear Bottom Fan Tray

show chassis hardware models (M120 Router)

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user@host> show chassis hardware models
Hardware inventory:
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Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 01	710-013667		
FPM CIP	REV 02	710-011410		CRAFT-M120-S
PEM 0	Rev 05	740-011936		PWR-M120-AC-S
PEM 1	Rev 05	740-011936		PWR-M120-AC-S
Routing Engine 0	REV 03	740-014080		RE-A-1000-2048-S
CB 0	REV 03	710-011403		CB-M120-S
CB 1	REV 06	710-011403		CB-M120-S
FPC 1	REV 02	710-015908		M120-cFPC-1XGE-XFP
FPC 3				
PIC 0	REV 16	750-008155		PB-2GE-SFP-QPP
PIC 1	REV 09	750-007745		PC-40C3-SON-SMIR
PIC 2	REV 16	750-008155		PB-2GE-SFP-QPP
PIC 3	REV 07	750-011800		PB-8GE-TYPE2-SFP-IQ2
FPC 4				
PIC 0	REV 16	750-007141		PC-10GE-SFP
FPC 5				
PIC 1	REV 05	750-012052		PB-1CHOC3-SMIR-QPP
PIC 2	REV 01	750-013167		PE-4CHDS3-QPP
PIC 3	REV 01	750-010240		PB-1GE-SFP
Fan Tray 0				FFANTRAY-M120-S
Fan Tray 1				FFANTRAY-M120-S
Fan Tray 2				RFANTRAY-M120-S
Fan Tray 3				RFANTRAY-M120-S

show chassis hardware (M160 Router)

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user@host> show chassis hardware
```

Item	Version	Part number	Serial number	Description
Chassis			101	M160
Midplane	REV 02	710-001245	S/N AB4107	
FPM CMB	REV 01	710-001642	S/N AA2911	
FPM Display	REV 01	710-001647	S/N AA2999	
CIP	REV 02	710-001593	S/N AA9563	
PEM 0	Rev 01	740-001243	S/N KJ35769	DC
PEM 1	Rev 01	740-001243	S/N KJ35765	DC
PCG 0	REV 01	710-001568	S/N AA9794	
PCG 1	REV 01	710-001568	S/N AA9804	
Host 1			da000004f8d57001	teknor
MCS 1	REV 03	710-001226	S/N AA9777	
SFM 0 SPP	REV 04	710-001228	S/N AA2975	
SFM 0 SPR	REV 02	710-001224	S/N AA9838	Internet Processor I
SFM 1 SPP	REV 04	710-001228	S/N AA2860	
SFM 1 SPR	REV 01	710-001224	S/N AB0139	Internet Processor I
FPC 0	REV 03	710-001255	S/N AA9806	FPC Type 1
CPU	REV 02	710-001217	S/N AA9590	
PIC 1	REV 05	750-000616	S/N AA1527	1x OC-12 ATM, MM
PIC 2	REV 05	750-000616	S/N AA1535	1x OC-12 ATM, MM
PIC 3	REV 01	750-000616	S/N AA1519	1x OC-12 ATM, MM
FPC 1	REV 02	710-001611	S/N AA9523	FPC Type 2
CPU	REV 02	710-001217	S/N AA9571	
PIC 0	REV 03	750-001900	S/N AA9626	1x STM-16 SDH, SMIR
PIC 1	REV 01	710-002381	S/N AD3633	2x G/E, 1000 BASE-SX

FPC 2				FPC Type OC192
CPU	REV 03	710-001217	S/N AB3329	
PIC 0	REV 01			1x OC-192 SM SR-2
Fan Tray 0				Rear Bottom Blower
Fan Tray 1				Rear Top Blower
Fan Tray 2				Front Top Blower
Fan Tray 3				Front Fan Tray

show chassis hardware models (M160 Router)

```
user@host> show chassis hardware models
Hardware inventory:
```

Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 03	710-009120		CHAS-BP-M320-S
FPM Display	REV 02	710-009351		CRAFT-M320-S
CIP	REV 03	710-005926		CIP-M320-S
PEM 2	Rev X4	740-009148		PWR-M-DC-S
PEM 3	Rev X4	740-009148		PWR-M-DC-S
Routing Engine 0	REV 02	740-008883		RE-1600-2048-S
Routing Engine 1	REV 02	740-008883		RE-1600-2048-S
FPC 0	REV 02	710-010419		M320-FPC1
PIC 0	REV 01	750-001323		P-TUNNEL
PIC 1	REV 02	750-002987		PE-10C12-SON-SMIR
PIC 2	REV 04	750-001894		PB-1GE-SX
PIC 3	REV 04	750-001896		PB-10C12-SON-SMIR
FPC 1	REV 02	710-010419		M320-FPC1
PIC 0	REV 04	750-001894		PB-1GE-SX
PIC 1	REV 04	750-001894		PB-1GE-SX
PIC 3	REV 03	750-001894		PB-1GE-SX
FPC 2	REV 02	710-010419		M320-FPC1
PIC 0	REV 10	750-005634		PB-1CHOC12SMIR-QPP
PIC 1	REV 10	750-005634		PB-1CHOC12SMIR-QPP
PIC 2	REV 07	750-005634		PB-1CHOC12SMIR-QPP
PIC 3	REV 07	750-005634		PB-1CHOC12SMIR-QPP
PIC 1	REV 10	750-005634		PB-1CHOC12SMIR-QPP
PIC 2	REV 07	750-005634		PB-1CHOC12SMIR-QPP
PIC 3	REV 07	750-005634		PB-1CHOC12SMIR-QPP
FPC 3				
PIC 0	REV 03	750-001895		PB-10C12-SON-MM
PIC 1	REV 04	750-001894		PB-1GE-SX
PIC 3	REV 04	750-003141		PB-1GE-SX-B
FPC 4	REV 02	710-010419		M320-FPC1
FPC 5	REV 02	710-010419		M320-FPC1
FPC 6	REV 02	710-010419		M320-FPC1
FPC 7				
PIC 0	REV 15	750-001901		PB-40C12-SON-SMIR
PIC 1	REV 06	750-001900		PB-10C48-SON-SMSR
PIC 2	REV 07	750-001900		PB-10C48-SON-SMSR
PIC 3	REV 05	750-003737		PB-4GE-SX
SIB 0	REV 03	710-009184		SIB-M-S
SIB 1	REV 03	710-009184		SIB-M-S
SIB 2	REV 03	710-009184		SIB-M-S
SIB 3	REV 03	710-009184		SIB-M-S
Fan Tray 0				FFANTRAY-M320-S
Fan Tray 1				FFANTRAY-M320-S
Fan Tray 2				RFANTRAY-M320-S

show chassis hardware detail (M160 Router)

```
user@host> show chassis hardware detail
Hardware inventory:
```

Item	Version	Part number	Serial number	Description
Chassis			101	M160
Midplane	REV 02	710-001245	S/N AB4107	
FPM CMB	REV 01	710-001642	S/N AA2911	

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FPM Display      REV 01  710-001647  S/N AA2999
CIP              REV 02  710-001593  S/N AA9563
PEM 0           Rev 01  740-001243  S/N KJ35769  DC
PEM 1           Rev 01  740-001243  S/N KJ35765  DC
PCG 0           REV 01  710-001568  S/N AA9794
PCG 1           REV 01  710-001568  S/N AA9804
Host 1          da000004f8d57001  teknor
MCS 1           REV 03  710-001226  S/N AA9777
SFM 0 SPP       REV 04  710-001228  S/N AA2975
SFM 0 SPR       REV 02  710-001224  S/N AA9838  Internet Processor I
  SSRAM bank 0  REV 01  710-000077  S/N 306456  1 MB
  SSRAM bank 1  REV 01  710-000077  S/N 306474  1 MB
  SSRAM bank 2  REV 01  710-000077  S/N 306388  1 MB
  SSRAM bank 3  REV 01  710-000077  S/N 306392  1 MB
SFM 1 SPP       REV 04  710-001228  S/N AA2860
SFM 1 SPR       REV 01  710-001224  S/N AB0139  Internet Processor I
  SSRAM bank 0  REV 01  710-000077  S/N 302917  1 MB
  SSRAM bank 1  REV 01  710-000077  S/N 302662  1 MB
  SSRAM bank 2  REV 01  710-000077  S/N 302593  1 MB
  SSRAM bank 3  REV 01  710-000077  S/N 100160  1 MB
FPC 0           REV 03  710-001255  S/N AA9806  FPC Type 1
CPU             REV 02  710-001217  S/N AA9590
SSRAM           REV 01  710-000077  S/N 302836  1 MB
SDRAM 0         REV 01  710-001196  S00141      32 MB
SDRAM 1         REV 01  710-001196  S0010;      32 MB
SSRAM           REV 01  710-000077  S/N 302633  1 MB
SDRAM 0         REV 01  710-001196  S00143      32 MB
SDRAM 1         REV 01  710-001196  S00115      32 MB
SSRAM           REV 01  710-000077  S/N 302952  1 MB
SDRAM 0         REV 01  710-001196  S00135      32 MB
SDRAM 1         REV 01  710-001196  S001=3      32 MB
SSRAM           REV 01  710-000077  S/N 302892  1 MB
SDRAM 0         REV 01  710-001196  S000?6      32 MB
SDRAM 1         REV 01  710-001196  S001=5      32 MB
PIC 1           REV 05  750-000616  S/N AA1527  1x OC-12 ATM, MM
PIC 2           REV 05  750-000616  S/N AA1535  1x OC-12 ATM, MM
PIC 3           REV 01  750-000616  S/N AA1519  1x OC-12 ATM, MM
FPC 1           REV 02  710-001611  S/N AA9523  FPC Type 2
CPU             REV 02  710-001217  S/N AA9571
SSRAM           REV 01  710-000077  S/N 306340  1 MB
SDRAM 0         REV 01  710-001196  S00012      32 MB
SDRAM 1         REV 01  710-001196  S0001?      32 MB
SSRAM           REV 01  710-000077  S/N 306454  1 MB
SDRAM 0         REV 01  710-001196  S00028      32 MB
SDRAM 1         REV 01  710-001196  S0002?      32 MB
SSRAM           REV 01  710-000077  S/N 306492  1 MB
SDRAM 0         REV 01  710-001196  S00015      32 MB
SDRAM 1         REV 01  710-001196  S00031      32 MB
SSRAM           REV 01  710-000077  S/N 306363  1 MB
SDRAM 0         REV 01  710-001196  S00013      32 MB
SDRAM 1         REV 01  710-001196  S00032      32 MB
PIC 0           REV 03  750-001900  S/N AA9626  1x STM-16 SDH, SMIR
PIC 1           REV 01  710-002381  S/N AD3633  2x G/E, 1000 BASE-SX
FPC 2           FPC Type OC192
... SSRAM       REV 01  710-000077  S/N 306466  1 MB

```

show chassis hardware
(M320 Router)

user@host> show chassis hardware

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			67245	M320
Midplane	REV 05	710-009120	RB1202	M320 Midplane

FPM GBUS	REV 04	710-005928	HZ5697	M320 Board
FPM Display	REV 05	710-009351	HR1464	M320 FPM Display
CIP	REV 04	710-005926	HT8672	M320 CIP
PEM 0	Rev 05	740-009148	QK34208	DC Power Entry Module
PEM 1	Rev 05	740-009148	QK34262	DC Power Entry Module
PEM 2	Rev 05	740-009148	QF10449	DC Power Entry Module
PEM 3	Rev 05	740-009148	QJ18257	DC Power Entry Module
Routing Engine 0	REV 06	740-008883	P11123901185	RE-4.0
CB 0	REV 07	710-009115	JB2382	M320 Control Board
FPC 0	REV 02	710-005017	CD9926	M320 FPC Type 2
CPU	REV 01	710-011659	CJ6940	M320 PCA SCPU
PIC 0	REV 07	750-001900	AT1594	1x OC-48 SONET, SMSR
PIC 1	REV 03	750-001850	HS2746	1x Tunnel
PIC 2	REV 05	750-010618	JE7117	4x G/E SFP, 1000 BASE
PIC 3	REV 06	750-001900	HE6083	1x OC-48 SONET, SMSR
FPC 2	REV 02	710-005017	CH0319	M320 FPC Type 1
CPU	REV 01	710-011659	CJ6942	M320 PCA SCPU
PIC 0	REV 05	750-003034	BD8705	4x OC-3 SONET, SMIR
FPC 5	REV 02	710-005017	CD9938	M320 FPC Type 2
CPU				
FPC 7	REV 02	710-005017	CD9934	M320 FPC Type 2
CPU				
SIB 0	REV 09	710-009184	JA6540	M320 SIB
SIB 1	REV 09	710-009184	HV9511	M320 SIB
SIB 2	REV 09	710-009184	HW2057	M320 SIB
SIB 3	REV 09	710-009184	JA6687	M320 SIB
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray

show chassis hardware models (M320 Router)

```
user@host> show chassis hardware models
Hardware inventory:
```

Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 03	710-009120		CHAS-BP-M320-S
FPM Display	REV 02	710-009351		CRAFT-M320-S
CIP	REV 03	710-005926		CIP-M320-S
PEM 2	Rev X4	740-009148		PWR-M-DC-S
PEM 3	Rev X4	740-009148		PWR-M-DC-S
Routing Engine 0	REV 02	740-008883		RE-1600-2048-S
Routing Engine 1	REV 02	740-008883		RE-1600-2048-S
FPC 0	REV 02	710-010419		M320-FPC1
PIC 0	REV 01	750-001323		P-TUNNEL
PIC 1	REV 02	750-002987		PE-10C12-SON-SMIR
PIC 2	REV 04	750-001894		PB-1GE-SX
PIC 3	REV 04	750-001896		PB-10C12-SON-SMIR
FPC 1	REV 02	710-010419		M320-FPC1
PIC 0	REV 04	750-001894		PB-1GE-SX
PIC 1	REV 04	750-001894		PB-1GE-SX
PIC 3	REV 03	750-001894		PB-1GE-SX
FPC 2	REV 02	710-010419		M320-FPC1
PIC 0	REV 10	750-005634		PB-1CHOC12SMIR-QPP
PIC 1	REV 10	750-005634		PB-1CHOC12SMIR-QPP
PIC 2	REV 07	750-005634		PB-1CHOC12SMIR-QPP
PIC 3	REV 07	750-005634		PB-1CHOC12SMIR-QPP
PIC 1	REV 10	750-005634		PB-1CHOC12SMIR-QPP
PIC 2	REV 07	750-005634		PB-1CHOC12SMIR-QPP
PIC 3	REV 07	750-005634		PB-1CHOC12SMIR-QPP
FPC 3				
PIC 0	REV 03	750-001895		PB-10C12-SON-MM
PIC 1	REV 04	750-001894		PB-1GE-SX
PIC 3	REV 04	750-003141		PB-1GE-SX-B

FPC 4	REV 02	710-010419	M320-FPC1
FPC 5	REV 02	710-010419	M320-FPC1
FPC 6	REV 02	710-010419	M320-FPC1
FPC 7			
PIC 0	REV 15	750-001901	PB-40C12-SON-SMIR
PIC 1	REV 06	750-001900	PB-10C48-SON-SMSR
PIC 2	REV 07	750-001900	PB-10C48-SON-SMSR
PIC 3	REV 05	750-003737	PB-4GE-SX
SIB 0	REV 03	710-009184	SIB-M-S
SIB 1	REV 03	710-009184	SIB-M-S
SIB 2	REV 03	710-009184	SIB-M-S
SIB 3	REV 03	710-009184	SIB-M-S
Fan Tray 0			FFANTRAY-M320-S
Fan Tray 1			FFANTRAY-M320-S
Fan Tray 2			RFANTRAY-M320-S

show chassis hardware user@host> **show chassis hardware**

(MX5 Router)

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			E1368	MX5-T
Midplane	REV 01	711-038215	YF5288	MX5-T
PEM 0	Rev 04	740-028288	VA01215	AC Power Entry Module
PEM 1	Rev 04	740-028288	VA01218	AC Power Entry Module
Routing Engine		BUILTIN	BUILTIN	Routing Engine
TFEB 0		BUILTIN	BUILTIN	Forwarding Engine
Processor				
QXM 0	REV 05	711-028408	ZA9136	MPC QXM
FPC 0		BUILTIN	BUILTIN	MPC BUILTIN
MIC 0		BUILTIN	BUILTIN	4x 10GE XFP
PIC 0		BUILTIN	BUILTIN	4x 10GE XFP
FPC 1		BUILTIN	BUILTIN	MPC BUILTIN
MIC 0	REV 24	750-028392	YX9820	3D 20x 1GE(LAN) SFP
PIC 0		BUILTIN	BUILTIN	10x 1GE(LAN) SFP
Xcvr 0	REV 01	740-031851	AM1045SUAQ3	SFP-SX
Xcvr 1	REV 01	740-031851	AM1045SUAPA	SFP-SX
Xcvr 2	REV 01	740-031851	AM1045SUAN7	SFP-SX
Xcvr 3	REV 01	740-031851	AM1045SU91Q	SFP-SX
Xcvr 4	REV 01	740-031851	AM1045SUDDR	SFP-SX
Xcvr 9	REV 01	740-011613	AM0848SB6A1	SFP-SX
PIC 1		BUILTIN	BUILTIN	10x 1GE(LAN) SFP
Xcvr 0	REV 01	740-031851	AM1045SUANO	SFP-SX
Xcvr 1	REV 01	740-011613	AS0812S0719	SFP-SX
Xcvr 2	REV 01	740-011613	AM0821SA121	SFP-SX
Xcvr 3	REV 01	740-011613	PF21K21	SFP-SX
Xcvr 4	REV 01	740-011613	AM0848SB69Z	SFP-SX
Xcvr 5	REV 01	740-011782	P9POXV3	SFP-SX
Xcvr 6	REV 01	740-011613	AM0812S8WJN	SFP-SX
Xcvr 7	REV 01	740-011613	PAM3G9Q	SFP-SX
Xcvr 8	REV 01	740-011613	AM0848SB4A6	SFP-SX
Xcvr 9	REV 01	740-011782	P9MOU37	SFP-SX
MIC 1	REV 20	750-028380	ZG2657	3D 2x 10GE XFP
PIC 2		BUILTIN	BUILTIN	1x 10GE XFP
PIC 3		BUILTIN	BUILTIN	1x 10GE XFP
Fan Tray				Fan Tray

show chassis hardware user@host> **show chassis hardware**

(MX10 Router)

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			E1372	MX10-T
Midplane	REV 01	711-038211	YF5285	MX10-T
PEM 0	Rev 04	740-028288	VB01678	AC Power Entry Module

Routing Engine		BUILTIN	BUILTIN	Routing Engine
TFEB 0		BUILTIN	BUILTIN	Forwarding Engine
Processor				
QXM 0	REV 05	711-028408	ZA9053	MPC QXM
FPC 0		BUILTIN	BUILTIN	MPC BUILTIN
MIC 0		BUILTIN	BUILTIN	4x 10GE XFP
PIC 0		BUILTIN	BUILTIN	4x 10GE XFP
FPC 1		BUILTIN	BUILTIN	MPC BUILTIN
MIC 0	REV 24	750-028392	YX9436	3D 20x 1GE(LAN) SFP
PIC 0		BUILTIN	BUILTIN	10x 1GE(LAN) SFP
Xcvr 0	REV 01	740-031851	AM1107SUFQW	SFP-SX
PIC 1		BUILTIN	BUILTIN	10x 1GE(LAN) SFP
Fan Tray				Fan Tray

show chassis hardware
(MX40 Router)

user@host> show chassis hardware

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			E1367	MX40-T
Midplane	REV 01	711-038211	YF5284	MX40-T
PEM 0	Rev 04	740-028288	VB01680	AC Power Entry Module
PEM 1	Rev 04	740-028288	VB01700	AC Power Entry Module
Routing Engine		BUILTIN	BUILTIN	Routing Engine
TFEB 0		BUILTIN	BUILTIN	Forwarding Engine
Processor				
QXM 0	REV 05	711-028408	ZA9048	MPC QXM
FPC 0		BUILTIN	BUILTIN	MPC BUILTIN
MIC 0		BUILTIN	BUILTIN	4x 10GE XFP
PIC 0		BUILTIN	BUILTIN	4x 10GE XFP
Xcvr 0	REV 01	740-014279	M7067UPP	XFP-10G-LR
Xcvr 1		NON-JNPR	K9J02UN	XFP-10G-LR
FPC 1		BUILTIN	BUILTIN	MPC BUILTIN
MIC 0	REV 24	750-028392	YX3504	3D 20x 1GE(LAN) SFP
PIC 0		BUILTIN	BUILTIN	10x 1GE(LAN) SFP
Xcvr 0	REV 01	740-011613	AM0812S8WTE	SFP-SX
Xcvr 1	REV 01	740-011613	PFA6KV2	SFP-SX
Xcvr 2	REV 01	740-031851	AM1045SUDDM	SFP-SX
Xcvr 3	REV 01	740-011613	PD63C7M	SFP-SX
Xcvr 4	REV 01	740-011613	PD63DJY	SFP-SX
Xcvr 5	REV 02	740-011613	AA0950STLL9	SFP-SX
Xcvr 6	REV 01	740-011782	PAR1YHC	SFP-SX
Xcvr 7	REV 01	740-011782	P9P0XXL	SFP-SX
Xcvr 8	REV 01	740-011613	PD63D95	SFP-SX
Xcvr 9	REV 01	740-031851	AM1045SU9B8	SFP-SX
PIC 1		BUILTIN	BUILTIN	10x 1GE(LAN) SFP
Xcvr 0	REV 01	740-011613	PF21L3Z	SFP-SX
Xcvr 1	REV 01	740-031851	AM1045SU7M9	SFP-SX
Xcvr 2	REV 01	740-031851	AM1045SUAPT	SFP-SX
Xcvr 3	REV 01	740-011613	PFF2BZH	SFP-SX
Xcvr 4	REV 01	740-031851	AM1045SUDDN	SFP-SX
Xcvr 5	REV 01	740-031851	AM1039S00ZR	SFP-SX
Xcvr 6	REV 01	740-031851	AM1045SUD6Y	SFP-SX
Xcvr 8	REV 01	740-011613	PFM1QBS	SFP-SX
Xcvr 9	REV 01	740-011613	PFF2E25	SFP-SX
MIC 1	REV 01	750-021130	KG4391	3D 2x 10GE XFP
PIC 2		BUILTIN	BUILTIN	1x 10GE XFP
Xcvr 0	REV 01	740-011571	C645XJ04G	XFP-10G-SR
PIC 3		BUILTIN	BUILTIN	1x 10GE XFP
Xcvr 0		NON-JNPR	CA49BK0AE	XFP-10G-SR
Fan Tray				Fan Tray


```

show chassis hardware user@host> show chassis hardware
(Fixed MX80 Router) Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               MX80-48T
Midplane      REV 01   711-031603   KF9250         MX80-48T
Routing Engine BUILTIN  BUILTIN     Routing Engine
FEB 0         BUILTIN  BUILTIN     Forwarding Engine Board
FPC 0         BUILTIN  BUILTIN     MPC BUILTIN
  MIC 0       BUILTIN  BUILTIN     4x 10GE XFP
  PIC 0       BUILTIN  BUILTIN     4x 10GE XFP
    Xcvr 0    NON-JNPR M6439D41     XFP-10G-LR
    Xcvr 1    REV 01   740-014279   6XE931N00202  XFP-10G-LR
    Xcvr 2    REV 01   740-014289   C715XU05F     XFP-10G-SR
    Xcvr 3    REV 01   740-014289   C650XU0EP     XFP-10G-SR
FPC 1         BUILTIN  BUILTIN     MPC BUILTIN
  MIC 0       REV 01   711-029399   JR6981        12x 1GE(LAN) RJ45
  PIC 0       BUILTIN  BUILTIN     12x 1GE(LAN) RJ45
  PIC 1       BUILTIN  BUILTIN     12x 1GE(LAN) RJ45
  MIC 1       REV 01   BUILTIN     12x 1GE(LAN) RJ45
  PIC 2       BUILTIN  BUILTIN     12x 1GE(LAN) RJ45
  PIC 3       BUILTIN  BUILTIN     12x 1GE(LAN) RJ45
Fan Tray                               Fan Tray

```

```

show chassis hardware user@host> show chassis hardware
(Modular MX80 Router) Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               MX80
Midplane      REV 02   711-031594   JR7084         MX80
PEM 0         Rev 01   740-028288   000018         AC Power Entry Module
Routing Engine BUILTIN  BUILTIN     Routing Engine
FEB 0         BUILTIN  BUILTIN     Forwarding Engine Board

  QXM 0       REV 05   711-028408   JR7041        MPC QXM
FPC 0         BUILTIN  BUILTIN     MPC BUILTIN
  MIC 0       BUILTIN  BUILTIN     4x 10GE XFP
  PIC 0       BUILTIN  BUILTIN     4x 10GE XFP
FPC 1         BUILTIN  BUILTIN     MPC BUILTIN
  MIC 0       REV 02   750-028380   JR6598        3D 2x 10GE XFP
  PIC 0       BUILTIN  BUILTIN     1x 10GE XFP
    Xcvr 0    REV 01   740-014289   T07M86365     XFP-10G-SR
    PIC 1     BUILTIN  BUILTIN     1x 10GE XFP
    Xcvr 0    REV 01   740-014289   T07M71094     XFP-10G-SR
  MIC 1       REV 02   750-028380   JG8548        3D 2x 10GE XFP
  PIC 2       BUILTIN  BUILTIN     1x 10GE XFP
    Xcvr 0    REV 02   740-014289   T08L86302     XFP-10G-SR
    PIC 3     BUILTIN  BUILTIN     1x 10GE XFP
    Xcvr 0    REV 02   740-014289   C810XU0BA     XFP-10G-SR
Fan Tray                               Fan Tray

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show chassis hardware user@host> show chassis hardware
(MX240 Router) Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               MX240
Midplane      REV 01   710-021041   TR1502         MX240 Backplane
FPM Board     REV 01   710-017254   KD4017         Front Panel Display
PEM 0         Rev 02   740-017330   000332         PS 1.2-1.7kW; 100-240V
AC in
PEM 1         Rev 02   740-017330   000226         PS 1.2-1.7kW; 100-240V
AC in

```

Routing Engine 0	REV 06	740-013063	1000703522	RE-S-2000
Routing Engine 1	REV 06	740-015113	1000687625	RE-S-1300
CB 0	REV 07	710-013385	KC9057	MX SCB
CB 1	REV 05	710-013385	JY4760	MX SCB
FPC 1	REV 01	750-021679	KC7340	DPCE 40x 1GE R
CPU	REV 06	710-013713	KD4078	DPC PMB
PIC 0		BUILTIN	BUILTIN	10x 1GE(LAN)
Xcvr 0	REV 01	740-011613	P9F18ME	SFP-SX
PIC 1		BUILTIN	BUILTIN	10x 1GE(LAN)
PIC 2		BUILTIN	BUILTIN	10x 1GE(LAN)
PIC 3		BUILTIN	BUILTIN	10x 1GE(LAN)
FPC 2	REV 04	710-016669	JS4529	DPCE 40x 1GE R EQ
CPU	REV 06	710-013713	KB3969	DPC PMB
PIC 0		BUILTIN	BUILTIN	10x 1GE(LAN) EQ
Xcvr 0	REV 01	740-011613	PBG3Y79	SFP-SX
Xcvr 1	REV 01	740-011613	PBG3XU8	SFP-SX
Xcvr 2	REV 01	740-011613	PBG3YG6	SFP-SX
Xcvr 3	REV 01	740-011613	PBG3XUG	SFP-SX
Xcvr 4	REV 01	740-011613	PBG3XTJ	SFP-SX
PIC 1		BUILTIN	BUILTIN	10x 1GE(LAN) EQ
Xcvr 0	REV 01	740-011613	PBG3ZUM	SFP-SX
Xcvr 1	REV 01	740-011613	PBG3Y5H	SFP-SX
Xcvr 2	REV 01	740-011613	PBG3UZT	SFP-SX
Xcvr 3	REV 01	740-011613	PBG3US1	SFP-SX
PIC 2		BUILTIN	BUILTIN	10x 1GE(LAN) EQ
Xcvr 0	REV 01	740-011613	PBG3YG7	SFP-SX
Xcvr 1	REV 01	740-011613	PBG3XZ9	SFP-SX
Xcvr 2	REV 01	740-011613	PBG3XTY	SFP-SX
Xcvr 3	REV 01	740-011613	PBG3UZG	SFP-SX
PIC 3		BUILTIN	BUILTIN	10x 1GE(LAN) EQ
Xcvr 0	REV 01	740-011613	PBG3Y8W	SFP-SX
Xcvr 1	REV 01	740-011613	PBG3YVX	SFP-SX
Xcvr 2	REV 01	740-011613	PBG3YB3	SFP-SX
Xcvr 3	REV 01	740-011613	PBG43VQ	SFP-SX
Fan Tray 0	REV 01	710-021113	JS4642	MX240 Fan Tray

**show chassis hardware
detail (MX 240 Router
with Routing Engine
Displaying DIMM
information)**

```
user@host> show chassis hardware detail
```

Item	Version	Part number	Serial number	Description
Chassis			JN11279B4AFC	MX240 Backplane
Midplane	REV 07	760-021404	TS2474	MX240 Backplane
FPM Board	REV 03	760-021392	XC2643	Front Panel Display
PEM 0	Rev 03	740-017343	QCS0908A068	DC Power Entry Module
Routing Engine 0			AARCH00	RE-S-1800x4
ad0 3764 MB	STEC M2+	CF 9.0.2	STIM2Q3209239145303	Removable Compact Flash
ad1 28626 MB	WDC SSD-F0030S-5000		C933Z036237215548S00	Compact Flash
usb0 (addr 1)	EHCI root hub 0		Intel	uhub0
usb0 (addr 2)	product 0x0020 32		vendor 0x8087	uhub1
DIMM 0	VL31B5263E-F8S DIE REV-0 PCB REV-0			MFR ID-ce80
DIMM 1	VL31B5263E-F8S DIE REV-0 PCB REV-0			MFR ID-ce80
DIMM 2	VL31B5263E-F8S DIE REV-0 PCB REV-0			MFR ID-ce80
DIMM 3	SL31B5263E-F8S DIE REV-0 PCB REV-0			MFR ID-ce80
CB 0	REV 03	710-021523	XD7225	MX SCB
Fan Tray 0	REV 01	710-021113	WZ4986	MX240 Fan Tray

**show chassis hardware
(MX240 Router with
Enhanced MX SCB)**

```
user@host> show chassis hardware
```

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN10C7F7EAFC	MX240
Midplane	REV 01	710-021041	TR1502	MX240 Backplane

FPM Board	REV 01	710-017254	KD4017	Front Panel Display
PEM 0	Rev 02	740-017330	000332	PS 1.2-1.7kW; 100-240V
AC in				
PEM 1	Rev 02	740-017330	000226	PS 1.2-1.7kW; 100-240V
AC in				
Routing Engine 0	REV 06	740-013063	1000703522	RE-S-2000
Routing Engine 1	REV 06	740-015113	1000687625	RE-S-1300
CB 0	REV 02	710-031391	YE8494	Enhanced MX SCB
CB 1	REV 05	710-031391	YOP5764	Enhanced MX SCB
FPC 1	REV 01	750-021679	KC7340	DPCE 40x 1GE R
CPU	REV 06	710-013713	KD4078	DPC PMB
PIC 0		BUILTIN	BUILTIN	10x 1GE(LAN)
Xcvr 0	REV 01	740-011613	P9F18ME	SFP-SX
PIC 1		BUILTIN	BUILTIN	10x 1GE(LAN)
PIC 2		BUILTIN	BUILTIN	10x 1GE(LAN)
PIC 3		BUILTIN	BUILTIN	10x 1GE(LAN)
FPC 2	REV 04	710-016669	JS4529	DPCE 40x 1GE R EQ
CPU	REV 06	710-013713	KB3969	DPC PMB
PIC 0		BUILTIN	BUILTIN	10x 1GE(LAN) EQ
Xcvr 0	REV 01	740-011613	PBG3Y79	SFP-SX
Xcvr 1	REV 01	740-011613	PBG3XU8	SFP-SX
Xcvr 2	REV 01	740-011613	PBG3YG6	SFP-SX
Xcvr 3	REV 01	740-011613	PBG3XUG	SFP-SX
Xcvr 4	REV 01	740-011613	PBG3XTJ	SFP-SX
PIC 1		BUILTIN	BUILTIN	10x 1GE(LAN) EQ
Xcvr 0	REV 01	740-011613	PBG3ZUM	SFP-SX
Xcvr 1	REV 01	740-011613	PBG3Y5H	SFP-SX
Xcvr 2	REV 01	740-011613	PBG3UZT	SFP-SX
Xcvr 3	REV 01	740-011613	PBG3US1	SFP-SX
PIC 2		BUILTIN	BUILTIN	10x 1GE(LAN) EQ
Xcvr 0	REV 01	740-011613	PBG3YG7	SFP-SX
Xcvr 1	REV 01	740-011613	PBG3XZ9	SFP-SX
Xcvr 2	REV 01	740-011613	PBG3XTY	SFP-SX
Xcvr 3	REV 01	740-011613	PBG3UZG	SFP-SX
PIC 3		BUILTIN	BUILTIN	10x 1GE(LAN) EQ
Xcvr 0	REV 01	740-011613	PBG3Y8W	SFP-SX
Xcvr 1	REV 01	740-011613	PBG3YVX	SFP-SX
Xcvr 2	REV 01	740-011613	PBG3YB3	SFP-SX
Xcvr 3	REV 01	740-011613	PBG43VQ	SFP-SX
Fan Tray 0	REV 01	710-021113	JS4642	MX240 Fan Tray

show chassis hardware (MX480 Router)

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user@host> show chassis hardware
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Hardware inventory:
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Item	Version	Part number	Serial number	Description
Chassis			JN10C7F7FAFB	MX480
Midplane	REV 04	710-017414	TR2071	MX480 Midplane
FPM Board	REV 02	710-017254	KB8459	Front Panel Display
PEM 0	Rev 02	740-017330	QCS07519029	PS 1.2-1.7kW; 100-240V
AC in				
PEM 1	Rev 02	740-017330	QCS07519041	PS 1.2-1.7kW; 100-240V
AC in				
PEM 2	Rev 02	740-017330	QCS07519097	PS 1.2-1.7kW; 100-240V
AC in				
Routing Engine 0	REV 07	740-013063	1000733381	RE-S-2000
Routing Engine 1	REV 07	740-013063	1000733540	RE-S-2000
CB 0	REV 07	710-013385	KA8022	MX SCB
CB 1	REV 07	710-013385	KA8303	MX SCB
FPC 0	REV 09	750-020452	KA8660	DPCE 40x 1GE X EQ
CPU	REV 06	710-013713	KA8185	DPC PMB
PIC 0		BUILTIN	BUILTIN	10x 1GE(LAN) EQ
PIC 1		BUILTIN	BUILTIN	10x 1GE(LAN) EQ

PIC 2	BUILTIN	BUILTIN	10x 1GE(LAN) EQ
PIC 3	BUILTIN	BUILTIN	10x 1GE(LAN) EQ
Fan Tray			Left Fan Tray

show chassis hardware user@host> **show chassis hardware**

(MX480 Router with
Enhanced MX SCB)

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN10C7F7FAFB	MX480
Midplane	REV 04	710-017414	TR2071	MX480 Midplane
FPM Board	REV 02	710-017254	KB8459	Front Panel Display
PEM 0	Rev 02	740-017330	QCS07519029	PS 1.2-1.7kW; 100-240V
AC in				
PEM 1	Rev 02	740-017330	QCS07519041	PS 1.2-1.7kW; 100-240V
AC in				
PEM 2	Rev 02	740-017330	QCS07519097	PS 1.2-1.7kW; 100-240V
AC in				
Routing Engine 0	REV 07	740-013063	1000733381	RE-S-2000
Routing Engine 1	REV 07	740-013063	1000733540	RE-S-2000
CB 0	REV 07	710-013385	KA8022	Enhanced MX SCB
CB 1	REV 07	710-013385	KA8303	Enhanced MX SCB
FPC 0	REV 09	750-020452	KA8660	DPCE 40x 1GE X EQ
CPU	REV 06	710-013713	KA8185	DPC PMB
PIC 0		BUILTIN	BUILTIN	10x 1GE(LAN) EQ
PIC 1		BUILTIN	BUILTIN	10x 1GE(LAN) EQ
PIC 2		BUILTIN	BUILTIN	10x 1GE(LAN) EQ
PIC 3		BUILTIN	BUILTIN	10x 1GE(LAN) EQ
Fan Tray				Left Fan Tray

show chassis hardware user@host> **show chassis hardware**

(MX960 Router)

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis				MX960
Midplane	REV 01	710-013698	AA6082	MX960 Midplane
PIM	Rev 01	740-013110	000008	Power Inlet Module
PEM 2				
PEM 3	Rev 01	740-013682	000038	PS 1.7kW; 200-240VAC in
Routing Engine 0	REV 00	740-015113	1000617944	RE-S-1300
CB 0	REV 05	710-013725	JK6947	MX960 Test SCB
FPC 4	REV 01	710-013305	JM7617	MX960 Test DPC
CPU				
PIC 0		BUILTIN	BUILTIN	1x 10GE(LAN/WAN)
PIC 1		BUILTIN	BUILTIN	10x 1GE
FPC 7	REV 01	710-013305	JL9634	MX960 Test DPC
CPU				
PIC 0		BUILTIN	BUILTIN	1x 10GE(LAN/WAN)
Xcvr 0		NON-JNPR	MYBG65I82C	XFP-10G-SR
PIC 1		BUILTIN	BUILTIN	10x 1GE
Xcvr 1	REV 01	740-011782	P7N0368	SFP-SX
Xcvr 4	REV 01	740-011782	P8J1W27	SFP-SX
Xcvr 6	REV 01	740-011782	P8J1VSD	SFP-SX
Xcvr 9	REV 01	740-011782	P8J1W25	SFP-SX
Fan Tray 0				
Fan Tray 1				

show chassis hardware user@host> **show chassis hardware**

(MX960 Router with
Bidirectional Optics)

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN10BA5B9AFA	MX960
Midplane	REV 03	710-013698	TR0234	MX960 Backplane
FPM Board	REV 03	710-014974	JA0878	Front Panel Display

PDM	Rev 03	740-013110	QCS11135028	Power Distribution Module
PEM 0	Rev 03	740-013682	QCS11154036	PS 1.7kW; 200-240VAC in
PEM 1	Rev 03	740-013682	QCS11154010	PS 1.7kW; 200-240VAC in
PEM 2	Rev 03	740-013682	QCS11154022	PS 1.7kW; 200-240VAC in
Routing Engine 0	REV 06	740-013063	1000691458	RE-S-2000
CB 0	REV 07	710-013385	KA2190	MX SCB
CB 1	REV 07	710-013385	KA0837	MX SCB
FPC 3	REV 02	750-018122	KB3890	DPCE 40x 1GE R
CPU				
FPC 4	REV 01	750-018122	KB3889	DPCE 40x 1GE R
CPU	REV 06	710-013713	KB3976	DPC PMB
PIC 0		BUILTIN	BUILTIN	10x 1GE(LAN)
Xcvr 1	REV 01	740-020426	4910549	SFP-1000BASE-BX40-D
Xcvr 2	REV 01	740-020426	4910551	SFP-1000BASE-BX40-D
Xcvr 5	REV 01	740-021340	77E245N00006	SFP-1000BASE-BX10-U
Xcvr 6	REV 01	740-020425	4882821	SFP-1000BASE-BX40-U
Xcvr 8	REV 01	740-020425	4882820	SFP-1000BASE-BX40-U
PIC 1		BUILTIN	BUILTIN	10x 1GE(LAN)
Xcvr 0	REV 01	740-020465	77E555N00894	SFP-1000BASE-BX10-D
Xcvr 1	REV 01	740-020465	75E467X00818	SFP-1000BASE-BX10-D
Xcvr 2	REV 01	740-020465	75E467X00573	SFP-1000BASE-BX10-D
Xcvr 3	REV 01	740-020465	4888227	SFP-1000BASE-BX10-D
Xcvr 4	REV 01	740-020465	4888241	SFP-1000BASE-BX10-D
Xcvr 5	REV 01	740-021340	77E245N00005	SFP-1000BASE-BX10-U
Xcvr 6	REV 01	740-021340	76E245X00487	SFP-1000BASE-BX10-U
Xcvr 7	REV 01	740-021341	5255889	SFP-1000BASE-BX10-U
Xcvr 8	REV 01	740-021341	5255887	SFP-1000BASE-BX10-U
Xcvr 9	REV 01	740-021340	77E245N00004	SFP-1000BASE-BX10-U
PIC 2		BUILTIN	BUILTIN	10x 1GE(LAN)
Xcvr 0	REV 01	740-020424	5007582	SFP-1000BASE-BX10-D
Xcvr 1	REV 01	740-020424	4888187	SFP-1000BASE-BX10-D
Xcvr 2	REV 01	740-020424	4656500	SFP-1000BASE-BX10-D
Xcvr 5	REV 01	740-021341	5255886	SFP-1000BASE-BX10-U
Xcvr 7	REV 01	740-021340	77E245N00003	SFP-1000BASE-BX10-U
Xcvr 8	REV 01	740-021341	5255888	SFP-1000BASE-BX10-U
PIC 3		BUILTIN	BUILTIN	10x 1GE(LAN)
Xcvr 0	REV 01	740-017726	74S184H30341	SFP-EX
Xcvr 1	REV 01	740-017726	4814061	SFP-EX
Xcvr 5	REV 01	740-017726	6ZS184H31108	SFP-EX
Xcvr 9	REV 01	740-021340	76E245X00486	SFP-1000BASE-BX10-U
Fan Tray 0				
Fan Tray 1	REV 03	740-014971	TP0850	Fan Tray

show chassis hardware
(MX960 Router with
Enhanced MX SCB)

user@host> show chassis hardware

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN1096805AFA	MX960
Midplane	REV 03	710-013698	TR0183	MX960 Backplane
Fan Extender	REV 02	710-018051	JY5227	Extended Cable Manager
FPM Board	REV 03	710-014974	JZ6876	Front Panel Display
PDM	Rev 03	740-013110	QCS11035023	Power Distribution Module
PEM 1	Rev 03	740-013682	QCS1109400L	PS 1.7kW; 200-240VAC in
PEM 2	Rev 03	740-013682	QCS11094015	PS 1.7kW; 200-240VAC in
PEM 3	Rev 03	740-013682	QCS11094012	PS 1.7kW; 200-240VAC in
Routing Engine 0	REV 06	740-013063	1000687969	RE-S-2000
Routing Engine 1	REV 06	740-013063	1000687955	RE-S-2000
CB 0	REV 11	750-031391	YZ6072	Enhanced MX SCB
CB 1	REV 11	750-031391	YZ6068	Enhanced MX SCB
CB 2	REV 11	750-031391	YZ6081	Enhanced MX SCB
FPC 0	REV 01	750-018122	KA5576	DPCE 40x 1GE R
CPU	REV 06	710-013713	KB3961	DPC PMB

PIC 0		BUILTIN	BUILTIN	10x 1GE(LAN)
Xcvr 0	REV 01	740-011613	P9F18GF	SFP-SX
Xcvr 2	REV 01	740-011782	P9M0TL9	SFP-SX
Xcvr 7	REV 01	740-011782	P9P0XXH	SFP-SX
Xcvr 9	REV 01	740-011782	P9M0TN1	SFP-SX
PIC 1		BUILTIN	BUILTIN	10x 1GE(LAN)
Xcvr 0	REV 01	740-011613	PAJ4UHC	SFP-SX
PIC 2		BUILTIN	BUILTIN	10x 1GE(LAN)
Xcvr 0	REV 01	740-011613	PFF2CD0	SFP-SX
Xcvr 1	REV 01	740-011613	PBG3ZUT	SFP-SX
Xcvr 2	REV 01	740-011613	PFF2DDV	SFP-SX
Xcvr 5	REV 01	740-011613	P8E2SST	SFP-SX
Xcvr 9	REV 01	740-011782	PB8329N	SFP-SX
PIC 3		BUILTIN	BUILTIN	10x 1GE(LAN)
Xcvr 0	REV 01	740-026192	1U0201084503342	SFP-100BASE-BX10-U
Xcvr 1	REV 01	740-026193	1U1201084503313	SFP-100BASE-BX10-D
Xcvr 2	REV 01	740-011613	PAJ4Y5B	SFP-SX
Xcvr 6	REV 01	740-011782	P9M0U3M	SFP-SX
Xcvr 7	REV 01	740-011782	P9M0TLA	SFP-SX
FPC 1	REV 16	750-031089	YL0719	MPC Type 2 3D
CPU	REV 06	711-030884	YL1463	MPC PMB 2G
MIC 0	REV 07	750-028387	JR6500	3D 4x 10GE XFP
PIC 0		BUILTIN	BUILTIN	2x 10GE XFP
Xcvr 0	REV 01	740-014279	733019A00154	XFP-10G-LR
Xcvr 1	REV 02	740-014289	T09F55034	XFP-10G-SR
PIC 1		BUILTIN	BUILTIN	2x 10GE XFP
Xcvr 0	REV 01	740-014279	913019B00791	XFP-10G-LR
Xcvr 1	REV 01	740-014289	98S803A90384	XFP-10G-SR
MIC 1	REV 24	750-028387	YJ3950	3D 4x 10GE XFP
PIC 2		BUILTIN	BUILTIN	2x 10GE XFP
Xcvr 0	REV 02	740-014279	T10B36134	XFP-10G-LR
Xcvr 1	REV 01	740-014289	T07M86354	XFP-10G-SR
PIC 3		BUILTIN	BUILTIN	2x 10GE XFP
FPC 2	REV 08	710-014219	JY9654	DPCE 4x 10GE R
CPU	REV 06	710-013713	JZ6549	DPC PMB
PIC 0		BUILTIN	BUILTIN	1x 10GE(LAN/WAN)
PIC 1		BUILTIN	BUILTIN	1x 10GE(LAN/WAN)
PIC 2		BUILTIN	BUILTIN	1x 10GE(LAN/WAN)
Xcvr 0	REV 03	740-011571	C931BK028	XFP-10G-SR
PIC 3		BUILTIN	BUILTIN	1x 10GE(LAN/WAN)
FPC 3	REV 10	750-024199	XJ6692	MX FPC Type 3
CPU	REV 03	710-022351	XF5182	DPC PMB
PIC 0	REV 17	750-009553	RJ2945	4x 0C-48 SONET
Xcvr 1	REV 01	740-011785	PCP3YLL	SFP-SR
Xcvr 3	REV 01	740-011785	PDSOMRY	SFP-SR
PIC 1	REV 32	750-003700	DP2113	1x 0C-192 12xMM VSR
FPC 5	REV 25	750-028467	YM8256	MPC 3D 16x 10GE
CPU	REV 10	711-029089	YL3029	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 1	REV 01	740-031980	AHNOX1Z	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
FPC 7	REV 02	750-031092	JR6658	MPC Type 1 3D Q
CPU	REV 01	711-030884	JZ9038	MPC PMB 2G
MIC 0	REV 08	750-028392	JZ8737	3D 20x 1GE(LAN) SFP
PIC 0		BUILTIN	BUILTIN	10x 1GE(LAN) SFP
Xcvr 0	REV 01	740-011782	PBE2C6Y	SFP-SX
Xcvr 2		NON-JNPR	U8105N8	SFP-SX
Xcvr 4	REV 01	740-011613	PFM18EF	SFP-SX
Xcvr 7	REV 01	740-011613	PFF2AM8	SFP-SX

Xcvr 8	REV 01	740-011613	PFF2CT6	SFP-SX
PIC 1		BUILTIN	BUILTIN	10x 1GE(LAN) SFP
Xcvr 0	REV 01	740-011782	PB82VHH	SFP-SX
Xcvr 1	REV 01	740-011613	PFF2CSW	SFP-SX
Xcvr 9	REV 01	740-011613	PFF2BY0	SFP-SX
QXM 0	REV 04	711-028408	JR6372	MPC QXM
FPC 8	REV 05	750-024387	JW9754	MX FPC Type 2
CPU	REV 03	710-022351	KF1651	DPC PMB
PIC 0	REV 08	750-014730	DM3664	4x OC-3 1x OC-12 SFP
Xcvr 0	REV 01	740-016065	81S290N00077	SFP-SR
Xcvr 1		NON-JNPR	2191844	SFP-SR
Xcvr 2	REV 01	740-011618	PD81EE5	SFP-IR
PIC 1	REV 08	750-014637	DM3671	4x OC-12-3 SFP
Xcvr 0	REV 01	740-011785	PCK3UNK	SFP-SR
Xcvr 3	REV 01	740-011785	PDSOMPZ	SFP-SR
FPC 10	REV 04	710-013699	JY4654	DPCE 40x 1GE R
CPU	REV 05	710-013713	JS9717	DPC PMB
PIC 0		BUILTIN	BUILTIN	10x 1GE(LAN)
Xcvr 5	REV 01	740-011782	PAR1L72	SFP-SX
Xcvr 6	REV 01	740-011782	P8N1YQ4	SFP-SX
PIC 1		BUILTIN	BUILTIN	10x 1GE(LAN)
PIC 2		BUILTIN	BUILTIN	10x 1GE(LAN)
Xcvr 0	REV 01	740-011782	P8Q2AVL	SFP-SX
Xcvr 5	REV 01	740-011782	PAR1L7B	SFP-SX
Xcvr 6	REV 01	740-011782	PAR1L2J	SFP-SX
Xcvr 8	REV 01	740-011782	P8N1YMY	SFP-SX
PIC 3		BUILTIN	BUILTIN	10x 1GE(LAN)
Fan Tray 0	REV 03	740-014971	TP0567	Fan Tray
Fan Tray 1	REV 03	740-014971	TP0702	Fan Tray

show chassis hardware
models (MX960
Router with Enhanced
MX SCB)

user@host> show chassis hardware models
Hardware inventory:

Item	Version	Part number	Serial number	FRU model number
Midplane	REV 03	710-013698	TR0183	CHAS-BP-MX960-S
Fan Extender	REV 02	710-018051	JY5227	ECM-MX960
FPM Board	REV 03	710-014974	JZ6876	CRAFT-MX960-S
Routing Engine 0	REV 06	740-013063	1000687969	RE-S-2000-4096-S
Routing Engine 1	REV 06	740-013063	1000687955	RE-S-2000-4096-S
CB 0	REV 11	750-031391	YZ6072	SCBE-MX-S
CB 1	REV 11	750-031391	YZ6068	SCBE-MX-S
CB 2	REV 11	750-031391	YZ6081	SCBE-MX-S
FPC 0	REV 01	750-018122	KA5576	DPCE-R-40GE-SFP
FPC 1	REV 16	750-031089	YL0719	MX-MPC2-3D
MIC 0	REV 07	750-028387	JR6500	MIC-3D-4XGE-XFP
MIC 1	REV 24	750-028387	YJ3950	MIC-3D-4XGE-XFP
FPC 2	REV 08	710-014219	JY9654	DPC-R-4XGE-XFP
FPC 3	REV 10	750-024199	XJ6692	MX-FPC3
PIC 0	REV 17	750-009553	RJ2945	PC-40C48-SON-SFP
PIC 1	REV 32	750-003700	DP2113	PC-10C192-SON-VSR
FPC 5	REV 25	750-028467	YM8256	MPC-3D-16XGE-SFPP
FPC 7	REV 02	750-031092	JR6658	MX-MPC1-3D-Q
MIC 0	REV 08	750-028392	JZ8737	MIC-3D-20GE-SFP
FPC 8	REV 05	750-024387	JW9754	MX-FPC2
PIC 0	REV 08	750-014730	DM3664	PB-40C3-10C12-SON2-SFP
PIC 1	REV 08	750-014637	DM3671	PB-40C3-40C12-SON-SFP
FPC 10	REV 04	710-013699	JY4654	DPC-R-40GE-SFP
Fan Tray 0	REV 03	740-014971	TP0567	FFANTRAY-MX960-S
Fan Tray 1	REV 03	740-014971	TP0702	FFANTRAY-MX960-S

**show chassis hardware
detail (MX960 Router)**

user@host> show chassis hardware detail

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis				MX960
Midplane	REV 01	710-013698	AA6082	MX960 Midplane
PIM	Rev 01	740-013110	000008	Power Inlet Module
PEM 2				
PEM 3	Rev 01	740-013682	000038	PS 1.7kW; 200-240VAC in
Routing Engine 0	REV 00	740-015113	1000617944	RE-S-1300
ad0	245 MB	SanDisk SDCFB-256	111419E1805T1141	Compact Flash
ad2	38154 MB	FUJITSU MHT2040BH	NROWT5925N77	Hard Disk
CB 0	REV 05	710-013725	JK6947	MX960 Test SCB
FPC 4	REV 01	710-013305	JM7617	MX960 Test DPC
CPU				
PIC 0		BUILTIN	BUILTIN	1x 10GE (LAN/WAN)
PIC 1		BUILTIN	BUILTIN	10x 1GE
FPC 7	REV 01	710-013305	JL9634	MX960 Test DPC
CPU				
PIC 0		BUILTIN	BUILTIN	1x 10GE (LAN/WAN)
Xcvr 0		NON-JNPR	MYBG65I82C	XFP-10G-SR
PIC 1		BUILTIN	BUILTIN	10x 1GE
Xcvr 1	REV 01	740-011782	P7N0368	SFP-SX
Xcvr 4	REV 01	740-011782	P8J1W27	SFP-SX
Xcvr 6	REV 01	740-011782	P8J1VSD	SFP-SX
Xcvr 9	REV 01	740-011782	P8J1W25	SFP-SX
Fan Tray 0				
Fan Tray 1				

**show chassis hardware
(T320 Router)**

user@host> show chassis hardware

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			19093	T320
Midplane	REV 04	710-004339	BC1436	T320 Backplane
FPM GBUS	REV 03	710-004461	BC1407	T320 FPM Board
FPM Display	REV 04	710-002897	BE0763	FPM Display
CIP	REV 05	710-002895	BB2311	T Series CIP
PEM 0	Rev 01	740-004359	NB12546	Power Entry Module
SCG 0	REV 06	710-004455	AY4522	T320 Sonet
Clock Gen.				
Routing Engine 0				unknown
CB 0	REV 13	710-002728	BC1577	T Series
Control Board				
CB 1	REV 13	710-002728	BC1595	T Series
Control Board				
FPC 1	REV 09	710-007531	HS1572	FPC Type 2
CPU	REV 15	710-001726	HR8763	FPC CPU
PIC 0	REV 01	750-010618	CB5579	4x G/E SFP,
1000 BASE				
SFP 0	REV 01	740-007326	P5809Z1	SFP-SX
SFP 1	REV 01	740-007326	P4Q10XU	SFP-SX
SFP 2		NON-JNPR	RA45020031	SFP-SX
SFP 3		NON-JNPR	RA45020032	SFP-SX
PIC 1	REV 01	750-010618	CD9587	4x G/E SFP,
1000 BASE				
SFP 0		NON-JNPR	P5A08QZ	SFP-T
SFP 1	REV 01	740-007326	P4Q133K	SFP-SX
SFP 2	REV 01	740-007326	P5809YY	SFP-SX
SFP 3	REV 01	740-007327	4C81704	SFP-LX
MMB 1	REV 03	710-005555	HR9401	MMB-288mbit
PPB 0	REV 04	710-003758	HR2886	PPB Type 2
FPC 2	REV 07	710-005860	HP2392	FPC Type 1


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CPU          REV 14  710-001726  HP7797          FPC CPU
PIC 0        REV 02  750-007643  HM0853          1x G/E QPP,
1000 BASE
SFP 0        REV 01  740-007326  P11E9JJ         SFP-SX
MMB 1        REV 02  710-005555  HN2379          MMB-288mbit
PPB 0        REV 04  710-003758  HP8092          PPB Type 2
FPC 3        REV 07  710-005860  HP2393          FPC Type 1
CPU          REV 14  710-001726  HP0968          FPC CPU
PIC 0        REV 01  750-010240  CB5363          1x G/E SFP,
1000 BASE
SFP 0        REV 01  740-007326  P4R0PNH         SFP-SX
PIC 1        REV 03  750-003034  HD2832          4x OC-3 SONET,
SMIR
MMB 1        REV 02  710-005555  HN6307          MMB-288mbit
PPB 0        REV 04  710-003758  HP5051          PPB Type 2
FPC 4        REV 01  710-010845  JD3872          FPC Type 4
CPU          REV 02  710-011481  JB6042          FPC CPU
5            REV 01  710-005802  BC1566          FPC Type 2
CPU          REV 09  710-001726  AY4922          FPC CPU
PIC 0        REV 02  750-008155  BE2114          2x G/E QPP,
1000 BASE
SFP 0        REV 01  740-007326  P4R0PMQ         SFP-SX
SFP 1        REV 01  740-007326  P4R0PN9         SFP-SX
PIC 1        REV 01  750-008155  BE2116          2x G/E QPP,
1000 BASE
SFP 0        REV 01  740-007326  P4R0PNZ         SFP-SX
SFP 1        NON-JNPR  2908           SFP-T
MMB 1        REV 01  710-005555  AZ2246          MMB-288mbit
PPB 0        REV 03  710-003758  AY4839          PPB Type 2
FPC 7        REV 01  710-005803  AZ2123          FPC Type 3
...

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show chassis hardware (T640 Router)

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user@host> show chassis hardware
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Hardware inventory:
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Item	Version	Part number	Serial number	Description
Chassis			19182	T640
Midplane	REV 04	710-002726	AX5608	T640 Backplane
FPM GBUS	REV 02	710-002901	HE3064	T640 FPM Board
FPM Display	REV 02	710-002897	HE7864	FPM Display
CIP	REV 05	710-002895	HA5024	T Series CIP
PEM 0	Rev 02	740-029522	VH26235	AC PEM 10kW US
PEM 1	Rev 02	740-029522	VH26230	AC PEM 10kW US
SCG 0	REV 03	710-003423	HA4508	T640 Sonet Clock Gen.
Routing Engine 0	REV 02	740-005022	210865700483	RE-3.0 (RE-600)
CB 0	REV 01	710-002728	HD3044	T Series Control Board
FPC 2	REV 04	710-001721	HD5572	FPC Type 3
CPU	REV 06	710-001726	HA4712	FPC CPU
PIC 1	REV 03	750-009567	HV2331	1x 10GE(LAN),XENPAK
SFP 0	REV 01	740-009898	USC202R103	XENPAK-SR
PIC 2	REV 03	750-009567	HV2332	1x 10GE(LAN),XENPAK
SFP 0	REV 01	740-011268	USC202R112	XENPAK-ZR
PIC 3	REV 03	750-009567	HX4416	1x 10GE(LAN),XENPAK
SFP 0	REV 01	740-012056	434TC004	XENPAK-CX4
PIC 4	REV 03	750-009567	HX4420	1x 10GE(LAN),XENPAK
SFP 0	REV 01	740-012058	434TC124	XENPAK-LX4
FPC 5	REV 01	710-013553	JE4839	E2-FPC Type 1
CPU	REV 01	710-013569	JW9163	FPC CPU
PIC 0	REV 01	750-009567	HX4419	1x 10GE(LAN),XENPAK
SFP 0	REV 01	740-009898	USC202RT05	XENPAK-LR
PIC 1	REV 03	750-009567	HN7426	1x 10GE(LAN),XENPAK
SFP 0	REV 01	740-009550	03L90051	XENPAK-ER

PIC 2	REV 03	750-009467	HT7423	1x 10GE(LAN),XENPAK
SFP 0		NON-JNPR		UNKNOWN
PIC 3	REV 04	750-005100	AY4850	1x 10GE(LAN),DWDM
FPC 4	REV 01	710-010845	JD3872	FPC Type 4
CPU	REV 02	710-011481	JB6042	FPC CPU
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray

show chassis hardware models (T640 Router) user@host> show chassis hardware models

Hardware inventory:

Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 04	710-002726		CHAS-BP-T640-S
FPM Display	REV 02	710-002897		CRAFT-T640-S
CIP	REV 05	710-002895		CIP-L-T640-S
PEM 0	Rev 01	740-002595		PWR-T-DC-S
SCG 0	REV 04	710-003423		SCG-T-S
SCG 1	REV 04	710-003423		SCG-T-S
Routing Engine 0	REV 01	740-005022		RE-600-2048-S
Routing Engine 1	REV 07	740-005022		RE-600-2048-S
CB 0	REV 06	710-002726		CHAS-BP-T640-S
CB 1	REV 06	710-002728		CB-L-T-S
FPC 5	REV 05	710-007527		T640-FPC2
PIC 0	REV 05	750-002510		PB-2GE-SX
PIC 1	REV 05	750-001901		PB-40C12-SON-SMIR
FPC 6	REV 03	710-001721		T640-FPC3
PIC 1	REV 01	750-009553		PC-40C48-SON-SFP
SIB 4	REV 02	750-005486		SIB-I-T640-S
Fan Tray 0				FANTRAY-T-S
Fan Tray 1				FANTRAY-T-S
Fan Tray 2				FAN-REAR-TX-T640-S

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 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:	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			

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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

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**show chassis hardware
(T4000 Router)**

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user@host> show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis
Midplane      REV 01   710-027486   RC8355        T-series Backplane
FPM GBUS      REV 13   710-002901   BBAE0927      T640 FPM Board
FPM Display   REV 01   710-021387   EF6764        T1600 FPM Display
CIP           REV 06   710-002895   BBAD9210      T-series CIP
PEM 0         REV 01   740-036442   VA00016       Power Entry Module 6x60
SCG 0         REV 18   710-003423   BBAD7248      T640 Sonet Clock Gen.
SCG 1         REV 18   710-003423   BBAE3874      T640 Sonet Clock Gen.
Routing Engine 0 REV 05   740-026941   P737F-002248  RE-DUO-1800
Routing Engine 1 REV 06   740-026941   P737F-002653  RE-DUO-1800
CB 0          REV 09   710-022597   ED0295        LCC Control Board
CB 1          REV 09   710-022597   EA6050        LCC Control Board
FPC 0         REV 26   750-032819   EK1173        FPC Type 5-3D
CPU           REV 12   711-030686   EJ8584        SNG PMB
PIC 0         REV 07   750-034624   EF6837        12x10GE (LAN/WAN) SFPP
  Xcvr 0      REV 01   740-031980   123363A01145  SFP+-10G-SR
  Xcvr 1      REV 01   740-031980   123363A01147  SFP+-10G-SR
  Xcvr 2      REV 01   740-031980   AJJ01P3       SFP+-10G-SR
  Xcvr 3      REV 01   740-031980   B10M03256     SFP+-10G-SR
  Xcvr 4      REV 01   740-031980   AJJ01M2       SFP+-10G-SR
  Xcvr 5      REV 01   740-031980   123363A01137  SFP+-10G-SR
  Xcvr 6      REV 01   740-031980   AJJ01PN       SFP+-10G-SR
  Xcvr 7      REV 01   740-031980   AJJ01NW       SFP+-10G-SR
  Xcvr 8      REV 01   740-031980   123363A01139  SFP+-10G-SR
  Xcvr 9      REV 01   740-031980   AJJ01KE       SFP+-10G-SR
  Xcvr 10     REV 01   740-031980   123363A01336  SFP+-10G-SR
  Xcvr 11     REV 01   740-031980   B10M01325     SFP+-10G-SR
PIC 1         REV 07   750-034624   EF6800        12x10GE (LAN/WAN) SFPP
  Xcvr 0      REV 01   740-031980   AJJ01SA       SFP+-10G-SR
  Xcvr 1      REV 01   740-031980   AJJ01QZ       SFP+-10G-SR
  Xcvr 2      REV 01   740-031980   AJH0217       SFP+-10G-SR
  Xcvr 3      REV 01   740-031980   AJJ01TE       SFP+-10G-SR
  Xcvr 4      REV 01   740-031980   AJJ01KV       SFP+-10G-SR
  Xcvr 5      REV 01   740-031980   AJJ01MU       SFP+-10G-SR
  Xcvr 6      REV 01   740-031980   AJJ01R0       SFP+-10G-SR

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Xcvr 7	REV 01	740-031980	AJJ01TC	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	AJJ0364	SFP+-10G-SR
Xcvr 9	REV 01	740-031980	AJD0GV3	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	B10M03343	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	AJJ01QJ	SFP+-10G-SR
LMB 0	REV 05	711-034381	EJ8490	Type-0 LMB
LMB 1	REV 04	711-035774	EJ8517	Type-1 LMB
LMB 2	REV 05	711-034381	EJ8489	Type-0 LMB
FPC 3	REV 07	750-032819	EG3637	FPC Type 5-3D
CPU	REV 09	711-030686	EG0150	SNG PMB
PIC 0	REV 08	750-035293	EF3657	1x100GE
Xcvr 0	REV 01	740-032210	C22CQNJ	CFP-100G-LR4
PIC 1	REV 10	750-034624	BBAN4098	12x10GE (LAN/WAN) SFPP
Xcvr 0	REV 01	740-031980	B11J04902	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11J04891	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AJJ01MX	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11J04183	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	B11J04894	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	B11J04184	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	B11J04897	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	B11J04899	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	AJJ01TV	SFP+-10G-SR
Xcvr 9	REV 01	740-031980	B11J04057	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	AJJ01M4	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	B11J04905	SFP+-10G-SR
LMB 0	REV 04	711-034381	EG1524	Type-0 LMB
LMB 1	REV 03	711-035774	EG0345	Type-1 LMB
LMB 2	REV 04	711-034381	EG1522	Type-0 LMB
FPC 5	REV 03	710-033871	BBAJ0768	FPC Type 4-ES
CPU	REV 11	710-016744	BBAH9342	ST-PMB2
PIC 0	REV 09	750-029262	EE6789	100GE
PIC 1	REV 03	750-034781	EE6655	100GE CFP
Xcvr 0	REV 01	740-032210	J11A22334	CFP-100G-LR4
BRIDGE 0	REV 03	711-029995	EE6572	100GE Bridge Board
MMB 0	REV 07	710-025563	BBAJ4657	ST-MMB2
MMB 1	REV 07	710-025563	BBAJ3073	ST-MMB2
FPC 6	REV 05	750-010153	EF4936	FPC Type 5-3D
CPU	REV 06	711-030686	EF4189	SNG PMB
PIC 0	REV 10	750-034624	BBAN4109	12x10GE (LAN/WAN) SFPP
Xcvr 0	REV 01	740-031980	B11J04895	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11J04898	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11J04021	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11J04903	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	B11J04311	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	B11J04059	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	B11J04016	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	B11J04017	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	B11J04887	SFP+-10G-SR
Xcvr 9	REV 01	740-031980	B11J04297	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	B11J04893	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	B11J04022	SFP+-10G-SR
PIC 1	REV 02	750-034624	EE3711	12x10GE (LAN/WAN) SFPP
Xcvr 0	REV 01	740-031980	AJH033X	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AJJ01N0	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AJJ01SV	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AJJ032L	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	B10M01593	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	AJD0FF1	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	AJJ01NU	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	123363A01305	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	B10M00361	SFP+-10G-SR

Xcvr 9	REV 01	740-031980	AJJ01M7	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	AJJ032X	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	AJJ01PG	SFP+-10G-SR
LMB 0	REV 04	711-034381	EF3838	Type-0 LMB
LMB 1	REV 03	711-035774	EF3821	Type-1 LMB
LMB 2	REV 04	711-034381	EF3834	Type-0 LMB
SPMB 0	REV 05	710-023321	ED1990	LCC Switch CPU
SPMB 1	REV 05	710-023321	EA2768	LCC Switch CPU
SIB 0	REV 02	711-036340	EF8802	SIB-HC-3D
SIB 1	REV 07	711-036340	EG2286	SIB-HC-3D
SIB 2	REV 07	711-036340	EG2252	SIB-HC-3D
SIB 3	REV 02	711-036340	EF1358	SIB-HC-3D
SIB 4	REV 02	711-036340	EF8806	SIB-HC-3D
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
-- Rev 2				
Fan Tray 2				Rear Fan Tray -- Rev 3

**show chassis hardware
clei-models (T4000
Router)**

user@host> show chassis hardware clei-models
Hardware inventory:

Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 01	710-027486	IPMJ700DRD	CHAS-BP-T1600-S
FPM Display	REV 01	710-021387		CRAFT-T1600-S
CIP	REV 06	710-002895		CIP-L-T640-S
PEM 0	REV 01	740-036442	IPUPAG6KAA	PWR-T-6-60-DC
SCG 0	REV 18	710-003423		SCG-T-S
SCG 1	REV 18	710-003423		SCG-T-S
Routing Engine 0	REV 05	740-026941		RE-DUO-C1800-8G-S
Routing Engine 1	REV 06	740-026941		RE-DUO-C1800-8G-S
CB 0	REV 09	710-022597		CB-LCC-S
CB 1	REV 09	710-022597		CB-LCC-S
FPC 3				
PIC 0	REV 08	750-035293	XXXXXXXXBB	PF-1CGE-CFP
PIC 1	REV 10	750-034624	XXXXXXXXCC	PF-12XGE-SFPP
FPC 5	REV 03	710-033871	IPUCAMBCTD	T1600-FPC4-ES
PIC 1	REV 03	750-034781	IPUIBKLMMA	PD-1CE-CFP-FPC4
FPC 6				
PIC 0	REV 10	750-034624	XXXXXXXXCC	PF-12XGE-SFPP
Fan Tray 0				FANTRAY-T-S
Fan Tray 1				FANTRAY-T4000-S
Fan Tray 2				FANTRAY-TXP-R-S

**show chassis hardware
detail (T4000 Router)**

user@host> show chassis hardware detail
Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN1172F25AHA	T4000
Midplane	REV 01	710-027486	RC8355	T-series Backplane
FPM GBUS	REV 13	710-002901	BBAE0927	T640 FPM Board
FPM Display	REV 01	710-021387	EF6764	T1600 FPM Display
CIP	REV 06	710-002895	BBAD9210	T-series CIP
PEM 0	REV 01	740-036442	VA00016	Power Entry Module 6x60
SCG 0	REV 18	710-003423	BBAD7248	T640 Sonet Clock Gen.
SCG 1	REV 18	710-003423	BBAE3874	T640 Sonet Clock Gen.
Routing Engine 0	REV 05	740-026941	P737F-002248	RE-DUO-1800
ad0	3823 MB	SMART CF	2009121602A661576157	Compact Flash
ad1	59690 MB	STEC MACH-8 SSD	STM000103FDB	Disk 1
Routing Engine 1	REV 06	740-026941	P737F-002653	RE-DUO-1800
ad0	3823 MB	SMART CF	201011150153F52CF52C	Compact Flash
ad1	62720 MB	SMART Lite SATA Drive	2010110900150A880A88	Disk 1
CB 0	REV 09	710-022597	ED0295	LCC Control Board
CB 1	REV 09	710-022597	EA6050	LCC Control Board

FPC 0	REV 26	750-032819	EK1173	FPC Type 5-3D
CPU	REV 12	711-030686	EJ8584	SNG PMB
PIC 0	REV 07	750-034624	EF6837	12x10GE (LAN/WAN) SFPP
Xcvr 0	REV 01	740-031980	123363A01145	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	123363A01147	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AJJ01P3	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B10M03256	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	AJJ01M2	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	123363A01137	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	AJJ01PN	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	AJJ01NW	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	123363A01139	SFP+-10G-SR
Xcvr 9	REV 01	740-031980	AJJ01KE	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	123363A01336	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	B10M01325	SFP+-10G-SR
PIC 1	REV 07	750-034624	EF6800	12x10GE (LAN/WAN) SFPP
Xcvr 0	REV 01	740-031980	AJJ01SA	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AJJ01QZ	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AJH0217	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AJJ01TE	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	AJJ01KV	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	AJJ01MU	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	AJJ01R0	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	AJJ01TC	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	AJJ0364	SFP+-10G-SR
Xcvr 9	REV 01	740-031980	AJD0GV3	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	B10M03343	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	AJJ01QJ	SFP+-10G-SR
LMB 0	REV 05	711-034381	EJ8490	Type-0 LMB
LMB 1	REV 04	711-035774	EJ8517	Type-1 LMB
LMB 2	REV 05	711-034381	EJ8489	Type-0 LMB
FPC 3	REV 07	750-032819	EG3637	FPC Type 5-3D
CPU	REV 09	711-030686	EG0150	SNG PMB
PIC 0	REV 08	750-035293	EF3657	1x100GE
Xcvr 0	REV 01	740-032210	C22CQNJ	CFP-100G-LR4
PIC 1	REV 10	750-034624	BBAN4098	12x10GE (LAN/WAN) SFPP
Xcvr 0	REV 01	740-031980	B11J04902	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11J04891	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AJJ01MX	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11J04183	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	B11J04894	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	B11J04184	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	B11J04897	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	B11J04899	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	AJJ01TV	SFP+-10G-SR
Xcvr 9	REV 01	740-031980	B11J04057	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	AJJ01M4	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	B11J04905	SFP+-10G-SR
LMB 0	REV 04	711-034381	EG1524	Type-0 LMB
LMB 1	REV 03	711-035774	EG0345	Type-1 LMB
LMB 2	REV 04	711-034381	EG1522	Type-0 LMB
FPC 5	REV 03	710-033871	BBAJ0768	FPC Type 4-ES
CPU	REV 11	710-016744	BBAH9342	ST-PMB2
PIC 0	REV 09	750-029262	EE6789	100GE
PIC 1	REV 03	750-034781	EE6655	100GE CFP
Xcvr 0	REV 01	740-032210	J11A22334	CFP-100G-LR4
BRIDGE 0	REV 03	711-029995	EE6572	100GE Bridge Board
MMB 0	REV 07	710-025563	BBAJ4657	ST-MMB2
MMB 1	REV 07	710-025563	BBAJ3073	ST-MMB2
FPC 6	REV 05	750-010153	EF4936	FPC Type 5-3D
CPU	REV 06	711-030686	EF4189	SNG PMB

PIC 0	REV 10	750-034624	BBAN4109	12x10GE (LAN/WAN) SFPP
Xcvr 0	REV 01	740-031980	B11J04895	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11J04898	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11J04021	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11J04903	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	B11J04311	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	B11J04059	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	B11J04016	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	B11J04017	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	B11J04887	SFP+-10G-SR
Xcvr 9	REV 01	740-031980	B11J04297	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	B11J04893	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	B11J04022	SFP+-10G-SR
PIC 1	REV 02	750-034624	EE3711	12x10GE (LAN/WAN) SFPP
Xcvr 0	REV 01	740-031980	AJH033X	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AJJ01N0	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AJJ01SV	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AJJ032L	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	B10M01593	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	AJD0FF1	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	AJJ01NU	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	123363A01305	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	B10M00361	SFP+-10G-SR
Xcvr 9	REV 01	740-031980	AJJ01M7	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	AJJ032X	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	AJJ01PG	SFP+-10G-SR
LMB 0	REV 04	711-034381	EF3838	Type-0 LMB
LMB 1	REV 03	711-035774	EF3821	Type-1 LMB
LMB 2	REV 04	711-034381	EF3834	Type-0 LMB
SPMB 0	REV 05	710-023321	ED1990	LCC Switch CPU
SPMB 1	REV 05	710-023321	EA2768	LCC Switch CPU
SIB 0	REV 02	711-036340	EF8802	SIB-HC-3D
SIB 1	REV 07	711-036340	EG2286	SIB-HC-3D
SIB 2	REV 07	711-036340	EG2252	SIB-HC-3D
SIB 3	REV 02	711-036340	EF1358	SIB-HC-3D
SIB 4	REV 02	711-036340	EF8806	SIB-HC-3D
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
-- Rev 2				
Fan Tray 2				Rear Fan Tray -- Rev 3

show chassis hardware models (T4000 Router)

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user@host> show chassis hardware models

Hardware inventory:
Item                Version  Part number  Serial number  FRU model number
Midplane            REV 01    710-027486   RC8355         CHAS-BP-T1600-S
FPM Display         REV 01    710-021387   EF6764         CRAFT-T1600-S
CIP                 REV 06    710-002895   BBAD9210       CIP-L-T640-S
PEM 0              REV 01    740-036442   VA00016        PWR-T-6-60-DC
SCG 0              REV 18    710-003423   BBAD7248        SCG-T-S
SCG 1              REV 18    710-003423   BBAE3874        SCG-T-S
Routing Engine 0    REV 05    740-026941   P737F-002248   RE-DUO-C1800-8G-S
Routing Engine 1    REV 06    740-026941   P737F-002653   RE-DUO-C1800-8G-S
CB 0               REV 09    710-022597   ED0295         CB-LCC-S
CB 1               REV 09    710-022597   EA6050         CB-LCC-S
FPC 3
  PIC 0            REV 08    750-035293   EF3657         PF-1CGE-CFP
  PIC 1            REV 10    750-034624   BBAN4098        PF-12XGE-SFPP
FPC 5              REV 03    710-033871   BBAJ0768        T1600-FPC4-ES
  PIC 1            REV 03    750-034781   EE6655         PD-1CE-CFP-FPC4
FPC 6
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PIC 0	REV 10	750-034624	BBAN4109	PF-12XGE-SFPP
Fan Tray 0				FANTRAY-T-S
Fan Tray 1				FANTRAY-T4000-S
Fan Tray 2				FAN-REAR-TXP-LCC

show chassis hardware user@host> **show chassis hardware lcc 0**
lcc (TX Matrix Router) lcc0-re0:

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Hardware inventory:
Item                Version  Part number  Serial number  Description
Chassis              REV 03    710-005608   65751         T640
Midplane             REV 09    710-002901   RA1408        T640 Backplane
FPM GBUS             REV 05    710-002897   RA2784        T640 FPM Board
FPM Display          REV 06    710-002895   RA2825        FPM Display
CIP                  REV 11    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)
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show chassis hardware user@host> **show chassis hardware scc**
scc (TX Matrix Router) scc-re0:

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Hardware inventory:
Item                Version  Part number  Serial number  Description
Chassis              REV 04    710-004396   RB0014        TX Matrix
Midplane             REV 04    710-004617   HW9141        SCC Midplane
FPM GBUS             REV 04    710-004619   HS5950        SCC FPM Board
FPM Display          REV 01    710-010218   HV9151        SCC FPM
CIP 0                REV 01    710-010218   HV9152        SCC CIP
CIP 1                REV 01    710-010218   HV9152        SCC CIP
PEM 1                Rev 11    740-002595   QB13977       Power Entry Module
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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
(T1600 Router)

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user@host> show chassis hardware
Hardware inventory:
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Item	Version	Part number	Serial number	Description
Chassis			B2703	T1600
Midplane	REV 03	710-005608	RC4137	T640 Backplane
FPM GBUS	REV 10	710-002901	DT7062	T640 FPM Board
FPM Display	REV 05	710-002897	DS3067	FPM Display
CIP	REV 06	710-002895	DT3386	T-series CIP
PEM 0	Rev 07	740-017906	UA26344	Power Entry Module 3x80
PEM 1	Rev 18	740-002595	UF38441	Power Entry Module
SCG 0	REV 15	710-003423	DV0941	T640 Sonet Clock Gen.
Routing Engine 0	REV 08	740-014082	9009014502	RE-A-2000
Routing Engine 1	REV 07	740-014082	9009009591	RE-A-2000
CB 0	REV 05	710-007655	JA9360	Control Board (CB-T)
CB 1	REV 03	710-017707	DT3251	Control Board (CB-T)
FPC 0	REV 07	710-013558	DR4253	E2-FPC Type 2
CPU	REV 05	710-013563	DS3902	FPC CPU-Enhanced
PIC 0	REV 01	750-010618	CB5446	4x G/E SFP, 1000 BASE
Xcvr 0	REV 01	740-011613	P9F11CW	SFP-SX
Xcvr 1	REV 01	740-011613	P9F15C2	SFP-SX
Xcvr 2	REV 01	740-011782	PB94K0L	SFP-SX
PIC 1	REV 06	750-001900	HB6399	1x OC-48 SONET, SMSR
PIC 2	REV 14	750-001901	AP1092	4x OC-12 SONET, SMIR
PIC 3	REV 07	750-001900	AR8275	1x OC-48 SONET, SMSR
MMB 1	REV 07	710-010171	DS1524	MMB-5M3-288mbit
FPC 1	REV 06	710-013553	DL9067	E2-FPC Type 1
CPU	REV 04	710-013563	DM1685	FPC CPU-Enhanced
PIC 0	REV 08	750-001072	AB1688	1x G/E, 1000 BASE-SX
PIC 1	REV 10	750-012266	JX5519	4x 1GE(LAN), IQ2
Xcvr 0	REV 01	740-011613	AM0812S8UK6	SFP-SX
Xcvr 2	REV 01	740-011613	AM0812S8UK1	SFP-SX
Xcvr 3	REV 01	740-011782	P8N1YHG	SFP-SX
PIC 2	REV 22	750-005634	DP0083	1x CHOC12 IQ SONET, SMIR
MMB 1	REV 07	710-008923	DN1862	MMB 3M 288-bit
FPC 2	REV 01	710-005548	HJ9899	FPC Type 3
CPU	REV 06	710-001726	HC0586	FPC CPU
PIC 0	REV 16	750-007141	NC9660	10x 1GE(LAN), 1000 BASE
Xcvr 0	REV 01	740-011613	AM0812S8XAR	SFP-SX
Xcvr 1	REV 01	740-011782	P920E7B	SFP-SX
Xcvr 2	REV 01	740-011613	AM0812S8XAU	SFP-SX
Xcvr 4	REV 01	740-011613	AM0812S8XAK	SFP-SX
Xcvr 5	REV 01	740-011613	AM0812S8XAA	SFP-SX
Xcvr 6	REV 01	740-011613	PAJ4NKY	SFP-SX
Xcvr 7	REV 01	740-011613	AM0812S8UJW	SFP-SX
Xcvr 8	REV 01	740-011782	PB81X89	SFP-SX
Xcvr 9	REV 01	740-011613	AM0812S8UJX	SFP-SX
PIC 1	REV 06	750-015217	DK3280	8x 1GE(TYPE3), IQ2
Xcvr 0	REV 01	740-011782	P8POA3T	SFP-SX
Xcvr 1	REV 01	740-013111	5090002	SFP-T
Xcvr 2	REV 01	740-011613	AM0814S93BQ	SFP-SX
Xcvr 4		NON-JNPR	PDEOFAN	SFP-SX
Xcvr 5	REV 01	740-011782	P8Q20XY	SFP-SX

Xcvr 6	REV 01	740-011613	AM0812S8UJV	SFP-SX
Xcvr 7	REV 01	740-011613	AM0812S8UP7	SFP-SX
PIC 2	REV 05	750-004695	HT4383	1x Tunnel
PIC 3	REV 17	750-009553	RL0204	4x OC-48 SONET
Xcvr 0	REV 01	740-011785	PDS3T23	SFP-SR
Xcvr 1	REV 01	740-011785	P6Q0F3E	SFP-SR
MMB 0	REV 03	710-004047	HD5843	MMB-288mbit
MMB 1	REV 03	710-004047	HE3208	MMB-288mbit
PPB 0	REV 02	710-002845	HA4524	PPB Type 3
PPB 1	REV 02	710-002845	HA4766	PPB Type 3
FPC 3	REV 01	710-010154	HR0863	E-FPC Type 3
CPU	REV 01	710-010169	HN3422	FPC CPU-Enhanced
PIC 0	REV 07	750-012793	WF5096	1x 10GE(LAN/WAN) IQ2
Xcvr 0		NON-JNPR	M64294TP	XFP-10G-LR
PIC 1	REV 25	750-007141	DV2127	10x 1GE(LAN), 1000 BASE
Xcvr 0	REV 01	740-011613	PFA6LTJ	SFP-SX
Xcvr 1	REV 01	740-011782	P9P0XV4	SFP-SX
Xcvr 2	REV 01	740-011782	P9M0TNX	SFP-SX
Xcvr 4	REV 01	740-011782	P9B0TTP	SFP-SX
Xcvr 5		NON-JNPR	PBS4LED	SFP-SX
PIC 2	REV 17	750-009553	RL0212	4x OC-48 SONET
Xcvr 0	REV 01	740-011785	PDS3T8G	SFP-SR
PIC 3	REV 32	750-003700	DL1279	1x OC-192 12xMM VSR
MMB 0	REV 01	710-010171	HR0821	MMB-288mbit
MMB 1	REV 01	710-010171	HR0818	MMB-288mbit
FPC 4	REV 16	710-013037	EB4919	FPC Type 4-ES
CPU	REV 09	710-016744	BBAA4382	ST-PMB2
PIC 0	REV 03	711-029996	EB1569	100GE
PIC 1	REV 05	711-029999	EB9983	100GE CFP
Xcvr 0	REV 0	740-032210	J10G80746	CFP-100G-LR4
BRIDGE 0	REV 02	711-029995	EB2235	100GE Bridge Board
MMB 0	REV 04	710-025563	BBAA7112	ST-MMB2
MMB 1	REV 04	710-025563	BBAA7149	ST-MMB2
FPC 5	REV 02	710-013037	DE3407	FPC Type 4-ES
CPU	REV 04	710-016744	DA2124	ST-PMB2
PIC 0	REV 16	750-012518	DF2554	4x OC-192 SONET XFP
Xcvr 0	REV 01	740-014279	AA0745N1FX8	XFP-OC192-SR
Xcvr 1	REV 01	740-014279	AA0748N1HN5	XFP-OC192-SR
Xcvr 2	REV 01	740-014279	AA0748N1HT6	XFP-OC192-SR
Xcvr 3	REV 01	740-014279	AA0744N1EC9	XFP-OC192-SR
PIC 1	REV 01	750-010850	JA0329	1x OC-768 SONET SR
MMB 0	REV 04	710-016036	DE9577	ST-MMB2
MMB 1	REV 04	710-016036	DK4060	ST-MMB2
FPC 6	REV 14	710-013037	DV1431	FPC Type 4-ES
CPU	REV 09	710-016744	DT9020	ST-PMB2
PIC 0	REV 11	750-017405	DM6261	4x 10GE (LAN/WAN) XFP
Xcvr 0	REV 01	740-014289	C701XU05Q	XFP-10G-SR
Xcvr 1	REV 01	740-014279	AA0748N1HPT	XFP-10G-LR
Xcvr 2	REV 01	740-014289	T08E19189	XFP-10G-SR
Xcvr 3	REV 01	740-014289	C715XU058	XFP-10G-SR
PIC 1	REV 13	750-017405	DP8772	4x 10GE (LAN/WAN) XFP
Xcvr 0	REV 02	740-011571	C850XJ037	XFP-10G-SR
Xcvr 1	REV 02	740-014289	C839XU0L9	XFP-10G-SR
Xcvr 2	REV 02	740-014289	C834XU05A	XFP-10G-SR
Xcvr 3	REV 02	740-014289	C810XU0CE	XFP-10G-SR
MMB 0	REV 01	710-025563	DT8454	ST-MMB2
MMB 1	REV 01	710-025563	DT8366	ST-MMB2
FPC 7	REV 09	710-007529	HZ7624	FPC Type 3
CPU	REV 15	710-001726	HZ1413	FPC CPU
PIC 0	REV 10	750-012793	DM5627	1x 10GE(LAN/WAN) IQ2

Xcvr 0	REV 02	740-011571	C831XJ062	XFP-10G-SR
PIC 1	REV 01	750-015217	JT6762	8x 1GE(TYPE3), IQ2
Xcvr 0	REV 01	740-011782	P8Q25JU	SFP-SX
Xcvr 1	REV 01	740-011782	P9B0U0K	SFP-SX
PIC 2	REV 01	750-015217	JS4268	8x 1GE(TYPE3), IQ2
Xcvr 0	REV 01	740-011613	AM0812S8XBZ	SFP-SX
Xcvr 1	REV 01	740-011613	AM0812S8XAP	SFP-SX
Xcvr 2	REV 01	740-011613	AM0812S8XBY	SFP-SX
Xcvr 3	REV 01	740-011613	AM0812S8XBX	SFP-SX
Xcvr 4	REV 01	740-011613	P9F1652	SFP-SX
Xcvr 5	REV 01	740-011782	P8Q21YC	SFP-SX
Xcvr 6	REV 01	740-011782	P8Q27HQ	SFP-SX
Xcvr 7	REV 01	740-011613	P8E2SSU	SFP-SX
PIC 3	REV 15	750-009450	NB6790	1x OC-192 SM SR2
MMB 0	REV 03	710-005555	HZ3450	MMB-288mbit
MMB 1	REV 03	710-005555	HZ3415	MMB-288mbit
PPB 0	REV 04	710-002845	HP0887	PPB Type 3
PPB 1	REV 04	710-002845	HW5255	PPB Type 3
SPMB 0	REV 10	710-003229	HX3699	T-series Switch CPU
SPMB 1	REV 12	710-003229	DT3091	T-series Switch CPU
SIB 0	REV 07	710-013074	DS4747	SIB-I8-SF
SIB 1	REV 07	710-013074	DS4942	SIB-I8-SF
SIB 2	REV 07	710-013074	DS4965	SIB-I8-SF
SIB 3	REV 07	710-013074	DS4990	SIB-I8-SF
SIB 4	REV 07	710-013074	DS4944	SIB-I8-SF
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray -- Rev 2

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show chassis hardware user@host> show chassis hardware
(TX Matrix Plus      sfc0-re0:
Router)
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Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               JN113186EAHB  TXP
Midplane      REV 05    710-022574   TS3822         SFC Midplane
FPM Display   REV 03    710-024027   DW4701         TXP FPM Display
CIP 0         REV 05    710-023792   DW7998         TXP CIP
CIP 1         REV 05    710-023792   DW7999         TXP CIP
PEM 0         Rev 04    740-027463   UM26367        Power Entry Module
PEM 1         Rev 04    740-027463   UM26346        Power Entry Module
Routing Engine 0 REV 06    740-026942   737A-1081      RE-DUO-2600
Routing Engine 1 REV 06    740-026942   737A-1043      RE-DUO-2600
CB 0          REV 05    710-022606   DW4435         SFC Control Board
CB 1          REV 09    710-022606   DW6100         SFC Control Board
SPMB 0        BUILTIN                                     SFC Switch CPU
SPMB 1        BUILTIN                                     SFC Switch CPU
SIB F13 0     REV 04    750-024564   DW5764         F13 SIB
  B Board     REV 03    710-023431   DW9053         F13 SIB Mezz
SIB F13 3     REV 04    750-024564   DW5785         F13 SIB
  B Board     REV 03    710-023431   DW9030         F13 SIB Mezz
SIB F13 6
SIB F13 8     REV 04    750-024564   DW5752         F13 SIB
  B Board     REV 03    710-023431   DW9051         F13 SIB Mezz
SIB F13 11    REV 04    750-024564   DW5782         F13 SIB
  B Board     REV 03    710-023431   DW9058         F13 SIB Mezz
SIB F13 12    REV 03    750-024564   DT9466         F13 SIB
  B Board     REV 02    710-023431   DT6556         F13 SIB Mezz
SIB F2S 0/0   REV 05    710-022603   DW7898         F2S SIB
  B Board     REV 05    710-023787   DW7625         F2S SIB Mezz
SIB F2S 0/2   REV 05    710-022603   DW7811         F2S SIB
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B Board	REV 05	710-023787	DW7550	F2S SIB Mezz
SIB F2S 0/4	REV 04	710-022603	DW4873	F2S SIB
B Board	REV 05	710-023787	DW8509	F2S SIB Mezz
SIB F2S 0/6	REV 04	710-022603	DW4867	F2S SIB
B Board	REV 05	710-023787	DW8472	F2S SIB Mezz
SIB F2S 1/0	REV 04	710-022603	DW4871	F2S SIB
B Board	REV 05	710-023787	DW8497	F2S SIB Mezz
SIB F2S 1/2	REV 05	710-022603	DW7868	F2S SIB
B Board	REV 05	710-023787	DW7551	F2S SIB Mezz
SIB F2S 1/4	REV 04	710-022603	DW4854	F2S SIB
B Board	REV 05	710-023787	DW8496	F2S SIB Mezz
SIB F2S 1/6	REV 05	710-022603	DW7889	F2S SIB
B Board	REV 05	710-023787	DW7496	F2S SIB Mezz
SIB F2S 2/0	REV 04	710-022603	DW4852	F2S SIB
B Board	REV 05	710-023787	DW8498	F2S SIB Mezz
SIB F2S 2/2	REV 04	710-022603	DW4845	F2S SIB
B Board	REV 05	710-023787	DW8457	F2S SIB Mezz
SIB F2S 2/4	REV 05	710-022603	DW7802	F2S SIB
B Board	REV 05	710-023787	DW7562	F2S SIB Mezz
SIB F2S 2/6	REV 04	710-022603	DW4822	F2S SIB
B Board	REV 05	710-023787	DW8467	F2S SIB Mezz
SIB F2S 3/0	REV 05	710-022603	DW7815	F2S SIB
B Board	REV 05	710-023787	DW7518	F2S SIB Mezz
SIB F2S 3/2	REV 03	710-022603	DV0068	F2S SIB
B Board	REV 03	710-023787	DT9974	F2S SIB Mezz
SIB F2S 3/4	REV 05	710-022603	DW7874	F2S SIB
B Board	REV 05	710-023787	DW7601	F2S SIB Mezz
SIB F2S 3/6	REV 03	710-022603	DV0033	F2S SIB
B Board	REV 03	710-023787	DT9969	F2S SIB Mezz
SIB F2S 4/0	REV 03	710-022603	DV0043	F2S SIB
B Board	REV 03	710-023787	DT9948	F2S SIB Mezz
SIB F2S 4/2	REV 05	710-022603	DW5446	F2S SIB
B Board	REV 05	710-023787	DW7611	F2S SIB Mezz
SIB F2S 4/4	REV 04	710-022603	DW4826	F2S SIB
B Board	REV 05	710-023787	DW8458	F2S SIB Mezz
SIB F2S 4/6	REV 03	710-022603	DV0026	F2S SIB
B Board	REV 03	710-023787	DT9963	F2S SIB Mezz
Fan Tray 0	REV 02	760-024497	DR8290	Front Fan Tray
Fan Tray 1	REV 02	760-024497	DR8293	Front Fan Tray
Fan Tray 2	REV 05	760-024502	DR8280	Rear Fan Tray
Fan Tray 3				
Fan Tray 4	REV 05	760-024502	DR8276	Rear Fan Tray
Fan Tray 5	REV 02	760-024502	DP5643	Rear Fan Tray

lcc0-re0:

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN11036F8AHA	T1600
Midplane	REV 03	710-017247	RC3799	T-series Backplane
FPM GBUS	REV 10	710-002901	DP7009	T640 FPM Board
FPM Display	REV 01	710-021387	DN7026	T1600 FPM Display
CIP	REV 06	710-002895	DP6024	T-series CIP
PEM 1	Rev 02	740-023211	WA50019	Power Entry Module 4x60A
SCG 0	REV 15	710-003423	DR6757	T640 Sonet Clock Gen.
SCG 1	REV 15	710-003423	DS2225	T640 Sonet Clock Gen.
Routing Engine 0	REV 01	740-026941	737F-1040	RE-DUO-1800
Routing Engine 1	REV 01	740-026941	737F-1016	RE-DUO-1800
CB 0	REV 06	710-022597	DX4011	LCC Control Board
CB 1	REV 06	710-022597	DX4017	LCC Control Board
FPC 1	REV 07	710-013035	DN5847	FPC Type 3-ES

CPU	REV 08	710-016744	DP2570	ST-PMB2
PIC 0	REV 05	750-015217	DB0418	8x 1GE(TYPE3), IQ2
Xcvr 0	REV 01	740-011782	P8Q27ZG	SFP-SX
Xcvr 1		NON-JNPR	PDA1U0D	SFP-SX
Xcvr 2	REV 01	740-011613	P9F1ALW	SFP-SX
Xcvr 3	REV 01	740-011782	PBA403V	SFP-SX
Xcvr 4		NON-JNPR	PDE09DP	SFP-SX
Xcvr 5	REV 01	740-011782	PCH2P4K	SFP-SX
Xcvr 6	REV 01	740-011782	PB94K0F	SFP-SX
Xcvr 7	REV 01	740-011782	PBA2R2A	SFP-SX
PIC 1	REV 03	750-004424	HJ4020	1x 10GE(LAN), DWDM
PIC 2	REV 01	750-003336	HG6073	4x OC-48 SONET, SMSR
MMB 0	REV 04	710-016036	DP3401	ST-MMB2
FPC 3	REV 12	710-013037	DR1169	FPC Type 4-ES
CPU	REV 08	710-016744	DP9429	ST-PMB2
PIC 0	REV 02	750-010850	JA0332	1x OC-768 SONET SR
MMB 0	REV 04	710-016036	DR0628	ST-MMB2
MMB 1	REV 04	710-016036	DR0592	ST-MMB2
FPC 4	REV 05	710-021534	DR7350	FPC Type 1-ES
CPU	REV 08	710-016744	DP8096	ST-PMB2
PIC 0	REV 04	750-014627	DP9171	4x OC-3 1x OC-12 SFP
Xcvr 0	REV 02	740-011615	PDE2RVR	SFP-SR
PIC 1	REV 22	750-005634	DS5815	1x CHOC12 IQ SONET, SMIR
PIC 2	REV 09	750-002911	CF4539	4x F/E, 100 BASE-TX
PIC 3	REV 08	750-021652	DR2827	1x CHOC12 IQE SONET
Xcvr 0		NON-JNPR	8	UNKNOWN
MMB 0	REV 04	710-016036	DR0809	ST-MMB2
FPC 5	REV 07	710-007529	HS5608	FPC Type 3
CPU	REV 15	710-001726	HX4351	FPC CPU
PIC 0	REV 14	750-009567	WJ8961	1x 10GE(LAN), XENPAK
Xcvr 0	REV 01	740-013170	J05K05961	XENPAK-LR
PIC 1	REV 16	750-007141	JJ8146	10x 1GE(LAN), 1000 BASE
Xcvr 1	REV 01	740-011613	P9F117T	SFP-SX
Xcvr 2	REV 01	740-011782	PBA2VCL	SFP-SX
Xcvr 3	REV 01	740-011782	PB83DRB	SFP-SX
Xcvr 4	REV 01	740-011613	AM0812S8UP8	SFP-SX
PIC 2	REV 12	750-009567	WF3566	1x 10GE(LAN), XENPAK
Xcvr 0	REV 02	740-013170	T07C94489	XENPAK-LR
MMB 0	REV 03	710-005555	HZ1907	MMB-288mbit
MMB 1	REV 03	710-005555	HW5283	MMB-288mbit
PPB 0	REV 04	710-002845	HZ7717	PPB Type 3
PPB 1	REV 04	710-002845	HS0110	PPB Type 3
FPC 6	REV 07	710-013035	DP7486	FPC Type 3-ES
CPU	REV 08	710-016744	DP2545	ST-PMB2
PIC 0	REV 09	750-009567	NE6323	1x 10GE(LAN), XENPAK
Xcvr 0	REV 02	740-013170	T09C71959	XENPAK-LR
PIC 1	REV 06	750-015217	DN4775	8x 1GE(TYPE3), IQ2
Xcvr 0	REV 01	740-011782	P7E0T6M	SFP-SX
Xcvr 1	REV 01	740-011613	AM0812S8XAY	SFP-SX
Xcvr 2	REV 01	740-011782	P7E0T6J	SFP-SX
Xcvr 3	REV 01	740-011782	PCH2P7D	SFP-SX
Xcvr 4	REV 01	740-011782	P9B0QYT	SFP-SX
Xcvr 5	REV 01	740-011613	AM0812S8WQJ	SFP-SX
Xcvr 6	REV 02	740-013111	9301220	SFP-T
Xcvr 7	REV 01	740-011782	P9B0TZ5	SFP-SX
PIC 2	REV 06	750-015217	DM6747	8x 1GE(TYPE3), IQ2
Xcvr 0	REV 01	740-011613	PAP0ZB2	SFP-SX
Xcvr 1	REV 01	740-013111	70191002	SFP-T
Xcvr 6	REV 01	740-011782	PBA29H8	SFP-SX

Xcvr 7	REV 01	740-011613	AM0812S8WQG	SFP-SX
MMB 0	REV 04	710-016036	DP3238	ST-MMB2
FPC 7	REV 03	710-021540	DV3154	FPC Type 2-ES
CPU	REV 09	710-016744	DT9053	ST-PMB2
PIC 0	REV 13	750-001901	HB4225	4x OC-12 SONET, SMIR
PIC 1	REV 05	750-001900	AD3644	1x OC-48 SONET, SMSR
PIC 2	REV 10	750-008155	HV0335	2x G/E IQ, 1000 BASE
Xcvr 0	REV 01	740-011782	PCH2UKF	SFP-SX
Xcvr 1	REV 01	740-011782	PCH2V19	SFP-SX
PIC 3	REV 03	750-014638	JS9493	1x OC-48-12-3 SFP
Xcvr 0	REV 01	740-011785	P6Q0ENK	SFP-SR
MMB 0	REV 05	710-016036	DP3323	ST-MMB2
SPMB 0	REV 04	710-023321	DX3004	LCC Switch CPU
SPMB 1	REV 04	710-023321	DX3009	LCC Switch CPU
SIB 0	REV 07	710-022594	DW4195	LCC SIB
B Board	REV 07	710-023185	DW3930	LCC SIB Mezz
SIB 1	REV 07	710-022594	DW4179	LCC SIB
B Board	REV 07	710-023185	DW3919	LCC SIB Mezz
SIB 2				
SIB 3	REV 06	710-022594	DT8251	LCC SIB
B Board	REV 06	710-023185	DT5792	LCC SIB Mezz
SIB 4	REV 08	710-022594	DW8014	LCC SIB
B Board	REV 07	710-023185	DW3917	LCC SIB Mezz
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray -- Rev 3

lcc1-re0:

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN1102270AHA	T1600
Midplane	REV 04	710-017247	RC5358	T-series Backplane
FPM GBUS	REV 10	710-002901	DS3443	T640 FPM Board
FPM Display	REV 01	710-021387	DS6411	T1600 FPM Display
CIP	REV 06	710-002895	DS4235	T-series CIP
PEM 0	Rev 02	740-023211	VM82438	Power Entry Module 4x60A
SCG 0	REV 15	710-003423	DS6649	T640 Sonet Clock Gen.
SCG 1	REV 15	710-003423	DR6775	T640 Sonet Clock Gen.
Routing Engine 0	REV 01	740-026941	737F-1083	RE-DUO-1800
Routing Engine 1	REV 01	740-026941	737F-1104	RE-DUO-1800
CB 0	REV 06	710-022597	DW8542	LCC Control Board
CB 1	REV 06	710-022597	DW8530	LCC Control Board
FPC 0	REV 02	710-010845	JE2392	FPC Type 4
CPU	REV 02	710-011481	JF6820	FPC CPU-Enhanced
PIC 0	REV 11	750-017405	DP7259	4x 10GE (LAN/WAN) XFP
Xcvr 0	REV 01	740-014279	AA0741N1C8T	XFP-10G-LR
Xcvr 1	REV 01	740-014279	AA0746N1GAM	XFP-10G-LR
Xcvr 2	REV 01	740-014279	AA0747N1H0B	XFP-10G-LR
Xcvr 3	REV 01	740-014279	AA0748N1HZ5	XFP-10G-LR
MMB 0	REV 03	710-010842	HY7601	ST-MMB
FPC 1	REV 16	710-013037	BBAA7398	FPC Type 4-ES
CPU	REV 09	710-016744	BBAA2329	ST-PMB2
PIC 0	REV 03	711-029996	EB1575	100GE
PIC 1	REV 06	750-034781	EB9980	100GE CFP
MMB 0	REV 04	710-025563	BBAA5325	ST-MMB2
MMB 1	REV 04	710-025563	BBAA5444	ST-MMB2
FPC 2	REV 16	710-013037	BBAA7185	FPC Type 4-ES
CPU	REV 09	710-016744	BBAA3522	ST-PMB2
PIC 0	REV 03	711-029996	EB1557	100GE
PIC 1	REV 05	750-034781	EB4660	100GE CFP

Xcvr 0	REV 0	740-032210	J10F73666	CFP-100G-LR4
BRIDGE 0	REV 02	711-029995	EB2237	100GE Bridge Board
MMB 0	REV 04	710-025563	BBAA5347	ST-MMB2
MMB 1	REV 04	710-025563	BBAA5401	ST-MMB2
FPC 3	REV 10	710-021534	DZ0941	FPC Type 1-ES
CPU	REV 09	710-016744	DY6364	ST-PMB2
PIC 0	REV 13	750-012266	DK9192	4x 1GE(LAN), IQ2
Xcvr 0	REV 01	740-011613	AM0812S8WVD	SFP-SX
Xcvr 1		NON-JNPR	PDD63Q4	SFP-SX
Xcvr 2		NON-JNPR	PDE4G54	SFP-SX
Xcvr 3		NON-JNPR	PD40MAG	SFP-SX
PIC 1	REV 01	750-007641	HJ2003	1x G/E IQ, 1000 BASE
Xcvr 0	REV 01	740-011613	AM0812S8WVG	SFP-SX
PIC 3	REV 17	750-007444	JB6873	1x CHSTM1 IQ SDH, SMIR
MMB 0	REV 04	710-025563	DZ0281	ST-MMB2
FPC 4	REV 06	710-013035	DK0614	FPC Type 3-ES
CPU	REV 07	710-016744	DK1616	ST-PMB2
PIC 0	REV 22	750-007141	DM1870	10x 1GE(LAN), 1000 BASE
Xcvr 0	REV 01	740-011782	PCL3UKW	SFP-SX
Xcvr 1	REV 01	740-011782	P7E0T73	SFP-SX
Xcvr 2	REV 01	740-007326	P4TOWLR	SFP-SX
Xcvr 3	REV 01	740-011782	PAR1LRL	SFP-SX
Xcvr 4	REV 01	740-011782	P9MOU3Z	SFP-SX
Xcvr 5	REV 01	740-011782	P9MOU0C	SFP-SX
Xcvr 6	REV 01	740-011782	P9M0TLG	SFP-SX
Xcvr 7	REV 01	740-011782	P9MOU0F	SFP-SX
Xcvr 8	REV 01	740-011613	PFA6LAP	SFP-SX
Xcvr 9	REV 01	740-011782	PCH2POU	SFP-SX
PIC 1	REV 16	750-009450	CV2565	1x OC-192 SM SR2
PIC 2	REV 05	750-004424	HH3057	1x 10GE(LAN),10GBASE-LR
PIC 3	REV 12	750-013423	DP0403	MultiServices 500
MMB 0	REV 04	710-016036	DK1988	ST-MMB2
FPC 5	REV 07	710-013560	DR0004	E2-FPC Type 3
CPU	REV 05	710-013563	DR0089	FPC CPU-Enhanced
PIC 0	REV 11	750-012793	DR6107	1x 10GE(LAN/WAN) IQ2
Xcvr 0	REV 01	740-014289	C743XU074	XFP-10G-SR
PIC 1	REV 01	750-004695	HD5980	1x Tunnel
PIC 2	REV 32	750-003700	DL3770	1x OC-192 12xMM VSR
PIC 3	REV 12	750-009553	WB8901	4x OC-48 SONET
Xcvr 0	REV 01	740-011785	P9D1GTQ	SFP-SR
Xcvr 1	REV 01	740-011785	PDSOMMB	SFP-SR
Xcvr 3	REV 01	740-011785	PDE1KXP	SFP-SR
MMB 0	REV 07	710-010171	DP7374	MMB-5M3-288mbit
MMB 1	REV 07	710-010171	DP7404	MMB-5M3-288mbit
FPC 6	REV 07	710-013035	DM0994	FPC Type 3-ES
CPU	REV 07	710-016744	DM3651	ST-PMB2
PIC 0	REV 07	750-015217	DN4743	8x 1GE(TYPE3), IQ2
Xcvr 3	REV 01	740-011613	AM0812S8XB0	SFP-SX
Xcvr 4	REV 01	740-011782	PB829RB	SFP-SX
Xcvr 5	REV 01	740-011782	P8J1SYX	SFP-SX
PIC 1	REV 03	750-003336	HJ9954	4x OC-48 SONET, SMSR
PIC 3	REV 02	750-012793	JM7665	1x 10GE(LAN/WAN) IQ2
MMB 0	REV 04	710-016036	DN6913	ST-MMB2
FPC 7	REV 08	710-010845	JM3958	FPC Type 4
CPU	REV 04	710-011481	JK3669	FPC CPU-Enhanced
PIC 0	REV 11	750-017405	DP8837	4x 10GE (LAN/WAN) XFP
Xcvr 1	REV 01	740-014279	753019A00277	XFP-10G-LR
Xcvr 2	REV 02	740-011571	C850XJ00P	XFP-10G-SR
Xcvr 3	REV 01	740-014279	AA0813N1RTG	XFP-10G-LR

MMB 0	REV 04	710-010842	JN1971	ST-MMB
SPMB 0	REV 04	710-023321	DW3629	LCC Switch CPU
SPMB 1	REV 04	710-023321	DW3621	LCC Switch CPU
SIB 0	REV 07	710-022594	DW4200	LCC SIB
B Board	REV 07	710-023185	DW3932	LCC SIB Mezz
SIB 1	REV 07	710-022594	DW4193	LCC SIB
B Board	REV 07	710-023185	DW3904	LCC SIB Mezz
SIB 2				
SIB 3	REV 07	710-022594	DW4210	LCC SIB
B Board	REV 06	710-023185	DT5780	LCC SIB Mezz
SIB 4	REV 08	710-022594	DW8019	LCC SIB
B Board	REV 06	710-023185	DT5795	LCC SIB Mezz
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray -- Rev 3

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 hardware
extensive (TX Matrix
Plus Router)

user@host> show chassis hardware extensive
sfc0-re0:

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN112F007AHB	TXP
Jedec Code:	0x7fb0	EEPROM Version:	0x02	
		S/N:	JN112F007AHB	
Assembly ID:	0x052c	Assembly Version:	00.00	
Date:	00-00-0000	Assembly Flags:	0x00	
ID:	TXP			

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 02 ff 05 2c 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: 4a 4e 31 31 32 46 30 30 37 41 48 42 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

Address 0x50: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

Address 0x60: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

Address 0x70: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

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Midplane          REV 05   710-022574   TS4027          SFC Midplane
Jedec Code:      0x7fb0          EEPROM Version:  0x01
P/N:             710-022574      S/N:             S/N TS4027
Assembly ID:     0x0962          Assembly Version: 01.05
Date:            03-23-2009      Assembly Flags:  0x00
Version:         REV 05
ID: SFC Midplane
Board Information Record:
  Address 0x00: ad 01 ff ff 00 1d b5 14 00 00 ff ff ff ff ff ff
I2C Hex Data:
  Address 0x00: 7f b0 01 ff 09 62 01 05 52 45 56 20 30 35 00 00
  Address 0x10: 00 00 00 00 37 31 30 2d 30 32 32 35 37 34 00 00
  Address 0x20: 53 2f 4e 20 54 53 34 30 32 37 00 00 00 17 03 07
  Address 0x30: d9 ff ff ff ad 01 ff ff 00 1d b5 14 00 00 ff ff
  Address 0x40: ff ff ff ff 00 ff ff ff ff ff ff ff ff ff ff
  Address 0x50: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x60: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x70: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
FPM Display       REV 03   710-024027   DX0282          TXP FPM Display
Jedec Code:      0x7fb0          EEPROM Version:  0x01
P/N:             710-024027      S/N:             S/N DX0282
Assembly ID:     0x096c          Assembly Version: 01.03
Date:            02-10-2009      Assembly Flags:  0x00
Version:         REV 03
ID: TXP FPM Display          FRU Model Number: CRAFT-TXP
Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
  Address 0x00: 7f b0 01 ff 09 6c 01 03 52 45 56 20 30 33 00 00
  Address 0x10: 00 00 00 00 37 31 30 2d 30 32 34 30 32 37 00 00
  Address 0x20: 53 2f 4e 20 44 58 30 32 38 32 00 00 00 0a 02 07
  Address 0x30: d9 ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 00 00 00 00 00 00 00 00 00 00 43
  Address 0x50: 52 41 46 54 2d 54 58 50 00 00 00 00 00 00 00
  Address 0x60: 00 00 00 00 00 00 ff ff ff ff ff ff ff ff ff
  Address 0x70: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
CIP 0             REV 04   710-023792   DW4889          TXP CIP
Jedec Code:      0x7fb0          EEPROM Version:  0x01
P/N:             710-023792      S/N:             S/N DW4889
Assembly ID:     0x0969          Assembly Version: 01.04
Date:            01-26-2009      Assembly Flags:  0x00
Version:         REV 04
ID: TXP CIP           FRU Model Number: CIP-TXP
Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff

```

show chassis hardware
clei-models (TX Matrix
Plus Router)

```

user@host> show chassis hardware clei-models
sfc0-re0:

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Hardware inventory:
Item          Version  Part number  CLEI code          FRU model number
Midplane      REV 05   710-022574          CHAS-BP-TXP-S
FPM Display   REV 03   710-024027          CRAFT-TXP-S
CIP 0         REV 05   710-023792          CIP-TXP-S
CIP 1         REV 05   710-023792          CIP-TXP-S
PEM 0         Rev 04   740-027463          PWR-TXP-7-60-DC
PEM 1         Rev 04   740-027463          PWR-TXP-7-60-DC
Routing Engine 0 REV 06   740-026942          RE-DUO-C2600-16G-S
Routing Engine 1 REV 06   740-026942          RE-DUO-C2600-16G-S
CB 0          REV 05   710-022606          CB-TXP-S
CB 1          REV 09   710-022606          CB-TXP-S

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SIB F13 0	REV 04	750-024564	SIB-TXP-F13
SIB F13 3	REV 04	750-024564	SIB-TXP-F13
SIB F13 8	REV 04	750-024564	SIB-TXP-F13
SIB F13 11	REV 04	750-024564	SIB-TXP-F13
SIB F13 12	REV 03	750-024564	SIB-TXP-F13
SIB F2S 0/0	REV 05	710-022603	SIB-TXP-F2S-S
SIB F2S 0/2	REV 05	710-022603	SIB-TXP-F2S-S
SIB F2S 0/4	REV 04	710-022603	SIB-TXP-F2S-S
SIB F2S 0/6	REV 04	710-022603	SIB-TXP-F2S-S
SIB F2S 1/0	REV 04	710-022603	SIB-TXP-F2S-S
SIB F2S 1/2	REV 05	710-022603	SIB-TXP-F2S-S
SIB F2S 1/4	REV 04	710-022603	SIB-TXP-F2S-S
SIB F2S 1/6	REV 05	710-022603	SIB-TXP-F2S-S
SIB F2S 2/0	REV 04	710-022603	SIB-TXP-F2S-S
SIB F2S 2/2	REV 04	710-022603	SIB-TXP-F2S-S
SIB F2S 2/4	REV 05	710-022603	SIB-TXP-F2S-S
SIB F2S 2/6	REV 04	710-022603	SIB-TXP-F2S-S
SIB F2S 3/0	REV 05	710-022603	SIB-TXP-F2S-S
SIB F2S 3/2	REV 03	710-022603	SIB-TXP-F2S-S
SIB F2S 3/4	REV 05	710-022603	SIB-TXP-F2S-S
SIB F2S 3/6	REV 03	710-022603	SIB-TXP-F2S-S
SIB F2S 4/0	REV 03	710-022603	SIB-TXP-F2S-S
SIB F2S 4/2	REV 05	710-022603	SIB-TXP-F2S-S
SIB F2S 4/4	REV 04	710-022603	SIB-TXP-F2S-S
SIB F2S 4/6	REV 03	710-022603	SIB-TXP-F2S-S
Fan Tray 0	REV 02	760-024497	FANTRAY-TXP-H-S
Fan Tray 1	REV 02	760-024497	FANTRAY-TXP-H-S
Fan Tray 2	REV 05	760-024502	FANTRAY-TXP-V-S
Fan Tray 3			
Fan Tray 4	REV 05	760-024502	FANTRAY-TXP-V-S
Fan Tray 5	REV 02	760-024502	FANTRAY-TXP-V-S

lcc0-re0:

Hardware inventory:

Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 03	710-017247		CHAS-BP-T1600-S
FPM Display	REV 01	710-021387		CRAFT-T1600-S
CIP	REV 06	710-002895		CIP-L-T640-S
PEM 1	Rev 02	740-023211	IPUPAC8KTA	PWR-T1600-4-60-DC-S
SCG 0	REV 15	710-003423		SCG-T-S
SCG 1	REV 15	710-003423		SCG-T-S
Routing Engine 0	REV 01	740-026941		RE-DUO-C1800-8G-S
Routing Engine 1	REV 01	740-026941		RE-DUO-C1800-8G-S
CB 0	REV 06	710-022597		CB-LCC-S
CB 1	REV 06	710-022597		CB-LCC-S
FPC 1	REV 07	710-013035		T640-FPC3-ES
PIC 0	REV 05	750-015217		PC-8GE-TYPE3-SFP-IQ2
PIC 1	REV 03	750-004424		PC-1XGE-LR
PIC 2	REV 01	750-003336		PC-40C48-SON-SMSR
FPC 3	REV 12	710-013037		T1600-FPC4-ES
PIC 0	REV 02	750-010850		PD-10C768-SON-SR
FPC 4	REV 05	710-021534		T640-FPC1-ES
PIC 0	REV 04	750-014627		PB-40C3-10C12-SON-SFP
PIC 1	REV 22	750-005634		PB-1CHOC12SMIR-QPP
PIC 2	REV 09	750-002911		PB-4FE-TX
PIC 3	REV 08	750-021652		PB-1CHOC12-STM4-IQE-SFP
FPC 5	REV 07	710-007529		T640-FPC3
PIC 0	REV 14	750-009567		PC-1XGE-XENPAK
PIC 1	REV 16	750-007141		PC-10GE-SFP
PIC 2	REV 12	750-009567		PC-1XGE-XENPAK

FPC 6	REV 07	710-013035	T640-FPC3-ES
PIC 0	REV 09	750-009567	PC-1XGE-XENPAK
PIC 1	REV 06	750-015217	PC-8GE-TYPE3-SFP-IQ2
PIC 2	REV 06	750-015217	PC-8GE-TYPE3-SFP-IQ2
FPC 7	REV 03	710-021540	T640-FPC2-ES
PIC 0	REV 13	750-001901	PB-40C12-SON-SMIR
PIC 1	REV 05	750-001900	PB-10C48-SON-SMSR
PIC 2	REV 10	750-008155	PB-2GE-SFP-QPP
PIC 3	REV 03	750-014638	PB-10C48-SON-B-SFP
SIB 0	REV 07	710-022594	SIB-TXP-T1600-S
SIB 1	REV 07	710-022594	SIB-TXP-T1600-S
SIB 3	REV 06	710-022594	SIB-TXP-T1600-S
SIB 4	REV 08	710-022594	SIB-TXP-T1600-S
Fan Tray 0			FANTRAY-T-S
Fan Tray 1			FANTRAY-T-S
Fan Tray 2			FANTRAY-TXP-R-S

lcc1-re0:

Hardware inventory:

Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 04	710-017247		CHAS-BP-T1600-S
FPM Display	REV 01	710-021387		CRAFT-T1600-S
CIP	REV 06	710-002895		CIP-L-T640-S
PEM 0	Rev 02	740-023211	IPUPAC8KTA	PWR-T1600-4-60-DC-S
SCG 0	REV 15	710-003423		SCG-T-S
SCG 1	REV 15	710-003423		SCG-T-S
Routing Engine 0	REV 01	740-026941		RE-DUO-C1800-8G-S
Routing Engine 1	REV 01	740-026941		RE-DUO-C1800-8G-S
CB 0	REV 06	710-022597		CB-LCC-S
CB 1	REV 06	710-022597		CB-LCC-S
FPC 0	REV 02	710-010845		T640-FPC4-ES
PIC 0	REV 11	750-017405		PD-4XGE-XFP
FPC 1	REV 16	710-013037		T1600-FPC4-ES
PIC 1	REV 06	750-034781		PD-1CE-CFP
FPC 2	REV 16	710-013037		T1600-FPC4-ES
PIC 1	REV 05	750-034781		PD-1CE-CFP
FPC 3	REV 10	710-021534		T640-FPC1-ES
PIC 0	REV 13	750-012266		PB-4GE-TYPE1-SFP-IQ2
PIC 1	REV 01	750-007641		PE-1GE-SFP-QPP
PIC 3	REV 17	750-007444		PB-1CHSTM1-SMIR-QPP
FPC 4	REV 06	710-013035		T640-FPC3-ES
PIC 0	REV 22	750-007141		PC-10GE-SFP
PIC 1	REV 16	750-009450		PC-10C192-SON-SR2
PIC 2	REV 05	750-004424		PC-1XGE-LR
PIC 3	REV 12	750-013423		PC-MS-500-3
FPC 5	REV 07	710-013560		T640-FPC3-E2
PIC 0	REV 11	750-012793		PC-1XGE-TYPE3-XFP-IQ2
PIC 1	REV 01	750-004695		PC-TUNNEL
PIC 2	REV 32	750-003700		PC-10C192-SON-VSR
PIC 3	REV 12	750-009553		PC-40C48-SON-SFP
FPC 6	REV 07	710-013035		T640-FPC3-ES
PIC 0	REV 07	750-015217		PC-8GE-TYPE3-SFP-IQ2
PIC 1	REV 03	750-003336		PC-40C48-SON-SMSR
PIC 3	REV 02	750-012793		PC-1XGE-TYPE3-XFP-IQ2
FPC 7	REV 08	710-010845		T640-FPC4-ES
PIC 0	REV 11	750-017405		PD-4XGE-XFP
SIB 0	REV 07	710-022594		SIB-TXP-T1600-S
SIB 1	REV 07	710-022594		SIB-TXP-T1600-S
SIB 3	REV 07	710-022594		SIB-TXP-T1600-S
SIB 4	REV 08	710-022594		SIB-TXP-T1600-S

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Fan Tray 0
Fan Tray 1
Fan Tray 2
FANTRAY-T-S
FANTRAY-T-S
FANTRAY-TXP-R-S

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show chassis hardware user@host> show chassis hardware detail
detail (TX Matrix Plus sfc0-re0:
Router)

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Hardware inventory:
Item                Version  Part number  Serial number  Description
Chassis              REV 01  710-022574   JN111B023AHB   TXP
Midplane             REV 03  710-024027   TR7990          SFC Midplane
FPM Display          REV 02  710-023792   DW4699          TXP FPM Display
CIP 0                REV 01  710-023792   DR1437          TXP CIP
CIP 1                REV 02  710-023792   DS4564          TXP CIP
PEM 0                Rev 07  740-027463   UM26360         Power Entry Module
Routing Engine 0     REV 01  740-026942   737A-1024       SFC RE
  ad0 3887 MB SMART CF 200811050193CEB1CEB1 Compact Flash
  ad1 30533 MB SAMSUNG MCBQE32G8MPP-0V SY814A0762 Disk 1
Routing Engine 1     REV 01  740-026942   737A-1024       SFC RE
  ad0 3887 MB SMART CF 20081105004C19A019A0 Compact Flash
  ad1 30533 MB SAMSUNG MCBQE32G8MPP-0V SY814A0794 Disk 1
CB 0                 REV 03  710-022606   DR7134          SFC Control Board
CB 1                 REV 01  710-022606   DP8890          SFC Control Board
SPMB 0               BUILTIN                                     SFC Switch CPU
SPMB 1               BUILTIN                                     SFC Switch CPU
SIB F13 0            REV 03  750-024564   DT9478          F13 SIB
  B Board            REV 02  710-023431   DT6554          F13 SIB
SIB F13 1            REV 03  750-024564   DT9454          F13 SIB
  B Board            REV 02  710-023431   DT6551          F13 SIB
SIB F2S 0/0          REV 02  710-022603   DT2838          F2S SIB
  B Board            REV 02  710-023787   DT1725          NEO PMB
SIB F2S 0/2          REV 02  710-022603   DT2824          F2S SIB
  B Board            REV 02  710-023787   DT1706          NEO PMB
SIB F2S 0/4          REV 02  710-022603   DT2822          F2S SIB
  B Board            REV 02  710-023787   DT1696          NEO PMB
SIB F2S 0/6          REV 02  710-022603   DT2823          F2S SIB
  B Board            REV 02  710-023787   DT1717          NEO PMB
SIB F2S 1/0          REV 03  710-022603   DV0059          F2S SIB
  B Board            REV 03  710-023787   DT9942          NEO PMB
SIB F2S 1/2          REV 02  710-022603   DT2826          F2S SIB
  B Board            REV 02  710-023787   DT1713          NEO PMB
SIB F2S 1/4          REV 03  710-022603   DV0092          F2S SIB
  B Board            REV 03  710-023787   DV0000          NEO PMB
SIB F2S 1/6          REV 03  710-022603   DV0079          F2S SIB
  B Board            REV 03  710-023787   DT9972          NEO PMB
SIB F2S 2/0          REV 03  710-022603   DV0100          F2S SIB
  B Board            REV 03  710-023787   DT9925          NEO PMB
SIB F2S 2/2          REV 03  710-022603   DV0050          F2S SIB
  B Board            REV 03  710-023787   DV0005          NEO PMB
SIB F2S 2/4          REV 03  710-022603   DV0097          F2S SIB
  B Board            REV 03  710-023787   DT9936          NEO PMB
Fan Tray 0           REV 02  760-024497   DR8286          Front Fan Tray
Fan Tray 1           REV 06  760-024497   DV9624          Front Fan Tray
Fan Tray 2           REV 02  760-024502   DR8259          Rear Fan Tray
Fan Tray 3           REV 02  760-024502   DR8270          Rear Fan Tray
Fan Tray 4           REV 02  760-024502   DR8284          Rear Fan Tray
Fan Tray 5           REV 06  760-024502   DV7813          Rear Fan Tray

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lcc0-re0:
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Hardware inventory:
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Item	Version	Part number	Serial number	Description
Chassis			JN1101F27AHA	T1600
Midplane	REV 04	710-017247	RC5317	T Series Backplane
FPM GBUS	REV 10	710-002901	DS8197	T640 FPM Board
FPM Display	REV 01	710-021387	DS6433	T1600 FPM Display
CIP	REV 06	710-002895	DS1493	T Series CIP
PEM 0	Rev 08	740-017906	UD26601	Power Entry Module 3x80
SCG 0	REV 15	710-003423	DP5847	T640 Sonet Clock Gen.
SCG 1	REV 15	710-003423	DR0924	T640 Sonet Clock Gen.
Routing Engine 0	REV 01	740-026942	737F-1024	LCC RE
ad0	3887 MB	SMART CF	2008110502B63E513E51	Compact Flash
ad1	30533 MB	SAMSUNG MCBQE32G8MPP-0V	SY814A1208	Disk 1
Routing Engine 1	REV 01	740-026942	737F-1024	LCC RE
ad0	3887 MB	SMART CF	2008110500F9A8A8A8A8	Compact Flash
ad1	30533 MB	SAMSUNG MCBQE32G8MPP-0V	SY814A1076	Disk 1
CB 0	REV 05	710-022597	DV4264	LCC Control Board
CB 1	REV 03	710-022597	DP8558	LCC Control Board
FPC 0	REV 14	710-013037	DS9967	FPC Type 4-ES
CPU	REV 08	710-016744	DS3989	ST-PMB2
PIC 0	REV 12	750-013198	DL7506	1x Tunnel
PIC 1	REV 12	750-013198	DL7505	1x Tunnel
MMB 0	REV 01	710-025563	DS8524	ST-MMB2
MMB 1	REV 01	710-025563	DS8373	ST-MMB2
FPC 1	REV 14	710-013037	DT0027	FPC Type 4-ES
CPU	REV 09	710-016744	DS7684	ST-PMB2
PIC 0	REV 12	750-013198	DL7512	1x Tunnel
PIC 1	REV 12	750-013198	DL7498	1x Tunnel
MMB 0	REV 01	710-025563	DS8494	ST-MMB2
MMB 1	REV 01	710-025563	DS8436	ST-MMB2
SPMB 0	REV 04	710-023321	DV3867	LCC Switch CPU
SPMB 1	REV 02	710-023321	DP0238	LCC Switch CPU
SIB 0	REV 06	710-022594	DT8268	LCC SIB
B Board	REV 06	710-023185	DT5791	LCC SIB Mezz
SIB 1	REV 06	710-022594	DT8261	LCC SIB
B Board	REV 06	710-023185	DT5769	LCC SIB Mezz
SIB 2	REV 04	710-022594	DS2315	LCC SIB
B Board	REV 06	710-023185	DT5788	LCC SIB Mezz
SIB 3	REV 06	710-022594	DT8253	LCC SIB
B Board	REV 06	710-023185	DT5811	LCC SIB Mezz
SIB 4	REV 06	710-022594	DT8248	LCC SIB
B Board	REV 06	710-023185	DT5812	LCC SIB Mezz
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray

show chassis hardware models (TX Matrix Plus Router)

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user@host> show chassis hardware models
sfc0-re0:
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Hardware inventory:

Item	Version	Part number	Serial number	FRU model number
FPM Display	REV 03	710-024027	DX0282	CRAFT-TXP
CIP 0	REV 04	710-023792	DW4889	CIP-TXP
CIP 1	REV 04	710-023792	DW4887	CIP-TXP
PEM 0	Rev 07	740-027463	UM26368	yyyyyyyyyyyyyyyyyyyy
Routing Engine 0	REV 01	740-026942	737A-1064	RE-TXP-SFC-DU0-2600-16G
Routing Engine 1	REV 01	740-026942	737A-1082	RE-TXP-SFC-DU0-2600-16G
CB 0	REV 09	710-022606	DW6099	CB-TXP
CB 1	REV 09	710-022606	DW6096	CB-TXP
SIB F13 1	REV 04	750-024564	DW5776	SIB-TXP-F13
SIB F13 3	REV 04	750-024564	DW5762	SIB-TXP-F13
SIB F13 4	REV 04	750-024564	DW5797	SIB-TXP-F13

SIB F13 6	REV 04	750-024564	DW5770	SIB-TXP-F13
SIB F13 7	REV 04	750-024564	DW5758	SIB-TXP-F13
SIB F13 8	REV 04	750-024564	DW5761	SIB-TXP-F13
SIB F13 9	REV 04	750-024564	DW5754	SIB-TXP-F13
SIB F13 12	REV 04	750-024564	DW5794	SIB-TXP-F13
SIB F2S 0/0	REV 05	710-022603	DW7897	
SIB F2S 0/2	REV 05	710-022603	DW7833	
SIB F2S 0/4	REV 05	710-022603	DW7875	
SIB F2S 0/6	REV 05	710-022603	DW7860	
SIB F2S 1/0	REV 04	710-022603	DW4820	
SIB F2S 1/2	REV 05	710-022603	DW7849	
SIB F2S 1/4	REV 05	710-022603	DW7927	SIB-TXP-F2S
SIB F2S 1/6	REV 05	710-022603	DW7866	
SIB F2S 2/0	REV 05	710-022603	DW7880	
SIB F2S 2/2	REV 05	710-022603	DW7895	
SIB F2S 2/4	REV 05	710-022603	DW7907	
SIB F2S 2/6	REV 05	710-022603	DW7785	
SIB F2S 3/0	REV 05	710-022603	DW7782	
SIB F2S 3/2	REV 05	710-022603	DW7793	
SIB F2S 3/4	REV 05	710-022603	DW7779	
SIB F2S 3/6	REV 05	710-022603	DW7930	
SIB F2S 4/0	REV 05	710-022603	DW7867	
SIB F2S 4/2	REV 05	710-022603	DW7917	
SIB F2S 4/4	REV 05	710-022603	DW7929	
SIB F2S 4/6	REV 05	710-022603	DW7870	
Fan Tray 0	REV 06	760-024497	DV7831	FANTRAY-TXP-F
Fan Tray 1	REV 06	760-024497	DV9614	FANTRAY-TXP-F
Fan Tray 2	REV 06	760-024502	DV9618	FANTRAY-TXP-R
Fan Tray 3	REV 06	760-024502	DV9616	FANTRAY-TXP-R
Fan Tray 4	REV 06	760-024502	DV7807	FANTRAY-TXP-R
Fan Tray 5	REV 06	760-024502	DV7828	FANTRAY-TXP-R

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lcc0-re0:
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Hardware inventory:
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Item	Version	Part number	Serial number	FRU model number
Midplane	REV 03	710-017247	RC3765	CHAS-BP-T1600-S
FPM Display	REV 01	710-021387	DN5441	CRAFT-T1600-S
CIP	REV 06	710-002895	DP6021	CIP-L-T640-S
PEM 0	Rev 07	740-017906	UA26384	PWR-T1600-3-80-DC-S
PEM 1	Rev 07	740-017906	UA26296	PWR-T1600-3-80-DC-S
SCG 0	REV 15	710-003423	DR0875	SCG-T-S
CB 0	REV 06	710-022597	DW8534	CB-LCC
CB 1	REV 06	710-022597	DW8527	CB-LCC
FPC 4	REV 12	710-013037	DJ8717	T1600-FPC4-ES
PIC 0	REV 11	750-017405	DP8795	PD-4XGE-XFP
PIC 1	REV 11	750-017405	DP8794	PD-4XGE-XFP
FPC 6	REV 14	710-013037	DS5335	T1600-FPC4-ES
PIC 0	REV 13	750-017405	DS7634	PD-4XGE-XFP
PIC 1	REV 13	750-017405	DS7637	PD-4XGE-XFP
FPC 7	REV 07	710-013035	DM0990	T1600-FPC3-ES
PIC 0	REV 16	750-007141	JJ8067	PC-10GE-SFP
PIC 1	REV 08	750-015749	WE9598	PC-10C192-SON-XFP
PIC 2	REV 10	750-009450	HX6466	PC-10C192-SON-SR2
SIB 0	REV 08	710-022594	DW8033	SIB-TXP-T1600-S
SIB 1	REV 08	710-022594	DW8044	SIB-TXP-T1600-S
SIB 2	REV 08	710-022594	DW8020	SIB-TXP-T1600-S
SIB 3	REV 08	710-022594	DW8063	SIB-TXP-T1600-S
SIB 4	REV 08	710-022594	DW8064	SIB-TXP-T1600-S
Fan Tray 0				FANTRAY-T-S
Fan Tray 1				FANTRAY-T-S

Fan Tray 2

FANTRAY-TXP-R-S

lcc1-re0:

Hardware inventory:

Item	Version	Part number	Serial number	FRU model number
Midplane	REV 04	710-017247	RC5361	CHAS-BP-T1600-S
FPM Display	REV 01	710-021387	DS6430	CRAFT-T1600-S
CIP	REV 06	710-002895	DS4239	CIP-L-T640-S
PEM 0	Rev 08	740-017906	UD26649	PWR-T1600-3-80-DC-S
SCG 0	REV 15	710-003423	DP5820	SCG-T-S
CB 0	REV 06	710-022597	DW8523	CB-LCC
CB 1	REV 06	710-022597	DW8528	CB-LCC
FPC 4	REV 12	710-013037	DP8509	T1600-FPC4-ES
PIC 0	REV 11	750-017405	DP8808	PD-4XGE-XFP
PIC 1	REV 11	750-017405	DP7263	PD-4XGE-XFP
FPC 6	REV 14	710-013037	DS9961	T1600-FPC4-ES
PIC 0	REV 13	750-017405	DS5532	PD-4XGE-XFP
PIC 1	REV 13	750-017405	DS7639	PD-4XGE-XFP
FPC 7	REV 03	710-013035	DF5564	T1600-FPC3-ES
PIC 0	REV 16	750-007141	JJ8063	PC-10GE-SFP
SIB 0	REV 08	710-022594	DW8035	SIB-TXP-T1600-S
SIB 1	REV 10	710-022594	DX7672	SIB-TXP-T1600-S
SIB 2	REV 08	710-022594	DW8060	SIB-TXP-T1600-S
SIB 3	REV 08	710-022594	DW8072	SIB-TXP-T1600-S
SIB 4	REV 08	710-022594	DW8043	SIB-TXP-T1600-S
Fan Tray 0				FANTRAY-T-S
Fan Tray 1				FANTRAY-T-S
Fan Tray 2				FANTRAY-TXP-R-S

lcc2-re0:

Hardware inventory:

Item	Version	Part number	Serial number	FRU model number
Midplane	REV 03	710-017247	RC3956	CHAS-BP-T1600-S
FPM Display	REV 01	710-021387	DN7030	CRAFT-T1600-S
CIP	REV 06	710-002895	DM3962	CIP-L-T640-S
PEM 0	Rev 08	740-017906	UD26519	PWR-T1600-3-80-DC-S
PEM 1	Rev 07	740-017906	UC26601	PWR-T1600-3-80-DC-S
SCG 0	REV 15	710-003423	DP0277	SCG-T-S
CB 0	REV 06	710-022597	DW8524	CB-LCC
CB 1	REV 06	710-022597	DW8536	CB-LCC
FPC 4	REV 12	710-013037	DR1194	T1600-FPC4-ES
PIC 0	REV 11	750-017405	DP8811	PD-4XGE-XFP
PIC 1	REV 11	750-017405	DP8823	PD-4XGE-XFP
FPC 5	REV 12	710-013037	DR1184	T1600-FPC4-ES
PIC 1	REV 11	750-017405	DP4744	PD-4XGE-XFP
FPC 6	REV 12	710-013037	DN8622	T1600-FPC4-ES
PIC 0	REV 14	750-012518	JY9924	PD-40C192-SON-XFP
PIC 1	REV 11	750-017405	DP8776	PD-4XGE-XFP
FPC 7	REV 04	710-013560	JR3968	T640-FPC3-E2
PIC 0	REV 16	750-007141	NC9330	PC-10GE-SFP
SIB 0	REV 07	710-022594	DW4217	SIB-TXP-T1600-S
SIB 1	REV 07	710-022594	DW4213	SIB-TXP-T1600-S
SIB 2	REV 07	710-022594	DW4189	SIB-TXP-T1600-S
SIB 3	REV 07	710-022594	DW4173	SIB-TXP-T1600-S
SIB 4	REV 07	710-022594	DW4201	SIB-TXP-T1600-S
Fan Tray 0				FANTRAY-T-S
Fan Tray 1				FANTRAY-T-S
Fan Tray 2				FANTRAY-TXP-R-S


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lcc3-re0:
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Hardware inventory:
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Item	Version	Part number	Serial number	FRU model number
Midplane	REV 04	710-017247	RC5319	CHAS-BP-T1600-S
FPM Display	REV 01	710-021387	DS6402	CRAFT-T1600-S
CIP	REV 06	710-002895	DR9973	CIP-L-T640-S
PEM 0	Rev 07	740-017906	UC26496	PWR-T1600-3-80-DC-S
PEM 1	Rev 07	740-017906	UC26599	PWR-T1600-3-80-DC-S
SCG 0	REV 15	710-003423	DP5831	SCG-T-S
CB 0	REV 06	710-022597	DW8533	CB-LCC
CB 1	REV 06	710-022597	DW8538	CB-LCC
FPC 0	REV 14	710-013037	DS5345	T1600-FPC4-ES
PIC 0	REV 13	750-017405	DS7641	PD-4XGE-XFP
PIC 1	REV 13	750-017405	DS5479	PD-4XGE-XFP
FPC 1	REV 14	710-013037	DS7338	T1600-FPC4-ES
PIC 0	REV 13	750-017405	DS7631	PD-4XGE-XFP
PIC 1	REV 13	750-017405	DS7632	PD-4XGE-XFP
FPC 2	REV 14	710-013037	DS9962	T1600-FPC4-ES
PIC 0	REV 13	750-017405	DS7581	PD-4XGE-XFP
PIC 1	REV 13	750-017405	DS7627	PD-4XGE-XFP
FPC 4	REV 10	710-010845	JZ6573	T640-FPC4-ES
PIC 0	REV 14	750-012518	JT5124	PD-40C192-SON-XFP
FPC 5	REV 14	710-013037	DT0016	T1600-FPC4-ES
PIC 0	REV 14	750-012518	JY9918	PD-40C192-SON-XFP
FPC 7	REV 07	710-013035	DM0967	T1600-FPC3-ES
PIC 0	REV 16	750-007141	JJ8059	PC-10GE-SFP
PIC 1	REV 13	750-004695	DM5712	PC-TUNNEL
SIB 0	REV 07	710-022594	DW4174	SIB-TXP-T1600-S
SIB 1	REV 07	710-022594	DW4207	SIB-TXP-T1600-S
SIB 2	REV 06	710-022594	DT8231	SIB-TXP-T1600-S
SIB 3	REV 07	710-022594	DW4175	SIB-TXP-T1600-S
SIB 4	REV 07	710-022594	DW4209	SIB-TXP-T1600-S
Fan Tray 0				FANTRAY-T-S
Fan Tray 1				FANTRAY-T-S
Fan Tray 2				FANTRAY-TXP-R-S

```
show chassis hardware user@host> show chassis hardware
```

```
(16-Port 10-Gigabit
Ethernet MPC with
SFP+ Optics [MX
Series Routers])
```

```
Hardware inventory:
```

Item	Version	Part number	Serial number	Description
Chassis			JN112D865AFA	MX960
Midplane	REV 03	710-013698	TS3339	MX960 Backplane
FPM Board	REV 03	710-014974	WW6267	Front Panel Display
PDM	Rev 03	740-013110	QCS12485026	Power Distribution
Module				
PEM 0	Rev 04	740-013682	QCS12434086	PS 1.7kW; 200-240VAC
in				
PEM 1	Rev 04	740-013682	QCS1243408Z	PS 1.7kW; 200-240VAC
in				
PEM 2	Rev 04	740-013682	QCS1243407X	PS 1.7kW; 200-240VAC
in				
Routing Engine 0	REV 07	740-015113	9009009677	RE-S-1300
Routing Engine 1	REV 07	740-015113	9009011510	RE-S-1300
CB 0	REV 03	710-021523	XF0394	MX SCB
CB 1	REV 03	710-021523	XF0550	MX SCB
CB 2	REV 03	710-021523	XD7455	MX SCB
FPC 4	REV 02	750-028467	JR6127	MPC M 16x 10GE
CPU	REV 02	711-029089	JX0129	AS PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+

PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Fan Tray 0	REV 05	740-014971	TP9990	Fan Tray
Fan Tray 1	REV 05	740-014971	VS1709	Fan Tray

show chassis hardware
(MPC3E [MX Series Routers])

user@host> show chassis hardware

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN1101AFEAFB	MX480
Midplane	REV 05	710-017414	TR4444	MX480 Midplane
FPM Board	REV 02	710-017254	KG6056	Front Panel Display
PEM 0	Rev 03	740-017330	QCS082090FC	PS 1.2-1.7kW; 100-240V
PEM 1	Rev 03	740-017330	QCS082090FD	PS 1.2-1.7kW; 100-240V
Routing Engine 0	REV 07	740-013063	9009004124	RE-S-2000
Routing Engine 1	REV 07	740-013063	9009005569	RE-S-2000
CB 0	REV 07	710-021523	XZ3587	MX SCB
CB 1	REV 03	710-021523	KH8306	MX SCB
FPC 1	REV 04.1.07	750-033205	P1240	MPC Type 3
CPU	REV 01	711-035209	YL0504	HMPC PMB 2G
MIC 1	REV 10	750-033199	YX4495	1X100GE CFP
PIC 2		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0	REV 01	740-032210	C22CQNE	CFP-100G-LR4
FPC 2	REV 26	750-016670	KH0045	DPCE 40x 1GE R EQ
CPU	REV 07	710-013713	KF5448	DPC PMB
PIC 0		BUILTIN	BUILTIN	10x 1GE(LAN) EQ
Xcvr 0	REV 01	740-011613	PF21JHU	SFP-SX
PIC 1		BUILTIN	BUILTIN	10x 1GE(LAN) EQ
Xcvr 9	REV 01	740-011613	AM0813S8ZL6	SFP-SX
PIC 2		BUILTIN	BUILTIN	10x 1GE(LAN) EQ
Xcvr 0	REV 02	740-011613	PGL2KYF	SFP-SX
Xcvr 2	REV 01	740-011613	AM0806S8N4P	SFP-SX
PIC 3		BUILTIN	BUILTIN	10x 1GE(LAN) EQ
Xcvr 5	REV 01	740-011613	AM0815S967N	SFP-SX
Xcvr 7	REV 01	740-011613	AM0806S8N1X	SFP-SX
Xcvr 8	REV 01	740-011613	AM0815S967J	SFP-SX
Xcvr 9	REV 01	740-011613	AM0815S967M	SFP-SX
FPC 3	REV 12.2.09	750-033205	YR9443	MPC Type 3
CPU	REV 03	711-035209	YL6931	HMPC PMB 2G
MIC 0	REV 05	750-033199	YR3269	1X100GE CFP
PIC 0		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0	REV 01	740-032210	ULH0KG3	CFP-100G-LR4
MIC 1	REV 02	750-033199	YG3245	1X100GE CFP
PIC 2		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0	REV 01	740-032210	ULH0KGF	CFP-100G-LR4
FPC 4	REV 12.3.09	750-033205	YR9437	MPC Type 3
CPU	REV 03	711-035209	YT5857	HMPC PMB 2G
MIC 0	REV 05	750-033199	YR3295	1X100GE CFP
PIC 0		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0		NON-JNPR	X12000187	CFP-100G-SR10
MIC 1	REV 10	750-033199	YX4518	1X100GE CFP
PIC 2		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0	REV 01	740-035329	X12J00008	CFP-100G-SR10
FPC 5	REV 06	750-024884	JW9769	MPC Type 2 3D EQ
CPU	REV 02	711-028401	JR6158	MPC PMB 2G Proto
MIC 0	REV 05	750-028387	JR6197	3D 4x 10GE XFP
PIC 0		BUILTIN	BUILTIN	2x 10GE XFP
Xcvr 0	REV 01	740-014289	T07M71112	XFP-10G-SR
Xcvr 1	REV 02	740-014289	T08L85610	XFP-10G-SR

PIC 1		BUILTIN	BUILTIN	2x 10GE XFP
MIC 1	REV 22	750-028392	YM0053	3D 20x 1GE(LAN) SFP
PIC 2		BUILTIN	BUILTIN	10x 1GE(LAN) SFP
Xcvr 0	REV 01	740-011613	AM0703S005B	SFP-SX
Xcvr 1	REV 01	740-011613	E07L01352	SFP-SX
PIC 3		BUILTIN	BUILTIN	10x 1GE(LAN) SFP
Xcvr 5	REV 01	740-013111	6500217	SFP-T
Xcvr 9	REV 02	740-013111	8499527	SFP-T
Fan Tray				Left Fan Tray

The PIC number for MIC 1 always starts from 2 (even if the first MIC is a 1X100GE CFP or a legacy MIC).

show chassis hardware (QFX3500 Switches)

```
user@switch> show chassis hardware
```

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis				QFX3500
Routing Engine 0		BUILTIN	BUILTIN	QFX Routing Engine
FPC 0	REV 04	750-044071	BBAR3902	QFX3500-48S4Q-AFI
CPU		BUILTIN	BUILTIN	FPC CPU
PIC 0		BUILTIN	BUILTIN	48x 10G-SFP+
PIC 1		BUILTIN	BUILTIN	15x 10G-SFP+
MGMT BRD	REV 02	750-044063	BBAR0398	QFX3500-MGMT-SFP-AFO
Xcvr 0	REV 01	740-011614	AC0946S0BD1	SFP-LX10
Xcvr 1	REV 02	740-013111	A281922	SFP-T
Power Supply 0	Rev 04	740-032091	UI00677	JPSU-650W-AC-AFI
Power Supply 1	REV 00	740-041741	VJ00162	JPSU-650W-AC-AFO
Fan Tray 0				QFX Fan Tray, Back to
Front Airflow				
Fan Tray 1				QFX Fan Tray, Back to
Front Airflow				
Fan Tray 2				QFX Fan Tray, Back to
Front Airflow				

show chassis hardware detail (QFX3500 Switches)

```
user@switch> show chassis hardware detail
```

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN000TEST5	QFX3500
Routing Engine 0		BUILTIN	BUILTIN	QFX Routing Engine
FPC 0	REV 05	750-036931	EE0823	QFX3500-48S4Q-AFI
CPU		BUILTIN	BUILTIN	FPC CPU
PIC 0		BUILTIN	BUILTIN	48x 10G-SFP+
Xcvr 0	REV 01	740-030589	S99E270079	SFP+-10G-LPBK
Xcvr 1	REV 01	740-030589	S9AK450099	SFP+-10G-LPBK
Xcvr 2	REV 01	740-030589	S99E270078	SFP+-10G-LPBK
Xcvr 3	REV 01	740-030589	S9AK450098	SFP+-10G-LPBK
Xcvr 4	REV 01	740-030589	S99E270075	SFP+-10G-LPBK
Xcvr 5	REV 01	740-030589	S9AK450093	SFP+-10G-LPBK
Xcvr 6	REV 01	740-030589	S9AK450097	SFP+-10G-LPBK
Xcvr 7	REV 01	740-030589	S9AK450095	SFP+-10G-LPBK
Xcvr 8	REV 01	740-030589	S99E270072	SFP+-10G-LPBK
Xcvr 9	REV 01	740-030589	S99E270073	SFP+-10G-LPBK
Xcvr 10	REV 01	740-030589	S99E270080	SFP+-10G-LPBK
Xcvr 11	REV 01	740-030589	S9AK450169	SFP+-10G-LPBK
Xcvr 12	REV 01	740-030589	S99E270076	SFP+-10G-LPBK
Xcvr 13	REV 01	740-030589	S9AK450167	SFP+-10G-LPBK
Xcvr 14	REV 01	740-030589	S9AK450170	SFP+-10G-LPBK

Xcvr 15	REV 01	740-030589	S9AK450166	SFP+-10G-LPBK
Xcvr 16	REV 01	740-030589	S9AK450092	SFP+-10G-LPBK
Xcvr 17	REV 01	740-030589	S9AK450163	SFP+-10G-LPBK
Xcvr 18	REV 01	740-030589	S9AK450094	SFP+-10G-LPBK
Xcvr 19	REV 01	740-030589	S9AK450100	SFP+-10G-LPBK
Xcvr 20	REV 01	740-030589	S9AK450168	SFP+-10G-LPBK
Xcvr 21	REV 01	740-030589	S9AK450165	SFP+-10G-LPBK
Xcvr 22	REV 01	740-030589	S9AK450073	SFP+-10G-LPBK
Xcvr 23	REV 01	740-030589	S9AK450164	SFP+-10G-LPBK
Xcvr 24	REV 01	740-030589	S9AK450074	SFP+-10G-LPBK
Xcvr 25	REV 01	740-030589	SA62270195	SFP+-10G-LPBK
Xcvr 26	REV 01	740-030589	S9AK450078	SFP+-10G-LPBK
Xcvr 27	REV 01	740-030589	S9AK450024	SFP+-10G-LPBK
Xcvr 28	REV 01	740-030589	S9AK450027	SFP+-10G-LPBK
Xcvr 29	REV 01	740-030589	S9AK450080	SFP+-10G-LPBK
Xcvr 30	REV 01	740-030589	S9AK450030	SFP+-10G-LPBK
Xcvr 31	REV 01	740-030589	S9AK450025	SFP+-10G-LPBK
Xcvr 32	REV 01	740-030589	S9AK450023	SFP+-10G-LPBK
Xcvr 33	REV 01	740-030589	S9AK450075	SFP+-10G-LPBK
Xcvr 34	REV 01	740-030589	S9AK450161	SFP+-10G-LPBK
Xcvr 35	REV 01	740-030589	S9AK450071	SFP+-10G-LPBK
Xcvr 36	REV 01	740-030589	S9AK450072	SFP+-10G-LPBK
Xcvr 37	REV 01	740-030589	S9AK450022	SFP+-10G-LPBK
Xcvr 38	REV 01	740-030589	S9AK450021	SFP+-10G-LPBK
Xcvr 39	REV 01	740-030589	S9AK450175	SFP+-10G-LPBK
Xcvr 40	REV 01	740-030589	S9AK450162	SFP+-10G-LPBK
Xcvr 41	REV 01	740-030589	S99E270074	SFP+-10G-LPBK
Xcvr 42	REV 01	740-030589	S9AK450174	SFP+-10G-LPBK
Xcvr 43	REV 01	740-030589	S9AK450077	SFP+-10G-LPBK
Xcvr 44	REV 01	740-030589	S9AK450076	SFP+-10G-LPBK
Xcvr 45	REV 01	740-030589	S9AK450026	SFP+-10G-LPBK
Xcvr 46	REV 01	740-030589	S9AK450079	SFP+-10G-LPBK
Xcvr 47	REV 01	740-030589	S9AK450029	SFP+-10G-LPBK
PIC 1		BUILTIN	BUILTIN	15x 10G-SFP+
Xcvr 1	REV 01	740-032986	QA170087	QSFP+-40G-SR4
Xcvr 4	REV 01	740-032986	QA360442	QSFP+-40G-SR4
Xcvr 8	REV 01	740-032986	QA170091	QSFP+-40G-SR4
Xcvr 12	REV 01	740-032986	QA170042	QSFP+-40G-SR4
MGMT BRD	REV 08	750-036946	EE0731	QFX3500-MB
Power Supply 0	Rev 04	740-032091	UI00690	QFX PS 650W AC
Power Supply 1	Rev 04	740-032091	UI00679	QFX PS 650W AC
Fan Tray 0				QFX Fan Tray
Fan Tray 1				QFX Fan Tray

```

show chassis hardware user@switch> show chassis hardware models
models (QFX3500 Hardware inventory:
Switches) Item Version Part number Serial number FRU model number
Routing Engine 0 BUILTIN BUILTIN
FPC 0 REV 02 711-032234 EC4074
Power Supply 0 PSMI 2C 11-d65800 --

```

```

show chassis hardware user@switch> show chassis hardware clei-models
clei-models (QFX3500 Hardware inventory:
Switches) Item Version Part number CLEI code FRU model number
Routing Engine 0 BUILTIN
FPC 0 REV 02 711-032234
Power Supply 0 PSMI 2C 11-d65800

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show chassis hardware
interconnect-device
(QFabric Switches)
user@switch> show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis              REV 07              BUILTIN        QFX_olive
Midplane            REV 07      750-021261    BH0208188289  QFX Midplane
CB 0                 REV 07      750-021261    BH0208188289  QFXIC08-CB4S

show chassis hardware
node-device (QFabric Switches)
user@switch> show chassis hardware node-device node1
Routing Engine 0  BUILTIN        BUILTIN        QFX Routing Engine
node1            REV 05      711-032234    ED3694          QFX3500-48S4Q-AFT

CPU
PIC 0
Xcvr 8           REV 01      740-030658    AD0946A028B    SFP+-10G-USR
...

show chassis hardware
(PTX5000 Packet Transport Switch)
user@switch> show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis              REV 03      711-031896    JN11D1FD7AJA  PTX5000
Midplane            REV 08      760-030647    EG1679         Front Panel Disp1
FPM                 Rev 05      740-032019    ZE00006        DC Power Dist Uni
PSM 0               Rev 05      740-032022    ZJ00018        DC 12V Power Supp
PSM 1               Rev 04      740-032022    ZC00052        DC 12V Power Supp
PSM 2               Rev 04      740-032022    ZD00051        DC 12V Power Supp
PSM 3               Rev 05      740-032022    ZJ00060        DC 12V Power Supp
CCG 0               REV 04      750-030653    EG3703         Clock Generator
CCG 1               REV 04      750-030653    EG3698         Clock Generator
Routing Engine 0  REV 05      740-026942    P737A-002231  RE-DUO-2600
Routing Engine 1  REV 06      740-026942    P737A-002438  RE-DUO-2600
CB 0                REV 08      750-030625    EG5519         Control Board
CB 1                REV 08      750-030625    EG5516         Control Board
FPC 0               REV 18      750-036844    EJ3080         FPC
CPU                 REV 12      711-030686    EJ3260         SNG PMB
FPC 2               REV 13      750-036844    EG5065         FPC
CPU                 REV 09      711-030686    EG4082         SNG PMB
PIC 0               REV 14      750-031913    EG5127         24x 10GE(LAN) SFP
Xcvr 0              REV 01      740-031980    143363A00240  SFP+-10G-SR
Xcvr 1              REV 01      740-031981    UK90PZ1        SFP+-10G-LR
Xcvr 2              REV 01      740-031980    AD1141A04XH    SFP+-10G-SR
Xcvr 3              REV 01      740-031981    UK90Q46        SFP+-10G-LR
Xcvr 4              REV 01      740-031980    AD1141A04X4    SFP+-10G-SR
Xcvr 6              REV 01      740-031980    B11H02560      SFP+-10G-SR
Xcvr 7              REV 01      740-031980    B11C01589      SFP+-10G-SR
Xcvr 8              REV 01      740-031980    AD1141A04XF    SFP+-10G-SR
Xcvr 10             REV 01      740-031980    123363A01094   SFP+-10G-SR
Xcvr 11             REV 01      740-031980    AK80LKF        SFP+-10G-SR
Xcvr 12             REV 01      740-031980    183363A01528   SFP+-10G-SR
Xcvr 14             REV 01      740-031980    193363A01079   SFP+-10G-SR
Xcvr 15             REV 01      740-031980    AK80MC8        SFP+-10G-SR
Xcvr 16             REV 01      740-031980    AJC08HC        SFP+-10G-SR
Xcvr 19             REV 01      740-021309    J08D26856      SFP+-10G-LR
Xcvr 21             REV 01      740-031980    AK80KCT        SFP+-10G-SR
Xcvr 22             REV 01      740-031981    UK90PZL        SFP+-10G-LR
Xcvr 23             REV 01      740-031980    AK80N1V        SFP+-10G-SR
FPC 3               REV 13      750-036844    EG5074         FPC
CPU                 REV 09      711-030686    EG4064         SNG PMB
PIC 1               REV 10      750-031903    EG0325         SNG Load

```

FPC 5	REV 06	750-036844	EH3198	FPC
CPU				
PIC 0	REV 14	750-031913	EG5134	24x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LBH	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11B03724	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80FMH	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	B11J00818	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	193363A00743	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	B11B06125	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	B11H02529	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	AK80LFB	SFP+-10G-SR
Xcvr 12	REV 01	740-031980	193363A01061	SFP+-10G-SR
Xcvr 15	REV 01	740-031980	B11J00687	SFP+-10G-SR
Xcvr 16	REV 01	740-031980	193363A00738	SFP+-10G-SR
Xcvr 18	REV 01	740-031980	AK80MQX	SFP+-10G-SR
Xcvr 19	REV 01	740-021309	J08C17257	SFP+-10G-LR
Xcvr 22	REV 01	740-031980	B11J00730	SFP+-10G-SR
Xcvr 23	REV 01	740-031980	AK80KEE	SFP+-10G-SR
PIC 1	REV 08	750-036710	EG3105	2x 40GE CFP
Xcvr 0	REV 01	740-034554	B260HLT	CFP-40G-LR4
Xcvr 1	REV 01	740-034554	B11C02847	CFP-40G-LR4
FPC 6	REV 18	750-036844	EJ4391	FPC
CPU	REV 12	711-030686	EJ3257	SNG PMB
FPC 7	REV 18	750-036844	EJ4382	FPC
CPU	REV 12	711-030686	EJ3238	SNG PMB
SPMB 0	REV 10	711-030686	EG5418	SNG PMB
SPMB 1	REV 09	711-030686	EG5373	SNG PMB
SIB 0	REV 07	750-030631	EG4858	SIB-I-8S
SIB 1	REV 07	750-030631	EG4872	SIB-I-8S
SIB 2	REV 07	750-030631	EG4866	SIB-I-8S
SIB 3	REV 07	750-030631	EG6011	SIB-I-8S
SIB 4	REV 07	750-030631	EG4907	SIB-I-8S
SIB 5	REV 07	750-030631	EG4879	SIB-I-8S
SIB 6	REV 07	750-030631	EG4864	SIB-I-8S
SIB 7	REV 07	750-030631	EG4899	SIB-I-8S
SIB 8	REV 07	750-030631	EG4880	SIB-I-8S
Fan Tray 0	REV 04	760-032784	EG1496	Vertical Fan Tray
Fan Tray 1	REV 04	760-030642	EG1335	Horizontal Fan Tray
Fan Tray 2	REV 02	760-030642	ED4952	Horizontal Fan Tray

show chassis hardware
clei-models (PTX5000
Packet Transport
Switch)

user@switch> show chassis hardware clei-models

Hardware inventory:

Item	Version	Part number	CLEI code	FRU model number
FPM	REV 08	760-030647	PROTOXCLEI	CRAFT-PTX5000-S
PDU 0	Rev 05	740-032019	IPUPAHLKAA	PWR-SAN-PDU-DC
PSM 0	Rev 05	740-032022	IPUPAHNKAA	PSM-PTX-DC-120-S
PSM 1	Rev 04	740-032022	032022XXXX	PWR-SAN-12-DC
PSM 2	Rev 04	740-032022	032022XXXX	PWR-SAN-12-DC
PSM 3	Rev 05	740-032022	IPUPAHNKAA	PSM-PTX-DC-120-S
CCG 0	REV 04	750-030653	PROTOXCLEI	CCG-PTX-S
CCG 1	REV 04	750-030653	PROTOXCLEI	CCG-PTX-S
Routing Engine 0	REV 05	740-026942		RE-DUO-C2600-16G-S
Routing Engine 1	REV 06	740-026942		RE-DUO-C2600-16G-S
CB 0	REV 08	750-030625	PROTOXCLEI	CB-PTX-S
CB 1	REV 08	750-030625	PROTOXCLEI	CB-PTX-S
FPC 0	REV 18	750-036844	PROTOXCLEI	FPC-PTX-P1-A
FPC 2	REV 13	750-036844	PROTOXCLEI	FPC-PTX-P1-A
PIC 0	REV 14	750-031913	PROTOXCLEI	P1-PTX-24-10GE-SFPP
FPC 3	REV 13	750-036844	PROTOXCLEI	FPC-PTX-P1-A
FPC 5				
PIC 0	REV 14	750-031913	PROTOXCLEI	P1-PTX-24-10GE-SFPP

FPC 6	REV 18	750-036844	PROTOXCLEI	FPC-PTX-P1-A
FPC 7	REV 18	750-036844	PROTOXCLEI	FPC-PTX-P1-A
SIB 0	REV 07	750-030631	PROTOXCLEI	SIB-I-PTX5008
SIB 1	REV 07	750-030631	PROTOXCLEI	SIB-I-PTX5008
SIB 2	REV 07	750-030631	PROTOXCLEI	SIB-I-PTX5008
SIB 3	REV 07	750-030631	PROTOXCLEI	SIB-I-PTX5008
SIB 4	REV 07	750-030631	PROTOXCLEI	SIB-I-PTX5008
SIB 5	REV 07	750-030631	PROTOXCLEI	SIB-I-PTX5008
SIB 6	REV 07	750-030631	PROTOXCLEI	SIB-I-PTX5008
SIB 7	REV 07	750-030631	PROTOXCLEI	SIB-I-PTX5008
SIB 8	REV 07	750-030631	PROTOXCLEI	SIB-I-PTX5008
Fan Tray 1	REV 04	760-030642	PROTOXCLEI	FAN-PTX-H-S

show chassis hardware detail (PTX5000 Packet Transport Switch) user@switch> **show chassis hardware detail**

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN11D1FD7AJA	PTX5000
Midplane	REV 03	711-031896	ABAC5589	Midplane-8S
FPM	REV 08	760-030647	EG1679	Front Panel Display
PDU 0	Rev 05	740-032019	ZE00006	DC Power Dist Unit
PSM 0	Rev 05	740-032022	ZJ00018	DC 12V Power Supply
PSM 1	Rev 04	740-032022	ZC00052	DC 12V Power Supply
PSM 2	Rev 04	740-032022	ZD00051	DC 12V Power Supply
PSM 3	Rev 05	740-032022	ZJ00060	DC 12V Power Supply
CCG 0	REV 04	750-030653	EG3703	Clock Generator
CCG 1	REV 04	750-030653	EG3698	Clock Generator
Routing Engine 0	REV 05	740-026942	P737A-002231	RE-DUO-2600
ad0	3823 MB	SMART CF	201006190039C02DC02D	Compact Flash
ad1	62720 MB	SMART Lite SATA Drive	2011042300CF4C6B4C6B	Disk 1
Routing Engine 1	REV 06	740-026942	P737A-002438	RE-DUO-2600
ad0	3823 MB	SMART CF	20100619053455F055F0	Compact Flash
ad1	62720 MB	SMART Lite SATA Drive	20110423000AE8E7E8E7	Disk 1
CB 0	REV 08	750-030625	EG5519	Control Board
CB 1	REV 08	750-030625	EG5516	Control Board
FPC 0	REV 18	750-036844	EJ3080	FPC
CPU	REV 12	711-030686	EJ3260	SNG PMB
FPC 2	REV 13	750-036844	EG5065	FPC
CPU	REV 09	711-030686	EG4082	SNG PMB
PIC 0	REV 14	750-031913	EG5127	24x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	143363A00240	SFP+-10G-SR
Xcvr 1	REV 01	740-031981	UK90PZ1	SFP+-10G-LR
Xcvr 2	REV 01	740-031980	AD1141A04XH	SFP+-10G-SR
Xcvr 3	REV 01	740-031981	UK90Q46	SFP+-10G-LR
Xcvr 4	REV 01	740-031980	AD1141A04X4	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	B11H02560	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	B11C01589	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	AD1141A04XF	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	123363A01094	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	AK80LKF	SFP+-10G-SR
Xcvr 12	REV 01	740-031980	183363A01528	SFP+-10G-SR
Xcvr 14	REV 01	740-031980	193363A01079	SFP+-10G-SR
Xcvr 15	REV 01	740-031980	AK80MC8	SFP+-10G-SR
Xcvr 16	REV 01	740-031980	AJC0BHC	SFP+-10G-SR
Xcvr 19	REV 01	740-021309	J08D26856	SFP+-10G-LR
Xcvr 21	REV 01	740-031980	AK80KCT	SFP+-10G-SR
Xcvr 22	REV 01	740-031981	UK90PZL	SFP+-10G-LR
Xcvr 23	REV 01	740-031980	AK80N1V	SFP+-10G-SR
FPC 3	REV 13	750-036844	EG5074	FPC
CPU	REV 09	711-030686	EG4064	SNG PMB
PIC 1	REV 10	750-031903	EG0325	SNG Load
FPC 5	REV 06	750-036844	EH3198	FPC

CPU					
PIC 0	REV 14	750-031913	EG5134	24x 10GE(LAN) SFP+	
Xcvr 0	REV 01	740-031980	AK80LBH	SFP+-10G-SR	
Xcvr 1	REV 01	740-031980	B11B03724	SFP+-10G-SR	
Xcvr 2	REV 01	740-031980	AK80FMH	SFP+-10G-SR	
Xcvr 5	REV 01	740-031980	B11J00818	SFP+-10G-SR	
Xcvr 6	REV 01	740-031980	193363A00743	SFP+-10G-SR	
Xcvr 7	REV 01	740-031980	B11B06125	SFP+-10G-SR	
Xcvr 10	REV 01	740-031980	B11H02529	SFP+-10G-SR	
Xcvr 11	REV 01	740-031980	AK80LFB	SFP+-10G-SR	
Xcvr 12	REV 01	740-031980	193363A01061	SFP+-10G-SR	
Xcvr 15	REV 01	740-031980	B11J00687	SFP+-10G-SR	
Xcvr 16	REV 01	740-031980	193363A00738	SFP+-10G-SR	
Xcvr 18	REV 01	740-031980	AK80MQX	SFP+-10G-SR	
Xcvr 19	REV 01	740-021309	J08C17257	SFP+-10G-LR	
Xcvr 22	REV 01	740-031980	B11J00730	SFP+-10G-SR	
Xcvr 23	REV 01	740-031980	AK80KEE	SFP+-10G-SR	
PIC 1	REV 08	750-036710	EG3105	2x 40GE CFP	
Xcvr 0	REV 01	740-034554	B260HLT	CFP-40G-LR4	
Xcvr 1	REV 01	740-034554	B11C02847	CFP-40G-LR4	
FPC 6	REV 18	750-036844	EJ4391	FPC	
CPU	REV 12	711-030686	EJ3257	SNG PMB	
FPC 7	REV 18	750-036844	EJ4382	FPC	
CPU	REV 12	711-030686	EJ3238	SNG PMB	
SPMB 0	REV 10	711-030686	EG5418	SNG PMB	
SPMB 1	REV 09	711-030686	EG5373	SNG PMB	
SIB 0	REV 07	750-030631	EG4858	SIB-I-8S	
SIB 1	REV 07	750-030631	EG4872	SIB-I-8S	
SIB 2	REV 07	750-030631	EG4866	SIB-I-8S	
SIB 3	REV 07	750-030631	EG6011	SIB-I-8S	
SIB 4	REV 07	750-030631	EG4907	SIB-I-8S	
SIB 5	REV 07	750-030631	EG4879	SIB-I-8S	
SIB 6	REV 07	750-030631	EG4864	SIB-I-8S	
SIB 7	REV 07	750-030631	EG4899	SIB-I-8S	
SIB 8	REV 07	750-030631	EG4880	SIB-I-8S	
Fan Tray 0	REV 04	760-032784	EG1496	Vertical Fan Tray	
Fan Tray 1	REV 04	760-030642	EG1335	Horizontal Fan Tray	
Fan Tray 2	REV 02	760-030642	ED4952	Horizontal Fan Tray	

show chassis hardware user@switch> show chassis hardware models

models (PTX5000

Packet Transport

Switch)

Hardware inventory:					
Item	Version	Part number	Serial number	FRU model number	
FPM	REV 08	760-030647	EG1679	CRAFT-PTX5000-S	
PDU 0	Rev 05	740-032019	ZE00006	PWR-SAN-PDU-DC	
PSM 0	Rev 05	740-032022	ZJ00018	PSM-PTX-DC-120-S	
PSM 1	Rev 04	740-032022	ZC00052	PWR-SAN-12-DC	
PSM 2	Rev 04	740-032022	ZD00051	PWR-SAN-12-DC	
PSM 3	Rev 05	740-032022	ZJ00060	PSM-PTX-DC-120-S	
CCG 0	REV 04	750-030653	EG3703	CCG-PTX-S	
CCG 1	REV 04	750-030653	EG3698	CCG-PTX-S	
Routing Engine 0	REV 05	740-026942	P737A-002231	RE-DUO-C2600-16G-S	
Routing Engine 1	REV 06	740-026942	P737A-002438	RE-DUO-C2600-16G-S	
CB 0	REV 08	750-030625	EG5519	CB-PTX-S	
CB 1	REV 08	750-030625	EG5516	CB-PTX-S	
FPC 0	REV 18	750-036844	EJ3080	FPC-PTX-P1-A	
FPC 2	REV 13	750-036844	EG5065	FPC-PTX-P1-A	
PIC 0	REV 14	750-031913	EG5127	P1-PTX-24-10GE-SFPP	
FPC 3	REV 13	750-036844	EG5074	FPC-PTX-P1-A	
FPC 5					
PIC 0	REV 14	750-031913	EG5134	P1-PTX-24-10GE-SFPP	
FPC 6	REV 18	750-036844	EJ4391	FPC-PTX-P1-A	

FPC 7	REV 18	750-036844	EJ4382	FPC-PTX-P1-A
SIB 0	REV 07	750-030631	EG4858	SIB-I-PTX5008
SIB 1	REV 07	750-030631	EG4872	SIB-I-PTX5008
SIB 2	REV 07	750-030631	EG4866	SIB-I-PTX5008
SIB 3	REV 07	750-030631	EG6011	SIB-I-PTX5008
SIB 4	REV 07	750-030631	EG4907	SIB-I-PTX5008
SIB 5	REV 07	750-030631	EG4879	SIB-I-PTX5008
SIB 6	REV 07	750-030631	EG4864	SIB-I-PTX5008
SIB 7	REV 07	750-030631	EG4899	SIB-I-PTX5008
SIB 8	REV 07	750-030631	EG4880	SIB-I-PTX5008
Fan Tray 1	REV 04	760-030642	EG1335	FAN-PTX-H-S

**show chassis hardware
extensive (PTX5000
Packet Transport
Switch)**

user@switch> show chassis hardware extensive

Hardware inventory:

Item	Version	Part number	Serial number	Description
.....				
PDU 0	Rev 04	740-032019	UE0003	DC Power Dist Unit
Jedec Code:	0x7fb0	EEPROM Version:	0x02	
P/N:	740-032019	S/N:	S/N UE0003	
Assembly ID:	0x043d	Assembly Version:	04.00	
Date:	11-29-2010	Assembly Flags:	0x00	
Version:	Rev 04	CLEI Code:	032022XXXX	
ID:	DC Power Dist Unit	FRU Model Number:	PWR-SAN-PDU-DC	
Board Information Record:				
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff				
I2C Hex Data:				
Address 0x00: 7f b0 02 ff 04 3d 04 00 52 65 76 20 30 34 00 00				
Address 0x10: 00 00 00 00 37 34 30 2d 30 33 32 30 31 39 00 00				
Address 0x20: 53 2f 4e 20 55 45 30 30 30 33 00 00 00 1d 0b 07				
Address 0x30: da ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff				
Address 0x40: ff ff ff ff 01 30 33 32 30 32 32 58 58 58 58 50				
Address 0x50: 57 52 2d 53 41 4e 2d 50 44 55 2d 44 43 00 00 00				
Address 0x60: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00				
Address 0x70: 00 00 00 a3 ff ff ff ff ff ff ff ff ff ff ff ff				
PSM 0	Rev 04	740-032022	YG00065	DC 12V Power Supply
Module				
Jedec Code:	0x7fb0	EEPROM Version:	0x02	
P/N:	740-032022	S/N:	S/N YG00065	
Assembly ID:	0x0440	Assembly Version:	04.00	
Date:	07-30-2010	Assembly Flags:	0x00	
Version:	Rev 04	CLEI Code:	032022XXXX	
ID:	DC 12V Power Supply Module	FRU Model Number:	PWR-SAN-12-DC	
Board Information Record:				
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff				
I2C Hex Data:				
Address 0x00: 7f b0 02 ff 04 40 04 00 52 65 76 20 30 34 00 00				
Address 0x10: 00 00 00 00 37 34 30 2d 30 33 32 30 32 32 00 00				
Address 0x20: 53 2f 4e 20 59 47 30 30 30 36 35 00 00 1e 07 07				
Address 0x30: da ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff				
Address 0x40: ff ff ff ff 01 30 33 32 30 32 32 58 58 58 58 50				
Address 0x50: 57 52 2d 53 41 4e 2d 31 32 2d 44 43 20 20 20 20				
Address 0x60: 20 20 20 20 20 20 01 00 ff ff ff ff ff ff ff ff				
Address 0x70: ff ff ff 0c ff ff ff ff ff ff ff ff ff ff ff ff				

show chassis power

Syntax (MX Series Router) show chassis power
 <all-members>
 <local>
 <member *member-id*>

Syntax (PTX Series) show chassis power
 <detail>

Release Information Command introduced in Junos OS Release 10.0
 Command introduced in Junos OS Release 12.1 for PTX Series Packet Transport Switches.

Description (MX Series 3D Universal Edge Routers and PTX Series Packet Transport Switches only)
 Display power limits and usage information for the AC or DC power sources.

- On the MX Series 3D Universal Edge Routers, 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 PTX Series Packet Transport Switches, power is supplied by power distribution units (PDUs). Each PDU contains up to four Power Supply Modules (PSMs).

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—(PTX Series only) (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 • [show chassis power sequence on page 393](#)
 • [show chassis power on page 386](#)

- Checklist for Monitoring Power Supplies

List of Sample Output [show chassis power \(MX960 Router with DC PEM\) on page 388](#)
[show chassis power \(MX960 Router with AC PEM\) on page 389](#)
[show chassis power \(MX480 Router with AC PEM\) on page 390](#)
[show chassis power \(MX240 Router with DC PEM\) on page 390](#)
[show chassis power \(PTX5000 Packet Transport Switch\) on page 391](#)
[show chassis power detail \(PTX5000 Packet Transport Switch\) on page 391](#)

Output Fields [Table 34 on page 387](#) lists the output fields for the **show chassis power** command. Output fields are listed in the approximate order in which they appear.

Table 34: show chassis power Output Fields

Field Name	Field Description	Level of Output
PEM number	<p>(MX Series only) AC or DC PEM number on the chassis. The following output fields are displayed for the PEM:</p> <ul style="list-style-type: none"> • State—State of the PEM: <ul style="list-style-type: none"> • 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. <p>NOTE: The maximum capacity for AC and DC PEMs is:</p> <ul style="list-style-type: none"> • 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—2400 W if the DIP switch is off. 2600 W if the DIP switch is on. • MX240 AC PEM—2520 W if it is high-line. 1450 W if it is low-line. • MX240 DC PEM—2400 W if the DIP switch is off. 2600 W if the DIP switch is on. • 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 capacity) for the zone. 	All levels

Table 34: show chassis power Output Fields (*continued*)

Field Name	Field Description	Level of Output
System	(MX Series only) Overall power statistics for the system zone: <ul style="list-style-type: none"> • <i>Zone number</i>: <ul style="list-style-type: none"> • 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. 	All levels
Total Power	(PTX Series only) Total power used by the switch (displayed in watts).	All levels
PDU number	(PTX Series only) ID number of the power distribution unit (PDU) on the chassis..	All levels
PSM number	(PTX Series only) ID number of the Power Supply Unit contained in the PDU. The following output fields are displayed for each PSM: <ul style="list-style-type: none"> • Input (V)—Voltage supplied to the PSM. • Used (W)—Actual power usage for the PSM (measured in watts). 	All levels
Item	(PTX Series only) (detail keyword only) Actual power usage (measured in watts) for individual FRUs. PTX Switches include the following FRUs: <ul style="list-style-type: none"> • Fan Tray <i>n</i>—Power usage for the specified fan tray. • RE<i>n</i>/CB<i>n</i>—Power usage for the specified Routing Engines and Control Boards • SIB/CCG/FPD—Power usage for the Switch Interface Board, Centralized Clock Generator, and Front Panel Display (craft interface). • FPC <i>n</i>—Power usage for the FPC in the slot specified. 	detail

Sample Output

```

show chassis power user@host> show chassis power
(MX960 Router with PEM 0:
DC PEM)           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
(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
(MX240 Router with
DC PEM)

```
user@host> show chassis power
PEM 0:
  State:      Online
  DC input:   OK (1 feed expected, 1 feed connected)
  DC input:   48.0 V input (53500 mV)
  Capacity:   2400 W (maximum 2400 W)
  DC output:  318 W (zone 0, 6 A at 53 V, 13% of capacity)

PEM 1:
  State:      Online
  DC input:   OK (1 feed expected, 1 feed connected)
  DC input:   48.0 V input (54000 mV)
  Capacity:   2400 W (maximum 2400 W)
  DC output:  0 W (zone 0, 0 A at 54 V, 0% of capacity)

PEM 2:
  State:      Online
  DC input:   OK (1 feed expected, 1 feed connected)
  DC input:   48.0 V input (52500 mV)
  Capacity:   2400 W (maximum 2400 W)
  DC output:  312 W (zone 0, 6 A at 52 V, 13% of capacity)

PEM 3:
  State:      Online
  DC input:   OK (1 feed expected, 1 feed connected)
  DC input:   48.0 V input (55000 mV)
  Capacity:   2400 W (maximum 2400 W)
  DC output:  0 W (zone 0, 0 A at 55 V, 0% of capacity)

System:
  Maximum capacity: 2400 W
  Allocated capacity: 1270 W (52% of maximum)
```

```

Remaining capacity: 1130 W
Actual usage:      630 W

show chassis power user@host> show chassis power
(PTX5000 Packet    Chassis Power      Input(V)      Used(W)
Transport Switch)
Total Power                               4006

PDU 0
  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
  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 user@host> show chassis power detail
detail (PTX5000    Chassis Power      Input(V)      Used(W)
Packet Transport   Switch)
Total Power                               3997

PDU 0
  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
  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 sequence

Syntax	show chassis power sequence
Release Information	Command introduced in Junos OS Release 10.0 Command introduced in Junos OS Release 12.1 for PTX Series Packet Transport Switches.
Description	(MX Series 3D Universal Edge Routers only) Show power-on sequence for the chassis Dense Port Concentrators (DPCs). (PTX Series Packet Transport Switches) Show power-on sequence for FPCs installed in the chassis.
Options	This command has no options.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> show chassis power on page 386
List of Sample Output	show chassis power sequence (MX Series) on page 393 show chassis power sequence (PTX5000 Packet Transport Switch) on page 393
Output Fields	Table 35 on page 393 lists the output fields for the show chassis power sequence command. Output fields are listed in the approximate order in which they appear.

Table 35: show chassis power sequence Output Fields

Field Name	Field Description
Chassis FRU Power Sequence	<p>(MX Series) Power-on sequence for the DPCs in the chassis. The numbers indicate the slot number of the DPCs.</p> <p>(PTX Series) Power-on sequence for the FPCs in the chassis. The numbers indicate the slot number of the FPC.</p>

Sample Output

show chassis power sequence (MX Series)	<pre>user@host> show chassis power sequence Chassis FRU Power Sequence: 3 4 5 6 7 8 9 10 11 0 1 2</pre>
show chassis power sequence (PTX5000 Packet Transport Switch)	<pre>user@host> show chassis power sequence Chassis FRU Power On Sequence: 0 1 2 3 4 5 6 7</pre>

show chassis routing-engine

Syntax	show chassis routing-engine <bios <i>slot</i> >
Syntax (EX Series Switches)	show chassis routing-engine < <i>slot</i> >
Syntax (T4000 routers)	show chassis routing-engine < <i>slot</i> > <bios >
Syntax (TX Matrix Router)	show chassis routing-engine <bios <i>slot</i> > <lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show chassis routing-engine <bios <i>slot</i> > <lcc <i>number</i> sfc <i>number</i> >
Syntax (QFX Series)	show chassis routing-engine <interconnect-device <i>name</i> > <node-device <i>name</i> >
Syntax (MX Series Router)	show chassis routing-engine <bios <i>slot</i> > <all-members> <local> <member <i>member-id</i> >
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 in 9.6. Command introduced in Junos OS Release 11.1 for the QFX Series.
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 T1600 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. interconnect-device <i>number</i> —(QFabric switches only) (Optional) Display Routing Engine information for a specified Interconnect device. lcc <i>number</i> —(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display Routing Engine 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 Routing Engine information for a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace *number* with a value from 0 through 3.

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 switches only) (Optional) Display Routing Engine information for a specified Node device.

scc—(TX Matrix routers only) (Optional) Display Routing Engine information for the TX Matrix router (or 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
- Configuring Routing Engine Redundancy
- Switching the Global Master and Backup Roles in a Virtual Chassis Configuration

List of Sample Output

[show chassis routing-engine \(M5 Router\) on page 397](#)
[show chassis routing-engine \(M10 Router\) on page 397](#)
[show chassis routing-engine \(M20 Router\) on page 398](#)
[show chassis routing-engine \(M40 Router\) on page 398](#)
[show chassis routing-engine \(M120 Router\) on page 399](#)
[show chassis routing-engine \(M160 Router\) on page 399](#)
[show chassis routing-engine \(MX240 Router\) on page 400](#)
[show chassis routing-engine \(MX480 Router\) on page 400](#)
[show chassis routing-engine \(MX960 Router\) on page 401](#)
[show chassis routing-engine \(T4000 router\) on page 401](#)
[show chassis routing-engine \(TX Matrix Router\) on page 402](#)
[show chassis routing-engine lcc \(TX Matrix Router\) on page 403](#)
[show chassis routing-engine bios \(TX Matrix Router\) on page 403](#)
[show chassis routing-engine \(TX Matrix Plus Router\) on page 404](#)
[show chassis routing-engine lcc \(TX Matrix Plus Router\) on page 405](#)
[show chassis routing-engine bios \(TX Matrix Plus Router\) on page 406](#)
[show chassis routing-engine \(QFX Series\) on page 406](#)

[show chassis routing-engine \(PTX Series Packet Transport Switch\) on page 406](#)

Output Fields [Table 36 on page 396](#) lists the output fields for the **show chassis routing-engine** command. Output fields are listed in the approximate order in which they appear.

Table 36: 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.
DRAM	Total DRAM available to the Routing Engine's processor.
Memory utilization	Percentage of Routing Engine memory being used.
CPU utilization	Information about the Routing Engine's CPU utilization: <ul style="list-style-type: none"> • 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.

Table 36: show chassis routing-engine Output Fields (*continued*)

Field Name	Field Description
Last reboot reason	Reason for last reboot, including: <ul style="list-style-type: none"> power cycle/failure—Reboot due to the switching off of the power button behind the Routing Engine, not the power button on the chassis. watchdog—Reboot due to a hardware watchdog. reset-button reset—(Not available on the J Series router or 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. 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 failure. reset from debugger—Reboot due to reset from the debugger. chassis control reset—Reboot due to a chassis control reset. 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.
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 (M10 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 user@host> show chassis routing-engine
routing-engine (M20) Routing Engine status:
Router) 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 user@host> show chassis routing-engine
routing-engine (M40) Routing Engine status:
Router) 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
routing-engine (M120 Router)
user@host> show chassis routing-engine
Routing Engine status:
Slot 0:
  Current state      Master
  Election priority  Master (default)
  Temperature        46 degrees C / 114 degrees F
  CPU temperature    44 degrees C / 111 degrees F
  DRAM               2048 MB
  Memory utilization 18 percent
  CPU utilization:
    User             0 percent
    Background       0 percent
    Kernel           5 percent
    Interrupt        0 percent
    Idle             95 percent
  Model              RE-A-1000
  Serial ID          1000621154
  Start time         2006-10-31 17:10:05 PST
  Uptime             14 minutes, 31 seconds
  Last reboot reason Router rebooted after a normal shutdown
  Load averages:    1 minute   5 minute  15 minute
                    0.02      0.07     0.07

Routing Engine status:
Slot 1:
  Current state      Backup
  Election priority  Backup (default)
  Temperature        45 degrees C / 113 degrees F
  CPU temperature    42 degrees C / 107 degrees F
  DRAM               2048 MB
  Memory utilization 15 percent
  CPU utilization:
    User             0 percent
    Background       0 percent
    Kernel           0 percent
    Interrupt        0 percent
    Idle             100 percent
  Model              RE-A-1000
  Serial ID          1000621151
  Start time         2006-10-31 17:10:04 PST
  Uptime             14 minutes, 30 seconds
  Last reboot reason Router rebooted after a normal shutdown

```

```

show chassis routing-engine
routing-engine (M160 Router)
user@host> show chassis routing-engine
Routing Engine status:
Slot 0:
  Current state      Master
  Election priority  Master (default)
  Temperature        43 degrees C / 109 degrees F
  DRAM               2048 MB
  Memory utilization 11 percent
  CPU utilization:
    User             1 percent
    Background       0 percent
    Kernel           2 percent

```

```

        Interrupt          0 percent
        Idle               97 percent
        Model              RE-3.0
        Serial ID          210865700403
        Start time         2003-12-23 12:25:55 PST
        Uptime              6 days, 22 hours, 33 minutes, 24 seconds
        Last reboot reason  Router rebooted after a normal shutdown
        Load averages:     1 minute   5 minute   15 minute
                           0.24       0.13       0.04

Routing Engine status:
Slot 1:
  Current state           Backup
  Election priority       Backup (default)
  Temperature             40 degrees C / 104 degrees F
  DRAM                    2048 MB
  Memory utilization      9 percent
  CPU utilization:
    User                  0 percent
    Background            0 percent
    Kernel                0 percent
    Interrupt             0 percent
    Idle                  100 percent
  Model                   RE-3.0
  Serial ID               210865700332
  Start time              2003-12-23 12:25:55 PST
  Uptime                  6 days, 22 hours, 33 minutes, 21 seconds
  Last reboot reason      Router rebooted after a normal shutdown

show chassis routing-engine user@host> show chassis routing-engine
Routing Engine status:
Slot 0:
  Current state           Backup
  Election priority       Master (default)
  Temperature             40 degrees C / 104 degrees F
  CPU temperature         47 degrees C / 116 degrees F
  DRAM                    3584 MB
  Memory utilization      7 percent
  CPU utilization:
    User                  0 percent
    Background            0 percent
    Kernel                0 percent
    Interrupt             0 percent
    Idle                  100 percent
  Model                   RE-S-2000
  Serial ID               1000703522
  Start time              2007-12-19 10:35:40 PST
  Uptime                  16 days, 3 hours, 15 minutes, 23 seconds
  Last reboot reason      Router rebooted after a normal shutdown

show chassis routing-engine user@host> show chassis routing-engine
Routing Engine status:
Slot 0:
  Current state           Master
  Election priority       Master (default)
  Temperature             41 degrees C / 105 degrees F
  CPU temperature         38 degrees C / 100 degrees F
  DRAM                    2048 MB
  Memory utilization      13 percent
  CPU utilization:
    User                  0 percent
    Background            0 percent

```



```

Kernel                2 percent
Interrupt             0 percent
Idle                  98 percent
Model                 RE-S-1300
Serial ID             1000697044
Start time            2008-01-04 06:46:08 PST
Uptime                8 hours, 17 minutes, 16 seconds
Last reboot reason    Router rebooted after a normal shutdown

```

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            37 degrees C / 98 degrees F
  CPU temperature        37 degrees C / 98 degrees F
  DRAM                   2048 MB
  Memory utilization     18 percent
  CPU utilization:
    User                 0 percent
    Background           0 percent
    Kernel               4 percent
    Interrupt            0 percent
    Idle                 96 percent
  Model                  RE-S-1300
  Serial ID              1000617944
  Start time             2006-10-26 12:37:13 PDT
  Uptime                 6 days, 4 hours, 59 minutes, 40 seconds
  Last reboot reason     Router rebooted after a normal shutdown
  Load averages:        1 minute   5 minute   15 minute
                        0.16       0.08       0.02

```

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:
```

**show chassis
routing-engine (TX
Matrix Plus Router)**

Routing Engine BIOS Version: V1.0.0

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

1cc0-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

```

```

1cc0-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 (PTX
Series Packet
Transport Switch)
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 sibs

Syntax	show chassis sibs
Syntax (TX Matrix Router)	show chassis sibs <lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show chassis sibs <lcc <i>number</i> sfc <i>number</i> >
Syntax (PTX Series Packet Transport Switches)	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 Switches. 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 Switch in Junos OS Release 12.1
Description	(M320 and T Series routers only) Display Switch Interface Boards (SIBs) status information.
Options	<p>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 T1600 routers.</p> <p>detail—(PTX Series) (Optional) Display detailed SIB status information.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus router only) (Optional) On a TX Matrix router, display SIB status 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 SIB status information for a specified T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) (Optional) Display SIB status information for the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) (Optional) Display SIB status information for the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p> <p>slot—(PTX Series) (Optional) Display status information about the SIB in the specified slot only. The range of values is 0 through 8.</p>
Required Privilege Level	view

- Related Documentation**
- request chassis sib
 - show chassis spmb sibs
 - [show chassis environment sib on page 210](#)
 - Monitoring the SIBs
 - M320 SIB Description

- List of Sample Output**
- [show chassis sibs \(T640 Router\) on page 411](#)
 - [show chassis sibs \(T4000 Router\) on page 411](#)
 - [show chassis sibs \(TX Matrix Router\) on page 412](#)
 - [show chassis sibs \(T1600 Router\) on page 412](#)
 - [show chassis sibs \(TX Matrix Plus Router\) on page 412](#)
 - [show chassis sibs sfc \(TX Matrix Plus Router\) on page 413](#)
 - [show chassis sibs lcc \(TX Matrix Plus Router\) on page 414](#)
 - [show chassis sibs \(M320 Router\) on page 414](#)
 - [show chassis sibs \(PTX Series\) on page 414](#)
 - [show chassis sibs \(PTX Series\) on page 414](#)

- Output Fields** Table 37 on page 409 lists the output fields for the **show chassis sibs** command. Output fields are listed in the approximate order in which they appear.

Table 37: 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	<p>SIB status:</p> <ul style="list-style-type: none"> • 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 (or 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. • Online—SIB is operational and running. • Offline—SIB is powered down. <p>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.</p>

Table 37: show chassis sibs Output Fields (*continued*)

Field Name	Field Description
	<ul style="list-style-type: none"> • Spare—SIB is redundant and will move to active state if one of the working SIBs fails to pass traffic. <p>NOTE: Spare does not apply to PTX Series Packet Transport Switches, as there are no spare SIBs.</p> <ul style="list-style-type: none"> • Empty—No SIB is present. • Fault—SIB is in an alarmed state in which the SIB's plane is not operational for one of the following reasons: <ul style="list-style-type: none"> • Onboard fabric ASIC is not operational. • Fiber-optic connector faults. • FPC connector faults. • SIB midplane connector faults. • 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: <ul style="list-style-type: none"> • 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 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. <p>NOTE: For SIBs in the Check state, the output displays some additional information:</p> <ul style="list-style-type: none"> • 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 Forwarding 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). <p>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.</p> <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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.

Table 37: show chassis sibs Output Fields (*continued*)

Field Name	Field Description
	<ul style="list-style-type: none"> 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. <p>NOTE: The Check state does not apply to PTX Series Packet Transport Switches.</p> <ul style="list-style-type: none"> 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. <p>NOTE: The Connected, Disconnected, and SFC Error states are only applicable to the SIBs on an LCC.</p> <ul style="list-style-type: none"> Invalid—The specific SIB slot is not valid for 4-LCC chassis configuration. See the <i>TX Matrix Plus Hardware Guide</i> for more information about the supported SIB slots. <p>NOTE: The Invalid state is applicable to TX Matrix Plus routers only.</p>
Fabric links	<p>Indicates status of fabric links on the SIB.</p> <ul style="list-style-type: none"> 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	<p>Indicates if there is any error on the SIB.</p> <ul style="list-style-type: none"> 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.

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  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      Uptime
0     Offline              SIB F13  --- Offlined by cli command ---
1     Online                SIB F13  4 hours, 1 minute, 39 seconds
2     Invalid
3     Empty
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  4 hours, 2 minutes, 17 seconds
0/2   Online                SIB F2S  4 hours, 2 minutes, 15 seconds
0/4   Online                SIB F2S  4 hours, 2 minutes, 14 seconds
0/6   Online                SIB F2S  4 hours, 2 minutes, 13 seconds

```

1/0	Online	SIB F2S	4 hours, 2 minutes, 25 seconds
1/2	Online	SIB F2S	4 hours, 2 minutes, 24 seconds
1/4	Online	SIB F2S	4 hours, 2 minutes, 23 seconds
1/6	Online	SIB F2S	4 hours, 2 minutes, 22 seconds
2/0	Online	SIB F2S	4 hours, 2 minutes, 20 seconds
2/2	Online	SIB F2S	4 hours, 2 minutes, 19 seconds
2/4	Online	SIB F2S	4 hours, 2 minutes, 18 seconds
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	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 sfc
(TX Matrix Plus
Router)

user@host> show chassis sibs sfc 0
sfc0-re0:

Slot	State	Type	Uptime
0	Online	SIB F13	4 hours, 15 minutes, 29 seconds
1	Offline		--- Offlined by cli command ---
2	Invalid		
3	Empty		
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	4 hours, 15 minutes, 50 seconds
0/2	Online	SIB F2S	4 hours, 15 minutes, 48 seconds
0/4	Online	SIB F2S	4 hours, 15 minutes, 47 seconds
0/6	Online	SIB F2S	4 hours, 15 minutes, 46 seconds
1/0	Online	SIB F2S	4 hours, 15 minutes, 58 seconds
1/2	Online	SIB F2S	4 hours, 15 minutes, 57 seconds
1/4	Online	SIB F2S	4 hours, 15 minutes, 56 seconds
1/6	Online	SIB F2S	4 hours, 15 minutes, 55 seconds
2/0	Online	SIB F2S	4 hours, 15 minutes, 53 seconds
2/2	Online	SIB F2S	4 hours, 15 minutes, 52 seconds
2/4	Online	SIB F2S	4 hours, 15 minutes, 51 seconds
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

```

show chassis sibs lcc
(TX Matrix Plus
Router)

```

user@host> show chassis sibs lcc 0
lcc0-re0:

```

```

-----
Slot  State                Uptime
0      SFC error            3 seconds
1      Offline              --- Offlined by cli command ---
2      Empty
3      Online               1 hour, 18 minutes, 18 seconds
4      Online               1 hour, 18 minutes, 3 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           None
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 synchronization

Syntax	show chassis synchronization <extensive> <backup master>
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 Switches.
Description	(M320, M40e, M120, T320, T640, and T1600 routers and PTX Series Packet Transport Switches only) Display information about the external clock source currently used for chassis synchronization.
Options	extensive —(Optional) Display clock synchronization information in detail. 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	<ul style="list-style-type: none"> • request chassis synchronization switch on page 121 • Configuring an External Clock Synchronization Interface for MX Series Routers • Supported Time Synchronization Standard
List of Sample Output	show chassis synchronization on page 417 show chassis synchronization master on page 417 show chassis synchronization backup on page 417 show chassis synchronization extensive on page 417 show chassis synchronization (T320, T640, and T1600 Routers) on page 417 show chassis synchronization (PTX Series Packet Transport Switches) on page 418
Output Fields	Table 38 on page 416 lists the output fields for the show chassis synchronization command. Output fields are listed in the approximate order in which they appear.

Table 38: show chassis synchronization Output Fields

Field Name	Field Description
Current state	<p>Indicates current status of external clock sources:</p> <ul style="list-style-type: none"> • backup—Source is currently the backup clock source. • master—Source is currently the master clock source. • Online-Master—(PTX Series Packet Transport Switches) Source is the master clock. Source is online. • Online-Standby—(PTX Series Packet Transport Switches) Source is the standby (backup) clock. Source is online.
Current clock state	<p>Indicates current source of external synchronization:</p> <ul style="list-style-type: none"> • 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 Switches) Source is locked to master clock source.
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).
Last deviation (in ppm)	Previous difference in clock timing, if any, in ppm.
Configured sources	Information about clock sources eligible for selection as master clock.
Source	Information about external clock sources.
Priority	<p>Indicates priority of external clock sources:</p> <ul style="list-style-type: none"> • primary—Source is a primary reference. • secondary—Source is a secondary reference.
Deviation (in ppm)	<p>Current difference in clock timing, in ppm:</p> <ul style="list-style-type: none"> • measuring—Establishing source deviation. • number—Deviation in ppm.
Last deviation (in ppm)	<p>Previous difference in clock timing, in ppm:</p> <ul style="list-style-type: none"> • number—Deviation in ppm.
Status	<p>Indicates status of external sources:</p> <ul style="list-style-type: none"> • 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 Switches) 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 temperature-thresholds

Syntax	show chassis temperature-thresholds
Syntax (TX Matrix Router)	show chassis temperature-thresholds <lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show chassis temperature-thresholds <lcc <i>number</i> sfc <i>number</i> >
Syntax (MX Series Router)	show chassis temperature-thresholds <all-members> <local> <member <i>member-id</i> >
Syntax (QFX Series)	show chassis temperature-thresholds <interconnect-device <i>name</i> > <node-device <i>name</i> >
Release Information	<p>Command introduced in Junos OS Release 8.0.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>sfc command introduced for the TX Matrix Plus router in Junos OS Release 9.6.</p> <p>Command introduced in Junos OS Release 11.1 for the QFX Series.</p> <p>Command introduced in Junos OS Release 12.1 for the T4000 Core Routers.</p> <p>Command introduced in Junos OS Release 12.1 for PTX Series Packet Transport Switches.</p>
Description	Display chassis temperature threshold settings, in degrees Celsius.
Options	<p>none—Display the temperature threshold details.</p> <p>all-members—(MX Series routers only) (Optional) Display the chassis temperature threshold settings of all member routers in the Virtual Chassis configuration.</p> <p>interconnect-device <i>name</i>—(QFabric switches only) (Optional) Display the chassis temperature threshold settings of the Interconnect device.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display the temperature threshold details of a specified T640 router (or 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 T1600 router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>local—(MX Series routers only) (Optional) Display the chassis temperature threshold settings of the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(MX Series routers only) (Optional) Display the chassis temperature threshold settings of the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value of 0 or 1.</p>

node-device *name*—(QFabric switches only) (Optional) Display the chassis temperature threshold settings of the Node device.

scc—(TX Matrix routers only) (Optional) Display the temperature threshold details of the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) Display the temperature threshold details of the TX Matrix Plus router (or switch-fabric chassis). Replace *number* with 0.

Required Privilege Level view

Related Documentation

- Defining Alarm Thresholds for System Temperature Sensors

List of Sample Output [show chassis temperature-thresholds on page 421](#)
[show chassis temperature-thresholds \(T4000 Core Routers\) on page 421](#)
[show chassis temperature-thresholds \(TX Matrix Plus Router\) on page 421](#)
[show chassis temperature-thresholds lcc \(TX Matrix Plus Router\) on page 423](#)
[show chassis temperature-thresholds sfc \(TX Matrix Plus Router\) on page 423](#)
[show chassis temperature-thresholds \(QFX3500 Switch\) on page 424](#)
[show chassis temperature-thresholds interconnect-device \(QFabric Switch\) on page 424](#)
[show chassis temperature-thresholds \(PTX5000 Packet Transport Switch\) on page 424](#)

Output Fields [Table 39 on page 420](#) lists the output fields for the **show chassis temperature-thresholds** command. Output fields are listed in the approximate order in which they appear.

Table 39: 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	<p>Temperature threshold settings, in degrees Celsius, for the fans to operate at normal and high speeds.</p> <ul style="list-style-type: none"> 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. High—The fans operate at high speed if the component has exceeded this temperature or a fan has failed or is missing. <p>An alarm is not triggered until the temperature exceeds the threshold settings for a yellow alarm or a red alarm.</p>
Yellow alarm	<p>Temperature threshold settings, in degrees Celsius, that trigger a yellow alarm.</p> <ul style="list-style-type: none"> 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 39: show chassis temperature-thresholds Output Fields (*continued*)

Field name	Field Description
Red alarm	<p>Temperature threshold settings, in degrees Celsius, that trigger a red alarm.</p> <ul style="list-style-type: none"> 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 and PTX Series Packet Transport Switches 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
```

Item	Fan speed (degrees C)		Yellow alarm (degrees C)		Red alarm (degrees C)	
	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 (T4000 Core Routers) user@host> show chassis temperature-thresholds
```

Item	Fan speed (degrees C)		Yellow alarm (degrees C)		Red alarm (degrees C)		Fire Shutdown (degrees C)
	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 user@host> show chassis temperature-thresholds
sfc0-re0:
```

**(TX Matrix Plus
Router)**

Item	Fan speed (degrees C)		Yellow alarm (degrees C)		Red alarm (degrees C)	
	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:

Item	Fan speed (degrees C)		Yellow alarm (degrees C)		Red alarm (degrees C)	
	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:

Item	Fan speed (degrees C)		Yellow alarm (degrees C)		Red alarm (degrees C)	
	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)
Normal  High  Normal  Bad fan  Normal  Bad fan
Item
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)
Normal  High  Normal  Bad fan  Normal  Bad fan
Item
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 user@switch> show chassis temperature-thresholds
(QFX3500 Switch)

```

	Fan speed (degrees C)		Yellow alarm (degrees C)		Red alarm (degrees C)	
Item	Normal	High	Normal	Bad fan	Normal	Bad fan
FPC Sensor TopLeft I	30	65	55	45	60	50
FPC Sensor TopRight I	30	65	55	45	60	50
FPC Sensor TopLeft E	30	65	55	45	60	50
FPC Sensor TopRight E	30	65	55	45	60	50
FPC Sensor TopMiddle I	30	65	55	45	60	50
FPC Sensor TopMiddle E	30	65	55	45	60	50
FPC Sensor Bottom I	30	65	55	45	60	50
FPC Sensor Bottom E	30	65	55	45	60	50
FPC Sensor Die Temp	30	65	55	45	60	50
FPC Sensor Mgmt Brd I	30	65	55	45	60	50
FPC Sensor Switch I	30	60	55	45	70	60

```

show chassis temperature-thresholds interconnect-device user@switch> show chassis temperature-thresholds interconnect-device interconnect1
(QFabric Switch)

```

	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 user@switch> show chassis temperature-thresholds
(PTX5000 Packet Transport Switch)

```

	Fan speed (degrees C)		Yellow alarm (degrees C)		Red alarm (degrees C)		Fire Shutdown (degrees C)
Item	Normal	High	Normal	Bad fan	Normal	Bad fan	Normal
Routing Engine 0	70	75	90	87	102	97	115
Routing Engine 1	70	75	90	87	102	97	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	20	25	65	60	80	75	100
FPC 1 Exhaust A	60	65	78	75	85	80	95
FPC 1 Exhaust B	60	65	78	75	85	80	95
FPC 1 TL0	70	75	90	87	102	97	115
FPC 1 TQ0	70	75	90	87	102	97	115
FPC 1 TL1	70	75	90	87	102	97	115
FPC 1 TQ1	70	75	90	87	102	97	115
FPC 1 TL2	70	75	90	87	102	97	115
FPC 1 TQ2	70	75	90	87	102	97	115
FPC 1 TL3	70	75	90	87	102	97	115
FPC 1 TQ3	70	75	90	87	102	97	115
FPC 2 Exhaust A	60	65	78	75	85	80	95
FPC 2 Exhaust B	60	65	78	75	85	80	95
FPC 2 TL0	70	75	90	87	102	97	115
FPC 2 TQ0	70	75	90	87	102	97	115
FPC 2 TL1	70	75	90	87	102	97	115
FPC 2 TQ1	70	75	90	87	102	97	115
FPC 2 TL2	70	75	90	87	102	97	115
FPC 2 TQ2	70	75	90	87	102	97	115
FPC 2 TL3	70	75	90	87	102	97	115
FPC 2 TQ3	70	75	90	87	102	97	115
PIC 2/0 Ambient	60	65	78	75	85	80	95
PIC 2/0 cfp-2/0/1	60	65	70	67	75	72	85
PIC 2/1 Ambient	60	65	78	75	85	80	95
SIB 0 Exhaust	60	65	78	75	85	80	95
SIB 0 Junction	70	75	90	87	102	97	115
SIB 1 Exhaust	60	65	78	75	85	80	95

SIB 1 Junction	70	75	90	87	102	97	115
SIB 2 Exhaust	60	65	78	75	85	80	95
SIB 2 Junction	70	75	90	87	102	97	115
SIB 3 Exhaust	60	65	78	75	85	80	95
SIB 3 Junction	70	75	90	87	102	97	115
SIB 4 Exhaust	60	65	78	75	85	80	95
SIB 4 Junction	70	75	90	87	102	97	115
SIB 5 Exhaust	60	65	78	75	85	80	95
SIB 5 Junction	70	75	90	87	102	97	115
SIB 6 Exhaust	60	65	78	75	85	80	95
SIB 6 Junction	70	75	90	87	102	97	115
SIB 7 Exhaust	60	65	78	75	85	80	95
SIB 7 Junction	70	75	90	87	102	97	115
SIB 8 Exhaust	60	65	78	75	85	80	95
SIB 8 Junction	70	75	90	87	102	97	115

show chassis zones (PTX Series Packet Transport Switches)

Syntax	<code>show chassis zones</code> <code><detail></code>
Release Information	Command introduced in Junos OS Release 12.1 for PTX Series Packet Transport Switches.
Description	(PTX5000 Packet Transport Switch 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	detail —(Optional) Display status of each FRU and fan belonging to the cooling system zones.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • show chassis fan on page 299 • show chassis temperature-thresholds on page 419
List of Sample Output	show chassis zones (PTX5000 Packet Transport Switch) on page 426 show chassis zones detail (PTX5000 Packet Transport Switch) on page 427
Output Fields	Table 40 on page 426 lists the output fields for the show chassis zones detail command.

Table 40: show chassis zones detail Output Fields

Field Name	Field Description
Item	Chassis component: <ul style="list-style-type: none"> • (PTX Series Packet Transport Switches)—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. Status can be OK , Absent , or Offline .
Measurement	Fan tray speed utilization in percentage.

Sample Output

```

show chassis zones (PTX5000 Packet Transport Switch)  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 user@host> **show chassis zones detail**

detail (PTX5000

Packet Transport

Switch)

```

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 interfaces (PTX Series Packet Transport Switches)

Syntax	<code>show interfaces et-<i>fpc/pic/port</i></code> <code><brief detail extensive terse></code> <code><descriptions></code> <code><media></code> <code><snmp-index <i>snmp-index</i>></code> <code><statistics></code>
Release Information	Command introduced in Junos OS Release 8.0. Command introduced in Junos OS Release 12.1 for PTX Series Packet Transport Switches.
Description	(PTX Series Packet Transport Switches only) Display status information about the specified Ethernet interface.
Options	<code>et-<i>fpc/pic/port</i></code> —Display standard information about the specified Ethernet interface. <code>brief detail extensive terse</code> —(Optional) Display the specified level of output. <code>descriptions</code> —(Optional) Display interface description strings. <code>media</code> —(Optional) Display media-specific information about network interfaces. <code>snmp-index <i>snmp-index</i></code> —(Optional) Display information for the specified SNMP index of the interface. <code>statistics</code> —(Optional) Display static interface statistics.
Required Privilege Level	view
List of Sample Output	show interfaces brief (PTX5000 Packet Transport Switch) on page 437 show interfaces extensive (PTX5000 Packet Transport Switch) on page 438 show interfaces terse (PTX5000 Packet Transport Switch) on page 439
Output Fields	See Table 41 on page 429 for the output fields for the show interfaces (PTX Series Packet Transport Switches) command.

Table 41: show interfaces PTX Series Output Fields

Field Name	Field Description	Level of Output
Physical Interface		
Physical interface	Name of the physical interface.	All levels
Enabled	State of the interface. Possible values are described in the “Enabled Field” section under Common Output Fields Description.	All levels
Interface index	Index number of the physical interface, which reflects its initialization sequence.	detail extensive none
SNMP ifIndex	SNMP index number for the physical interface.	detail extensive none
Generation	Unique number for use by Juniper Networks technical support only.	detail extensive
Link-level type	Encapsulation being used on the physical interface.	All levels
MTU	Maximum transmission unit size on the physical interface.	All levels
Speed	Speed at which the interface is running.	All levels
BPDU Error	Bridge protocol data unit (BPDU) errors (if any).	All levels
MAC-Rewrite	MAC Rewrite errors (if any).	All levels
Loopback	Loopback status: Enabled or Disabled . If loopback is enabled, type of loopback: Local or Remote .	All levels
Source filtering	Source filtering status: Enabled or Disabled .	All levels
Flow control	Flow control status: Enabled or Disabled .	All levels
Device flags	Information about the physical device. Possible values are described in the “Device Flags” section under Common Output Fields Description.	All levels
Interface flags	Information about the interface. Possible values are described in the “Interface Flags” section under Common Output Fields Description.	All levels
Link flags	Information about the link. Possible values are described in the “Links Flags” section under Common Output Fields Description.	All levels
CoS queues	Number of CoS queues configured.	detail extensive none
Hold-times	Current interface hold-time up and hold-time down, in milliseconds.	detail extensive
Current address	Configured MAC address.	detail extensive none
Hardware address	Hardware MAC address.	detail extensive none

Table 41: show interfaces PTX Series Output Fields (*continued*)

Field Name	Field Description	Level of Output
Last flapped	Date, time, and how long ago the interface went from down to up. The format is Last flapped: year-month-day hour:minute:second:timezone (hour:minute:second ago) . For example, Last flapped: 2002-04-26 10:52:40 PDT (04:33:20 ago) .	detail extensive none
Statistics last cleared	Time when the statistics for the interface were last set to zero.	detail extensive
Traffic statistics	<p>Number and rate of bytes and packets received and transmitted on the physical interface.</p> <ul style="list-style-type: none"> • Input bytes—Number of bytes received on the interface. • Output bytes—Number of bytes transmitted on the interface. • Input packets—Number of packets received on the interface. • Output packets—Number of packets transmitted on the interface. 	detail extensive
Input errors	<p>Input errors on the interface. The following paragraphs explain the counters whose meaning might not be obvious:</p> <ul style="list-style-type: none"> • Errors—Sum of the incoming frame aborts and FCS errors. • Drops—Number of packets dropped by the input queue of the I/O Manager ASIC. If the interface is saturated, this number increments once for every packet that is dropped by the ASIC's RED mechanism. • Framing errors—Number of packets received with an invalid frame checksum (FCS). • Runts—Number of frames received that are smaller than the runt threshold. • Policed discards—Number of frames that the incoming packet match code discarded because they were not recognized or not of interest. Usually, this field reports protocols that the Junos OS does not handle. • L3 incompletes—Number of incoming packets discarded because they failed Layer 3 (usually IPv4) sanity checks of the header. For example, a frame with less than 20 bytes of available IP header is discarded. L3 incomplete errors can be ignored by configuring the ignore-l3-incompletes statement. • L2 channel errors—Number of times the software did not find a valid logical interface for an incoming frame. • L2 mismatch timeouts—Number of malformed or short packets that caused the incoming packet handler to discard the frame as unreadable. • FIFO errors—Number of FIFO errors in the receive direction that are reported by the ASIC on the PIC. If this value is ever nonzero, the PIC is probably malfunctioning. • Resource errors—Sum of transmit drops. 	extensive

Table 41: show interfaces PTX Series Output Fields (*continued*)

Field Name	Field Description	Level of Output
Output errors	<p>Output errors on the interface. The following paragraphs explain the counters whose meaning might not be obvious:</p> <ul style="list-style-type: none"> • Carrier transitions—Number of times the interface has gone from down to up. This number does not normally increment quickly, increasing only when the cable is unplugged, the far-end system is powered down and then up, or another problem occurs. If the number of carrier transitions increments quickly (perhaps once every 10 seconds), the cable, the far-end system, or the PIC or PIM is malfunctioning. • Errors—Sum of the outgoing frame aborts and FCS errors. • Drops—Number of packets dropped by the output queue of the I/O Manager ASIC. If the interface is saturated, this number increments once for every packet that is dropped by the ASIC's RED mechanism. • Collisions—Number of Ethernet collisions. The Gigabit Ethernet PIC supports only full-duplex operation, so for Gigabit Ethernet PICs, this number should always remain 0. If it is nonzero, there is a software bug. • Aged packets—Number of packets that remained in shared packet SDRAM so long that the system automatically purged them. The value in this field should never increment. If it does, it is most likely a software bug or possibly malfunctioning hardware. • FIFO errors—Number of FIFO errors in the send direction as reported by the ASIC on the PIC. If this value is ever nonzero, the PIC is probably malfunctioning. • HS link CRC errors—Number of errors on the high-speed links between the ASICs responsible for handling the router interfaces. • MTU errors—Number of packets whose size exceeded the MTU of the interface. • Resource errors—Sum of transmit drops. 	extensive
Egress queues	Total number of egress queues supported on the specified interface.	detail extensive
Queue counters (Egress)	<p>CoS queue number and its associated user-configured forwarding class name.</p> <ul style="list-style-type: none"> • Queued packets—Number of queued packets. • Transmitted packets—Number of transmitted packets. • Dropped packets—Number of packets dropped by the ASIC's RED mechanism. 	detail extensive
Ingress queues	Total number of ingress queues supported on the specified interface.	extensive
Queue counters (Ingress)	<p>CoS queue number and its associated user-configured forwarding class name.</p> <ul style="list-style-type: none"> • Queued packets—Number of queued packets. • Transmitted packets—Number of transmitted packets. • Dropped packets—Number of packets dropped by the ASIC's RED mechanism. 	extensive

Table 41: show interfaces PTX Series Output Fields (*continued*)

Field Name	Field Description	Level of Output
Active alarms and Active defects	<p>Ethernet-specific defects that can prevent the interface from passing packets. When a defect persists for a certain amount of time, it is promoted to an alarm. Based on the router configuration, an alarm can ring the red or yellow alarm bell on the router, or turn on the red or yellow alarm LED on the craft interface. These fields can contain the value None or Link.</p> <ul style="list-style-type: none"> • None—There are no active defects or alarms. • Link—Interface has lost its link state, which usually means that the cable is unplugged, the far-end system has been turned off, or the PIC is malfunctioning. 	detail extensive none
MAC statistics	<p>Receive and Transmit statistics reported by the PIC's MAC subsystem, including the following:</p> <ul style="list-style-type: none"> • Total octets and total packets—Total number of octets and packets. • Unicast packets, Broadcast packets, and Multicast packets—Number of unicast, broadcast, and multicast packets. • CRC/Align errors—Total number of packets received that had a length (excluding framing bits, but including FCS octets) of between 64 and 1518 octets, inclusive, and had either a bad FCS with an integral number of octets (FCS Error) or a bad FCS with a nonintegral number of octets (Alignment Error). • FIFO error—Number of FIFO errors that are reported by the ASIC on the PIC. If this value is ever nonzero, the PIC or a cable is probably malfunctioning. • MAC control frames—Number of MAC control frames. • MAC pause frames—Number of MAC control frames with pause operational code. • Oversized frames—Number of frames that exceed 1518 octets. • Jabber frames—Number of frames that were longer than 1518 octets (excluding framing bits, but including FCS octets), and had either an FCS error or an alignment error. This definition of jabber is different from the definition in IEEE-802.3 section 8.2.1.5 (10BASE5) and section 10.3.1.4 (10BASE2). These documents define jabber as the condition in which any packet exceeds 20 ms. The allowed range to detect jabber is from 20 ms to 150 ms. • Fragment frames—Total number of packets that were less than 64 octets in length (excluding framing bits, but including FCS octets), and had either an FCS error or an alignment error. Fragment frames normally increment because both runts (which are normal occurrences caused by collisions) and noise hits are counted. • VLAN tagged frames—Number of frames that are VLAN tagged. The system uses the TPID of 0x8100 in the frame to determine whether a frame is tagged or not. • Code violations—Number of times an event caused the PHY to indicate "Data reception error" or "invalid data symbol error." 	extensive

Table 41: show interfaces PTX Series Output Fields (*continued*)

Field Name	Field Description	Level of Output
Filter statistics	<p>Receive and Transmit statistics reported by the PIC's MAC address filter subsystem. The filtering is done by the content-addressable memory (CAM) on the PIC. The filter examines a packet's source and destination MAC addresses to determine whether the packet should enter the system or be rejected.</p> <ul style="list-style-type: none"> • Input packet count—Number of packets received from the MAC hardware that the filter processed. • Input packet rejects—Number of packets that the filter rejected because of either the source MAC address or the destination MAC address. • Input DA rejects—Number of packets that the filter rejected because the destination MAC address of the packet is not on the accept list. It is normal for this value to increment. When it increments very quickly and no traffic is entering the router from the far-end system, either there is a bad ARP entry on the far-end system, or multicast routing is not on and the far-end system is sending many multicast packets to the local router (which the router is rejecting). • Input SA rejects—Number of packets that the filter rejected because the source MAC address of the packet is not on the accept list. The value in this field should increment only if source MAC address filtering has been enabled. If filtering is enabled, if the value increments quickly, and if the system is not receiving traffic that it should from the far-end system, it means that the user-configured source MAC addresses for this interface are incorrect. • Output packet count—Number of packets that the filter has given to the MAC hardware. • Output packet pad count—Number of packets the filter padded to the minimum Ethernet size (60 bytes) before giving the packet to the MAC hardware. Usually, padding is done only on small ARP packets, but some very small IP packets can also require padding. If this value increments rapidly, either the system is trying to find an ARP entry for a far-end system that does not exist or it is misconfigured. • Output packet error count—Number of packets with an indicated error that the filter was given to transmit. These packets are usually aged packets or are the result of a bandwidth problem on the FPC hardware. On a normal system, the value of this field should not increment. • CAM destination filters, CAM source filters—Number of entries in the CAM dedicated to destination and source MAC address filters. There can only be up to 64 source entries. If source filtering is disabled, which is the default, the values for these fields should be 0. 	extensive

Table 41: show interfaces PTX Series Output Fields (*continued*)

Field Name	Field Description	Level of Output
Autonegotiation information	<p>Information about link autonegotiation.</p> <ul style="list-style-type: none"> • Negotiation status: <ul style="list-style-type: none"> • Incomplete—Ethernet interface has the speed or link mode configured. • No autonegotiation—Remote Ethernet interface has the speed or link mode configured, or does not perform autonegotiation. • Complete—Ethernet interface is connected to a device that performs autonegotiation and the autonegotiation process is successful. • Link partner status—OK when Ethernet interface is connected to a device that performs autonegotiation and the autonegotiation process is successful. • Link partner: <ul style="list-style-type: none"> • Link mode—Depending on the capability of the attached Ethernet device, either Full-duplex or Half-duplex. • Flow control—Types of flow control supported by the remote Ethernet device. For Fast Ethernet interfaces, the type is None. For Gigabit Ethernet interfaces, types are Symmetric (link partner supports PAUSE on receive and transmit), Asymmetric (link partner supports PAUSE on transmit), and Symmetric/Asymmetric (link partner supports both PAUSE on receive and transmit or only PAUSE receive). • Remote fault—Remote fault information from the link partner—Failure indicates a receive link error. OK indicates that the link partner is receiving. Negotiation error indicates a negotiation error. Offline indicates that the link partner is going offline. • Local resolution—Information from the link partner: <ul style="list-style-type: none"> • Flow control—Types of flow control supported by the remote Ethernet device. For Gigabit Ethernet interfaces, types are Symmetric (link partner supports PAUSE on receive and transmit), Asymmetric (link partner supports PAUSE on transmit), and Symmetric/Asymmetric (link partner supports both PAUSE on receive and transmit or only PAUSE receive). • Remote fault—Remote fault information. Link OK (no error detected on receive), Offline (local interface is offline), and Link Failure (link error detected on receive). 	extensive
Packet Forwarding Engine configuration	<p>Information about the configuration of the Packet Forwarding Engine:</p> <ul style="list-style-type: none"> • Destination slot—FPC slot number. 	extensive

Table 41: show interfaces PTX Series Output Fields (*continued*)

Field Name	Field Description	Level of Output
CoS information	<p>Information about the CoS queue for the physical interface.</p> <ul style="list-style-type: none"> • CoS transmit queue—Queue number and its associated user-configured forwarding class name. • Bandwidth %—Percentage of bandwidth allocated to the queue. • Bandwidth bps—Bandwidth allocated to the queue (in bps). • Buffer %—Percentage of buffer space allocated to the queue. • Buffer usec—Amount of buffer space allocated to the queue, in microseconds. This value is nonzero only if the buffer size is configured in terms of time. • Priority—Queue priority: low or high. • Limit—Displayed if rate limiting is configured for the queue. Possible values are none and exact. If exact is configured, the queue transmits only up to the configured bandwidth, even if excess bandwidth is available. If none is configured, the queue transmits beyond the configured bandwidth if bandwidth is available. 	extensive
Logical Interface		
Logical interface	Name of the logical interface.	All levels
Index	Index number of the logical interface, which reflects its initialization sequence.	detail extensive none
SNMP ifIndex	SNMP interface index number for the logical interface.	detail extensive none
Generation	Unique number for use by Juniper Networks technical support only.	detail extensive
Flags	Information about the logical interface. Possible values are described in the “Logical Interface Flags” section under Common Output Fields Description.	All levels

Table 41: show interfaces PTX Series Output Fields (*continued*)

Field Name	Field Description	Level of Output
VLAN-Tag	<p>Rewrite profile applied to incoming or outgoing frames on the outer (Out) VLAN tag or for both the outer and inner (In) VLAN tags.</p> <ul style="list-style-type: none"> • push—An outer VLAN tag is pushed in front of the existing VLAN tag. • pop—The outer VLAN tag of the incoming frame is removed. • swap—The outer VLAN tag of the incoming frame is overwritten with the user-specified VLAN tag information. • push—An outer VLAN tag is pushed in front of the existing VLAN tag. • push-push—Two VLAN tags are pushed in from the incoming frame. • swap-push—The outer VLAN tag of the incoming frame is replaced by a user-specified VLAN tag value. A user-specified outer VLAN tag is pushed in front. The outer tag becomes an inner tag in the final frame. • swap-swap—Both the inner and the outer VLAN tags of the incoming frame are replaced by the user-specified VLAN tag value. • pop-swap—The outer VLAN tag of the incoming frame is removed, and the inner VLAN tag of the incoming frame is replaced by the user-specified VLAN tag value. The inner tag becomes the outer tag in the final frame. • pop-pop—Both the outer and inner VLAN tags of the incoming frame are removed. 	brief detail extensive none
Demux	<p>IP demultiplexing (demux) value that appears if this interface is used as the demux underlying interface. The output is one of the following:</p> <ul style="list-style-type: none"> • Source Family Inet • Destination Family Inet 	detail extensive none
Encapsulation	Encapsulation on the logical interface.	All levels
Protocol	Protocol family. Possible values are described in the “Protocol Field” section under Common Output Fields Description.	detail extensive none
MTU	Maximum transmission unit size on the logical interface.	detail extensive none
Maximum labels	Maximum number of MPLS labels configured for the MPLS protocol family on the logical interface.	detail extensive none
Traffic statistics	<p>Number and rate of bytes and packets received and transmitted on the specified interface set.</p> <ul style="list-style-type: none"> • Input bytes, Output bytes—Number of bytes received and transmitted on the interface set • Input packets, Output packets—Number of packets received and transmitted on the interface set. 	detail extensive
IPv6 transit statistics	Number of IPv6 transit bytes and packets received and transmitted on the logical interface if IPv6 statistics tracking is enabled.	extensive
Local statistics	Number and rate of bytes and packets destined to the router.	extensive
Transit statistics	Number and rate of bytes and packets transiting the switch.	extensive

Table 41: show interfaces PTX Series Output Fields (*continued*)

Field Name	Field Description	Level of Output
Generation	Unique number for use by Juniper Networks technical support only.	detail extensive
Route Table	Route table in which the logical interface address is located. For example, 0 refers to the routing table inet.0.	detail extensive none
Flags	Information about protocol family flags. Possible values are described in the “Family Flags” section under Common Output Fields Description.	detail extensive
Donor interface	(Unnumbered Ethernet) Interface from which an unnumbered Ethernet interface borrows an IPv4 address.	detail extensive none
Preferred source address	(Unnumbered Ethernet) Secondary IPv4 address of the donor loopback interface that acts as the preferred source address for the unnumbered Ethernet interface.	detail extensive none
Input Filters	Names of any input filters applied to this interface. If you specify a precedence value for any filter in a dynamic profile, filter precedence values appear in parentheses next to all interfaces.	detail extensive
Output Filters	Names of any output filters applied to this interface. If you specify a precedence value for any filter in a dynamic profile, filter precedence values appear in parentheses next to all interfaces.	detail extensive
Mac-Validate Failures	Number of MAC address validation failures for packets and bytes. This field is displayed when MAC address validation is enabled for the logical interface.	detail extensive none
Addresses, Flags	Information about the address flags. Possible values are described in the “Addresses Flags” section under Common Output Fields Description.	detail extensive none
<i>protocol-family</i>	Protocol family configured on the logical interface. If the protocol is inet , the IP address of the interface is also displayed.	brief
Flags	Information about flags (possible values are described in the “Addresses Flags” section under Common Output Fields Description.	detail extensive none
Destination	IP address of the remote side of the connection.	detail extensive none
Local	IP address of the logical interface.	detail extensive none
Broadcast	Broadcast address of the logical interface.	detail extensive none
Generation	Unique number for use by Juniper Networks technical support only.	detail extensive

Sample Output

```

show interfaces brief user@host> show interfaces brief et-7/0/0
(PTX5000 Packet      Physical interface: et-7/0/0, Enabled, Physical link is Up
Transport Switch)   Link-level type: Ethernet, MTU: 1514, Speed: 10Gbps, Loopback: Disabled, Source
                    filtering: Disabled, Flow control: Enabled
                    Device flags   : Present Running

```

```

Interface flags: SNMP-Traps Internal: 0x4000
Link flags      : None

show interfaces extensive (PTX5000 Packet Transport Switch)
user@host> show interfaces et-7/0/0 extensive
Physical interface: et-7/0/0, Enabled, Physical link is Up
Interface index: 168, SNMP ifIndex: 501, Generation: 171
Link-level type: Ethernet, MTU: 1514, Speed: 10Gbps, BPDU Error: None,
MAC-REWRITE Error: None, Loopback: Disabled, Source filtering: Disabled, Flow
control: Enabled
Device flags      : Present Running
Interface flags: SNMP-Traps Internal: 0x4000
Link flags        : None
CoS queues        : 8 supported, 8 maximum usable queues
Hold-times        : Up 0 ms, Down 0 ms
Current address: 88:e0:f3:3b:de:43, Hardware address: 88:e0:f3:3b:de:43
Last flapped      : 2012-01-18 11:48:24 PST (01:51:00 ago)
Statistics last cleared: 2012-01-18 13:38:54 PST (00:00:30 ago)
Traffic statistics:
Input bytes       : 0                               0 bps
Output bytes      : 0                               0 bps
Input packets     : 0                               0 pps
Output packets    : 0                               0 pps
IPv6 transit statistics:
Input bytes       : 0
Output bytes      : 0
Input packets     : 0
Output packets    : 0
Input errors:
Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Policed discards: 0, L3
incompletes: 0, L2 channel errors: 0, L2 mismatch timeouts: 0, FIFO errors: 0,
Resource errors: 0
Output errors:
Carrier transitions: 0, Errors: 0, Drops: 0, Collisions: 0, Aged packets: 0,
FIFO errors: 0, HS link CRC errors: 0, MTU errors: 0, Resource errors: 0
Egress queues: 8 supported, 4 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

Queue number:        Mapped forwarding classes
0                    best-effort
1                    expedited-forwarding
2                    assured-forwarding
3                    network-control

Active alarms : None
Active defects : None
MAC statistics:
Total octets        Receive      Transmit
Total packets       0          0
Unicast packets     0          0
Broadcast packets   0          0
Multicast packets   0          0
CRC/Align errors    0          0
FIFO errors         0          0
MAC control frames  0          0

```

```

MAC pause frames          0          0
Oversized frames          0
Jabber frames             0
Fragment frames           0
VLAN tagged frames        0
Code violations            0
Filter statistics:
  Input packet count       0
  Input packet rejects     0
  Input DA rejects         0
  Input SA rejects         0
  Output packet count      0
  Output packet pad count  0
  Output packet error count 0
  CAM destination filters: 0, CAM source filters: 0
Autonegotiation information:
  Negotiation status: Incomplete
Packet Forwarding Engine configuration:
  Destination slot: 7
CoS information:
  Direction : Output
  CoS transmit queue      Bandwidth      Buffer Priority
Limit
      0 best-effort      95      9500000000    95      usec      0      low
none
      3 network-control  5      500000000    5      0      low
none
Interface transmit statistics: Disabled

```

show interfaces terse
(PTX5000 Packet
Transport Switch)

```

user@host> show interfaces terse
Interface      Admin Link Proto  Local      Remote
et-2/0/0       up    up
et-2/0/1       up    up
et-2/0/2       up    up
et-2/0/3       up    up
et-2/0/4       up    up
et-2/0/5       up    down
et-2/0/6       up    up
et-2/0/7       up    up
et-2/0/8       up    up
et-2/0/9       up    down
et-2/0/10      up    up
et-2/0/11      up    up
et-2/0/12      up    up
et-2/0/13      up    down
et-2/0/14      up    up
et-2/0/15      up    up
et-2/0/16      up    up
et-2/0/17      up    down
et-2/0/18      up    down
et-2/0/19      up    up
et-2/0/20      up    down
et-2/0/21      up    up
et-2/0/22      up    down
et-2/0/23      up    up
et-2/1/0       up    up
et-2/1/1       up    up
et-2/1/2       up    up
et-2/1/3       up    up
et-2/1/4       up    up

```

et-2/1/5	up	up	
et-2/1/6	up	up	
et-2/1/7	up	up	
et-2/1/8	up	up	
et-2/1/9	up	up	
et-2/1/10	up	up	
et-2/1/11	up	up	
et-2/1/12	up	up	
et-2/1/13	up	up	
et-2/1/14	up	up	
et-2/1/15	up	up	
et-2/1/16	up	up	
et-2/1/17	up	up	
et-2/1/18	up	up	
et-2/1/19	up	up	
et-2/1/20	up	up	
et-2/1/21	up	up	
et-2/1/22	up	up	
et-2/1/23	up	up	
et-5/0/0	up	up	
et-5/0/0.0	up	up	ccc
et-5/0/0.32767	up	up	multiservice
et-5/0/1	up	up	
et-5/0/2	up	up	
et-5/0/3	up	down	
et-5/0/4	up	down	
et-5/0/5	up	up	
et-5/0/5.0	up	up	ccc
et-5/0/5.32767	up	up	multiservice
et-5/0/6	up	up	
et-5/0/7	up	up	
et-5/0/8	up	down	
et-5/0/9	up	up	
et-5/0/10	up	up	
et-5/0/11	up	up	
et-5/0/12	up	up	
et-5/0/13	up	down	
et-5/0/14	up	down	
et-5/0/15	up	up	
et-5/0/16	up	up	
et-5/0/17	up	up	
et-5/0/18	up	up	
et-5/0/19	up	up	
et-5/0/20	up	down	
et-5/0/21	up	down	
et-5/0/22	up	up	
et-5/0/23	up	up	
et-5/1/0	up	up	
et-5/1/1	up	up	
et-7/0/0	up	up	
et-7/0/1	up	up	
et-7/0/2	up	up	
et-7/0/3	up	up	
et-7/0/4	up	up	
et-7/0/5	up	up	
et-7/0/6	up	up	
et-7/0/7	up	up	
et-7/0/8	up	up	
et-7/0/9	up	up	
et-7/0/10	up	down	
et-7/0/11	up	down	


```

et-7/0/12          up    down
et-7/0/13          up    down
et-7/0/14          up    down
et-7/0/15          up    down
et-7/0/16          up    down
et-7/0/17          up    down
et-7/0/18          up    down
et-7/0/19          up    down
et-7/0/20          up    down
et-7/0/21          up    down
et-7/0/22          up    down
et-7/0/23          up    down
dsc                up    up
em0                up    up
em0.0              up    up    inet    192.168.177.61/25
gre                up    up
ipip               up    up
ixgbe0             up    up
ixgbe0.0           up    up    inet    10.0.0.4/8
                                   128.0.0.1/2
                                   128.0.0.4/2
                                   inet6   fe80::200:ff:fe00:4/64
                                   fec0::a:0:0:4/64
                                   tnp      0x4
ixgbe1             up    up
ixgbe1.0           up    up    inet    10.0.0.4/8
                                   128.0.0.1/2
                                   128.0.0.4/2
                                   inet6   fe80::200:1ff:fe00:4/64
                                   fec0::a:0:0:4/64
                                   tnp      0x4
lo0                up    up
lo0.0              up    up    inet    10.255.177.61    --> 0/0
                                   127.0.0.1        --> 0/0
                                   iso
47.0005.80ff.f800.0000.0108.0001.0102.5517.7061
                                   inet6   abcd::10:255:177:61
                                   fe80::ee9e:cd0f:fc02:b01e
lo0.16384          up    up    inet    127.0.0.1        --> 0/0
lo0.16385          up    up    inet
lsi                up    up
mtun               up    up
pimd               up    up
pime               up    up
tap                up    up

```

show interfaces extensive

Syntax show interfaces extensive

Release Information Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 12.1 for PTX Series Packet Transport Switches.

Description Display extensive information about all interfaces configured on the router.



NOTE:

- At some times, the cumulative byte counters displayed with the `show interfaces extensive` command on the 10-Gigabit Ethernet MPC with SFP+ is not always increasing and cumulative and does not give the correct results. There is a time lag in collecting these statistics, during which the display might decrease or go from a nonzero number to zero. Eventually, the counter will display the correct result.
 - When the `show interfaces extensive` command is executed on a router with an MPC or a T4000 Type 5 FPC, the *Input packet rejects* counter of the *Filter statistics* field also displays statistics related to the following packet errors:
 - Invalid VLAN range
 - Tagged packet received on an untagged interface
 - When the `show interfaces extensive` command is executed on an interface that is configured on T4000 Type 5 FPC, the *IPv6 transit statistics* field displays:
 - Total statistics (sum of transit and local statistics) at the physical interface level
 - Transit statistics at the logical interface level
-

Options This command has no options.

Required Privilege Level view

List of Sample Output [show interfaces extensive \(Circuit Emulation\) on page 443](#)
[show interfaces extensive \(Fast Ethernet\) on page 443](#)
[show interfaces extensive \(Gigabit Ethernet\) on page 445](#)
[show interfaces extensive \(10-Gigabit Ethernet\) on page 446](#)
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[show interfaces extensive \(100-Gigabit Ethernet\) on page 451](#)
[show interfaces extensive \(PTX5000 Packet Transport Switch\) on page 453](#)

Output Fields For more information, see the output fields table for the particular interface type in which you are interested. For information about destination class and source class statistics, see the “Destination Class Field” section and the “Source Class Field” section under Common Output Fields Description. For sample output for specific interfaces, see the other topics in this collection.

Sample Output

show interfaces extensive (Circuit Emulation) If a Circuit Emulation (CE) PIC is configured for SAToP pseudowire, then pseudowire statistics are displayed in the CE information section of the show interface extensive output. If SAToP pseudowire is not configured on the CE PIC, then all the CE information counters will be displayed as 0 (zero).

```
user@host> show interface tl-0/0/0 extensive
Physical interface :tl-0/0/0, Enabled, Physical Link : Up
  Interface index:61441
  Speed : 1.54 Mbps, Loopback: Disabled
  Operational state : Enabled,   Encapsulation : Trans
  Encoding : b8zs,      Framing   : unframe,   Build-out : 0-30
  Inversion  : enable,  Clock source : master
  Description :
  Traffic statistics:
  T1 media:      Seconds
  ES              1643
  SES            1643

  CE Info      Packets      Bytes
  CE Rx       : 2395529     306627712
  CE Tx       : 2396259     306721152
  CE Rx Drop: 0             0
  CE Tx Drop: 0             0

  CE Overrun Events: 0
  CE Underrun Events: 0
```

Sample Output

show interfaces extensive (Fast Ethernet)

```
user@host> show interfaces fe-0/2/1 extensive
Physical interface: fe-0/2/0, Enabled, Physical link is Up
  Interface index: 129, SNMP ifIndex: 23, Generation: 130
  Link-level type: Ethernet, MTU: 1514, Speed: 100mbps, Loopback: Disabled,
  Source filtering: Disabled, Flow control: Enabled
  Device flags   : Present Running
  Interface flags: SNMP-Traps Internal: 0x4000
  CoS queues     : 4 supported, 4 maximum usable queues
  Hold-times     : Up 0 ms, Down 0 ms
  Current address: 00:90:69:91:c4:3e, Hardware address: 00:90:69:91:c4:3e
  Last flapped   : 2006-04-16 23:00:41 PDT (02:08:05 ago)
  Statistics last cleared: 2006-04-16 21:42:00 PDT (03:26:46 ago)
  Traffic statistics:
    Input bytes : 17539      152 bps
    Output bytes : 92968     224 bps
    Input packets: 348       0 pps
    Output packets: 1349    0 pps
  Input errors:
    Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Policed discards: 0,
    L3 incompletes: 0, L2 channel errors: 0, L2 mismatch timeouts: 0,
    FIFO errors: 0, Resource errors: 0
```

Output errors:

Carrier transitions: 3, Errors: 0, Drops: 0, Collisions: 0, Aged packets: 0,

FIFO errors: 0, HS link CRC errors: 0, MTU errors: 0, Resource errors: 0

Egress queues: 4 supported, 4 in use

Queue counters:	Queued packets	Transmitted packets	Dropped packets
0 best-effort	66	66	0
1 expedited-fo	0	0	0
2 assured-forw	0	0	0
3 network-cont	1283	1283	0

Active alarms : None

Active defects : None

MAC statistics:	Receive	Transmit
Total octets	24721	105982
Total packets	348	1349
Unicast packets	347	430
Broadcast packets	1	37
Multicast packets	0	882
CRC/Align errors	0	0
FIFO errors	0	0
MAC control frames	0	0
MAC pause frames	0	0
Oversized frames	0	
Jabber frames	0	
Fragment frames	0	
VLAN tagged frames	0	
Code violations	0	

Filter statistics:

Input packet count	348	
Input packet rejects	0	
Input DA rejects	0	
Input SA rejects	0	
Output packet count		1349
Output packet pad count		0
Output packet error count		0

CAM destination filters: 3, CAM source filters: 0

Autonegotiation information:

Negotiation status: Complete

Link partner:

Link mode: Full-duplex, Flow control: None, Remote fault: OK

Packet Forwarding Engine configuration:

Destination slot: 0

CoS information:

CoS transmit queue		Bandwidth		Buffer	Priority	Limit
	%	bps	%	usec		
0 best-effort	95	95000000	95	0	low	none
3 network-control	5	5000000	5	0	low	none

Logical interface fe-0/2/0.0 (Index 66) (SNMP ifIndex 46) (Generation 133)

Flags: SNMP-Traps Encapsulation: ENET2

Protocol inet, MTU: 1500, Generation: 142, Route table: 0

Flags: DCU, SCU-out

Destination class	Packets (packet-per-second)	Bytes (bits-per-second)
silv1_new	0	0
(0)	0)

```

silv2_new          0          0
                   (          0) (          0)
silv_misc          0          0
                   (          0) (          0)
silver0            0          0
                   (          0) (          0)
silver2            0          0
                   (          0) (          0)
silver3            0          0
                   (          0) (          0)
silver4            0          0
                   (          0) (          0)
silver5            0          0
                   (          0) (          0)
silver6            0          0
                   (          0) (          0)
silver7            0          0
                   (          0) (          0)
silver9            0          0
                   (          0) (          0)
Source class      Packets      Bytes
                  (packet-per-second) (bits-per-second)
gold1             0          0
                   (          0) (          0)
gold2             16600      1062400
                   (          0) (          0)
gold3             0          0
                   (          0) (          0)
Addresses, Flags: Is-Preferred Is-Primary
Destination: 12.1.1/24, Local: 12.1.1.1, Broadcast: 12.1.1.255,
Generation: 150

```

Sample Output

```

show interfaces extensive (Gigabit Ethernet)
user@host> show interfaces ge-5/0/0.0 extensive

Logical interface ge-5/0/0.0 (Index 71) (SNMP ifIndex 1930) (Generation 139)
Flags: SNMP-Traps 0x4000 Encapsulation: ENET2
Traffic statistics:
  Input bytes : 0
  Output bytes : 42
  Input packets: 0
  Output packets: 1
Local statistics:
  Input bytes : 0
  Output bytes : 42
  Input packets: 0
  Output packets: 1
Transit statistics:
  Input bytes : 0 0 bps
  Output bytes : 0 0 bps
  Input packets: 0 0 pps
  Output packets: 0 0 pps
Output Filters: f-any
Protocol inet, MTU: 1500, Generation: 155, Route table: 0
  Output Filters: f-inet,
  Addresses, Flags: Is-Preferred Is-Primary
    Destination: 10.11.1/24, Local: 10.11.1.1, Broadcast: 10.11.1.255,
    Generation: 170
Protocol multiservice, MTU: Unlimited, Generation: 156, Route table: 0
  Flags: Is-Primary

```

Policer: Input: __default_arp_policer__

Sample Output

```

show interfaces extensive (10-Gigabit Ethernet)
user@host> show interfaces xe-2/1/0 extensive

Physical interface: xe-2/1/0, Enabled, Physical link is Up
Interface index: 258, SNMP ifIndex: 762, Generation: 2046
Link-level type: Ethernet, MTU: 1514, LAN-PHY mode, Speed: 10Gbps, BPDU Error:
None, Loopback: None, Source filtering: Disabled,
Flow control: Enabled
Device flags   : Present Running
Interface flags: SNMP-Traps Internal: 0x4000
Link flags     : None
CoS queues     : 8 supported, 8 maximum usable queues
Hold-times     : Up 0 ms, Down 0 ms
Current address: 00:1d:b5:f8:6d:eb, Hardware address: 00:1d:b5:f8:6d:eb
Last flapped   : 2011-12-17 00:19:02 PST (07:36:37 ago)
Statistics last cleared: 2011-12-17 07:55:24 PST (00:00:15 ago)
Traffic statistics:
Input bytes :          110000          0 bps
Output bytes :             0          0 bps
Input packets:           1000          0 pps
Output packets:            0          0 pps
IPv6 transit statistics:
Input bytes :          110000
Output bytes :             0
Input packets:           1000
Output packets:            0
Input errors:
Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Policed discards: 0, L3
incompletes: 0, L2 channel errors: 0,
L2 mismatch timeouts: 0, FIFO errors: 0, Resource errors: 0
Output errors:
Carrier transitions: 0, Errors: 0, Drops: 0, Collisions: 0, Aged packets: 0,
FIFO errors: 0, HS link CRC errors: 0,
MTU errors: 0, Resource errors: 0
Egress queues: 8 supported, 4 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

Queue number:      Mapped forwarding classes
0                  best-effort
1                  expedited-forwarding
2                  assured-forwarding
3                  network-control
Active alarms : None
Active defects : None
PCS statistics
Bit errors          0
Errored blocks      0
MAC statistics:
Total octets        Receive      Transmit
128000              0

```

```

Total packets          1000          0
Unicast packets        1000          0
Broadcast packets      0            0
Multicast packets      0            0
CRC/Align errors       0            0
FIFO errors            0            0
MAC control frames     0            0
MAC pause frames       0            0
Oversized frames       0
Jabber frames          0
Fragment frames        0
VLAN tagged frames     0
Code violations         0
Filter statistics:
  Input packet count    1000
  Input packet rejects  0
  Input DA rejects      0
  Input SA rejects      0
  Output packet count   0
  Output packet pad count 0
  Output packet error count 0
  CAM destination filters: 0, CAM source filters: 0
Packet Forwarding Engine configuration:
  Destination slot: 2
CoS information:
  Direction : Output
  CoS transmit queue    Bandwidth      Buffer Priority
Limit
    0 best-effort        %      bps      %      usec      low
none
    3 network-control    5      500000000    5      0      low
none
Interface transmit statistics: Disabled

Logical interface xe-2/1/0.0 (Index 83) (SNMP ifIndex 1677) (Generation 10082)

Flags: SNMP-Traps 0x4004000 Encapsulation: ENET2
Traffic statistics:
  Input bytes :          110000
  Output bytes :           0
  Input packets:          1000
  Output packets:         0
IPv6 transit statistics:
  Input bytes :          55000
  Output bytes :           0
  Input packets:          500
  Output packets:         0
Local statistics:
  Input bytes :          55000
  Output bytes :           0
  Input packets:          500
  Output packets:         0
Transit statistics:
  Input bytes :          55000          0 bps
  Output bytes :           0          0 bps
  Input packets:          500          0 pps
  Output packets:         0          0 pps
IPv6 transit statistics:
  Input bytes :          55000
  Output bytes :           0

```

```

Input packets:          500
Output packets:         0
Protocol inet6, MTU: 1500, Generation: 23739, Route table: 0
Addresses, Flags: Is-Preferred Is-Primary
Destination: 2001:1000:abcd:2312:1432:abcd:1234:0/112, Local:
2001:1000:abcd:2312:1432:abcd:1234:1234
Generation: 506
Addresses, Flags: Is-Preferred
Destination: fe80::/64, Local: fe80::21d:b5ff:fe80:6deb
Protocol multiservice, MTU: Unlimited, Generation: 508
Generation: 23740, Route table: 0
Policer: Input: __default_arp_policer__

```

Sample Output

**show interfaces
extensive (IQ2 and
IQ2E)**

```

user@host> show interfaces ge-3/2/2 extensive
Physical interface: ge-3/2/2, Enabled, Physical link is Up
Interface index: 156, SNMP ifIndex: 548, Generation: 159
Link-level type: Ethernet, MTU: 1518, Speed: 1000mbps, BPDU Error: None,
MAC-REWRITE Error: None, Loopback: Disabled, Source filtering: Disabled,
Flow control: Enabled, Auto-negotiation: Enabled, Remote fault: Online
Device flags   : Present Running
Interface flags: SNMP-Traps Internal: 0x4000
CoS queues    : 8 supported, 8 maximum usable queues
Schedulers    : 128
Hold-times    : Up 0 ms, Down 0 ms
Current address: 00:14:f6:12:86:fa, Hardware address: 00:14:f6:12:86:fa
Last flapped   : 2010-03-17 04:03:11 PDT (00:45:30 ago)
Statistics last cleared: Never
Traffic statistics:
Input bytes   :          1716096          0 bps
Output bytes  :          1716448          0 bps
Input packets :           13407          0 pps
Output packets:           13411          0 pps
IPv6 total statistics:
Input bytes   :          1716096
Output bytes  :          1716096
Input packets :           13407
Output packets:           13407
Ingress traffic statistics at Packet Forwarding Engine:
Input bytes   :          1716096          0 bps
Input packets :           13407          0 pps
Drop bytes    :              0          0 bps
Drop packets  :              0          0 pps
Input errors:
Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Policed discards: 0,
L3 incompletes: 0, L2 channel errors: 1, L2 mismatch timeouts: 0, FIFO errors:
0,
Resource errors: 0
Output errors:
Carrier transitions: 1, Errors: 0, Drops: 0, Collisions: 0, Aged packets:
0, FIFO errors: 0, HS link CRC errors: 0, MTU errors: 0, Resource errors: 0
Ingress queues: 8 supported, 4 in use
Queue counters:      Queued packets  Transmitted packets      Dropped
packets
0 0 best-effort          13407          13407
0 1 expedited-fo              0              0
0 2 assured-forw              0              0
0

```



```

0      3 network-cont          0          0
0      Egress queues: 8 supported, 4 in use
      Queue counters:      Queued packets  Transmitted packets      Dropped
packets
0      0 best-effort          13407          13407
0      1 expedited-fo          0          0
0      2 assured-forw          0          0
0      3 network-cont          4          4
0
Active alarms : None
Active defects : None
MAC statistics:
      Total octets          1716096          1716448
      Total packets          13407          13411
      Unicast packets          13407          13407
      Broadcast packets          0          0
      Multicast packets          0          4
      CRC/Align errors          0          0
      FIFO errors          0          0
      MAC control frames          0          0
      MAC pause frames          0          0
      Oversized frames          0
      Jabber frames          0
      Fragment frames          0
      VLAN tagged frames          0
      Code violations          0
Filter statistics:
      Input packet count          13407
      Input packet rejects          0
      Input DA rejects          0
      Input SA rejects          0
      Output packet count          13411
      Output packet pad count          0
      Output packet error count          0
      CAM destination filters: 0, CAM source filters: 0
Autonegotiation information:
      Negotiation status: Complete
      Link partner:
          Link mode: Full-duplex, Flow control: None, Remote fault: OK
      Local resolution:
          Flow control: Symmetric, Remote fault: Link OK
Packet Forwarding Engine configuration:
      Destination slot: 3
CoS information:
      Direction : Output
      CoS transmit queue          Bandwidth          Buffer Priority
Limit
      0 best-effort          %          bps          %          usec
      none          95          950000000          95          0          low
      3 network-control          5          50000000          5          0          low
      none
      Direction : Input
      CoS transmit queue          Bandwidth          Buffer Priority
Limit
      0 best-effort          %          bps          %          usec
      95          950000000          95          0          low

```

```

none
3 network-control      5      50000000      5      0      low
none

```

```

148) Logical interface ge-3/2/2.0 (Index 83) (SNMP ifIndex 6080) (Generation
Flags: SNMP-Traps 0x4000 VLAN-Tag [ 0x8100.100 ] Encapsulation: ENET2
Traffic statistics:
Input bytes :          0
Output bytes :         336
Input packets:          0
Output packets:         4
IPv6 total statistics:
Input bytes :      1716096
Output bytes :      1716096
Input packets:      13407
Output packets:      13407
Local statistics:
Input bytes :          0
Output bytes :         336
Input packets:          0
Output packets:         4
Transit statistics:
Input bytes :          0      0 bps
Output bytes :          0      0 bps
Input packets:          0      0 pps
Output packets:          0      0 pps
IPv6 total statistics:
Input bytes :      1716096
Output bytes :      1716096
Input packets:      13407
Output packets:      13407
Protocol inet6, MTU: 1500, Generation: 159, Route table: 0
Flags: Is-Primary
Addresses, Flags: Is-Default Is-Primary
Destination: Unspecified, Local: 2000::2
Generation: 146
Addresses, Flags: Is-Preferred
Destination: fe80::/64, Local: fe80::214:f600:6412:86fa
Protocol multiservice, MTU: Unlimited, Generation: 148
Generation: 160, Route table: 0
Policer: Input: __default_arp_policer__

```

```

149) Logical interface ge-3/2/2.32767 (Index 84) (SNMP ifIndex 6081) (Generation
Flags: SNMP-Traps 0x4000 VLAN-Tag [ 0x0000.0 ] Encapsulation: ENET2
Traffic statistics:
Input bytes :          0
Output bytes :          0
Input packets:          0
Output packets:          0
Local statistics:
Input bytes :          0
Output bytes :          0
Input packets:          0
Output packets:          0
Transit statistics:
Input bytes :          0      0 bps
Output bytes :          0      0 bps
Input packets:          0      0 pps
Output packets:          0      0 pps

```

```

Protocol multiservice, MTU: Unlimited, Generation: 161, Route table: 0
Flags: None
Policer: Input: __default_arp_policer__

```

Sample Output

```

show interfaces extensive user@host> show interfaces et-0/0/0:0 extensive
extensive (100-Gigabit Ethernet) Physical interface: et-0/0/0:0, Enabled, Physical link is Down
Interface index: 156, SNMP ifIndex: 516, Generation: 163
Link-level type: Ethernet, MTU: 9192, Speed: 50000Mbps, BPDU Error: None,
MAC-REWRITE Error: None,
Loopback: Disabled, Source filtering: Disabled, Flow control: Enabled
Device flags : Present Running Down
Interface flags: Hardware-Down SNMP-Traps Internal: 0x4000
Link flags : None
CoS queues : 8 supported, 8 maximum usable queues
Hold-times : Up 0 ms, Down 0 ms
Current address: 00:aa:aa:aa:aa:00, Hardware address: 00:21:59:5c:48:00
Last flapped : 2010-01-07 16:36:49 PST (18:02:35 ago)
Statistics last cleared: Never
Traffic statistics:
Input bytes : 0 0 bps
Output bytes : 0 0 bps
Input packets: 0 0 pps
Output packets: 0 0 pps
IPv6 transit statistics:
Input bytes : 0
Output bytes : 0
Input packets: 0
Output packets: 0
Input errors:
Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Policed discards: 0, L3
incompletes: 0,
L2 channel errors: 0, L2 mismatch timeouts: 0, FIFO errors: 0, Resource errors:
0
Output errors:
Carrier transitions: 0, Errors: 0, Drops: 0, Collisions: 0, Aged packets: 0,
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 DEFAULT, NC- 0 0 0
1 REALTIME 0 0 0
2 PRIVATE, NC- 0 0 0
3 CONTROL 1253 1253 0
4 BC-H, CLASS_ 0 0 0
5 BC-M, CLASS_ 0 0 0
6 IA, CLASS_V_ 0 0 0
7 CLASS_S_OUTP 0 0 0

Queue Mapped Forwarding Class
0 DEFAULT, NC-Q0
1 REALTIME

```

```

2      PRIVATE, NC-Q1
3      CONTROL
4      BC-H, CLASS-Q4
5      BC-M, CLASS-Q5
6      IA, CLASS_V_OUTPUT
7      CLASS_S_OUTPUT

```

Active alarms : None

Active defects : None

MAC statistics:	Receive	Transmit
Total octets	0	0
Total packets	0	0
Unicast packets	0	0
Broadcast packets	0	0
Multicast packets	0	0
CRC/Align errors	0	0
FIFO errors	0	0
MAC control frames	0	0
MAC pause frames	0	0
Oversized frames	0	0
Jabber frames	0	0
Fragment frames	0	0
VLAN tagged frames	0	0
Code violations	0	0

Packet Forwarding Engine configuration:

Destination slot: 0

CoS information:

Direction : Output

CoS transmit queue		Bandwidth			Buffer	Priority	Limit
	%	bps	%	usec			
0 best-effort	95	47500000000	95	0	low	none	
3 network-control	5	2500000000	5	0	low	none	

Logical interface et-0/0/0:0.0 (Index 68) (SNMP ifIndex 546) (Generation 161)

Flags: Devlet-Down SNMP-Traps Encapsulation: ENET2

Traffic statistics:

```

Input bytes : 0
Output bytes : 0
Input packets: 0
Output packets: 0

```

Local statistics:

```

Input bytes : 0
Output bytes : 0
Input packets: 0
Output packets: 0

```

Transit statistics:

```

Input bytes : 0 0 bps
Output bytes : 0 0 bps
Input packets: 0 0 pps
Output packets: 0 0 pps

```

Protocol inet, MTU: 9178, Generation: 220, Route table: 0

Addresses, Flags: Dest-route-down Is-Preferred Is-Primary

Destination: 210.160.0/24, Local: 210.160.0.1, Broadcast: 210.160.0.255,

Generation: 192

Protocol mpls, MTU: 9166, Maximum labels: 3, Generation: 221, Route table: 0

Protocol multiservice, MTU: Unlimited, Generation: 222, Route table: 0

Policer: Input: __default_arp_policer

Sample Output

```

show interfaces      user@host> show interfaces et-7/0/0 extensive
extensive (PTX5000   Physical interface: et-7/0/0, Enabled, Physical link is Up
Packet Transport    Interface index: 168, SNMP ifIndex: 501, Generation: 171
Switch)             Link-level type: Ethernet, MTU: 1514, Speed: 10Gbps, BPDU Error: None,
                       MAC-REWRITE Error: None,
                       Loopback: Disabled, Source filtering: Disabled, Flow control: Enabled
                       Device flags   : Present Running
                       Interface flags: SNMP-Traps Internal: 0x4000
                       Link flags     : None
                       CoS queues     : 8 supported, 8 maximum usable queues
                       Hold-times      : Up 0 ms, Down 0 ms
                       Current address: 88:e0:f3:3b:de:43, Hardware address: 88:e0:f3:3b:de:43
                       Last flapped   : 2012-01-18 11:48:24 PST (01:47:08 ago)
                       Statistics last cleared: Never
                       Traffic statistics:
                           Input bytes :          3583014          0 bps
                           Output bytes:          758050          0 bps
                           Input packets:          17740          0 pps
                           Output packets:           3418          0 pps
                       IPv6 transit statistics:
                           Input bytes :              0
                           Output bytes :              0
                           Input packets:              0
                           Output packets:              0
                       Input errors:
                           Errors: 0, Drops: 0, Framing errors: 0, Runt: 0, Policed discards: 0, L3
incompletes: 0,
                           L2 channel errors: 0, L2 mismatch timeouts: 0, FIFO errors: 0, Resource errors:
0
                       Output errors:
                           Carrier transitions: 1, Errors: 0, Drops: 0, Collisions: 0, Aged packets: 0,
FIFO errors: 0,
                           HS link CRC errors: 0, MTU errors: 0, Resource errors: 0
                       Egress queues: 8 supported, 4 in use
                       Queue counters:

```

	Queued packets	Transmitted packets	Dropped packets
0 best-effort	252	252	0
1 expedited-fo	0	0	0
2 assured-forw	0	0	0
3 network-cont	6196	6196	0

```

Queue number:          Mapped forwarding classes
0                      best-effort
1                      expedited-forwarding
2                      assured-forwarding
3                      network-control
Active alarms : None
Active defects : None
MAC statistics:
Total octets           4108825          Receive          Transmit
Total packets          21166           6448
Unicast packets        14824           3255
Broadcast packets      3              0
Multicast packets      6339           3193
CRC/Align errors       0              0

```

```
FIFO errors                                0                0
MAC control frames                        0                0
MAC pause frames                         0                0
Oversized frames                         0
Jabber frames                           0
Fragment frames                         0
VLAN tagged frames                      16091
Code violations                          0
Filter statistics:
  Input packet count                     9
  Input packet rejects                   9
  Input DA rejects                       9
  Input SA rejects                       0
  Output packet count                   0
  Output packet pad count               0
  Output packet error count             0
  CAM destination filters: 0, CAM source filters: 0
Autonegotiation information:
  Negotiation status: Incomplete
Packet Forwarding Engine configuration:
  Destination slot: 7
CoS information:
  Direction : Output
  CoS transmit queue                    Bandwidth          Buffer Priority
Limit                                  %      bps      %      usec
    0 best-effort                      95    9500000000    95      0      low
none
    3 network-control                  5     500000000     5      0      low
none
  Interface transmit statistics: Disabled
```

show interfaces filters

Syntax	show interfaces filters <interface-name>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced on PTX Series Packet Transport Switches for Junos OS Release 12.1.
Description	Display all firewall filters that are installed on each interface in a system.
Options	none —Display filter information about all interfaces. interface-name —(Optional) Display filter information about a particular interface.
Additional Information	For information about how to configure firewall filters, see the Junos OS Policy Framework Configuration Guide . For related operational mode commands, see the Junos OS Routing Protocols and Policies Command Reference .
Required Privilege Level	view
List of Sample Output	show interfaces filters on page 456 show interfaces filters interface-name on page 456 show interfaces filters (PTX Series Packet Transport Switches) on page 456
Output Fields	Table 42 on page 455 lists the output fields for the show interfaces filters command. Output fields are listed in the approximate order in which they appear.

Table 42: show interfaces filters Output Fields

Field Name	Field Description
Interface	Name of the interface.
Admin	Interface state: up or down .
Link	Link state: up or down .
Proto	Protocol configured on the interface.
Input Filter	Names of any firewall filters to be evaluated when packets are received on the interface, including any filters attached through activation of dynamic service.
Output Filter	Names of any firewall filters to be evaluated when packets are transmitted on the interface, including any filters attached through activation of dynamic service.

Sample Output

```

show interfaces filters user@host> show interfaces filters
Interface      Admin Link Proto Input Filter      Output Filter
ge-0/0/0       up    up    inet
ge-0/0/0.0     up    up    inet
                                   iso
ge-5/0/0       up    up
ge-5/0/0.0     up    up    any
                                   inet
                                   multiservice
f-any
f-inet

gr-0/3/0       up    up
ip-0/3/0       up    up
mt-0/3/0       up    up
pd-0/3/0       up    up
pe-0/3/0       up    up
vt-0/3/0       up    up
at-1/0/0       up    up
at-1/0/0.0     up    up    inet
                                   iso
at-1/1/0       up    down
at-1/1/0.0     up    down inet
                                   iso
....

show interfaces filters user@host> show interfaces filters so-2/1/0
interface-name Interface      Admin Link Proto Input Filter      Output Filter
so-2/1/0       up    down
so-2/1/0.0     up    down inet goop
                                   iso
                                   inet6 v6in
                                   v6out

user@host > show interfaces filters ge-3/0/1
Interface      Admin Link Proto Input Filter      Output Filter
ge-3/0/1       up    up
ge-3/0/1.0     up    up    inet F1-ge-3/0/1.0-in
                                   inet F3-ge-3/0/1.0-in
                                   F2-ge-3/0/1.0-out

show interfaces filters user@host > show interfaces filters em0
(PTX Series Packet Interface      Admin Link Proto Input Filter      Output Filter
Transport Switches)   em0          up    up
em0.0             up    up    inet

```


show interfaces (M Series and T Series Router Management and Internal Ethernet)

Syntax	<pre>show interfaces fxp(0 1) <brief detail extensive terse> <descriptions> <media> <snmp-index <i>snmp-index</i>> <statistics></pre>
Syntax (T640 and T1600 Routers with RE-C1800 and TX Matrix Plus Routers)	<pre>show interfaces em0 <brief detail extensive terse> <descriptions> <media> <snmp-index <i>snmp-index</i>> <statistics></pre>
Syntax (PTX Series Packet Transport Switches)	<pre>show interfaces em0 <brief detail extensive terse> <descriptions> <statistics></pre>
Release Information	<p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced on PTX Series Packet Transport Switches for Junos OS Release 12.1.</p>
Description	(M Series, T Series, and PTX Series devices only) Display status information about the management Ethernet and internal Ethernet interfaces.
Options	<p>fxp(0 1)—(M Series and T Series routers except routers with RE-C1800 or RE-C2600) Display standard information about the management Ethernet or internal Ethernet interface, respectively.</p> <p>em0—(T640 and T1600 routers with RE-C1800, TX Matrix Plus routers, and PTX Series Packet Transport Switches) Display standard information about the management Ethernet interface.</p> <p>brief detail extensive terse—(Optional) Display the specified level of output.</p> <p>descriptions—(Optional) Display interface description strings.</p> <p>media—(Optional) Display media-specific information.</p> <p>snmp-index <i>snmp-index</i>—(Optional) Display information for the specified SNMP index of the interface.</p> <p>statistics—(Optional) Display static interface statistics.</p>
Required Privilege Level	view
List of Sample Output	<p>show interfaces brief (Management Ethernet) on page 461</p> <p>show interfaces (Management Ethernet) on page 461</p>

[show interfaces \(Management Ethernet \[TX Matrix Plus Router\]\) on page 462](#)
[show interfaces \(Management Ethernet \[PTX Series Packet Transport Switches\]\) on page 462](#)
[show interfaces detail \(Management Ethernet\) on page 462](#)
[show interfaces detail \(Management Ethernet \[TX Matrix Plus Router\]\) on page 463](#)
[show interfaces detail \(Management Ethernet \[PTX Packet Transport Switches\]\) on page 463](#)
[show interfaces extensive \(Management Ethernet\) on page 464](#)
[show interfaces extensive \(Management Ethernet \[TX Matrix Plus Router\]\) on page 465](#)
[show interfaces extensive \(Management Ethernet \[PTX Series Packet Transport Switches\]\) on page 466](#)
[show interfaces brief \(Management Ethernet\) on page 466](#)
[show interfaces brief \(Management Ethernet \[TX Matrix Plus Router\]\) on page 467](#)
[show interfaces brief \(Management Ethernet \[PTX Series Packet Transport Switches\]\) on page 467](#)
[show interfaces \(Internal Ethernet\) on page 467](#)
[show interfaces \(Internal Ethernet \[TX Matrix Plus Router\]\) on page 468](#)
[show interfaces detail \(Internal Ethernet\) on page 468](#)
[show interfaces detail \(Internal Ethernet \[TX Matrix Plus Router\]\) on page 469](#)
[show interfaces extensive \(internal Ethernet\) on page 470](#)
[show interfaces extensive \(internal Ethernet \[TX Matrix Plus Router\]\) on page 471](#)

Output Fields Table 43 on page 458 lists the output fields for the **show interfaces** (management) command on the M Series routers, T Series routers, TX Matrix Plus routers, and PTX Series Packet Transport Switches. Output fields are listed in the approximate order in which they appear.

Table 43: M Series and T Series Router Management and Internal Ethernet show interfaces Output Fields

Field Name	Field Description	Level of Output
Physical Interface		
Physical interface	Name of the physical interface.	All levels
Enabled	State of the interface. Possible values are described in the “Enabled Field” section under Common Output Fields Description.	All levels
Interface index	Physical interface index number, which reflects its initialization sequence.	detail extensive none
SNMP ifIndex	SNMP index number for the physical interface.	detail extensive none
Generation	Unique number for use by Juniper Networks technical support only.	detail extensive
Type	Type of interface.	All levels
Link-level type	Encapsulation type used on the physical interface.	All levels
MTU	Maximum transmission unit (MTU)—Size of the largest packet to be transmitted.	All levels
Clocking	Reference clock source of the interface.	All levels

Table 43: M Series and T Series Router Management and Internal Ethernet show interfaces Output Fields (*continued*)

Field Name	Field Description	Level of Output
Speed	Network speed on the interface.	All levels
Device flags	Information about the physical device. Possible values are described in the “Device Flags” section under Common Output Fields Description.	All levels
Interface flags	Information about the interface. Possible values are described in the “Interface Flags” section under Common Output Fields Description.	All levels
Link type	Data transmission type.	detail extensive none
Link flags	Information about the link. Possible values are described in the “Link Flags” section under Common Output Fields Description.	detail extensive
Physical info	Information about the physical interface.	detail extensive
Hold-times	Current interface hold-time up and hold-time down. Value is in milliseconds.	detail extensive
Current address	Configured MAC address.	detail extensive none
Hardware address	Media access control (MAC) address of the interface.	detail extensive none
Alternate link address	Backup link address.	detail extensive
Last flapped	Date, time, and how long ago the interface went from down to up. The format is Last flapped: <i>year-month-day hour:minute:second timezone (hour:minute:second ago)</i> . For example, Last flapped: 2002-04-26 10:52:40 PDT (04:33:20 ago) .	detail extensive none
Input packets	Number of packets received on the physical interface.	None specified
Output packets	Number of packets transmitted on the physical interface.	None specified
Statistics last cleared	Time when the statistics for the interface were last set to zero.	detail extensive
Traffic statistics	Number and rate of bytes and packets received and transmitted on the logical and physical interface. <ul style="list-style-type: none"> • Input bytes, Output bytes—Number of bytes received and transmitted on the interface. • Input packets, Output packets—Number of packets received and transmitted on the interface. 	detail extensive

Table 43: M Series and T Series Router Management and Internal Ethernet show interfaces Output Fields (*continued*)

Field Name	Field Description	Level of Output
Input errors	<ul style="list-style-type: none"> • Errors—Input errors on the interface. • Drops—Number of packets dropped by the output queue of the I/O Manager ASIC. • Framing errors—Number of packets received with an invalid frame checksum (FCS). • Runts—Frames received smaller than the runt threshold. • Giants—Frames received larger than the giant threshold. • Policed Discards—Frames that the incoming packet match code discarded because they were not recognized or were not of interest. Usually, this field reports protocols that Junos does not support. • Resource errors—Sum of transmit drops. 	extensive
Output errors	<ul style="list-style-type: none"> • Carrier transitions—Number of times the interface has gone from down to up. This number does not normally increment quickly, increasing only when the cable is unplugged, the far-end system is powered down and then up, or another problem occurs. If the number of carrier transitions increments quickly, possibly once every 10 seconds, the cable, the remote system, or the interface is malfunctioning. • Errors—Sum of outgoing frame aborts and FCS errors. • Drops—Number of packets dropped by the output queue of the I/O Manager ASIC. If the interface is saturated, this number increments once for every packet dropped by the ASIC RED mechanism. • Resource errors—Sum of transmit drops. 	extensive
Logical Interface		
Logical interface	Name of the logical interface	All levels
Index	Logical interface index number, which reflects its initialization sequence.	detail extensive none
SNMP ifIndex	Logical interface SNMP interface index number.	detail extensive none
Generation	Unique number for use by Juniper Networks technical support only.	detail extensive
Flags	Information about the logical interface; values are described in the "Device Flags" section under Common Output Fields Description.	All levels
Encapsulation	Encapsulation on the logical interface.	detail extensive none
inet	IP address of the logical interface.	brief
Protocol	Protocol family configured on the logical interface (such as iso or inet6).	detail extensive none
MTU	MTU size on the logical interface.	detail extensive none
Generation	Unique number for use by Juniper Networks technical support only.	detail extensive

Table 43: M Series and T Series Router Management and Internal Ethernet show interfaces Output Fields (*continued*)

Field Name	Field Description	Level of Output
Route table	Route table in which this address exists. For example, Route table:0 refers to inet.0.	detail extensive
Flags	Information about the protocol family flags. Possible values are described in the “Family Flags” section under Common Output Fields Description.	detail extensive none
Addresses, Flags	Information about address flags. Possible values are described in the “Addresses Flags” section under Common Output Fields Description.	detail extensive none
Destination	IP address of the remote side of the connection.	detail extensive none
Local	IP address of the logical interface.	detail extensive none
Broadcast	Broadcast address.	detail extensive none
Generation	Unique number for use by Juniper Networks technical support only.	detail extensive

Sample Output

```

show interfaces brief user@host> show interfaces fxp0 brief
  (Management      Physical interface: fxp0, Enabled, Physical link is Up
  Ethernet)        Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,
                   Speed: 100mbps
                   Device flags   : Present Running
                   Interface flags: SNMP-Traps

                   Logical interface fxp0.0
                   Flags: SNMP-Traps Encapsulation: ENET2
                   inet 192.168.70.143/21

show interfaces user@host> show interfaces fxp0
  (Management      Physical interface: fxp0, Enabled, Physical link is Up
  Ethernet)        Interface index: 1, SNMP ifIndex: 1
                   Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Speed: 100mbps
                   Device flags   : Present Running
                   Interface flags: SNMP-Traps
                   Link type      : Half-Duplex
                   Current address: 00:a0:a5:56:01:89, Hardware address: 00:a0:a5:56:01:89
                   Last flapped   : Never
                   Input packets  : 80804
                   Output packets: 1105

                   Logical interface fxp0.0 (Index 2) (SNMP ifIndex 13)
                   Flags: SNMP-Traps Encapsulation: ENET2
                   Protocol inet, MTU: 1500
                   Flags: Is-Primary
                   Addresses, Flags: Is-Preferred Is-Primary
                   Destination: 192.168.64/21, Local: 192.168.70.143,
                   Broadcast: 192.168.71.255

```

```
show interfaces user@host> show interfaces em0
(Management Physical interface: em0, Enabled, Physical link is Up
Ethernet [TX Matrix Interface index: 8, SNMP ifIndex: 17
Plus Router]) Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Speed: 100mbps
Device flags : Present Running
Interface flags: SNMP-Traps
Link type : Full-Duplex
Current address: 00:80:f9:26:00:c0, Hardware address: 00:80:f9:26:00:c0
Last flapped : Never
Input packets : 1424
Output packets: 5282

Logical interface em0.0 (Index 3) (SNMP ifIndex 18)
Flags: SNMP-Traps Encapsulation: ENET2
Input packets : 1424
Output packets: 5282
Protocol inet, MTU: 1500
Flags: Is-Primary
Addresses, Flags: Is-Preferred Is-Primary
Destination: 192.168.178.0/25, Local: 192.168.178.11, Broadcast:
192.168.178.127

show interfaces user@host> show interfaces em0
(Management Physical interface: em0, Enabled, Physical link is Up
Ethernet [PTX Series Interface index: 8, SNMP ifIndex: 0
Packet Transport Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Speed: 1000mbps
Switches]) Device flags : Present Running
Interface flags: SNMP-Traps
Link type : Full-Duplex
Current address: 00:80:f9:25:00:1b, Hardware address: 00:80:f9:25:00:1b
Last flapped : Never
Input packets : 212581
Output packets: 71

Logical interface em0.0 (Index 3) (SNMP ifIndex 0)
Flags: SNMP-Traps Encapsulation: ENET2
Input packets : 212551
Output packets: 71
Protocol inet, MTU: 1500
Flags: Is-Primary
Addresses, Flags: Is-Default Is-Preferred Is-Primary
Destination: 192.168.3/24, Local: 192.168.3.30,
Broadcast: 192.168.3.255

show interfaces detail user@host> show interfaces fxp0 detail
(Management Physical interface: fxp0, Enabled, Physical link is Up
Ethernet) Interface index: 1, SNMP ifIndex: 1, Generation: 0
Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,
Speed: 100mbps
Device flags : Present Running
Interface flags: SNMP-Traps
Link type : Half-Duplex
Physical info : Unspecified
Hold-times : Up 0 ms, Down 0 ms
Current address: 00:a0:a5:56:01:89, Hardware address: 00:a0:a5:56:01:89
Alternate link address: Unspecified
Last flapped : Never
Statistics last cleared: Never
Traffic statistics:
Input bytes : 6484031
```

```

Output bytes :          167503
Input packets:          81008
Output packets:         1110

```

```

Logical interface fxp0.0 (Index 2) (SNMP ifIndex 13) (Generation 1)
Flags: SNMP-Traps Encapsulation: ENET2
Protocol inet, MTU: 1500, Generation: 6, Route table: 0
Flags: Is-Primary
Addresses, Flags: Is-Preferred Is-Primary
Destination: 192.168.64/21, Local: 192.168.70.143,
Broadcast: 192.168.71.255, Generation: 1

```

**show interfaces detail
(Management
Ethernet [TX Matrix
Plus Router])**

```

user@host> show interfaces em0 detail
Physical interface: em0, Enabled, Physical link is Up
Interface index: 8, SNMP ifIndex: 17, Generation: 2
Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,
Speed: 100mbps
Device flags : Present Running
Interface flags: SNMP-Traps
Link type : Full-Duplex
Physical info : Unspecified
Hold-times : Up 0 ms, Down 0 ms
Current address: 00:80:f9:26:00:c0, Hardware address: 00:80:f9:26:00:c0
Alternate link address: Unspecified
Last flapped : Never
Statistics last cleared: Never
Traffic statistics:
Input bytes :          124351
Output bytes :         1353212
Input packets:          1804
Output packets:         5344
IPv6 transit statistics:
Input bytes :           0
Output bytes :           0
Input packets:           0
Output packets:          0

```

```

Logical interface em0.0 (Index 3) (SNMP ifIndex 18) (Generation 1)
Flags: SNMP-Traps Encapsulation: ENET2
Traffic statistics:
Input bytes :          117135
Output bytes :         1331647
Input packets:          1804
Output packets:         5344
Local statistics:
Input bytes :          117135
Output bytes :         1331647
Input packets:          1804
Output packets:         5344
Protocol inet, MTU: 1500, Generation: 1, Route table: 0
Flags: Is-Primary
Addresses, Flags: Is-Preferred Is-Primary
Destination: 192.168.178.0/25, Local: 192.168.178.11, Broadcast:
192.168.178.127, Generation: 1

```

**show interfaces detail
(Management
Ethernet [PTX Packet
Transport Switches])**

```

user@host> show interfaces detail em0
Physical interface: em0, Enabled, Physical link is Up
Interface index: 8, SNMP ifIndex: 0, Generation: 3
Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,
Speed: 1000mbps

```

```

Device flags   : Present Running
Interface flags: SNMP-Traps
Link type      : Full-Duplex
Physical info  : Unspecified
Hold-times    : Up 0 ms, Down 0 ms
Current address: 00:80:f9:25:00:1b, Hardware address: 00:80:f9:25:00:1b
Alternate link address: Unspecified
Last flapped   : Never
Statistics last cleared: Never
Traffic statistics:
  Input bytes   :          15255909
  Output bytes  :           4608
  Input packets :          214753
  Output packets:           72
IPv6 transit statistics:
Input bytes   :          0
Output bytes  :          0
Input packets :          0
Output packets:          0

Logical interface em0.0 (Index 3) (SNMP ifIndex 0) (Generation 1)
Flags: SNMP-Traps Encapsulation: ENET2
Traffic statistics:
  Input bytes   :          14394630
  Output bytes  :           3024
  Input packets :          214723
  Output packets:           72
Local statistics:
  Input bytes   :          14394630
  Output bytes  :           3024
  Input packets :          214723
  Output packets:           72
Protocol inet, MTU: 1500, Generation: 1, Route table: 0
Flags: Is-Primary
Addresses, Flags: Is-Default Is-Preferred Is-Primary
  Destination: 192.168.3/24, Local: 192.168.3.30,
  Broadcast: 192.168.3.255, Generation: 1

```

```

show interfaces extensive
(Management Ethernet) user@host> show interfaces fxp0 extensive
Physical interface: fxp0, Enabled, Physical link is Up
Interface index: 1, SNMP ifIndex: 1, Generation: 0
Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,
Speed: 100mbps
Device flags   : Present Running
Interface flags: SNMP-Traps
Link type      : Half-Duplex
Physical info  : Unspecified
Hold-times    : Up 0 ms, Down 0 ms
Current address: 00:a0:a5:56:01:89, Hardware address: 00:a0:a5:56:01:89
Alternate link address: Unspecified
Last flapped   : Never
Statistics last cleared: Never
Traffic statistics:
  Input bytes   :          6678904
  Output bytes  :          169657
  Input packets :          83946
  Output packets:          1127
Input errors:
  Errors: 12, Drops: 0, Framing errors: 0, Runts: 0, Giants: 0,
  Policed discards: 0, Resource errors: 0
Output errors:

```


Carrier transitions: 0, Errors: 0, Drops: 0, MTU errors: 0,
Resource errors: 0

Logical interface fxp0.0 (Index 2) (SNMP ifIndex 13) (Generation 1)
Flags: SNMP-Traps Encapsulation: ENET2
Protocol inet, MTU: 1500, Generation: 6, Route table: 0
Flags: Is-Primary
Addresses, Flags: Is-Preferred Is-Primary
Destination: 192.168.64/21, Local: 192.168.70.143,
Broadcast: 192.168.71.255, Generation: 1

**show interfaces
extensive
(Management
Ethernet [TX Matrix
Plus Router])**

user@host> show interfaces em0 extensive

Physical interface: em0, Enabled, Physical link is Up
Interface index: 8, SNMP ifIndex: 17, Generation: 2
Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,
Speed: 100mbps
Device flags : Present Running
Interface flags: SNMP-Traps
Link type : Full-Duplex
Physical info : Unspecified
Hold-times : Up 0 ms, Down 0 ms
Current address: 00:80:f9:26:00:c0, Hardware address: 00:80:f9:26:00:c0
Alternate link address: Unspecified
Last flapped : Never
Statistics last cleared: Never
Traffic statistics:
Input bytes : 127120
Output bytes : 1357414
Input packets: 1843
Output packets: 5372
IPv6 transit statistics:
Input bytes : 0
Output bytes : 0
Input packets: 0
Output packets: 0
Input errors:
Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Giants: 0, Policed discards:
0, Resource errors: 0
Output errors:
Carrier transitions: 0, Errors: 0, Drops: 0, MTU errors: 0, Resource errors:
0

Logical interface em0.0 (Index 3) (SNMP ifIndex 18) (Generation 1)
Flags: SNMP-Traps Encapsulation: ENET2
Traffic statistics:
Input bytes : 119748
Output bytes : 1335719
Input packets: 1843
Output packets: 5372
Local statistics:
Input bytes : 119748
Output bytes : 1335719
Input packets: 1843
Output packets: 5372
Protocol inet, MTU: 1500, Generation: 1, Route table: 0
Flags: Is-Primary
Addresses, Flags: Is-Preferred Is-Primary
Destination: 192.168.178.0/25, Local: 192.168.178.11, Broadcast:
192.168.178.127, Generation: 1

```

show interfaces extensive user@host> show interfaces extensive em0
(Management Physical interface: em0, Enabled, Physical link is Up
Ethernet [PTX Series Interface index: 8, SNMP ifIndex: 0, Generation: 3
Packet Transport Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,
Switches]) Speed: 1000mbps
Device flags : Present Running
Interface flags: SNMP-Traps
Link type : Full-Duplex
Physical info : Unspecified
Hold-times : Up 0 ms, Down 0 ms
Current address: 00:80:f9:25:00:1b, Hardware address: 00:80:f9:25:00:1b
Alternate link address: Unspecified
Last flapped : Never
Statistics last cleared: Never
Traffic statistics:
  Input bytes : 15236459
  Output bytes : 4608
  Input packets: 214482
  Output packets: 72
  IPv6 transit statistics:
    Input bytes : 0
    Output bytes : 0
    Input packets: 0
    Output packets: 0
  Input errors:
    Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Giants: 0,
    Policed discards: 0, Resource errors: 0
  Output errors:
    Carrier transitions: 0, Errors: 0, Drops: 0, MTU errors: 0,
    Resource errors: 0

    Logical interface em0.0 (Index 3) (SNMP ifIndex 0) (Generation 1)
    Flags: SNMP-Traps Encapsulation: ENET2
    Traffic statistics:
      Input bytes : 14376264
      Output bytes : 3024
      Input packets: 214452
      Output packets: 72
    Local statistics:
      Input bytes : 14376264
      Output bytes : 3024
      Input packets: 214452
      Output packets: 72
    Protocol inet, MTU: 1500, Generation: 1, Route table: 0
    Flags: Is-Primary
    Addresses, Flags: Is-Default Is-Preferred Is-Primary
      Destination: 192.168.3/24, Local: 192.168.3.30,
      Broadcast: 192.168.3.255, Generation: 1

show interfaces brief user@host> show interfaces fxp1 brief
(Management Physical interface: fxp1, Enabled, Physical link is Up
Ethernet) Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,
Speed: 100mbps
Device flags : Present Running
Interface flags: SNMP-Traps

    Logical interface fxp1.0
    Flags: SNMP-Traps Encapsulation: ENET2
    inet 10.0.0.4/8

```

```
inet6 fe80::200:ff:fe00:4/64
fec0::10:0:0:4/64
tnp 4
```

**show interfaces brief
(Management
Ethernet [TX Matrix
Plus Router])**

```
user@host> show interfaces em0 brief
Physical interface: em0, Enabled, Physical link is Up
Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,
Speed: 100mbps
Device flags : Present Running
Interface flags: SNMP-Traps

Logical interface em0.0
Flags: SNMP-Traps Encapsulation: ENET2
inet 192.168.178.11/25
```

**show interfaces brief
(Management
Ethernet [PTX Series
Packet Transport
Switches])**

```
user@host> show interfaces em0 brief
Physical interface: em0, Enabled, Physical link is Up
Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,

Speed: 1000mbps
Device flags : Present Running
Interface flags: SNMP-Traps

Logical interface em0.0
Flags: SNMP-Traps Encapsulation: ENET2
inet 192.168.3.30/24
```

```
root@aboslutely> show interfaces em0 terse
Interface      Admin Link Proto  Local      Remote
em0            up    up
em0.0          up    up   inet    192.168.3.30/24
```

**show interfaces
(Internal Ethernet)**

```
user@host> show interfaces fxp1
Physical interface: fxp1, Enabled, Physical link is Up
Interface index: 2, SNMP ifIndex: 2
Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Speed: 100mbps
Device flags : Present Running
Interface flags: SNMP-Traps
Link type : Full-Duplex
Current address: 02:00:00:00:00:04, Hardware address: 02:00:00:00:00:04
Last flapped : Never
Input packets : 30655
Output packets: 33323

Logical interface fxp1.0 (Index 3) (SNMP ifIndex 14)
Flags: SNMP-Traps Encapsulation: ENET2
Protocol inet, MTU: 1500
Flags: Is-Primary
Addresses, Flags: Is-Default Is-Preferred Is-Primary
Destination: 10/8, Local: 10.0.0.4, Broadcast: 10.255.255.255
Protocol inet6, MTU: 1500
Flags: Is-Primary
Addresses, Flags: Is-Preferred
Destination: fe80::/64, Local: fe80::200:ff:fe00:4
Addresses, Flags: Is-Default Is-Preferred Is-Primary
Destination: fec0::/64, Local: fec0::10:0:0:4
Protocol tnp, MTU: 1500
Flags: Primary, Is-Primary
```

Addresses
Local: 4

show interfaces
(Internal Ethernet [TX
Matrix Plus Router])

```
user@host> show interfaces ixgbe0
Physical interface: ixgbe0, Enabled, Physical link is Up
Interface index: 2, SNMP ifIndex: 116
Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Speed: 1000mbps
Device flags : Present Running
Interface flags: SNMP-Traps
Link type : Full-Duplex
Current address: 02:00:00:22:00:04, Hardware address: 02:00:00:22:00:04
Last flapped : Never
Input packets : 2301738
Output packets: 3951155
```

```
Logical interface ixgbe0.0 (Index 4) (SNMP ifIndex 117)
Flags: SNMP-Traps Encapsulation: ENET2
Input packets : 2301595
Output packets: 3951155
Protocol inet, MTU: 1500
Flags: Is-Primary
Addresses, Flags: Is-Preferred
Destination: 10/8, Local: 10.34.0.4, Broadcast: 10.255.255.255
Addresses, Flags: Primary Is-Default Is-Preferred Is-Primary
Destination: 128/2, Local: 162.0.0.4, Broadcast: 191.255.255.255
Protocol inet6, MTU: 1500
Flags: Is-Primary
Addresses, Flags: Is-Preferred
Destination: fe80::/64, Local: fe80::200:ff:fe22:4
Addresses, Flags: Is-Default Is-Preferred Is-Primary
Destination: fec0::/64, Local: fec0::a:22:0:4
Protocol tnp, MTU: 1500
Flags: Primary, Is-Primary
Addresses
Local: 0x22000004
```

show interfaces detail
(Internal Ethernet)

```
user@host> show interfaces fxp1 detail
Physical interface: fxp1, Enabled, Physical link is Up
Interface index: 2, SNMP ifIndex: 2, Generation: 1
Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,
Speed: 100mbps
Device flags : Present Running
Interface flags: SNMP-Traps
Link type : Full-Duplex
Physical info : Unspecified
Hold-times : Up 0 ms, Down 0 ms
Current address: 02:00:00:00:00:04, Hardware address: 02:00:00:00:00:04
Alternate link address: Unspecified
Last flapped : Never
Statistics last cleared: Never
Traffic statistics:
Input bytes : 2339969
Output bytes : 15880707
Input packets: 30758
Output packets: 33443
```

```
Logical interface fxp1.0 (Index 3) (SNMP ifIndex 14) (Generation 2)
Flags: SNMP-Traps Encapsulation: ENET2
Protocol inet, MTU: 1500, Generation: 7, Route table: 1
Flags: Is-Primary
Addresses, Flags: Is-Default Is-Preferred Is-Primary
```

```

    Destination: 10/8, Local: 10.0.0.4, Broadcast: 10.255.255.255,
    Generation: 3
Protocol inet6, MTU: 1500, Generation: 8, Route table: 1
Flags: Is-Primary
Addresses, Flags: Is-Preferred
    Destination: fe80::/64, Local: fe80::200:ff:fe00:4,
    Broadcast: Unspecified, Generation: 5
Addresses, Flags: Is-Default Is-Preferred Is-Primary
    Destination: fec0::/64, Local: fec0::10:0:0:4, Broadcast: Unspecified,
    Generation: 7
Protocol tnp, MTU: 1500, Generation: 9, Route table: 1
Flags: Primary, Is-Primary
Addresses, Flags: None
    Destination: Unspecified, Local: 4, Broadcast: Unspecified,
    Generation: 8

```

show interfaces detail
(Internal Ethernet [TX
Matrix Plus Router])

```

user@host> show interfaces ixgbe0 detail
Physical interface: ixgbe0, Enabled, Physical link is Up
Interface index: 2, SNMP ifIndex: 116, Generation: 3
Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,
Speed: 1000Mbps
Device flags : Present Running
Interface flags: SNMP-Traps
Link type : Full-Duplex
Physical info : Unspecified
Hold-times : Up 0 ms, Down 0 ms
Current address: 02:00:00:22:00:04, Hardware address: 02:00:00:22:00:04
Alternate link address: Unspecified
Last flapped : Never
Statistics last cleared: Never
Traffic statistics:
Input bytes : 238172825
Output bytes : 1338948955
Input packets: 2360984
Output packets: 4061512
IPv6 transit statistics:
Input bytes : 0
Output bytes : 0
Input packets: 0
Output packets: 0

Logical interface ixgbe0.0 (Index 4) (SNMP ifIndex 117) (Generation 2)
Flags: SNMP-Traps Encapsulation: ENET2
Traffic statistics:
Input bytes : 228720309
Output bytes : 1261387447
Input packets: 2360841
Output packets: 4061512
IPv6 transit statistics:
Input bytes : 0
Output bytes : 0
Input packets: 0
Output packets: 0
Local statistics:
Input bytes : 228720309
Output bytes : 1261387447
Input packets: 2360841
Output packets: 4061512
Protocol inet, MTU: 1500, Generation: 2, Route table: 1
Flags: Is-Primary
Addresses, Flags: Is-Preferred

```

```

    Destination: 10/8, Local: 10.34.0.4, Broadcast: 10.255.255.255, Generation:
2
    Addresses, Flags: Primary Is-Default Is-Preferred Is-Primary
    Destination: 128/2, Local: 162.0.0.4, Broadcast: 191.255.255.255,
Generation: 3
    Protocol inet6, MTU: 1500, Generation: 3, Route table: 1
    Flags: Is-Primary
    Addresses, Flags: Is-Preferred
    Destination: fe80::/64, Local: fe80::200:ff:fe22:4
    Generation: 4
    Addresses, Flags: Is-Default Is-Preferred Is-Primary
    Destination: fec0::/64, Local: fec0::a:22:0:4
    Protocol tnp, MTU: 1500, Generation: 5
    Generation: 4, Route table: 1
    Flags: Primary, Is-Primary
    Addresses, Flags: None
    Destination: Unspecified, Local: 0x22000004, Broadcast: Unspecified,
Generation: 6

```

show interfaces
extensive
(internal Ethernet)

```

user@host> show interfaces fxp1 extensive
Physical interface: fxp1, Enabled, Physical link is Up
Interface index: 2, SNMP ifIndex: 2, Generation: 1
Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,
Speed: 100mbps
Device flags   : Present Running
Interface flags: SNMP-Traps
Link type      : Full-Duplex
Physical info   : Unspecified
Hold-times     : Up 0 ms, Down 0 ms
Current address: 02:00:00:00:00:04, Hardware address: 02:00:00:00:00:04
Alternate link address: Unspecified
Last flapped   : Never
Statistics last cleared: Never
Traffic statistics:
Input bytes   :          2349897
Output bytes  :          15888605
Input packets :           30896
Output packets:           33607
Input errors:
Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Giants: 0,
Policed discards: 0, Resource errors: 0
Output errors:
Carrier transitions: 0, Errors: 0, Drops: 0, MTU errors: 0,
Resource errors: 0

Logical interface fxp1.0 (Index 3) (SNMP ifIndex 14) (Generation 2)
Flags: SNMP-Traps Encapsulation: ENET2
Protocol inet, MTU: 1500, Generation: 7, Route table: 1
Flags: Is-Primary
Addresses, Flags: Is-Default Is-Preferred Is-Primary
Destination: 10/8, Local: 10.0.0.4, Broadcast: 10.255.255.255,
Generation: 3
Protocol inet6, MTU: 1500, Generation: 8, Route table: 1
Flags: Is-Primary
Addresses, Flags: Is-Preferred
Destination: fe80::/64, Local: fe80::200:ff:fe00:4,
Broadcast: Unspecified, Generation: 5
Addresses, Flags: Is-Default Is-Preferred Is-Primary
Destination: fec0::/64, Local: fec0::10:0:0:4, Broadcast: Unspecified,
Generation: 7
Protocol tnp, MTU: 1500, Generation: 9, Route table: 1

```

```

Flags: Primary, Is-Primary
Addresses, Flags: None
  Destination: Unspecified, Local: 4, Broadcast: Unspecified,
  Generation: 8

show interfaces extensive
(internal Ethernet [TX
Matrix Plus Router])
user@host> show interfaces ixgbe0 extensive
Physical interface: ixgbe0, Enabled, Physical link is Up
  Interface index: 2, SNMP ifIndex: 116, Generation: 3
  Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,
  Speed: 1000mbps
  Device flags   : Present Running
  Interface flags: SNMP-Traps
  Link type      : Full-Duplex
  Physical info  : Unspecified
  Hold-times     : Up 0 ms, Down 0 ms
  Current address: 02:00:00:22:00:04, Hardware address: 02:00:00:22:00:04
  Alternate link address: Unspecified
  Last flapped   : Never
  Statistics last cleared: Never
  Traffic statistics:
    Input bytes   :          242730780
    Output bytes  :          1348312269
    Input packets :          2398737
    Output packets:          4133510
  IPv6 transit statistics:
    Input bytes   :          0
    Output bytes  :          0
    Input packets :          0
    Output packets:          0
  Input errors:
    Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Giants: 0, Policed discards:
0, Resource errors: 0
  Output errors:
    Carrier transitions: 0, Errors: 0, Drops: 0, MTU errors: 0, Resource errors:
0

Logical interface ixgbe0.0 (Index 4) (SNMP ifIndex 117) (Generation 2)
  Flags: SNMP-Traps Encapsulation: ENET2
  Traffic statistics:
    Input bytes   :          233127252
    Output bytes  :          1269350897
    Input packets :          2398594
    Output packets:          4133510
  IPv6 transit statistics:
    Input bytes   :          0
    Output bytes  :          0
    Input packets :          0
    Output packets:          0
  Local statistics:
    Input bytes   :          233127252
    Output bytes  :          1269350897
    Input packets :          2398594
    Output packets:          4133510
  Protocol inet, MTU: 1500, Generation: 2, Route table: 1
    Flags: Is-Primary
    Addresses, Flags: Is-Preferred
      Destination: 10/8, Local: 10.34.0.4, Broadcast: 10.255.255.255, Generation:
2
    Addresses, Flags: Primary Is-Default Is-Preferred Is-Primary
      Destination: 128/2, Local: 162.0.0.4, Broadcast: 191.255.255.255,
      Generation: 3

```

```
Protocol inet6, MTU: 1500, Generation: 3, Route table: 1
  Flags: Is-Primary
  Addresses, Flags: Is-Preferred
    Destination: fe80::/64, Local: fe80::200:ff:fe22:4
  Generation: 4
  Addresses, Flags: Is-Default Is-Preferred Is-Primary
    Destination: fec0::/64, Local: fec0::a:22:0:4
Protocol tnp, MTU: 1500, Generation: 5
  Generation: 4, Route table: 1
  Flags: Primary, Is-Primary
  Addresses, Flags: None
    Destination: Unspecified, Local: 0x22000004, Broadcast: Unspecified,
  Generation: 6
```


show interfaces mac-database (Gigabit Ethernet)

Syntax	<code>show interfaces mac-database (ge-fpc/pic/port ge-fpc/pic/port.n) <mac-address mac-address></code>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced on PTX Series Packet Transport Switches for Junos OS Release 12.1.
Description	(M Series, T Series, MX Series routers, and PTX Series Packet Transport Switches only) Display media access control (MAC) address information for the specified Gigabit Ethernet interface.
Options	<p>ge-fpc/pic/port—Display MAC addresses that have been learned on all logical interfaces on a particular physical interface.</p> <p>ge-fpc/pic/port.n—Display MAC addresses that have been learned on a particular logical interface.</p> <p>mac-address mac-address—(Optional) Display detailed MAC address statistics, including policer information.</p>
Additional Information	On IQ2 PIC interfaces, the default value for maximum retention of entries in the MAC address table has changed, for cases in which the table is not full. The new holding time is 12 hours. The previous retention time of 3 minutes is still in effect when the table is full.
Required Privilege Level	view
List of Sample Output	show interfaces mac-database (All MAC Addresses on a Port) on page 475 show interfaces mac-database (All MAC Addresses on a Service) on page 475 show interfaces mac-database mac-address on page 476
Output Fields	Table 44 on page 473 lists the output fields for the show interfaces mac-database command. Output fields are listed in the approximate order in which they appear.

Table 44: show interfaces mac-database Output Fields

Field Name	Field Description
Physical Interface	
Physical interface	Name of the physical interface.
Enabled	State of the physical interface. Possible values are described in the "Enabled Field" section under Common Output Fields Description.
Interface index	Physical interface index number, which reflects its initialization sequence.
SNMP ifIndex	SNMP index number for the physical interface.
Description	Description and name of the interface.

Table 44: show interfaces mac-database Output Fields (*continued*)

Field Name	Field Description
Link-level type	Encapsulation being used on the physical interface.
MTU	MTU size on the physical interface.
Speed	Speed at which the interface is running.
Loopback	Whether loopback is enabled and the type of loopback: local or remote .
Source filtering	Whether source filtering is configured.
Flow control	Whether flow control is enabled or disabled.
Device flags	Information about the physical device. Possible values are described in the “Device Flags” section under Common Output Fields Description.
Interface flags	Information about the interface. Possible values are described in the “Links Flags” section under Common Output Fields Description.
Link flags	Information about the link. Possible values are described in the “Device Flags” section under Common Output Fields Description.
Logical Interface	
Logical interface	Name of the logical interface.
Index	Logical interface index number, which reflects its initialization sequence.
SNMP ifIndex	Logical interface SNMP interface index number.
Flags	Information about the logical interface (possible values are described in the “Logical Interface Flags” section under Common Output Fields Description.
Encapsulation	Encapsulation on the logical interface.
MAC address, Input frames, Input bytes, Output frames, Output bytes	MAC address and corresponding number of input frames, input bytes, output frames, and output bytes.
Number of MAC addresses	Number of MAC addresses configured.

Table 44: show interfaces mac-database Output Fields (*continued*)

Field Name	Field Description
Policer Statistics	<p>(Displayed for mac-address option only) Display information about policers applied to a logical interface-MAC pair.</p> <ul style="list-style-type: none"> • Policer type—Type of policer that is out of spec with respect to the configuration. It can be one or more of the following: <ul style="list-style-type: none"> • Input premium—Number of high-priority rating out-of-spec frames or bytes received. • Output premium—Number of high-priority rating out-of-spec frames or bytes sent. • Input aggregate—Total number of out-of-spec frames or bytes received. • Output aggregate—Total number of out-of-spec frames or bytes sent. • Discarded Frames—Number of discarded frames. • Discarded Bytes—Number of discarded bytes.

Sample Output

```

show interfaces mac-database (All MAC Addresses on a Port) user@host> show interfaces mac-database xe-0/3/3
Physical interface: xe-0/3/3, Enabled, Physical link is Up
Interface index: 372, SNMP ifIndex: 788
Link-level type: Ethernet, MTU: 1514, LAN-PHY mode, Speed: 10Gbps, Loopback:
None, Source filtering: Disabled, Flow control: Enabled
Device flags : Present Running
Interface flags: SNMP-Traps Internal: 0x4000
Link flags : None

Logical interface xe-0/3/3.0 (Index 364) (SNMP ifIndex 829)
Flags: SNMP-Traps 0x4004000 Encapsulation: ENET2
MAC address      Input frames    Input bytes    Output frames    Output bytes
00:00:00:00:00:00      1              56             0                0
00:00:c0:01:01:02     7023810        323095260      0                0
00:00:c0:01:01:03     7023810        323095260      0                0
00:00:c0:01:01:04     7023810        323095260      0                0
00:00:c0:01:01:05     7023810        323095260      0                0
00:00:c0:01:01:06     7023810        323095260      0                0
00:00:c0:01:01:07     7023810        323095260      0                0
00:00:c0:01:01:08     7023809        323095214      0                0
00:00:c0:01:01:09     7023809        323095214      0                0
00:00:c0:01:01:0a     7023809        323095214      0                0
00:00:c0:01:01:0b     7023809        323095214      0                0
00:00:c8:01:01:02     30424784       1399540064     37448598         1722635508
00:00:c8:01:01:03     30424784       1399540064     37448598         1722635508
00:00:c8:01:01:04     30424716       1399536936     37448523         1722632058
00:00:c8:01:01:05     30424789       1399540294     37448598         1722635508
00:00:c8:01:01:06     30424788       1399540248     37448597         1722635462
00:00:c8:01:01:07     30424783       1399540018     37448597         1722635462
00:00:c8:01:01:08     30424783       1399540018     37448596         1722635416
00:00:c8:01:01:09     8836796        406492616      8836795          406492570
00:00:c8:01:01:0a     30424712       1399536752     37448521         1722631966
00:00:c8:01:01:0b     30424715       1399536890     37448523         1722632058
Number of MAC addresses : 21

```

```

show interfaces mac-database (All user@host> show interfaces mac-database xe-0/3/3
Logical interface xe-0/3/3.0 (Index 364) (SNMP ifIndex 829)
Flags: SNMP-Traps 0x4004000 Encapsulation: ENET2

```

MAC Addresses on a Service)	MAC address	Input frames	Input bytes	Output frames	Output bytes
	00:00:00:00:00:00	1	56	0	0
	00:00:c0:01:01:02	7023810	323095260	0	0
	00:00:c0:01:01:03	7023810	323095260	0	0
	00:00:c0:01:01:04	7023810	323095260	0	0
	00:00:c0:01:01:05	7023810	323095260	0	0
	00:00:c0:01:01:06	7023810	323095260	0	0
	00:00:c0:01:01:07	7023810	323095260	0	0
	00:00:c0:01:01:08	7023809	323095214	0	0
	00:00:c0:01:01:09	7023809	323095214	0	0
	00:00:c0:01:01:0a	7023809	323095214	0	0
	00:00:c0:01:01:0b	7023809	323095214	0	0
	00:00:c8:01:01:02	31016568	1426762128	38040381	1749857526
	00:00:c8:01:01:03	31016568	1426762128	38040382	1749857572
	00:00:c8:01:01:04	31016499	1426758954	38040306	1749854076
	00:00:c8:01:01:05	31016573	1426762358	38040381	1749857526
	00:00:c8:01:01:06	31016573	1426762358	38040381	1749857526
	00:00:c8:01:01:07	31016567	1426762082	38040380	1749857480
	00:00:c8:01:01:08	31016567	1426762082	38040379	1749857434
	00:00:c8:01:01:09	9428580	433714680	9428580	433714680
	00:00:c8:01:01:0a	31016496	1426758816	38040304	1749853984
	00:00:c8:01:01:0b	31016498	1426758908	38040307	1749854122


```

show interfaces user@host> show interfaces mac-database xe-0/3/3 mac-address 00:00:c8:01:01:09
mac-database Physical interface: xe-0/3/3, Enabled, Physical link is Up
mac-address Interface index: 372, SNMP ifIndex: 788
Link-level type: Ethernet, MTU: 1514, LAN-PHY mode, Speed: 10Gbps, Loopback:
None, Source filtering: Disabled, Flow control: Enabled
Device flags : Present Running
Interface flags: SNMP-Traps Internal: 0x4000
Link flags : None

Logical interface xe-0/3/3.0 (Index 364) (SNMP ifIndex 829)
Flags: SNMP-Traps 0x4004000 Encapsulation: ENET2
MAC address: 00:00:c8:01:01:09, Type: Configured,
Input bytes : 202324652
Output bytes : 202324560
Input frames : 4398362
Output frames : 4398360
Policer statistics:
Policer type Discarded frames Discarded bytes
Output aggregate 3992386 183649756

```

show interfaces media

Syntax	show interfaces media
Release Information	Command introduced before Junos OS Release 7.4. Command introduced on PTX Series Packet Transport Switches for Junos OS Release 12.1.
Description	Display media-specific information about all configured network interfaces.
	<div>  <p>NOTE: <code>show interfaces media</code> lists details for all interfaces, whereas <code>show interfaces media interface-name</code> lists details only for the specified interface.</p> </div>
Options	This command has no options.
Additional Information	Output from both the <code>show interfaces interface-name detail</code> and the <code>show interfaces interface-name extensive</code> commands includes all the information displayed in the output from the <code>show interfaces media</code> command.
Required Privilege Level	view
List of Sample Output	show interfaces media (SONET/SDH) on page 477 show interfaces media (PTX Series Packet Transport Switches) on page 478
Output Fields	<p>The output from the <code>show interfaces media</code> command includes fields that display interface media-specific information. These fields are also included in the <code>show interfaces interface-name</code> command for each particular interface type, and the information provided in the fields is unique to each interface type.</p> <p>One field unique to the <code>show interfaces media</code> command is interface-type errors (for example, SONET errors). This field appears for channelized E3, channelized T3, channelized OC, E1, E3, SONET, T1, and T3 interfaces. The information provided in this output field is also provided in the output from the <code>show interfaces interface-name</code> command. (For example, for SONET interfaces, these fields are SONET section, SONET line, and SONET path). For a description of errors, see the chapter with the particular interface type in which you are interested.</p>

Sample Output

show interfaces media (SONET/SDH)	<p>The following example displays the output fields unique to the <code>show interfaces media</code> command for a SONET interface (with no level of output specified):</p> <pre> user@host> show interfaces media so-4/1/2 Physical interface: so-4/1/2, Enabled, Physical link is Up Interface index: 168, SNMP ifIndex: 495 Link-level type: PPP, MTU: 4474, Clocking: Internal, SONET mode, Speed: OC48, Loopback: None, FCS: 16, Payload scrambler: Enabled </pre>
--	--

```
Device flags      : Present Running
Interface flags: Point-To-Point SNMP-Traps 16384
Link flags       : Keepalives
Keepalive settings: Interval 10 seconds, Up-count 1, Down-count 3
Keepalive: Input: 1783 (00:00:00 ago), Output: 1786 (00:00:08 ago)
LCP state: Opened
NCP state: inet: Not-configured, inet6: Not-configured, iso: Not-configured,
mpls: Not-configured
CHAP state: Not-configured
CoS queues       : 8 supported
Last flapped    : 2005-06-15 12:14:59 PDT (04:31:29 ago)
Input rate      : 0 bps (0 pps)
Output rate     : 0 bps (0 pps)
SONET alarms    : None
SONET defects   : None
SONET errors:
    BIP-B1: 121, BIP-B2: 916, REI-L: 0, BIP-B3: 137, REI-P: 16747, BIP-BIP2: 0
Received path trace: routerb so-1/1/2
Transmitted path trace: routera so-4/1/2
```

show interfaces media
(PTX Series Packet
Transport Switches)

```
user@host> show interfaces media em0
Physical interface: em0, Enabled, Physical link is Up
    Interface index: 8, SNMP ifIndex: 0
    Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Speed: 1000mbps
    Device flags      : Present Running
    Interface flags: SNMP-Traps
    Link type        : Full-Duplex
    Current address: 00:80:f9:25:00:1b, Hardware address: 00:80:f9:25:00:1b
    Last flapped     : Never
    Input packets    : 215151
    Output packets   : 72
```

show interfaces policers

Syntax	show interfaces policers <interface-name>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced on PTX Series Packet Transport Switches for Junos OS Release 12.1.
Description	Display all policers that are installed on each interface in a system.
Options	none —Display policer information about all interfaces. interface-name —(Optional) Display filter information about a particular interface.
Additional Information	For information about how to configure policers, see the <i>Junos Policy Framework Configuration Guide</i> . For related operational mode commands, see the <i>Junos Routing Protocols and Policies Command Reference</i> .
Required Privilege Level	view
List of Sample Output	show interfaces policers on page 480 show interfaces policers interface-name on page 480 show interfaces policers (PTX Series Packet Transport Switches) on page 480
Output Fields	Table 45 on page 479 lists the output fields for the show interfaces policers command. Output fields are listed in the approximate order in which they appear.

Table 45: show interfaces policers Output Fields

Field Name	Field Description
Interface	Name of the interface.
Admin	Interface state: up or down .
Link	Link state: up or down .
Proto	Protocol configured on the interface.
Input Policer	Policer to be evaluated when packets are received on the interface. It has the format <i>interface-name-in-policer</i> .
Output Policer	Policer to be evaluated when packets are transmitted on the interface. It has the format <i>interface-name-out-policer</i> .

Sample Output

```

show interfaces user@host> show interfaces policers
policers
Interface      Admin Link Proto Input Policer      Output Policer
ge-0/0/0       up    up
ge-0/0/0.0     up    up    inet
               up    up    iso
gr-0/3/0       up    up
ip-0/3/0       up    up
mt-0/3/0       up    up
pd-0/3/0       up    up
pe-0/3/0       up    up
...
so-2/0/0       up    up
so-2/0/0.0     up    up    inet    so-2/0/0.0-in-policer    so-2/0/0.0-out-policer
               up    up    iso
so-2/1/0       up    down
...

show interfaces user@host> show interfaces policers so-2/1/0
policers
Interface      Admin Link Proto Input Policer      Output Policer
so-2/1/0       up    down
so-2/1/0.0     up    down    inet    so-2/1/0.0-in-policer    so-2/1/0.0-out-policer
               up    down    iso
               up    down    inet6

show interfaces user@host> show interfaces policers em0
policers (PTX Series Packet Transport Switches)
Interface      Admin Link Proto Input Policer      Output Policer
em0            up    up
em0.0          up    up
               inet

```


show interfaces routing summary

Syntax	show interfaces routing summary <interface-name> <logical-system (all logical-system-name)>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 12.1 for PTX Series Packet Transport Switches.
Description	Display a summary of the state of the router interfaces. Use this command for performing router diagnostics only, when you are determining whether the routing protocols and the Junos OS differ about the state of an interface.
Options	none —Display summary information about the state of all router interfaces on all logical systems. interface-name —(Optional) Name of a specific interface. logical-system (all logical-system-name) —(Optional) Perform this operation on all logical systems or on a particular logical system.
Additional Information	For information about how to configure routing protocols, see the Junos OS Routing Protocols Configuration Guide . For information about related operational mode commands for routing instances and protocols, see the Junos OS Routing Protocols and Policies Command Reference .
Required Privilege Level	view
List of Sample Output	show interfaces routing summary on page 482 show interfaces routing summary (TX Matrix Plus Router) on page 482 show interfaces routing summary (PTX5000 Packet Transport Switches) on page 482
Output Fields	Table 46 on page 481 lists the output fields for the show interfaces routing summary command. Output fields are listed in the approximate order in which they appear.

Table 46: show interfaces routing summary Output Fields

Field Name	Field Description
n physical interfaces	Number of routing interfaces and number of interfaces in the up state.
n protocol protocol interfaces	Type and number of routing protocols and number of related interfaces in the up state.
Interface	Logical interface name.
Index	Logical interface index number, which reflects its initialization sequence.

Table 46: show interfaces routing summary Output Fields (*continued*)

Field Name	Field Description
Metric	Metric value for the interface.
Trans	Number of times the interface has transitioned from Down to Up .
Status	Interface status (Up or Down) and type.

Sample Output

show interfaces routing summary user@host> show interfaces routing summary

```

14 physical interfaces (12 up)
  11 INET protocol addresses (11 up)
  6 ISO protocol addresses (4 up)
  3 MPLS protocol addresses (3 up)
  3 CCC protocol addresses (3 up)
Interface  Index    Metric   Trans.  Status
so-5/0/3.0   15         0         0 0 Broadcast PointToPoint Multicast
so-5/0/2.0   14         0         0 0 Up Broadcast PointToPoint Multicast
so-5/0/1.0   13         0         5 5 Up Broadcast PointToPoint Multicast
so-5/0/0.0   12         0         2 2 Up Broadcast PointToPoint Multicast
so-1/2/0.0   11         0         0 0 Broadcast PointToPoint Multicast
so-1/1/0.0   10         0         5 5 Up Broadcast PointToPoint Multicast
at-1/0/0.6    9         0         0 0 Up Broadcast PointToPoint Multicast
at-1/0/0.5    8         0         0 0 Up Broadcast PointToPoint Multicast
at-1/0/0.4    7         0         0 0 Up Broadcast PointToPoint Multicast
at-1/0/0.3    6         0         0 0 Up Broadcast PointToPoint Multicast
at-1/0/0.2    5         0         0 0 Up Broadcast PointToPoint Multicast
at-1/0/0.0    4         0         0 0 Up Broadcast PointToPoint Multicast
lo0.0         3         0         0 0 Up Broadcast Loopback Multicast
fxp1.0        2         0         1 1 Up Broadcast Multicast
fxp0.0        1         0         0 0 Up Broadcast Multicast

```

show interfaces routing summary (TX Matrix Plus Router) user@host> show interfaces routing summary

```

9 physical interfaces (9 up)
  11 INET protocol addresses (11 up)
  6 MPLS protocol addresses (6 up)
  4 INET6 protocol addresses (4 up)
Interface      Index    Metric   Trans.  Status
ge-23/0/8.0    73         0         0 0 Up Broadcast Multicast
ge-23/0/7.0    72         0         0 0 Up Broadcast Multicast
ge-23/0/6.0    71         0         0 0 Up Broadcast Multicast
ge-7/0/9.0     69         0         0 0 Up Broadcast Multicast
ge-15/0/9.0    70         0         0 0 Up Broadcast Multicast
xe-6/1/1.0     68         0         0 0 Up Broadcast Multicast
lo0.16385      66         0         0 0 Up Broadcast Loopback Multicast
lo0.16384      65         0         0 0 Up Broadcast Loopback Multicast
lo0.0          64         0         0 0 Up Broadcast Loopback Multicast
ixgbe1.0       5         0         0 0 Up Broadcast Multicast
ixgbe0.0       4         0         0 0 Up Broadcast Multicast
em0.0          3         0         0 0 Up Broadcast Multicast

```

show interfaces routing summary user@host> show interfaces routing summary

(PTX5000 Packet
Transport Switches)

- 7 physical interfaces (68 up)
- 7 INET protocol addresses (7 up)
- 2 CCC protocol addresses (2 up)
- 4 INET6 protocol addresses (4 up)

Interface	Index	Metric	Trans. Status
lo0.16385	66	0	0 Up Broadcast Loopback Multicast
lo0.16384	64	0	0 Up Broadcast Loopback Multicast
lo0.0	65	0	0 Up Broadcast Loopback Multicast
ixgbe1.0	5	0	0 Up Broadcast Multicast
ixgbe0.0	4	0	0 Up Broadcast Multicast
et-5/0/5.32767	72	0	0 Up Broadcast Multicast
et-5/0/5.0	68	0	0 Up Broadcast Multicast
et-5/0/0.32767	67	0	0 Up Broadcast Multicast
et-5/0/0.0	71	0	0 Up Broadcast Multicast
em0.0	3	0	0 Up Broadcast Multicast

show interfaces statistics

Syntax `show interfaces statistics interface-name`
 `<detail>`

Release Information Command introduced before Junos OS Release 7.4.
 Command introduced in Junos OS Release 12.1 for PTX Series Packet Transport Switches..

Description Display static interface statistics, such as errors.



.....
NOTE: When the `show interfaces statistics` command is executed on an interface that is configured on T4000 Type 5 FPC, the *IPv6 transit statistics* field displays:

- Total statistics (sum of transit and local statistics) at the physical interface level
 - Transit statistics at the logical interface level
-

Options *interface-name*—Name of an interface.
 detail—(Optional) Display detail output.

Required Privilege Level view

Related Documentation • [clear interfaces statistics](#)

List of Sample Output [show interfaces statistics \(Fast Ethernet\) on page 485](#)
 [show interfaces statistics \(Gigabit Ethernet PIC—Egress\) on page 485](#)
 [show interfaces statistics detail \(Aggregated Ethernet\) on page 487](#)
 [show interfaces statistics detail \(Aggregated Ethernet—Ingress\) on page 488](#)
 [show interfaces statistics detail \(Aggregated Ethernet—Egress\) on page 489](#)
 [show interfaces statistics \(SONET/SDH\) on page 491](#)
 [show interfaces statistics \(Aggregated SONET/SDH—Ingress\) on page 492](#)
 [show interfaces statistics \(Aggregated SONET/SDH—Egress\) on page 493](#)
 [show interfaces statistics \(PTX Series Packet Transport Switches\) on page 494](#)

Output Fields Output from both the `show interfaces interface-name detail` and the `show interfaces interface-name extensive` commands include all the information displayed in the output from the `show interfaces statistics` command. For more information, see the particular interface type in which you are interested. For information about destination class and source class statistics, see the “Destination Class Field” section and the “Source Class Field” section under Common Output Fields Description. For information about the input errors and output errors, see Fast Ethernet and Gigabit Ethernet Counters.

Sample Output

```

show interfaces statistics (Fast Ethernet)
user@host> show interfaces fe-1/3/1 statistics
Physical interface: fe-1/3/1, Enabled, Physical link is Up
Interface index: 144, SNMP ifIndex: 1042
Description: ford fe-1/3/1
Link-level type: Ethernet, MTU: 1514, Speed: 100mbps, Loopback: Disabled,
Source filtering: Disabled, Flow control: Enabled
Device flags : Present Running
Interface flags: SNMP-Traps Internal: 0x4000
CoS queues : 4 supported, 4 maximum usable queues
Current address: 00:90:69:93:04:dc, Hardware address: 00:90:69:93:04:dc
Last flapped : 2006-04-18 03:08:59 PDT (00:01:24 ago)
Statistics last cleared: Never
Input rate : 0 bps (0 pps)
Output rate : 0 bps (0 pps)
Input errors: 0, Output errors: 0
Active alarms : None
Active defects : None
Logical interface fe-1/3/1.0 (Index 69) (SNMP ifIndex 50)
Flags: SNMP-Traps Encapsulation: ENET2
Protocol inet, MTU: 1500
Flags: Is-Primary, DCU, SCU-in

          Packets          Bytes
Destination class (packet-per-second) (bits-per-second)
          silver1          0          0
          (          0) (          0)
          silver2          0          0
          (          0) (          0)
          silver3          0          0
          (          0) (          0)
Addresses, Flags: Is-Default Is-Preferred Is-Primary
Destination: 10.27.245/24, Local: 10.27.245.2,
Broadcast: 10.27.245.255
Protocol iso, MTU: 1497
Flags: Is-Primary

show interfaces statistics (Gigabit Ethernet PIC—Egress)
user@host> show interfaces ge-5/2/0 statistics detail
Physical interface: ge-5/2/0, Enabled, Physical link is Up
Interface index: 146, SNMP ifIndex: 519, Generation: 149
Link-level type: Ethernet, MTU: 1514, Speed: 1000mbps, BPDU Error: None,
MAC-REWRITE Error: None, Loopback: Disabled,
Source filtering: Disabled, Flow control: Enabled, Auto-negotiation: Enabled,
Remote fault: Online
Device flags : Present Running
Interface flags: SNMP-Traps Internal: 0x4000
Link flags : None
CoS queues : 8 supported, 8 maximum usable queues
Hold-times : Up 0 ms, Down 0 ms
Current address: 00:1d:b5:61:d9:74, Hardware address: 00:1d:b5:61:d9:74
Last flapped : 2009-11-11 11:24:00 PST (09:23:08 ago)
Statistics last cleared: 2009-11-11 17:50:58 PST (02:56:10 ago)
Traffic statistics:
Input bytes : 271524 0 bps
Output bytes : 37769598 352 bps
Input packets: 3664 0 pps
Output packets: 885790 0 pps
IPv6 transit statistics:
Input bytes : 0
Output bytes : 16681118

```

```

Input packets:          0
Output packets:        362633
Multicast statistics:
  IPV4 multicast statistics:
    Input bytes :          112048          0 bps
    Output bytes :        20779920          0 bps
    Input packets:         1801          0 pps
    Output packets:       519498          0 pps
  IPV6 multicast statistics:
    Input bytes :          156500          0 bps
    Output bytes :       16681118          0 bps
    Input packets:         1818          0 pps
    Output packets:       362633          0 pps
Input errors:
  Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Policed discards: 0, L3
incompletes: 0, L2 channel errors: 0,
  L2 mismatch timeouts: 0, FIFO errors: 0, Resource errors: 0
Output errors:
  Carrier transitions: 0, Errors: 0, Drops: 0, Collisions: 0, Aged packets: 0,
FIFO errors: 0, HS link CRC errors: 0, MTU errors: 0,
  Resource errors: 0
Egress queues: 8 supported, 4 in use
Queue counters:      Queued packets  Transmitted packets      Dropped packets

  0 best-effort          882558          882558          0
  1 expedited-fo           0              0              0
  2 assured-forw           0              0              0
  3 network-cont        3232          3232          0

Active alarms : None
Active defects : None

Logical interface ge-5/2/0.0 (Index 71) (SNMP ifIndex 573) (Generation 135)
Flags: SNMP-Traps 0x4000 Encapsulation: ENET2
Traffic statistics:
  Input bytes :          271524
  Output bytes :        37769598
  Input packets:         3664
  Output packets:       885790
  IPv6 transit statistics:
    Input bytes :           0
    Output bytes :       16681118
    Input packets:           0
    Output packets:       362633
  Local statistics:
    Input bytes :          271524
    Output bytes :        308560
    Input packets:         3664
    Output packets:        3659
  Transit statistics:
    Input bytes :           0          0 bps
    Output bytes :       37461038          0 bps
    Input packets:           0          0 pps
    Output packets:       882131          0 pps
  IPv6 transit statistics:
    Input bytes :           0
    Output bytes :       16681118
    Input packets:           0

```

```

Output packets:          362633
Multicast statistics:
  IPv4 multicast statistics:
    Input bytes :          112048          0 bps
    Output bytes :        20779920          0 bps
    Input packets:          1801          0 pps
    Output packets:        519498          0 pps
  IPv6 multicast statistics:
    Input bytes :          156500          0 bps
    Output bytes :        16681118          0 bps
    Input packets:          1818          0 pps
    Output packets:        362633          0 pps
Protocol inet, MTU: 1500, Generation: 151, Route table: 0
  Addresses, Flags: Is-Preferred Is-Primary
  Destination: 40.40.40.0/30, Local: 40.40.40.2, Broadcast: 40.40.40.3,
Generation: 167
Protocol inet6, MTU: 1500, Generation: 152, Route table: 0
  Addresses, Flags: Is-Preferred Is-Primary
  Destination: ::40.40.40.0/126, Local: ::40.40.40.2
Generation: 169
  Addresses, Flags: Is-Preferred
  Destination: fe80::/64, Local: fe80::21d:b5ff:fe61:d974
Protocol multiservice, MTU: Unlimited, Generation: 171
Generation: 153, Route table: 0
  Policer: Input: __default_arp_policer__

```

**show interfaces
statistics detail
(Aggregated Ethernet)**

```

user@host> show interfaces ae0 detail
Physical interface: ae0, Enabled, Physical link is Up
  Interface index: 186, SNMP ifIndex: 111, Generation: 187
  Link-level type: Ethernet, MTU: 1514, Speed: 2000mbps, Loopback: Disabled,
  Source filtering: Disabled, Flow control: Disabled, Minimum links needed: 1,
  Minimum bandwidth needed: 0
  Device flags : Present Running
  Interface flags: SNMP-Traps Internal: 0x4000
  Current address: 00:90:69:0b:2f:f0, Hardware address: 00:90:69:0b:2f:f0
  Last flapped : Never
  Statistics last cleared: 2006-12-23 03:04:16 PST (01:16:24 ago)
Traffic statistics:
  Input bytes :          28544          0 bps
  Output bytes :          39770          0 bps
  Input packets:           508          0 pps
  Output packets:          509          0 pps
  Input bytes :          IPv6 28544
  Output bytes :          IPv6 0
  Input packets:          IPv6 508
  Output packets:          IPv6 0
Input errors:
  Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Giants: 0,
  Policed discards: 0, Resource errors: 0
Output errors:
  Carrier transitions: 0, Errors: 0, Drops: 0, MTU errors: 0,
  Resource errors: 0

Logical interface ae0.0 (Index 67) (SNMP ifIndex 139) (Generation 145)
  Flags: SNMP-Traps Encapsulation: ENET2
  Statistics
  Packets      pps      Bytes      bps
Bundle:
  Input :      508      0      28544      0
  Output:      509      0      35698      0
Link:

```

```

ge-3/3/8.0
  Input :          508          0          28544          0
  Output:          0          0           0          0
ge-3/3/9.0
  Input :          0          0           0          0
  Output:          0          0           0          0
Marker Statistics:  Marker Rx      Resp Tx      Unknown Rx      Illegal Rx
ge-3/3/8.0          0          0          0          0
ge-3/3/9.0          0          0          0          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

Protocol inet, MTU: 1500, Generation: 166, Route table: 0
Flags: None
Addresses, Flags: Is-Preferred Is-Primary
Destination: 10.1.1/24, Local: 10.1.1.1, Broadcast: 10.1.1.255,
Generation: 159
Protocol inet6, MTU: 1500, Generation: 163, Route table: 0
Flags: Is-Primary
Addresses, Flags: Is-Preferred
Destination: fe80::/64, Local: fe80::206:5bff:fe05:c321,
Broadcast: Unspecified, Generation: 161

```

```

show interfaces user@host> show interfaces statistics detail ae0 | no-more
statistics detail Physical interface: ae0, Enabled, Physical link is Up
(Aggregated Ethernet Ingress) Interface index: 128, SNMP ifIndex: 504, Generation: 278
Link-level type: Ethernet, MTU: 1514, Speed: 1Gbps, BPDU Error: None, MAC-REWRITE
Error: None, Loopback: Disabled,
Source filtering: Disabled, Flow control: Disabled, Minimum links needed: 1,
Minimum bandwidth needed: 0
Device flags   : Present Running
Interface flags: SNMP-Traps Internal: 0x4000
Current address: 00:1d:b5:61:db:f0, Hardware address: 00:1d:b5:61:db:f0
Last flapped   : 2009-11-09 03:30:23 PST (00:01:28 ago)
Statistics last cleared: 2009-11-09 03:26:18 PST (00:05:33 ago)
Traffic statistics:
Input bytes :          544009602          54761856 bps
Output bytes :           3396          0 bps
Input packets:          11826292          148809 pps
Output packets:           42          0 pps
IPv6 transit statistics:
Input bytes :          350818604
Output bytes :           0
Input packets:          7626488
Output packets:           0
Input errors:
Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Giants: 0, Policed discards:
0, Resource errors: 0
Output errors:
Carrier transitions: 0, Errors: 0, Drops: 0, MTU errors: 0, Resource errors:
0
Ingress queues: 8 supported, 4 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

Egress queues: 8 supported, 4 in use

Queue counters:	Queued packets	Transmitted packets	Dropped packets
0 best-effort	21	21	0
1 expedited-fo	0	0	0
2 assured-forw	0	0	0
3 network-cont	451	451	0

Logical interface ae0.0 (Index 70) (SNMP ifIndex 574) (Generation 177)

Flags: SNMP-Traps 0x4000 Encapsulation: ENET2

Statistics	Packets	pps	Bytes	bps
Bundle:				
Input :	11826292	148809	544009602	54761856
Output:	42	0	3396	0

Link:

ge-5/2/0.0

Input :	11826292	148809	544009602	54761856
Output:	42	0	3396	0

Marker Statistics:	Marker Rx	Resp Tx	Unknown Rx	Illegal Rx
ge-5/2/0.0	0	0	0	0

Protocol inet, MTU: 1500, Generation: 236, Route table: 0

Addresses, Flags: Is-Preferred Is-Primary

Destination: 30.30.30.0/30, Local: 30.30.30.2, Broadcast: 30.30.30.3,

Generation: 310

Protocol inet6, MTU: 1500, Generation: 237, Route table: 0

Addresses, Flags: Is-Preferred Is-Primary

Destination: ::30.30.30.0/126, Local: ::30.30.30.2

Generation: 312

Addresses, Flags: Is-Preferred

Destination: fe80::/64, Local: fe80::21d:b5ff:fe61:dbf0

Protocol multiservice, MTU: Unlimited, Generation: 314

Generation: 238, Route table: 0

Policer: Input: __default_arp_policer__

show interfaces
statistics detail
(Aggregated Ethernet Egress)

user@host> **show interfaces statistics detail ae0 | no-more**

Physical interface: ae0, Enabled, Physical link is Up

Interface index: 128, SNMP ifIndex: 501, Generation: 319

Link-level type: Ethernet, MTU: 1514, Speed: 1Gbps, BPDU Error: None, MAC-REWRITE

Error: None, Loopback: Disabled,

Source filtering: Disabled, Flow control: Disabled, Minimum links needed: 1,
Minimum bandwidth needed: 0

Device flags : Present Running

Interface flags: SNMP-Traps Internal: 0x4000

Current address: 00:1f:12:c2:37:f0, Hardware address: 00:1f:12:c2:37:f0

Last flapped : 2009-11-09 03:30:24 PST (00:02:42 ago)

Statistics last cleared: 2009-11-09 03:26:42 PST (00:06:24 ago)

Traffic statistics:

Input bytes : 440 0 bps

```

Output bytes :          1047338120          54635848 bps
Input packets:           7              0 pps
Output packets:        22768200          148466 pps
IPv6 transit statistics:
  Input bytes :          288
  Output bytes :        723202616
  Input packets:         4
  Output packets:       15721796
Input errors:
  Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Giants: 0, Policed discards:
0, Resource errors: 0
Output errors:
  Carrier transitions: 0, Errors: 0, Drops: 0, MTU errors: 0, Resource errors:
0
Ingress queues: 8 supported, 4 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

Egress queues: 8 supported, 4 in use
Queue counters:      Queued packets  Transmitted packets      Dropped packets

  0 best-effort        201985796          201985796          0
  1 expedited-fo              0              0              0
  2 assured-forw              0              0              0
  3 network-cont         65              65              0

Logical interface ae0.0 (Index 72) (SNMP ifIndex 505) (Generation 204)
Flags: SNMP-Traps 0x4000 Encapsulation: ENET2
Statistics      Packets      pps      Bytes      bps
Bundle:
  Input :          7          0          440          0
  Output:        22768200    148466    1047338120    54635848
Link:
  ge-2/1/6.0
  Input :          7          0          440          0
  Output:        22768200    148466    1047338120    54635848
Marker Statistics:  Marker Rx      Resp Tx  Unknown Rx  Illegal Rx
ge-2/1/6.0          0              0          0              0
Protocol inet, MTU: 1500, Generation: 291, Route table: 0
  Addresses, Flags: Is-Preferred Is-Primary
    Destination: 30.30.30.0/30, Local: 30.30.30.1, Broadcast: 30.30.30.3,
Generation: 420
  Protocol inet6, MTU: 1500, Generation: 292, Route table: 0
    Addresses, Flags: Is-Preferred Is-Primary
      Destination: ::/26, Local: ::30.30.30.1
Generation: 422
    Addresses, Flags: Is-Preferred
      Destination: fe80::/64, Local: fe80::21f:12ff:fec2:37f0
Protocol multiservice, MTU: Unlimited, Generation: 424

```

```

Generation: 293, Route table: 0
Policer: Input: __default_arp_policer__

show interfaces statistics detail so-3/0/0 | no-more
statistics (SONET/SDH)
user@host> show interfaces statistics detail so-3/0/0 | no-more
Physical interface: so-3/0/0, Enabled, Physical link is Up
Interface index: 133, SNMP ifIndex: 538, Generation: 283
Link-level type: PPP, MTU: 4474, Clocking: Internal, SONET mode, Speed: OC192,
Loopback: None, FCS: 16, Payload scrambler: Enabled
Device flags : Present Running
Interface flags: Point-To-Point SNMP-Traps Internal: 0x4000
Link flags : Keepalives
Hold-times : Up 0 ms, Down 0 ms
Keepalive settings: Interval 10 seconds, Up-count 1, Down-count 3
Keepalive statistics:
Input : 13 (last seen 00:00:04 ago)
Output: 14 (last sent 00:00:02 ago)
LCP state: Opened
NCP state: inet: Opened, inet6: Opened, iso: Not-configured, mpls: Not-configured

CHAP state: Closed
PAP state: Closed
CoS queues : 8 supported, 8 maximum usable queues
Last flapped : 2009-11-09 02:52:34 PST (01:12:39 ago)
Statistics last cleared: 2009-11-09 03:58:54 PST (00:06:19 ago)
Traffic statistics:
Input bytes : 2559160294 54761720 bps
Output bytes : 10640 48 bps
Input packets: 55633975 148809 pps
Output packets: 216 0 pps
IPv6 transit statistics:
Input bytes : 647922328
Output bytes : 0
Input packets: 14085269
Output packets: 0
Input errors:
Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Giants: 0, Bucket drops:
0, Policed discards: 0, L3 incompletes: 0,
L2 channel errors: 0, L2 mismatch timeouts: 0, HS link CRC errors: 0, HS link
FIFO overflows: 0
Output errors:
Carrier transitions: 0, Errors: 0, Drops: 0, Aged packets: 0, HS link FIFO
underflows: 0, MTU errors: 0
Egress queues: 8 supported, 4 in use
Queue counters: Queued packets Transmitted packets Dropped packets

0 best-effort 4 4 0
1 expedited-fo 0 0 0
2 assured-forw 0 0 0
3 network-cont 213 213 0

SONET alarms : None
SONET defects : None

Logical interface so-3/0/0.0 (Index 72) (SNMP ifIndex 578) (Generation 182)
Flags: Point-To-Point SNMP-Traps 0x4000 Encapsulation: PPP
Protocol inet, MTU: 4470, Generation: 244, Route table: 0
Addresses, Flags: Is-Preferred Is-Primary
Destination: 30.30.30.0/30, Local: 30.30.30.2, Broadcast: 30.30.30.3,

```

```

Generation: 322
  Protocol inet6, MTU: 4470, Generation: 245, Route table: 0
  Addresses, Flags: Is-Preferred Is-Primary
    Destination: ::30.30.30.0/126, Local: ::30.30.30.2
  Generation: 324
    Addresses, Flags: Is-Preferred
    Destination: fe80::/64, Local: fe80::2a0:a5ff:fe61:9264
  Generation: 326

show interfaces statistics (Aggregated SONET/SDH—Ingress)
user@host> show interfaces statistics detail as0 | no-more
Physical interface: as0, Enabled, Physical link is Up
  Interface index: 132, SNMP ifIndex: 534, Generation: 282
  Link-level type: PPP, MTU: 4474, Speed: OC192, Minimum links needed: 1, Minimum
  bandwidth needed: 0
  Device flags   : Present Running
  Interface flags: SNMP-Traps Internal: 0x4000
  Link flags     : Keepalives
  Keepalive settings: Interval 10 seconds, Up-count 1, Down-count 3
  Last flapped   : 2009-11-09 03:45:53 PST (00:09:38 ago)
  Statistics last cleared: 2009-11-09 03:48:17 PST (00:07:14 ago)
  Traffic statistics:
    Input bytes :          2969786332          54761688 bps
    Output bytes :           11601           0 bps
    Input packets:          64560636          148808 pps
    Output packets:           225           0 pps
  IPv6 transit statistics:
    Input bytes :       2086013152
    Output bytes :           0
    Input packets:       45348114
    Output packets:           0
  Input errors:
    Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Giants: 0, Policed discards:
    0, Resource errors: 0
  Output errors:
    Carrier transitions: 0, Errors: 0, Drops: 0, MTU errors: 0, Resource errors:
    0
  Egress queues: 8 supported, 4 in use
  Queue counters:
    Queued packets  Transmitted packets  Dropped packets

    0 best-effort          3              3              0

    1 expedited-fo          0              0              0

    2 assured-forw          0              0              0

    3 network-cont        222             222             0

Logical interface as0.0 (Index 71) (SNMP ifIndex 576) (Generation 179)
  Flags: Point-To-Point SNMP-Traps 0x4000 Encapsulation: PPP
  Statistics
    Packets      pps      Bytes      bps
  Bundle:
    Input :      64560550    148808    2969785300    54761688
    Output:       139         0         10344         0
  Link:
    so-3/0/0.0
    Input :      64560550    148808    2969785300    54761688
    Output:       139         0         10344         0
  Protocol inet, MTU: 4470, Generation: 240, Route table: 0
  Addresses, Flags: Is-Preferred Is-Primary
    Destination: 30.30.30.0/30, Local: 30.30.30.2, Broadcast: 30.30.30.3,

```

```

Generation: 316
  Protocol inet6, MTU: 4470, Generation: 241, Route table: 0
    Addresses, Flags: Is-Preferred Is-Primary
      Destination: ::30.30.30.0/126, Local: ::30.30.30.2
Generation: 318
  Addresses, Flags: Is-Preferred
    Destination: fe80::/64, Local: fe80::2a0:a5ff:fe61:9264
Generation: 320

show interfaces statistics (Aggregated SONET/SDH—Egress)
user@host> show interfaces statistics detail as0 | no-more
Physical interface: as0, Enabled, Physical link is Up
  Interface index: 132, SNMP ifIndex: 565, Generation: 323
  Link-level type: PPP, MTU: 4474, Speed: 0C192, Minimum links needed: 1, Minimum
  bandwidth needed: 0
  Device flags   : Present Running
  Interface flags: SNMP-Traps Internal: 0x4000
  Link flags     : Keepalives
  Keepalive settings: Interval 10 seconds, Up-count 1, Down-count 3
  Last flapped   : 2009-11-09 03:43:37 PST (00:12:48 ago)
  Statistics last cleared: 2009-11-09 03:48:54 PST (00:07:31 ago)
  Traffic statistics:
    Input bytes :          11198          392 bps
    Output bytes :       3101452132       54783448 bps
    Input packets:           234           0 pps
    Output packets:      67422937      148868 pps
  IPv6 transit statistics:
    Input bytes :          5780
    Output bytes :      2171015678
    Input packets:           72
    Output packets:      47195993
  Input errors:
    Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Giants: 0, Policed discards:
    0, Resource errors: 0
  Output errors:
    Carrier transitions: 0, Errors: 0, Drops: 0, MTU errors: 0, Resource errors:
    0
  Egress queues: 8 supported, 4 in use
  Queue counters:
    Queued packets  Transmitted packets  Dropped packets

    0 best-effort          67422830          67422830          0

    1 expedited-fo          0              0              0

    2 assured-forw          0              0              0

    3 network-cont          90             90             0

Logical interface as0.0 (Index 71) (SNMP ifIndex 548) (Generation 206)
  Flags: Point-To-Point SNMP-Traps 0x4000 Encapsulation: PPP
  Statistics
    Packets      pps      Bytes      bps
  Bundle:
    Input :      144        0      10118      392
    Output: 67422847 148868 3101450962 54783448
  Link:
    so-0/1/0.0
    Input :      144        0      10118      392
    Output: 67422847 148868 3101450962 54783448
  Protocol inet, MTU: 4470, Generation: 295, Route table: 0
    Addresses, Flags: Is-Preferred Is-Primary
      Destination: 30.30.30.0/30, Local: 30.30.30.1, Broadcast: 30.30.30.3,

```

```
Generation: 426
  Protocol inet6, MTU: 4470, Generation: 296, Route table: 0
    Addresses, Flags: Is-Preferred Is-Primary
      Destination: ::/26, Local: ::30.30.30.1
    Generation: 428
      Addresses, Flags: Is-Preferred
        Destination: fe80::/64, Local: fe80::2a0:a5ff:fe63:1d0a
    Generation: 429

show interfaces statistics em0
statistics (PTX Series Packet Transport Switches)
user@host> show interfaces statistics em0
Physical interface: em0, Enabled, Physical link is Up
  Interface index: 8, SNMP ifIndex: 0
  Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Speed: 1000mbps
  Device flags   : Present Running
  Interface flags: SNMP-Traps
  Link type      : Full-Duplex
  Current address: 00:80:f9:25:00:1b, Hardware address: 00:80:f9:25:00:1b
  Last flapped   : Never
  Statistics last cleared: Never
Input packets : 212620
Output packets: 71
  Input errors: 0, Output errors: 0

  Logical interface em0.0 (Index 3) (SNMP ifIndex 0)
  Flags: SNMP-Traps Encapsulation: ENET2
  Input packets : 212590
  Output packets: 71
  Protocol inet, MTU: 1500
  Flags: Is-Primary
  Addresses, Flags: Is-Default Is-Preferred Is-Primary
    Destination: 192.168.3/24, Local: 192.168.3.30,
    Broadcast: 192.168.3.255
```

show interfaces terse

Syntax	show interfaces terse
Release Information	Command introduced before Junos OS Release 7.4. Command introduced on PTX Series Packet Transport Switches for Junos OS Release 12.1.
Description	Display summary information about interfaces.
Options	This command has no options.
Additional Information	Interfaces are always displayed in numerical order, from the lowest to the highest FPC slot number. Within that slot, the lowest PIC slot is shown first. On an individual PIC, the lowest port number is always first.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> Examples: Configuring Logical System Interfaces
List of Sample Output	show interfaces terse on page 495 show interfaces terse (TX Matrix Plus Router) on page 496 show interfaces terse (PTX Series Packet Transport Switches) on page 497
Output Fields	Table 47 on page 495 lists the output fields for the show interfaces terse command. Output fields are listed in the approximate order in which they appear.

Table 47: show interfaces terse Output Fields

Field Name	Field Description
Interface	Interface name.
Admin	Whether the interface is turned on (up) or off (down).
Link	Link state: up or down .
Proto	Protocol family configured on the logical interface. A logical interface on a router that supports Ethernet OAM always shows the multiservice protocol.
Local	Local IP address of the logical interface.
Remote	Remote IP address of the logical interface.

Sample Output

```
show interfaces terse user@host> show interfaces terse
```

Interface	Admin	Link	Proto	Local	Remote
t1-0/1/0:0	up	up			
t1-0/1/0:0.0	up	up	inet	192.168.220.18/30	
t1-0/1/0:1	up	up			
t1-0/1/0:2	up	up			
t1-0/1/0:3	up	up			
at-1/0/0	up	up			
at-1/0/1	up	up			
dsc	up	up			
fxp0	up	up			
fxp0.0	up	up	inet	192.168.71.249/21	
fxp1	up	up			
fxp1.0	up	up	inet tnp	10.0.0.4/8 4	
gre	up	up			
ipip	up	up			
lo0	up	up			
lo0.0	up	up	inet	10.0.1.4 127.0.0.1	--> 0/0 --> 0/0
lo0.16385	up	up	inet		
lsi	up	up			
mtun	up	up			

show interfaces terse user@host> show interfaces terse

(TX Matrix Plus
Router)

Interface	Admin	Link	Proto	Local	Remote
xe-0/0/0	up	up			
xe-0/0/1	up	up			
xe-0/0/2	up	up			
xe-0/0/3	up	up			
xe-6/0/0	up	up			
xe-6/0/1	up	up			
xe-6/0/2	up	up			
xe-6/0/3	up	up			
xe-6/1/0	up	up			
xe-6/1/1	up	up			
xe-6/1/2	up	up			
xe-6/1/3	up	up			
so-0/0/0	up	up			
so-0/0/0.0	up	up	inet	1.1.1.1/30	
ge-1/3/0.0	up	up	inet	--> 0/0	
ge-7/0/0	up	up			
ge-7/0/0.0	up	up	inet	2.15.1.1/30	
ge-7/0/0.1	up	up	inet	2.15.1.5/30	
ge-7/0/0.2	up	up	inet	2.15.1.9/30	
ge-7/0/0.3	up	up	inet	2.15.1.13/30	
ge-7/0/0.4	up	up	inet	2.15.1.17/30	
ge-7/0/0.5	up	up	inet	2.15.1.21/30	
...					
em0	up	up			
em0.0	up	up	inet	192.168.178.11/25	
gre	up	up			
ipip	up	up			
ixgbe0	up	up			
ixgbe0.0	up	up	inet	10.34.0.4/8 162.0.0.4/2 fe80::200:ff:fe22:4/64 fec0::a:22:0:4/64 0x22000004	


```
ixgbe1          up    up
ixgbe1.0        up    up    inet    10.34.0.4/8
                                   162.0.0.4/2
                                   inet6   fe80::200:1ff:fe22:4/64
                                   fec0::a:22:0:4/64
                                   tnp      0x22000004
```

show interfaces terse
(PTX Series Packet
Transport Switches)

user@host> show interfaces em0 terse

Interface	Admin	Link	Proto	Local	Remote
em0	up	up			
em0.0	up	up	inet	192.168.3.30/24	

PART 4

Troubleshooting

- [Troubleshooting Procedures on page 501](#)

CHAPTER 13

Troubleshooting Procedures

show chassis alarms

Syntax	show chassis alarms
Syntax (TX Matrix Router)	show chassis alarms <lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show chassis alarms <lcc <i>number</i> sfc <i>number</i> >
Syntax (MX Series Router)	show chassis alarms <all-members> <local> <member <i>member-id</i> >
Syntax (QFX Series)	show chassis alarms <interconnect-device <i>name</i> > <node-device <i>name</i> >
Syntax (PTX Series Packet Transport Switches)	show chassis alarms
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 the TX Matrix Plus router 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 12.1 for the PTX Series Packet Transport Switches.
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 <i>name</i> —(QFabric switches only) (Optional) Display information about alarm conditions for the Interconnect device. lcc <i>number</i> — (TX Matrix and TX Matrix Plus routers only) (Optional) On the TX Matrix router, show information about a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On the TX Matrix Plus router, show information about a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3. 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* with a value of 0 or 1.

node-device *name*—(QFabric switches only) (Optional) Display information about alarm conditions for the Node device.

scc—(TX Matrix router only) (Optional) Show information about the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus router only) (Optional) Show information about the TX Matrix Plus router (or switch-fabric chassis). Replace *number* with 0.

Additional Information You cannot clear the alarms for chassis components. Instead, you must remedy the cause of the alarm. When a chassis alarm 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.

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 sonic clock generator (SCG) that is offline or absent.

Required Privilege Level view

Related Documentation

- [Configuring an Alarm Entry and Its Attributes](#)
- [Chassis Conditions That Trigger Alarms](#)

List of Sample Output

- [show chassis alarms \(Alarms Active\) on page 504](#)
- [show chassis alarms \(No Alarms Active\) on page 504](#)
- [show chassis alarms \(Fan Tray\) on page 504](#)
- [show chassis alarms \(T4000 Router\) on page 504](#)
- [show chassis alarms \(Unreachable Destinations Present on a T Series Router\) on page 504](#)
- [show chassis alarms \(FPC Offline Due to Unreachable Destinations on a T Series Router\) on page 505](#)
- [show chassis alarms \(SCG Absent on a T Series Router\) on page 505](#)
- [show chassis alarms \(Alarms Active on a TX Matrix Router\) on page 505](#)
- [show chassis alarms \(Backup Routing Engine\) on page 506](#)
- [show chassis alarms \(Alarms Active on the QFX Series\) on page 506](#)

[show chassis alarms node-device \(Alarms Active on the QFabric Switch\) on page 506](#)
[show chassis alarms \(Alarms Active on the QFabric Switch\) on page 506](#)
[show chassis alarms \(Alarms Active on an EX8200 Switch\) on page 506](#)
[show chassis alarms \(Alarms Active on a PTX5000 Packet Transport Switch\) on page 507](#)

Output Fields Table 48 on page 130 lists the output fields for the **show chassis alarms** command. Output fields are listed in the approximate order in which they appear.

Table 48: 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      user@host> show chassis alarms
(Alarms Active)        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      user@host> show chassis alarms
(No Alarms Active)      No alarms are currently active

show chassis alarms      user@host> show chassis alarms
(Fan Tray)              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      user@host> show chassis alarms
(T4000 Router)         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      user@host> show chassis alarms
(Unreachable)         10 alarms currently active
                          Alarm time      Class  Description

```



```

Destinations Present 2011-08-30 18:43:53 PDT Major FPC 7 has unreachable destinations
on a T Series Router) 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 user@host> show chassis alarms
(FPC Offline Due to 10 alarms currently active
Unreachable          Alarm time      Class  Description
Destinations on a T 2011-08-30 18:43:53 PDT Major FPC 7 offline due to unreachable destinations
Series Router)      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 user@host> show chassis alarms
(SCG Absent on a T 4 alarms currently active
Series Router)      Alarm time      Class  Description
2011-01-23 21:42:46 PST Major SCG 0 NO EXT CLK MEAS-BKUP SCG ABS

```

```

show chassis alarms user@host> show chassis alarms
(Alarms Active on a TX scc-re0:
Matrix Router) -----
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 (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 (Alarms Active on the QFX Series) 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 Switch) user@switch> show chassis alarms node-device ED3691
node-device ED3694
3 alarms currently active
Alarm time          Class Description
2011-08-24 16:04:15 UTC Major ED3694:fte-0/1/2: Link down
2011-08-24 16:04:14 UTC Major ED3694:fte-0/1/0: Link down
2011-08-24 14:21:14 UTC Major ED3694 PEM 0 is not supported/powered

show chassis alarms (Alarms Active on the QFabric Switch) user@switch> show chassis alarms
IC-A0001:
-----
1 alarms currently active
Alarm time          Class Description
2011-08-24 16:04:15 UTC Minor Backup RE Active

ED3694:
-----
3 alarms currently active
Alarm time          Class Description
2011-08-24 16:04:15 UTC Major ED3694:fte-0/1/2: Link down
2011-08-24 16:04:14 UTC Major ED3694:fte-0/1/0: Link down
2011-08-24 14:21:14 UTC Major ED3694 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 ED3691 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
(Alarms Active on a
PTX5000 Packet
Transport Switch)

```
user@switch> 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
```


PART 5

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