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Junos<sup>®</sup> OS

# Routing Matrix with a TX Matrix Plus Router Deployment Guide

Release  
13.2



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Release 13.2

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## Documentation and Release Notes

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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

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

- TX Matrix Plus
- T4000
- T1600

## 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 *CLI User Guide*.

## Documentation Conventions

Table 1 on page xvii 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 xvii defines the text and syntax conventions used in this guide.

Table 2: Text and Syntax Conventions

Convention	Description	Examples
<b>Bold text like this</b>	Represents text that you type.	To enter configuration mode, type the <b>configure</b> command:  user@host> <b>configure</b>
Fixed-width text like this	Represents output that appears on the terminal screen.	user@host> <b>show chassis alarms</b> 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"> <li>Introduces or emphasizes important new terms.</li> <li>Identifies book names.</li> <li>Identifies RFC and Internet draft titles.</li> </ul>	<ul style="list-style-type: none"> <li>A policy <i>term</i> is a named structure that defines match conditions and actions.</li> <li><i>Junos OS System Basics Configuration Guide</i></li> <li>RFC 1997, <i>BGP Communities Attribute</i></li> </ul>
<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@# <b>set system domain-name</b> <i>domain-name</i>
<b>Text like this</b>	Represents names of configuration statements, commands, files, and directories; configuration hierarchy levels; or labels on routing platform components.	<ul style="list-style-type: none"> <li>To configure a stub area, include the <b>stub</b> statement at the [edit protocols ospf area area-id] hierarchy level.</li> <li>The console port is labeled <b>CONSOLE</b>.</li> </ul>
< > (angle brackets)	Enclose optional keywords or variables.	<b>stub &lt;default-metric metric&gt;;</b>
(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.	<b>broadcast   multicast</b>  <i>(string1   string2   string3)</i>
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	<b>rsvp { # Required for dynamic MPLS only</b>
[ ] (square brackets)	Enclose a variable for which you can substitute one or more values.	<b>community name members [ community-ids ]</b>
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.	
<b>GUI Conventions</b>		
<b>Bold text like this</b>	Represents graphical user interface (GUI) items you click or select.	<ul style="list-style-type: none"> <li>In the Logical Interfaces box, select <b>All Interfaces</b>.</li> <li>To cancel the configuration, click <b>Cancel</b>.</li> </ul>
> (bold right angle bracket)	Separates levels in a hierarchy of menu selections.	In the configuration editor hierarchy, select <b>Protocols&gt;Ospf</b> .

## Documentation Feedback

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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](mailto: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)

## Requesting Technical Support

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Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active J-Care or JNASC support contract, or are covered under warranty, and need post-sales technical support, you can access our tools and resources online or open a case with JTAC.

- 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.

## Self-Help Online Tools and Resources

For quick and easy problem resolution, Juniper Networks has designed an online self-service portal called the Customer Support Center (CSC) that provides you with the following features:

- Find CSC offerings: <http://www.juniper.net/customers/support/>
- 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

- [Product Overview on page 3](#)
- [System Requirements on page 25](#)
- [Glossary on page 27](#)



## CHAPTER 1

# Product Overview

- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
- [Routing Matrix with TXP-T1600 Configuration on page 5](#)
- [Routing Matrix with TXP-T1600-3D Configuration on page 7](#)
- [Routing Matrix with TXP-T4000-3D Configuration on page 8](#)
- [Overview of a Routing Matrix with TXP-Mixed-LCC-3D Configuration on page 11](#)
- [FPC Numbering for Interfaces in TXP-T1600 Configuration on page 14](#)
- [FPC Numbering for Interfaces in TXP-T1600-3D Configuration on page 16](#)
- [FPC Numbering for Interfaces in TXP-T4000-3D Configuration on page 19](#)
- [FPC Numbering for Interfaces in TXP-Mixed-LCC-3D Configuration on page 20](#)
- [Managing the Routing Matrix as a Single Router on page 21](#)
- [Redundant Host Subsystems in a Routing Matrix with a TX Matrix Plus Router on page 22](#)
- [Routing Engine Connectivity in a Routing Matrix with a TX Matrix Plus Router on page 23](#)
- [Degraded Fabric Alarms on TX Matrix Plus Router with 3D SIBs on page 24](#)

### Overview of a Routing Matrix with a TX Matrix Plus Router

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The TX Matrix Plus router is the centralized switch fabric of the routing matrix, which is a multiterabit routing system for interconnecting routers.

The routing matrix multichassis architecture provides scalable growth for aggregation and core services for voice, video, and data networks. It provides a flexible and cost-effective means to simplify large point-of-presence (POP) and central office environments. The routing matrix delivers high availability services from tunnel services, ATM, DS3, OC3/STM1, OC12/STM4, Gigabit Ethernet, 10-Gigabit Ethernet, 100-Gigabit Ethernet, OC48/STM16, OC192/STM64, and other high-speed interfaces.

The routing matrix leverages the intelligent virtual services capabilities of the Junos<sup>®</sup> operating system (Junos OS), which enables you to create multiple application-specific logical networks over a single physical topology. This gives you the ability to virtually separate traffic types that require unique network attributes—such as ATM or high-priority voice over IP (VoIP) and third-generation (3G) mobile traffic—from bulk transit IP traffic.

The router architecture cleanly separates control operations from packet forwarding operations. This design eliminates processing and traffic congestions, permitting the routing matrix to achieve terabit performance levels. Control operations in the routing matrix are performed by the host subsystem, which runs Junos OS to handle traffic engineering and configuration management. High availability, interchassis communications are provided by an Ethernet LAN that interconnects the host subsystems in the TX Matrix Plus router (also referred to as the switch-fabric chassis or the SFC) and the line-card chassis (LCC) routers.

A routing matrix based on a Juniper Networks® TX Matrix Plus router is a multichassis architecture composed of one TX Matrix Plus router and one of the following LCC configurations:

- TXP-T1600 configuration—Supports up to four interconnected Juniper Networks T1600 Core Routers.
- TXP-T1600-3D configuration—Supports up to eight interconnected Juniper Networks T1600 Core Routers.
- TXP-T4000-3D configuration—Supports up to four interconnected Juniper Networks T4000 Core Routers.
- TXP-Mixed-LCC-3D configuration—Supports the following combinations of T1600 and T4000 routers:
  - Six T1600 routers and one T4000 router
  - Four T1600 routers and two T4000 routers
  - Two T1600 routers and three T4000 routers

The TXP-T1600-3D, TXP-T4000-3D, and TXP-Mixed-LCC-3D configurations use 3D SIBs (TXP-F13-3D and TXP-F2S-3D SIBs on the SFC and TXP-LCC-3D SIB on the LCC). For more details on the hardware components used in the routing matrix with a TX Matrix Plus router, see the [TX Matrix Plus Router Hardware Guide](#).

**Related  
Documentation**

- [Routing Matrix with TXP-T1600 Configuration on page 5](#)
- [Routing Matrix with TXP-T1600-3D Configuration on page 7](#)
- [Routing Matrix with TXP-T4000-3D Configuration on page 8](#)
- [Overview of a Routing Matrix with TXP-Mixed-LCC-3D Configuration on page 11](#)
- [Example Configuration for a Routing Matrix with a TX Matrix Plus Router on page 47](#)
- [Example: Configuring a Routing Matrix with a TX Matrix Plus Router in Mixed Mode on page 70](#)



## Routing Matrix with TXP-T1600 Configuration

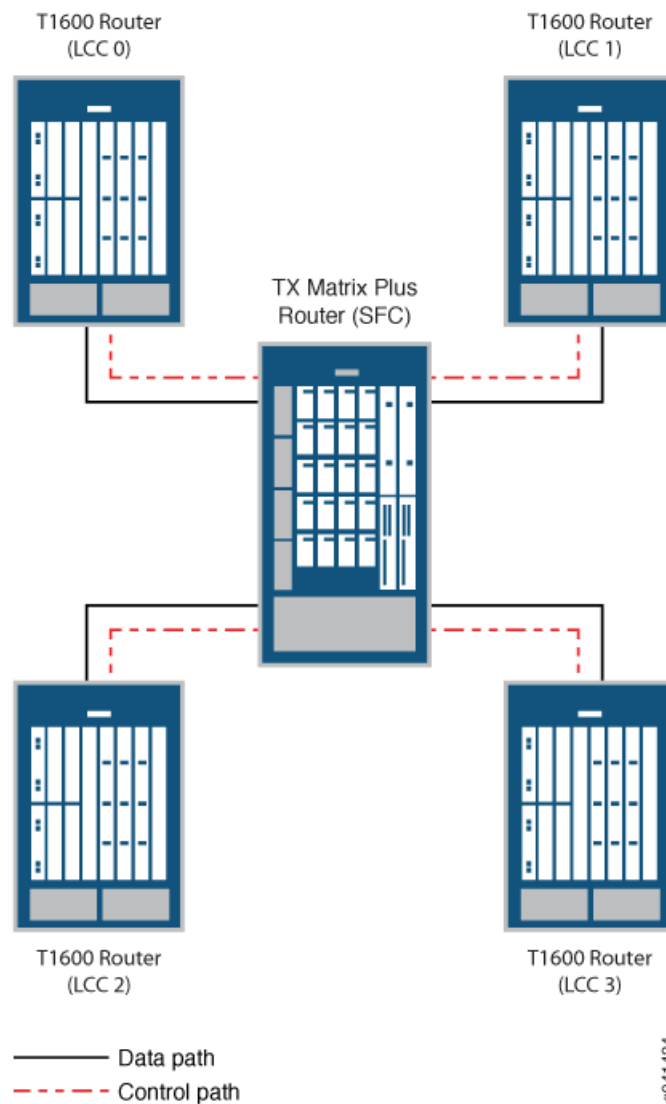
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A routing matrix with the TXP-T1600 configuration consists of two types of chassis: a Juniper Networks TX Matrix Plus Router and Juniper Networks T1600 Core Routers.

- TX Matrix Plus router—A routing matrix can contain only one Juniper Networks TX Matrix Plus router. A TX Matrix Plus router is also referred to as the *switch-fabric chassis* (SFC). In the Junos OS command-line interface (CLI), **sfc 0** is used to refer to the TX Matrix Plus router. For information about installing and connecting to a TX Matrix Plus router, see the [TX Matrix Plus Router Hardware Guide](#).
- T1600 routers—A routing matrix can contain from one to four T1600 routers, numbered from 0 through 3. A T1600 router in a routing matrix is also referred to as a *line-card chassis* (LCC). In the Junos OS CLI, **lcc 0** through **lcc 3** are used to refer to T1600 routers in a TXP-T1600 configuration. For information about connecting to a T1600 routers in a routing matrix, see the [TX Matrix Plus Router Hardware Guide](#).

In a routing matrix, the TX Matrix Plus router controls all the connected T1600 routers, as shown in [Figure 1 on page 6](#).

Figure 1: TXP-T1600 Configuration



A key element of the routing matrix design is the ability to migrate existing standalone T1600 routers and connect them with a TX Matrix Plus router through fiber-optic cables and Switch Interface Boards (SIBs).

The TX Matrix Plus router connection between the T1600 routers uses a scalable, three-stage switch fabric. This system architecture provides terabit bandwidth expansion capacity and eliminates the use of subscriber line cards to connect devices within points of presence (POPs). As a result, the primary application for the routing matrix is to collapse aggregation and core layers in large POPs and central offices.

Similarly, you can limit which portions of the routing matrix are modified during configuration or maintenance procedures (for example, performing software upgrades or halting Routing Engines).

- Related Documentation**
- [FPC Numbering for Interfaces in TXP-T1600 Configuration on page 14](#)
  - [Example Configuration for a Routing Matrix with a TX Matrix Plus Router on page 47](#)

## Routing Matrix with TXP-T1600-3D Configuration

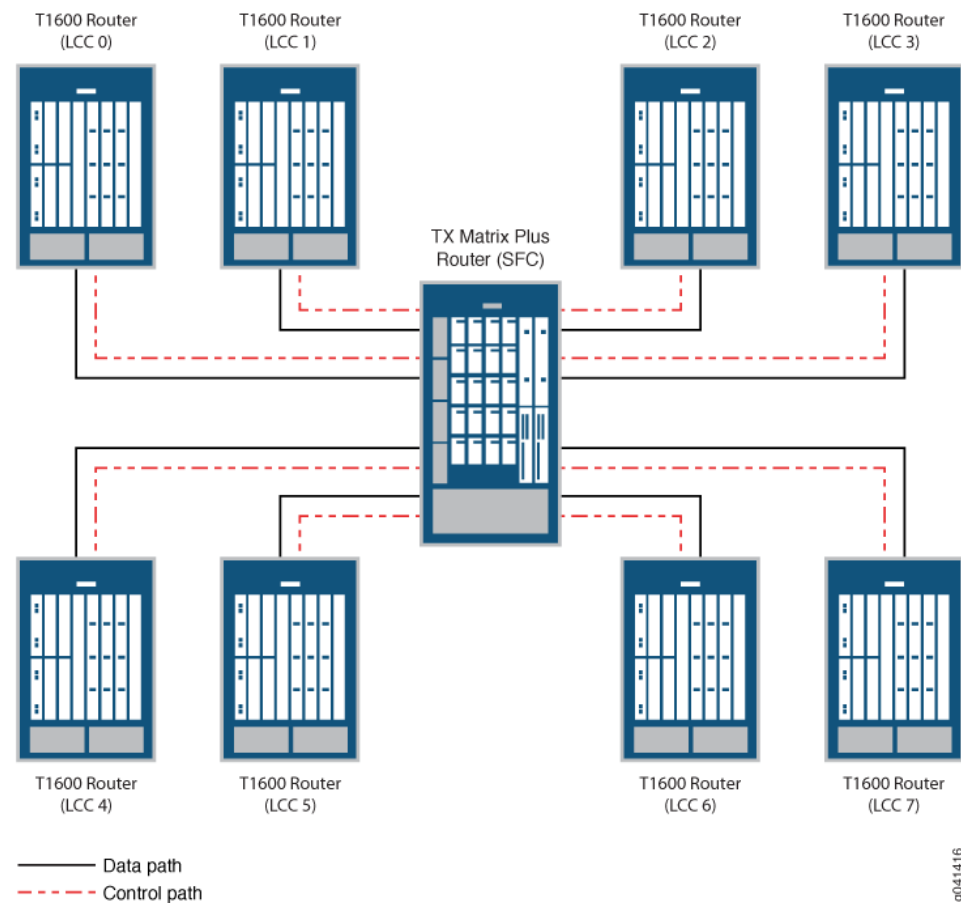
A routing matrix with the TXP-T1600-3D configuration consists of two types of chassis: a Juniper Networks TX Matrix Plus Router and Juniper Networks T1600 Core Routers.

- **TX Matrix Plus router**—A routing matrix contains only one Juniper Networks TX Matrix Plus router. In a routing matrix, a TX Matrix Plus router is also referred to as the *switch-fabric chassis* (SFC). In the Junos OS command-line interface (CLI), **sfc 0** is used to refer to the TX Matrix Plus router. For information about installing and connecting to a TX Matrix Plus router, see the [TX Matrix Plus Router Hardware Guide](#).
- **T1600 router**—In the TXP-T1600-3D configuration, a routing matrix can contain up to eight T1600 routers, numbered from 0 through 7. A T1600 router in a routing matrix is also referred to as a *line-card chassis* (LCC). In the Junos OS CLI, **lcc 0** through **lcc 7** are used to refer to T1600 routers in a TXP-T1600-3D configuration. For information about connecting a T1600 router in a routing matrix, see the [TX Matrix Plus Router Hardware Guide](#).

To enable the TXP-T1600-3D configuration in the Junos OS CLI, the LCC mode on the SFC must be set to **t1600**. By default, the LCC mode is set to **t1600**. If the mode is not the set to **t1600** (due to previous configurations), you can set the LCC mode to **t1600**, by including the **set lcc-mode lcc lcc-number mode t1600** statement at the **[edit chassis]** hierarchy level.

In a routing matrix, the TX Matrix Plus router controls all the connected T1600 routers, as shown in [Figure 2 on page 8](#).

Figure 2: TXP-T1600-3D Configuration



#### Related Documentation

- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
- [FPC Numbering for Interfaces in TXP-T1600-3D Configuration on page 16](#)
- [Example: Configuring a Routing Matrix with a TX Matrix Plus Router in Mixed Mode on page 70](#)

## Routing Matrix with TXP-T4000-3D Configuration

A routing matrix with the TXP-T4000-3D configuration consists of two types of chassis: a Juniper Networks TX Matrix Plus Router and Juniper Networks T4000 Core Routers.

- **TX Matrix Plus router**—A routing matrix contains only one Juniper Networks TX Matrix Plus router. In a routing matrix, a TX Matrix Plus router is also referred to as the *switch-fabric chassis* (SFC). In the Junos OS command-line interface (CLI), **sfc 0** is used to refer to the TX Matrix Plus router. For information about installing and connecting to a TX Matrix Plus router, see the [TX Matrix Plus Router Hardware Guide](#).
- **T4000 router**—In the TXP-T4000-3D configuration, a routing matrix can contain up to four T4000 routers that are assigned the even LCC numbers 0, 2, 4, and 6. A T4000

router in a routing matrix is also referred to as a *line-card chassis* (LCC). In the Junos OS CLI, **lcc 0**, **lcc 2**, **lcc 4**, and **lcc 6** are used to refer to T4000 routers in a TXP-T4000-3D configuration

For information about connecting a T4000 router to a routing matrix, see the [TX Matrix Plus Router Hardware Guide](#).

To enable the TXP-T4000-3D configuration in the Junos OS CLI, you must configure the LCC mode on the SFC. To configure the LCC mode, include the **set lcc-mode lcc lcc-number mode t4000** statement at the **[edit chassis]** hierarchy level. By default, the LCC mode is set to **t1600**.

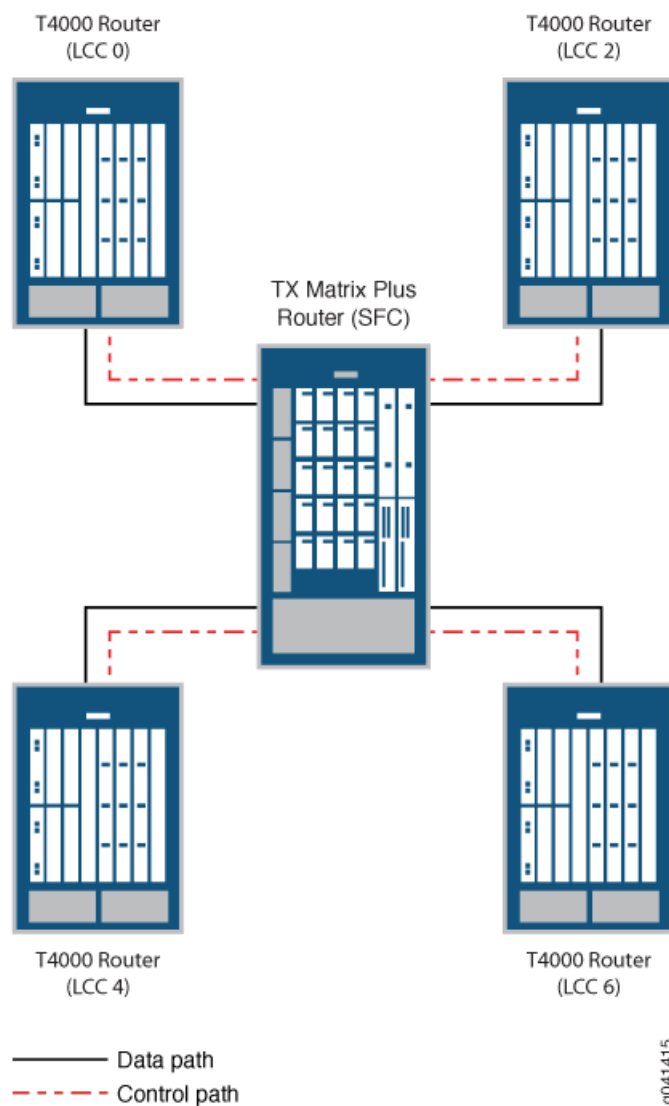


**NOTE:** When you set the LCC mode as **t4000**, you must set the next LCC (odd-numbered) mode as **empty**. For example, if you set LCC mode **t4000** on LCC 2, then you must set the LCC 3 mode as **empty**. Otherwise, the commit fails. Setting the LCC mode for an LCC as **empty** disables the control plane and data plane connections between that LCC and the SFC, so the LCC does not come online.

---

In a routing matrix, the TX Matrix Plus router controls all the connected T4000 routers, as shown in [Figure 3 on page 10](#).

Figure 3: TXP-T4000-3D Configuration



**Related Documentation**

- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
- [FPC Numbering for Interfaces in TXP-T4000-3D Configuration on page 19](#)
- [Example: Configuring a Routing Matrix with a TX Matrix Plus Router in Mixed Mode on page 70](#)

## Overview of a Routing Matrix with TXP-Mixed-LCC-3D Configuration

A routing matrix with the TXP-Mixed-LCC-3D configuration consists of three types of chassis: a Juniper Networks TX Matrix Plus Router and a combination of Juniper Networks T1600 Core Routers and Juniper Networks T4000 Core Routers.

- TX Matrix Plus router—A routing matrix contains only one Juniper Networks TX Matrix Plus router. A TX Matrix Plus router in a routing matrix is also referred to as the *switch-fabric chassis* (SFC). In the Junos OS command-line interface (CLI), **sfc 0** is used to refer to the TX Matrix Plus router. For information about installing and connecting to a TX Matrix Plus router, see the [TX Matrix Plus Router Hardware Guide](#).
- T1600 and T4000 routers—In the mixed LCC configuration, a routing matrix can comprise:
  - Six T1600 routers and one T4000 router
  - Four T1600 routers and two T4000 routers
  - Two T1600 routers and three T4000 routers

To enable the TXP-Mixed-LCC-3D configuration in the Junos OS CLI, you must configure the LCC mode on the SFC. To configure the LCC mode, include the **set lcc-mode lcc lcc-number mode (empty | t1600 | t4000)** statement at the **[edit chassis]** hierarchy level. By default, the LCC mode is set to **t1600**.

To view the configured LCC mode information, use the **show chassis lcc-mode** operational mode command.



### NOTE:

- The LCC mode **t4000** is supported only on the even-numbered LCCs—LCC 0, LCC 2, LCC 4, and LCC 6.
- When you set the LCC mode as **t4000**, you must set the next LCC (odd-numbered) mode as **empty**. For example, if you set LCC mode **t4000** on LCC 2, then you must set the LCC 3 mode as **empty**. Otherwise, the commit operation fails. Setting the LCC mode for an LCC as **empty** disables the control plane and data plane connections between that LCC and the SFC, so the LCC does not come online.
- LCC numbers in a mixed-mode configuration can be changed as long as the T4000 LCC is assigned an even number. For other valid combinations of LCCs in the mixed-mode configuration, see [Line-Card Chassis ID](#) in the [TX Matrix Plus Router Hardware Guide](#).

In a routing matrix, the TX Matrix Plus router controls all the connected T1600 and T4000 routers, as shown in [Figure 4 on page 12](#), [Figure 5 on page 13](#), and [Figure 6 on page 14](#).

Figure 4: TXP-Mixed-LCC-3D Configuration with One T4000 Router and Six T1600 Routers

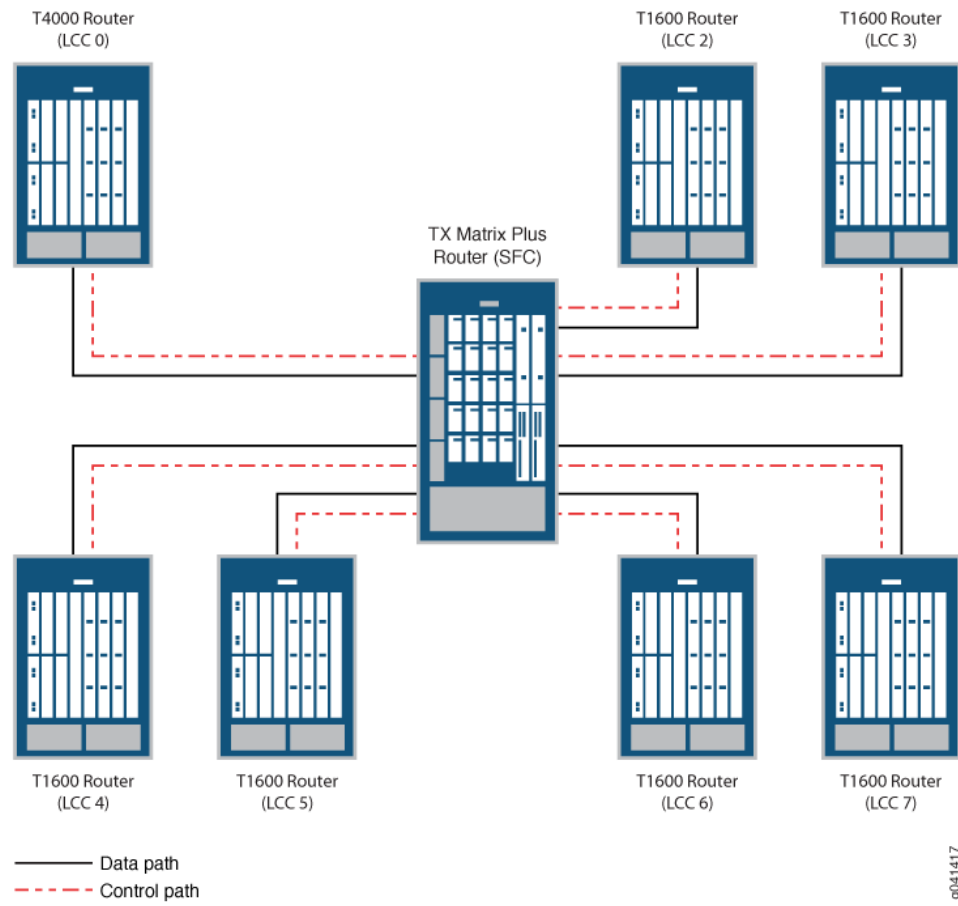
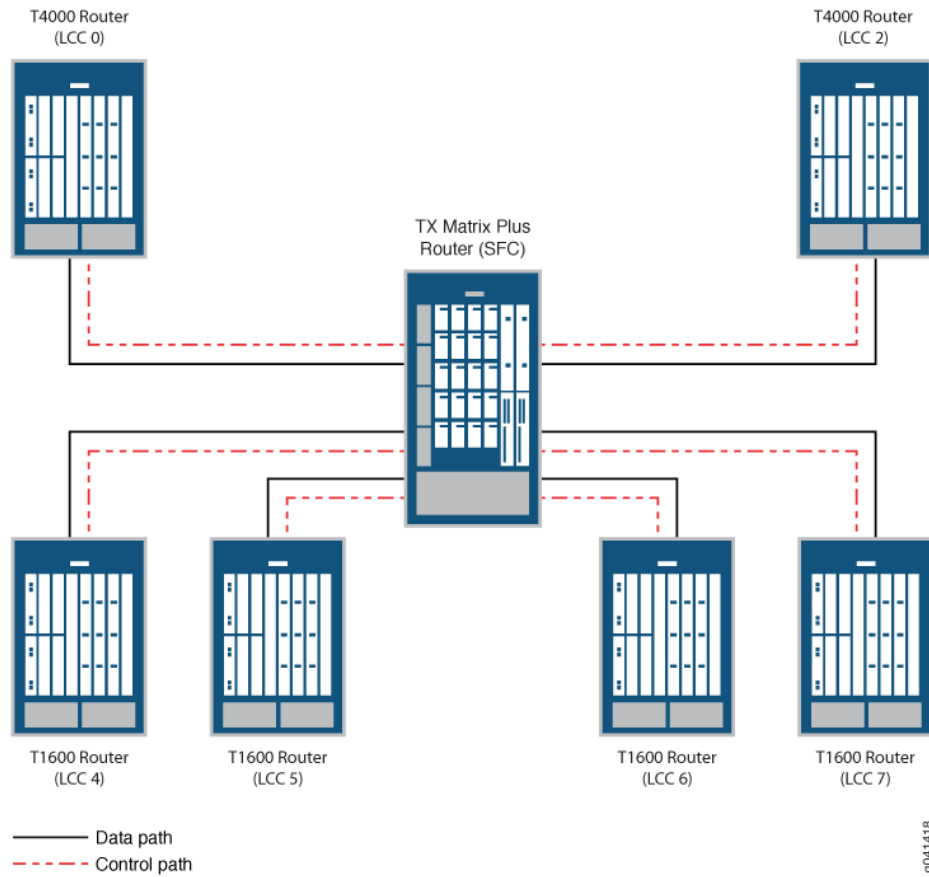
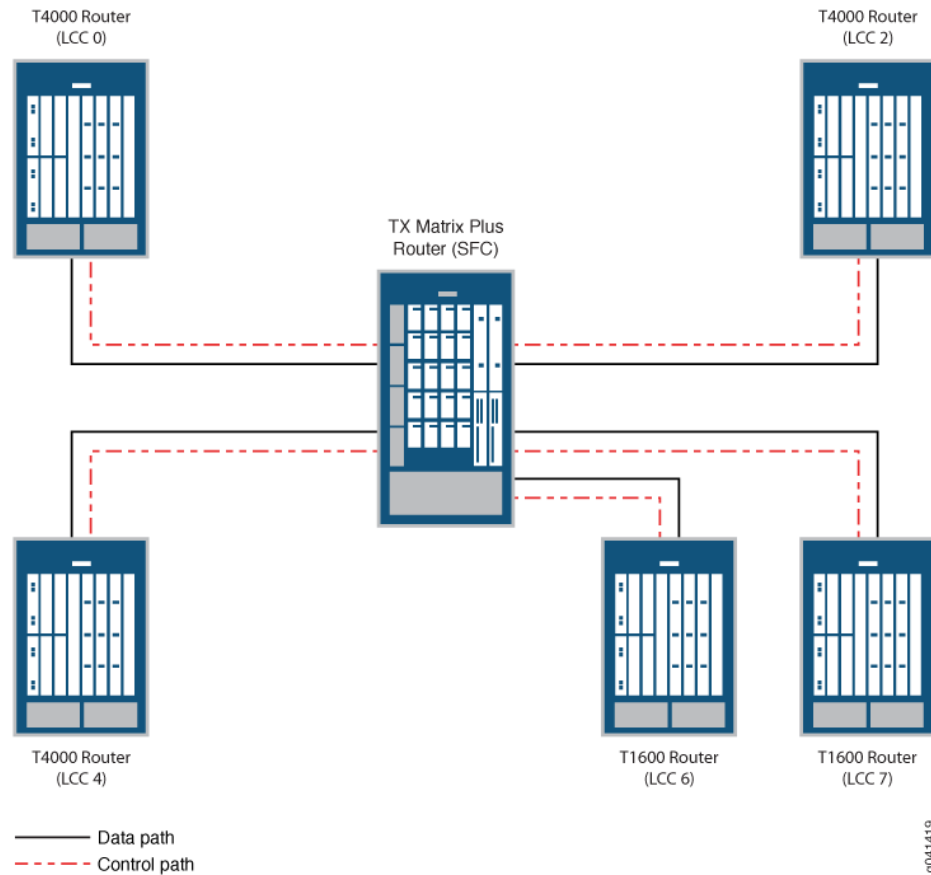




Figure 5: TXP-Mixed-LCC-3D Configuration with Two T4000 Routers and Four T1600 Routers



**Figure 6: TXP-Mixed-LCC-3D Configuration with Three T4000 Routers and Two T1600 Routers**



**Related Documentation**

- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
- [FPC Numbering for Interfaces in TXP-Mixed-LCC-3D Configuration on page 20](#)
- [Example: Configuring a Routing Matrix with a TX Matrix Plus Router in Mixed Mode on page 70](#)

## FPC Numbering for Interfaces in TXP-T1600 Configuration

A routing matrix with the TXP-T1600 configuration can consist of up to four T1600 routers (also referred to as line-card chassis), which are assigned numbers from 0 through 3 depending on the chassis ID setting. In the Junos OS CLI, **lcc 0** through **lcc 3** are used to refer to T1600 routers in a routing matrix with the TXP-T1600 configuration. Each T1600 router can contain up to eight Flexible PIC Concentrators (FPCs) in FPC hardware slots labeled 0 through 7. Therefore, in the TXP-T1600 configuration, a routing matrix with a TX Matrix Plus router can contain up to 32 FPCs.

In the Junos OS CLI, an interface name has the following format:

*type-fpc/pic/port*

When you specify the FPC number for a T1600 router in a routing matrix, Junos OS determines which T1600 router contains the specified FPC. [Table 3 on page 15](#) shows the basic correspondence between FPC hardware slot numbers (0 through 7), which are labeled on the T1600 chassis, and routing matrix FPC numbers (0 through 31), which are used in the Junos OS CLI.

**Table 3: FPC Numbering for up to Four Routers in a Routing Matrix**

T1600 Router in a Routing Matrix (TXP-T1600 Configuration)	Basic Correspondence of FPC Numbering	
	FPC Hardware Slot Numbers	Global FPC Numbers
LCC 0	0–7	0–7
LCC 1	0–7	8–15
LCC 2	0–7	16–23
LCC 3	0–7	24–31

To easily convert an FPC hardware slot number on a specific LCC (T1600 router) in a routing matrix to the corresponding global FPC number (routing matrix FPC number), use the conversion chart shown in [Table 4 on page 15](#). You can use the converted FPC number to configure the interfaces on the TX Matrix Plus router in your routing matrix.

**Table 4: FPC Numbering for up to Four T1600 Routers in a Routing Matrix Conversion Chart**

Conversion Chart for FPC Numbering									
	LCC 0								
FPC Hardware Slot Numbers	0	1	2	3	4	5	6	7	<b>Example:</b> In the interface name xe-1/0/0, the global FPC number <b>1</b> refers to the FPC hardware slot <b>1</b> in the T1600 router <b>lcc0</b> .
Global FPC Numbers	0	1	2	3	4	5	6	7	
	LCC 1								
FPC Hardware Slot Numbers	0	1	2	3	4	5	6	7	<b>Example:</b> In the interface name xe-11/2/0, the global FPC number <b>11</b> refers to the FPC hardware slot <b>3</b> in the T1600 router <b>lcc1</b> .
Global FPC Numbers	8	9	10	11	12	13	14	15	
	LCC 2								
FPC Hardware Slot Numbers	0	1	2	3	4	5	6	7	<b>Example:</b> In the interface name xe-20/0/1, the global FPC number <b>20</b> refers to the FPC hardware slot <b>4</b> in the T1600 router <b>lcc2</b> .
Global FPC Numbers	16	17	18	19	20	21	22	23	

Table 4: FPC Numbering for up to Four T1600 Routers in a Routing Matrix Conversion Chart (*continued*)

Conversion Chart for FPC Numbering									
	LCC 3								
FPC Hardware Slot Numbers	0	1	2	3	4	5	6	7	<b>Example:</b> In the interface name xe-31/1/0, the global FPC number <b>31</b> refers to the FPC hardware slot <b>7</b> in the T1600 router <b>lcc3</b> .
Global FPC Numbers	24	25	26	27	28	29	30	31	

You can use a CLI operational command to display the numbers of the connected FPCs in a routing matrix. To display the FPC numbers in both global numbering mode (from **0** through **31**, as used to specify an interface name in a routing matrix) and the associated local numbering mode (LCC number and FPC physical slot number), you can use various forms of the **show chassis location** command. For more information, see [“Displaying Chassis Physical Locations for a Routing Matrix with a TX Matrix Plus Router” on page 141](#).

#### Related Documentation

- [show chassis lccs on page 753](#)
- [FPC Numbering for Interfaces in TXP-T1600-3D Configuration on page 16](#)
- [FPC Numbering for Interfaces in TXP-T4000-3D Configuration on page 19](#)
- [FPC Numbering for Interfaces in TXP-Mixed-LCC-3D Configuration on page 20](#)

## FPC Numbering for Interfaces in TXP-T1600-3D Configuration

A routing matrix with the TXP-T1600-3D configuration can include up to eight T1600 routers (also referred to as line-card chassis), which are assigned numbers from 0 through 7, depending on the chassis ID setting. In the Junos OS CLI, **lcc 0** through **lcc 7** are used to refer to T1600 routers in a routing matrix with the TXP-T1600-3D configuration. Each T1600 router can contain up to eight Flexible PIC Concentrators (FPCs) in FPC hardware slots labeled 0 through 7. Therefore, a routing matrix with a TX Matrix Plus router in the TXP-T1600-3D configuration can contain up to 64 FPCs. For information about which FPCs are supported in the TXP-T1600-3D configuration, see the [TX Matrix Plus Router Hardware Guide](#).

In the Junos OS CLI, an interface name has the following format:

*type-fpc/pic/port*

When you specify the FPC number for a T1600 router in a routing matrix, Junos OS determines which T1600 router contains the specified FPC. [Table 5 on page 17](#) shows the basic correspondence between FPC hardware slot numbers (**0** through **7**), which are labeled on the T1600 chassis, and the global FPC numbers (**0** through **63**), which are used in the Junos OS CLI.

Table 5: FPC Numbering for up to Eight T1600 Routers in a Routing Matrix

T1600 Router in a Routing Matrix (TXP-T1600-3D Configuration)	Basic Correspondence of FPC Numbering	
	FPC Hardware Slot Numbers	Global FPC Numbers
LCC 0	0–7	0–7
LCC 1	0–7	8–15
LCC 2	0–7	16–23
LCC 3	0–7	24–31
LCC 4	0–7	32–39
LCC 5	0–7	40–47
LCC 6	0–7	48–55
LCC 7	0–7	56–63

To easily convert an FPC hardware slot number on a specific LCC (T1600 router) in a routing matrix to the corresponding global FPC number (routing matrix FPC number), use the conversion chart shown in [Table 6 on page 17](#). You can use the converted FPC number to configure the interfaces on the TX Matrix Plus router in your routing matrix.

Table 6: FPC Numbering for up to Eight T1600 Routers in a Routing Matrix — Conversion Chart

Conversion Chart for FPC Numbering									
	LCC 0								
FPC Hardware Slot Numbers	0	1	2	3	4	5	6	7	<b>Example:</b> In the interface name xe-1/0/0, the global FPC number 1 refers to the FPC hardware slot 1 in the T1600 router <b>lcc 0</b> .
Global FPC Numbers	0	1	2	3	4	5	6	7	
	LCC 1								
FPC Hardware Slot Numbers	0	1	2	3	4	5	6	7	<b>Example:</b> In the interface name xe-11/2/0, the global FPC number 11 refers to the FPC hardware slot 3 in the T1600 router <b>lcc 1</b> .
Global FPC Numbers	8	9	10	11	12	13	14	15	
	LCC 2								
FPC Hardware Slot Numbers	0	1	2	3	4	5	6	7	<b>Example:</b> In the interface name xe-20/1/0, the global FPC number 20 refers to the FPC hardware slot 4 in the T1600 router <b>lcc 2</b> .
Global FPC Numbers	16	17	18	19	20	21	22	23	

**Table 6: FPC Numbering for up to Eight T1600 Routers in a Routing Matrix — Conversion Chart** (*continued*)

Conversion Chart for FPC Numbering								
LCC 3								
FPC Hardware Slot Numbers	0	1	2	3	4	5	6	7
Global FPC Numbers	24	25	26	27	28	29	30	31
<b>Example:</b> In the interface name xe-31/1/0, the global FPC number <b>31</b> refers to the FPC hardware slot 7 in the T1600 router <b>lcc 3</b> .								
LCC 4								
FPC Hardware Slot Numbers	0	1	2	3	4	5	6	7
Global FPC Numbers	32	33	34	35	36	37	38	39
<b>Example:</b> In the interface name xe-39/1/0, the global FPC number <b>39</b> refers to the FPC hardware slot 7 in the T1600 router <b>lcc 4</b> .								
LCC 5								
FPC Hardware Slot Numbers	0	1	2	3	4	5	6	7
Global FPC Numbers	40	41	42	43	44	45	46	47
<b>Example:</b> In the interface name xe-46/0/1, the global FPC number <b>46</b> refers to the FPC hardware slot 6 in the T1600 router <b>lcc 5</b> .								
LCC 6								
FPC Hardware Slot Numbers	0	1	2	3	4	5	6	7
Global FPC Numbers	48	49	50	51	52	53	54	55
<b>Example:</b> In the interface name xe-49/1/0, the global FPC number <b>49</b> refers to the FPC hardware slot 1 in the T1600 router <b>lcc 6</b> .								
LCC 7								
FPC Hardware Slot Numbers	0	1	2	3	4	5	6	7
Global FPC Numbers	56	57	58	59	60	61	62	63
<b>Example:</b> In the interface name xe-63/1/0, the global FPC number <b>63</b> refers to the FPC hardware slot 7 in the T1600 router <b>lcc 7</b> .								

You can use a CLI operational command to display the numbers of the connected FPCs in a routing matrix. To display the FPC numbers in global numbering mode (**0** through **63**, as used to specify an interface name in a routing matrix) and the associated local numbering mode (LCC number and FPC physical slot number), you can use various forms of the **show chassis location** command. For more information, see [“Displaying Chassis Physical Locations for a Routing Matrix with a TX Matrix Plus Router”](#) on page 141.

#### Related Documentation

- [show chassis lccs on page 753](#)
- [FPC Numbering for Interfaces in TXP-T1600 Configuration on page 14](#)
- [FPC Numbering for Interfaces in TXP-Mixed-LCC-3D Configuration on page 20](#)
- [FPC Numbering for Interfaces in TXP-T4000-3D Configuration on page 19](#)

## FPC Numbering for Interfaces in TXP-T4000-3D Configuration

A routing matrix with the TXP-T4000-3D configuration can include up to four T4000 routers (line-card chassis) that are assigned even numbers (0, 2, 4, and 6). In the Junos OS CLI, **lcc 0**, **lcc 2**, **lcc 4**, and **lcc 6** are used to refer to T4000 routers in a routing matrix with the TXP-T4000-3D configuration. Each T4000 router can contain up to eight Flexible PIC Concentrators (FPCs) in FPC hardware slots labeled 0 through 7.

In the Junos OS CLI, an interface name has the following format:

*type-fpc/pic/port*

When you specify the FPC number for a T4000 router in a routing matrix, Junos OS determines which T4000 router contains the specified FPC. [Table 7 on page 19](#) shows the basic correspondence between FPC hardware slot numbers that are labeled on the T4000 chassis, and routing matrix FPC numbers that are used in the Junos OS CLI.

**Table 7: FPC Numbering for up to Four T4000 Routers in a Routing Matrix**

T4000 Router in a Routing Matrix (TXP-T4000 Configuration)	Basic Correspondence of FPC Numbering	
	FPC Hardware Slot Numbers	Global FPC Numbers
LCC 0	0–7	0–7
LCC 2	0–7	16–23
LCC 4	0–7	32–39
LCC 6	0–7	48–55

To easily convert an FPC hardware slot number in a specific LCC (T4000 router) in a routing matrix to the corresponding global FPC number (routing matrix FPC number), use the conversion chart shown in [Table 8 on page 19](#). You can use the converted FPC number to configure the interfaces on the TX Matrix Plus router in your routing matrix.

**Table 8: FPC Numbering for up to Four T4000 Routers in a Routing Matrix Conversion Chart**

Conversion Chart for FPC Numbering									
	LCC 0								
FPC Hardware Slot Numbers	0	1	2	3	4	5	6	7	<b>Example:</b> In the interface name xe-1/0/0, the global FPC number 1 refers to the FPC hardware slot 1 in the T4000 router <b>lcc 0</b> .
Global FPC Numbers	0	1	2	3	4	5	6	7	

Table 8: FPC Numbering for up to Four T4000 Routers in a Routing Matrix Conversion Chart (*continued*)

Conversion Chart for FPC Numbering									
	LCC 2								
FPC Hardware Slot Numbers	0	1	2	3	4	5	6	7	<b>Example:</b> In the interface name xe-16/2/0, the global FPC number <b>16</b> refers to the FPC hardware slot <b>0</b> in the T4000 router <b>lcc 2</b> .
Global FPC Numbers	16	17	18	19	20	21	22	23	
	LCC 4								
FPC Hardware Slot Numbers	0	1	2	3	4	5	6	7	<b>Example:</b> In the interface name xe-34/0/1, the global FPC number <b>34</b> refers to the FPC hardware slot <b>2</b> in the T4000 router <b>lcc 4</b> .
Global FPC Numbers	32	33	34	35	36	37	38	39	
	LCC 6								
FPC Hardware Slot Numbers	0	1	2	3	4	5	6	7	<b>Example:</b> In the interface name xe-54/1/0, the global FPC number <b>54</b> refers to the FPC hardware slot <b>6</b> in the T4000 router <b>lcc 6</b> .
Global FPC Numbers	48	49	50	51	52	53	54	55	

You can use a CLI operational command to display the numbers of the connected FPCs in a routing matrix. To display the FPC numbers in global numbering mode (0 through 55, as used to specify an interface name in a routing matrix) and the associated local numbering mode (LCC number and FPC physical slot number), you can use various forms of the **show chassis location** command. For more information, see [“Displaying Chassis Physical Locations for a Routing Matrix with a TX Matrix Plus Router” on page 141](#).

#### Related Documentation

- [show chassis lccs on page 753](#)
- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
- [FPC Numbering for Interfaces in TXP-T1600 Configuration on page 14](#)
- [FPC Numbering for Interfaces in TXP-T1600-3D Configuration on page 16](#)
- [FPC Numbering for Interfaces in TXP-Mixed-LCC-3D Configuration on page 20](#)

## FPC Numbering for Interfaces in TXP-Mixed-LCC-3D Configuration

A routing matrix with the TXP-Mixed-LCC-3D configuration supports the following combinations of T1600 and T4000 routers:

- Six T1600 routers and one T4000 router
- Four T1600 routers and two T4000 routers
- Two T1600 routers and three T4000 routers



In the mixed mode of operation, one T4000 line-card chassis (LCC) can be placed instead of two T1600 LCCs. The T1600 routers are assigned numbers from 0 through 7, depending on the chassis ID setting. The T4000 routers are assigned the even numbers 0, 2, 4, and 6.

The FPC numbering scheme for the TXP-Mixed-LCC-3D configuration remains the same as that used for the TXP-T1600-3D and TXP-T4000-3D configurations. For more details see, “FPC Numbering for Interfaces in TXP-T1600-3D Configuration” on page 16 and “FPC Numbering for Interfaces in TXP-T4000-3D Configuration” on page 19.

**Related  
Documentation**

- [show chassis lccs on page 753](#)
- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
- [FPC Numbering for Interfaces in TXP-T1600 Configuration on page 14](#)
- [FPC Numbering for Interfaces in TXP-T1600-3D Configuration on page 16](#)
- [FPC Numbering for Interfaces in TXP-T4000-3D Configuration on page 19](#)

## Managing the Routing Matrix as a Single Router

Although a routing matrix can contain multiple separate physical components, from the perspective of the user interface, the routing matrix appears as a single router for most operations and uses the existing Junos OS CLI.

To manage the multichassis system, some enhancements have been made to the CLI to enable you to select the amount of output you want to display when you issue operational commands. For example, you can specify the entire routing matrix, the TX Matrix Plus router, a specific T1600 or T4000 router and its Flexible PIC Concentrators (FPCs), or a combination thereof.

When you issue configuration and operational commands on a TX Matrix Plus router, your view of the routing matrix shows a single routing device with a single range of FPC numbers (from 0 through 31 or from 0 through 63 rather than from 0 through 7 for each FPC). As a result, you will need to adjust certain configuration statements to accommodate the global numbering of FPCs installed on the routing matrix. When you include the **fpc** statement at the **[edit chassis lcc lcc-number]** hierarchy level, specify the FPC hardware slot number (0 through 7) as labeled on the T1600 or the T4000 router chassis. Do not specify the corresponding global FPC number.

**Related  
Documentation**

- [Routing Engine Connectivity in the Routing Matrix on page 23](#)
- [Redundant Host Subsystems in the Routing Matrix on page 22](#)
- [Roadmap for Configuring the Routing Matrix on page 31](#)
- [Example Configuration for the Routing Matrix on page 47](#)
- [Upgrading the Junos OS on the Routing Matrix on page 155](#)

## Redundant Host Subsystems in a Routing Matrix with a TX Matrix Plus Router

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The TX Matrix Plus router and the T1600 or T4000 routers in the routing matrix are all configured with redundant host subsystems.

- In a TX Matrix Plus router, the independent control planes are connected by two physical links between the two 10-Gigabit Ethernet ports on their respective Routing Engines. The primary link to the remote Routing Engine is at the **ixgbe0** internal 10-Gigabit Ethernet interface. The alternate link to the remote Routing Engine is at the **ixgbe1** internal 10-Gigabit Ethernet interface. If one of the two links between the host subsystems fails, both Routing Engines can use the other link for IP communication.
- In a T1600 or T4000 router in a routing matrix, the independent control planes are connected by two physical links between the Gigabit Ethernet ports on their respective Routing Engines. The primary link to the remote Routing Engine is at the **bcm0** internal Ethernet interface. The alternate link to the remote Routing Engine is at the **em1** internal Ethernet interface. If one of the two links between the host subsystems fails, both Routing Engines can use the other link for IP communication.

Two Routing Engines provide redundancy and graceful Routing Engine switchover (GRES) capabilities.



**NOTE:** If GRES is configured, the CLI command prompt indicates Routing Engine mastership (**{master}** or **{backup}**) and physical slot number (**-re0** or **-re1**).

For example, the following CLI prompt indicates that you are logged in to the master Routing Engine in slot RE0 of the router with hostname mylcc3:

```
{master}  
user@mylcc3-re0>
```

The following CLI prompt indicates that you are logged in to the backup Routing Engine in slot RE1 of the router with hostname mylcc3:

```
{backup}  
user@mylcc3-re1>
```

### Related Documentation

- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
- [Roadmap for Configuring the Routing Matrix on page 31](#)
- [Example Configuration for the Routing Matrix on page 47](#)
- [Example: Configuring a Routing Matrix with a TX Matrix Plus Router in Mixed Mode on page 70](#)
- [Upgrading the Junos OS on the Routing Matrix on page 155](#)

## Routing Engine Connectivity in a Routing Matrix with a TX Matrix Plus Router

The TX Matrix Plus router contains two Connector Interface Panels (CIPs)—one for each Routing Engine—that are referred to as **TXP-CIP-0** and **TXP-CIP-1**. In a routing matrix with a TX Matrix Plus router, all Routing Engines are connected to their respective Control Boards, which in turn are connected to ports on the two CIPs on the TX Matrix Plus router:

- On a TX Matrix Plus router, the Routing Engine (RE-TXP-SFC) and Control Board (TXP-CB) function as a unit, or host subsystem. For each of the two host subsystems in the router, the Junos OS automatically creates two internal Ethernet interfaces, **ixgbe0** and **ixgbe1**, for the two 10-Gigabit Ethernet ports on the Routing Engine. The port at **ixgbe0** connects the TX Matrix Plus Routing Engine to the Routing Engines of every T1600 or T4000 router configured in the routing matrix. Another internal Ethernet interface, **ixgbe1**, is created on each Routing Engine in order to support fault tolerance.
- On a T1600 or T4000 router configured in a routing matrix, the Routing Engine (RE-TXP-LCC) and Control Board (LCC-CB) function as a unit, or host subsystem. For each of the two host subsystems in the router, the Junos OS automatically creates two internal Ethernet interfaces, **bcm0** and **em1**, for the two Gigabit Ethernet ports on the Routing Engine. The port at **bcm0** connects the LCC Routing Engine to the Routing Engines of every other T1600 or T4000 router configured in the routing matrix.



**NOTE:** The Routing Engines in the TX Matrix Plus router and in the T1600 routers configured in a routing matrix do not support the management Ethernet interface **fxp0** or the internal Ethernet interfaces **fxp1** or **fxp2**.

Configurations and automated scripts that have been developed for standalone T1600 (T1600 routers not configured in a routing matrix) might contain references to the **fxp0**, **fxp1**, or **fxp2** interfaces.

Before reusing the configurations or scripts on T1600 routers in a routing matrix, update the files as appropriate:

- Edit any command lines that reference the T1600 router management Ethernet interface **fxp0** by replacing “**fxp0**” with “**em0**.”
- Ensure that any **show interfaces** commands that are intended to list the T1600 router internal Ethernet interfaces refer to the **bcm0** or **em1** interfaces.

For more detailed information, see the *Junos OS Network Interfaces Library for Routing Devices*.

### Related Documentation

- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
- [Roadmap for Configuring the Routing Matrix on page 31](#)
- [Example Configuration for the Routing Matrix on page 47](#)
- [Upgrading the Junos OS on the Routing Matrix on page 155](#)

## Degraded Fabric Alarms on TX Matrix Plus Router with 3D SIBs

---

On a routing matrix with TX Matrix Plus Router with 3D SIBs, each FPC (installed on the T1600 or T4000 LCC) contains one or two Packet Forwarding Engines that receive incoming packets from the PICs installed on the FPC and forward them to other FPCs through the switching planes.

The degraded fabric alarm is raised on the source FPC if both the following conditions are met:

- The active Packet Forwarding Engine destinations are reachable on one or no active switching planes.
- At least one of the inactive switching planes has a fault that causes the destination Packet Forwarding Engine to become unreachable.

The alarm indicates that the source FPC is running with a degraded fabric condition. This alarm is an early warning of a possible fabric black-hole condition. When the degraded fabric alarm is raised on the source FPC, you can take remedial action to avoid a fabric black-hole condition.



### NOTE:

- By default, the degraded fabric alarm is enabled.
  - The degraded fabric alarm is not raised for the user-initiated events such as:
    - System reboot
    - Destination FPC taken offline
    - LCC taken offline
    - Switch Processor Mezzanine Board restart
- 

### Related Documentation

- [show system alarms on page 920](#)
- [clear chassis alarms fabric degraded on page 188](#)

## CHAPTER 2

# System Requirements

- [System Requirements for a Routing Matrix with a TX Matrix Plus Router on page 25](#)

### System Requirements for a Routing Matrix with a TX Matrix Plus Router

---

To implement a routing matrix with a TX Matrix Plus router, your system must meet the following minimum requirements:

- One to four Juniper Networks T1600 Core Routers—Junos OS Release 9.6 or later is required.
  - The TX Matrix Plus router must contain the following components:
    - Two C2600 Routing Engines—Model RE-DUO-C2600-16G
    - Two LCC-CB Control Boards (CBs)—Model CB-LCC
    - F13 SIB Switch Interface Boards (SIBs)—Model SIB-TXP-F13
    - F2 SIB Switch Interface Boards (SIBs)—Model SIB-TXP-F2S
  - The T1600 router must contain the following components:
    - Two C1800 Routing Engines—Model RE-DUO-C1800-8G or RE-DUO-C1800-16G
    - Two LCC-CB Control Boards (CBs)—Model CB-LCC
    - Five TXP-T1600 Switch Interface Boards (SIBs)—Model SIB-TXP-T1600
    - One rear fan tray—Model FAN-REAR-TXP-LCC
- Up to eight Juniper Networks T1600 Core Routers—Junos OS Release 13.1 or later is required.
  - The TX Matrix Plus router must contain the following components:
    - Two C2600 Routing Engines—Model RE-DUO-C2600-16G
    - Two LCC-CB Control Boards (CBs)—Model CB-LCC
    - F13 SIB Switch Interface Boards (SIBs)—Model SIB-TXP-3D-F13
    - F2 SIB Switch Interface Boards (SIBs)—Model SIB-TXP-3D-F2S
    - Fan tray—Model PWR-TRAY-TXP-5-60-DC

- The T1600 router must contain the following components:
  - Two C1800 Routing Engines—Model RE-DUO-C1800-8G or RE-DUO-C1800-16G
  - Two LCC-CB Control Boards (CBs)—Model SIB-TXP-3D-LCC
  - Five TXP-T1600 Switch Interface Boards (SIBs)—Model SIB-TXP-3D-T1600
  - One rear fan tray—Model FAN-REAR-TXP-3D-LCC
  - Two power supplies—PWR-T-6-60-DC

For information about upgrading a standalone T1600 router and integrating it into a routing matrix, see the [TX Matrix Plus Router Hardware Guide](#).

- Two to four Juniper Networks T4000 Core Routers—Junos OS Release 13.1 or later is required.
  - The TX Matrix Plus router must contain the following components:
    - Two C2600 Routing Engines—Model RE-DUO-C2600-16G
    - Two LCC-CB Control Boards (CBs)—Model CB-LCC
    - F13 SIB Switch Interface Boards (SIBs)—Model SIB-TXP-3D-F13
    - F2 SIB Switch Interface Boards (SIBs)—Model SIB-TXP-3D-F2S
    - Fan tray—Model PWR-TRAY-TXP-5-60-DC
  - The T4000 router must contain the following components:
    - Two C1800 Routing Engines—Model RE-DUO-C1800-8G or RE-DUO-C1800-16G
    - Two LCC-CB Control Boards (CBs)—Model SIB-TXP-3D-LCC
    - Five TXP-T1600 Switch Interface Boards (SIBs)—Model SIB-TXP-3D-T1600
    - One rear fan tray—Model FAN-REAR-TXP-3D-LCC
    - Two power supplies—PWR-T-6-60-DC

For information about upgrading a standalone T1600 router and integrating it into a routing matrix, see the [TX Matrix Plus Router Hardware Guide](#).

- Physical Interface Cards (PICs) of your choice. To view a list of supported PICs, see the [T1600 Interface Module Reference](#).

#### **Related Documentation**

- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
- [Roadmap for Configuring the Routing Matrix on page 31](#)
- [Example Configuration for the Routing Matrix on page 47](#)
- [Example: Configuring a Routing Matrix with a TX Matrix Plus Router in Mixed Mode on page 70](#)
- [Upgrading the Junos OS on the Routing Matrix on page 155](#)

## CHAPTER 3

# Glossary

- [Routing Matrix Terms and Acronyms on page 27](#)

## Routing Matrix Terms and Acronyms

---

### L

**line-card chassis (LCC)** A T1600 router or T4000 router installed in a routing matrix.

### R

**routing matrix** A high capacity, multichassis router. The routing matrix with a TX Matrix router combines multiple T640 routers with a TX Matrix router switch fabric. The routing matrix with a TX Matrix Plus router combines multiple T1600 or T4000 routers with a TX Matrix Plus router switch fabric.

### S

**Switch Interface Board (SIB)** On T640, T1600, and T4000 routers and on TX Matrix router and TX Matrix Plus routers, a switch fabric plane component that forwards packets from a source Packet Forwarding Engine to a destination Packet Forwarding Engine.

**switch-card chassis (SCC)** A TX Matrix router installed in a routing matrix.

**switch-fabric chassis (SFC)** A TX Matrix Plus router installed in a routing matrix.

### T

**TX Matrix Plus router** A high-speed centralized switch fabric that connects multiple T1600 or T4000 routers in a routing matrix.

**TX Matrix router** A high-speed centralized switch fabric that connects multiple T640 routers in a routing matrix.

#### Related Documentation

- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
- [Roadmap for Configuring the Routing Matrix on page 31](#)
- [Example Configuration for the Routing Matrix on page 47](#)
- [Example: Configuring a Routing Matrix with a TX Matrix Plus Router in Mixed Mode on page 70](#)

- [Upgrading the Junos OS on the Routing Matrix on page 155](#)



## PART 2

# Configuration

- [Configuration Overview on page 31](#)
- [Configuration Steps on page 33](#)
- [Configuration Examples on page 47](#)
- [Using Configuration Examples on page 97](#)
- [Chassis Statements on page 99](#)
- [LCC-Specific Chassis Statements on page 107](#)
- [FPC-Specific Chassis Statements on page 111](#)
- [PIC-Specific Chassis Statements on page 113](#)
- [System Statements on page 121](#)
- [Syslog-Specific System Statements on page 133](#)



# Configuration Overview

- Roadmap for Configuring a Routing Matrix with a TX Matrix Plus Router on page 31

## Roadmap for Configuring a Routing Matrix with a TX Matrix Plus Router

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This topic summarizes the procedures for configuring a routing matrix with a TX Matrix Plus router.

To configure a routing matrix with a TX Matrix Plus router, complete the following tasks:

1. Plan your hardware configuration. Determine the SFC configuration size for the TX Matrix Plus router, and the LCC chassis ID for each T1600 or T4000 router to be added to the routing matrix. For more details, see the [TX Matrix Plus Hardware Guide](#).
2. Install and configure the TX Matrix Plus router, including setting the SFC chassis ID and the configuration size. If you are upgrading to 3D SIBs, you must change the SFC configuration size to 03. For more information about the initial hardware installation and configuration procedures, upgrade procedures, and setting the chassis ID and configuration size, see the [TX Matrix Plus Hardware Guide](#).
3. (Only for a routing matrix with a TX Matrix Plus router with 3D SIBs) Log on to the TX Matrix Plus router and configure the LCC mode for each T1600 or T4000 router to be added to the routing matrix. For more information, see [lcc-mode](#).



**NOTE:** You can set the LCC mode before the LCCs are connected to the routing matrix.

4. Install the standalone T1600 or T4000 routers. For more information, see [T1600 Router Hardware Guide](#) and [T4000 Router Hardware Guide](#).
5. Upgrade, connect, and integrate the T1600 or T4000 LCC into the routing matrix, including setting the LCC chassis ID. For more information, see the [TX Matrix Plus Hardware Guide](#).



**NOTE:** After the LCCs are integrated into the routing matrix, all configuration and operational commands for the LCC are performed from the TX Matrix Plus router.

6. Log on to the TX Matrix Plus Router. For more information, see the [TX Matrix Plus Hardware Guide](#).
7. Verify that the same Junos OS version is loaded on TX Matrix Plus router and the LCCs using the `show version` command.
8. Create and apply Routing Engine configuration groups, as described in “[Using Configuration Groups and Inheritance in a Routing Matrix with a TX Matrix Plus Router](#)” on page 34.

In general, configuration groups and inheritance of the statements in configuration groups support configuration of various router components. The special Routing Engine configuration groups (`re0`, `re1`, `lccn-re0`, and `lccn-re1`, where *n* is the LCC number) offer a simple way to establish hostnames, management interfaces, and default routes for the Routing Engines in the routing matrix.

9. Adjust certain configuration statements to accommodate the global number of FPCs installed on the LCCs, as described in “[Using Global FPC Numbering for Interfaces in a Routing Matrix with a TX Matrix Plus Router](#)” on page 40.
10. (Optional) Configure protocols and other features on the routing matrix, as described in “[Configuring Protocols and Other Features on a Routing Matrix with a TX Matrix Plus Router](#)” on page 41.

Other than the expanded range of FPC numbers for interfaces and the requirement to create groups for the routers, you can configure protocols in exactly the same manner as you would for other Juniper Networks routers.

11. (Optional) For T1600 or T4000 LCCs in a routing matrix, you can configure PIC-specific features, create an alarm for LCCs that do not come online, and take LCCs offline. For more information, see “[Configuring Chassis-Specific Features on a Routing Matrix with a TX Matrix Plus Router](#)” on page 41.
12. Commit configurations on the routing matrix, as described in “[Committing Configurations on a Routing Matrix with a TX Matrix Plus Router](#)” on page 43.

**Related  
Documentation**

- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
- [Example Configuration for the Routing Matrix on page 47](#)
- [Upgrading the Junos OS on the Routing Matrix on page 155](#)
- [lcc on page 101](#)

## CHAPTER 5

# Configuration Steps

- [Connecting to a Routing Matrix with a TX Matrix Plus Router on page 33](#)
- [Using Configuration Groups and Inheritance in a Routing Matrix with a TX Matrix Plus Router on page 34](#)
- [Using Global FPC Numbering for Interfaces in a Routing Matrix with a TX Matrix Plus Router on page 40](#)
- [Configuring Protocols and Other Features on a Routing Matrix with a TX Matrix Plus Router on page 41](#)
- [Configuring Chassis-Specific Features on a Routing Matrix with a TX Matrix Plus Router on page 41](#)
- [Committing Configurations on a Routing Matrix with a TX Matrix Plus Router on page 43](#)

### Connecting to a Routing Matrix with a TX Matrix Plus Router

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On a routing matrix with a TX Matrix Plus router, you can perform management and service operations on the routing matrix through a Junos OS command-line interface (CLI) session with the TX Matrix Plus router.

This topic contains the following information:

- [Accessing a Routing Engine by Direct Console Connection to a Serial Port on page 33](#)
- [Accessing a Routing Engine by Telnet Access to a Management Ethernet Port on page 34](#)
- [Accessing a Routing Engine by Logging In from the CLI of Another Routing Engine on page 34](#)

### Accessing a Routing Engine by Direct Console Connection to a Serial Port

For an out-of-band connection to a Routing Engine in the routing matrix with TX Matrix Plus router, you can attach one or more management console or auxiliary devices to the appropriate serial ports on a Routing Engine in a routing matrix. On a TX Matrix Plus router, the **CONSOLE** or **AUXILIARY** serial ports are located on each control board (TXP-CB). After you connect the T1600 or T4000 routers to a TX Matrix Plus router, we recommend that you manage the routers using the **CONSOLE** or **AUXILIARY** serial ports on the TX Matrix Plus router. For more information, see [TX Matrix Plus Hardware Guide](#).

## Accessing a Routing Engine by Telnet Access to a Management Ethernet Port

After you configure the em0 Management Ethernet interface logical port, **em0.0**, with a valid IP address, you can establish a Telnet session over the network connection using the **ETHERNET** port located on each TXP-CB. This provides an out-of-band management connection to the a TX Matrix Plus router. The control plane connections to the TX Matrix Plus router allow you to configure and operate the T1600 and T4000 routers in the routing matrix by logging on to the TX Matrix Plus router. For more information about the initial software configuration for the TX Matrix Plus router, control plane connections, and integrating T1600 or T4000 routers into a routing matrix, see [TX Matrix Plus Hardware Guide](#)

## Accessing a Routing Engine by Logging In from the CLI of Another Routing Engine

After you are logged in to one Routing Engine in a routing matrix, you can issue the [request routing-engine login](#) command to connect to another Routing Engine in the routing matrix.



**BEST PRACTICE:** We recommend that you access a routing matrix by connecting to the master Routing Engine on the TX Matrix Plus router as described in “[Accessing a Routing Engine by Direct Console Connection to a Serial Port](#)” on page 33, “[Accessing a Routing Engine by Telnet Access to a Management Ethernet Port](#)” on page 34, and “[Accessing a Routing Engine by Logging In from the CLI of Another Routing Engine](#)” on page 34. Under normal operating conditions, you do not need to access or configure the T1600 or T4000 routers directly after they have been integrated into the routing matrix.

### Related Documentation

- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
- [Roadmap for Configuring the Routing Matrix on page 31](#)
- [Example Configuration for the Routing Matrix on page 47](#)
- [Example: Configuring a Routing Matrix with a TX Matrix Plus Router in Mixed Mode on page 70](#)
- [Upgrading the Junos OS on the Routing Matrix on page 155](#)

## Using Configuration Groups and Inheritance in a Routing Matrix with a TX Matrix Plus Router

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To simplify configuration of individual Routing Engines in a routing matrix with a TX Matrix Plus router, you can create a configuration group for each Routing Engine in the routing matrix:

- [Overview of Configuration Groups and Inheritance in a Routing Matrix on page 35](#)
- [Creating Configuration Groups in a Routing Matrix on page 35](#)
- [Applying a Configuration Group in a Routing Matrix on page 36](#)

- [Displaying Inherited Statements on page 36](#)
- [Disabling Inheritance of a Configuration Group in the Routing Matrix on page 37](#)
- [Using Special Configuration Groups for the Routing Engines in the Routing Matrix on page 37](#)

## Overview of Configuration Groups and Inheritance in a Routing Matrix

The configuration groups feature in the Junos OS enables you to create a group containing configuration statements and to direct the inheritance of that group's statements in the rest of the configuration. The same group can be applied to different sections of the configuration, and different sections of one group's configuration statements can be inherited in different places in the configuration.

Configuration groups enable you to create smaller, more logically constructed configuration files, making it easier to configure and maintain the Junos OS. For example, you can group statements that are repeated in many places in the configuration, such as when configuring interfaces, and thereby limit updates to just the group.

Configuration groups use true inheritance, which involves a dynamic, ongoing relationship between the source of the configuration data and the target of that data. Data values changed in the configuration group are automatically inherited by the target. The target need not contain the inherited information, although the inherited values can be overridden in the target without affecting the source from which they were inherited.

This inheritance model allows you to see only the instance-specific information without seeing the inherited details. A command pipe in configuration mode allows you to display the inherited data.

## Creating Configuration Groups in a Routing Matrix

For areas of your configuration to inherit configuration statements, you must first put the statements into a configuration group and then apply that group to the levels in the configuration hierarchy that require the statements.

To create configuration groups in a routing matrix with a TX Matrix Plus router, you can include the **groups** statement at the **[edit]** hierarchy level on the TX Matrix Plus router:

```
[edit]
groups {
  group-name {
    ...configuration-data...
  }
}
```

The **group-name** statement specifies the name of a configuration group. You can configure more than one configuration group by specifying multiple **group-name** statements at the **[edit groups]** hierarchy level.

You cannot use the prefix **junos-** in a group name because it is reserved for use by the Junos OS. One reason for the naming restriction is a configuration group called **junos-defaults**. This preset configuration group is applied to the configuration automatically. You cannot modify or remove the **junos-defaults** configuration group. For

more information about the Junos default configuration group, see “*Using Junos OS Defaults Groups*” in the *CLI User Guide*.

Similarly, the configuration group **juniper-ais** is reserved exclusively for Juniper Advanced Insight Solutions (AIS)-related configuration. For more information about the **juniper-ais** configuration group, see the *Juniper Networks Advanced Insight Solutions Guide*.

## Applying a Configuration Group in a Routing Matrix

To have a configuration inherit the statements in a configuration group, include the **apply-groups** statement on the TX Matrix Plus router:

```
apply-groups [ group-names ];
```

Include the **apply-groups [ group-names ]** statement anywhere in the configuration that the configuration statements contained in a configuration group are needed.

If you specify more than one group name, list them in order of inheritance priority. The configuration statements in the first group take priority over configuration statements in subsequent groups.

You can include only one **apply-groups** statement at each specific level of the configuration hierarchy. The **apply-groups** statement at a specific hierarchy level lists the configuration groups to be added to the containing statement's list of configuration groups.

Values specified at the specific hierarchy level override values inherited from the configuration group.

Groups listed in nested **apply-groups** statements take priority over groups in outer statements. In the following example, the BGP neighbor 10.0.0.1 inherits configuration data from group one first, then from groups two and three. Configuration data in group one overrides data in any other group. Data from group ten is used only if a statement is not contained in any other group.

```
apply-groups [ eight nine ten ];
protocols {
  apply-groups seven;
  bgp {
    apply-groups [ five six ];
    group some-bgp-group {
      apply-groups four;
      neighbor 10.0.0.1 {
        apply-groups [ one two three ];
      }
    }
  }
}
```

## Displaying Inherited Statements

Configuration groups can add some confusion regarding the actual values used by the router, because configuration data can be inherited from configuration groups. To view the actual values used by the router, use the **display inheritance** command after the pipe



in a **show** command. This command displays the inherited statements at the level at which they are inherited and the group from which they have been inherited.

The following example shows part of the output of the **show | display inheritance** command that shows configuration statements inherited from the special configuration group **re0**, which contains configuration statements that apply to the Routing Engine in slot 0 (labeled **RE0**) on the TX Matrix Plus router:

```
[edit]
user@host# show | display inheritance
...
system {
  ## 'sfc0' was inherited from group 're0'
  host-name sfc0;
  ## 'backup-router' was inherited from group 're0'
  backup-router 192.168.35.254;
}
interfaces {
  ## 'em0' was inherited from group 're0'
  em0 {
    ## '0' was inherited from group 're0'
    unit 0 {
      ## 'inet' was inherited from group 're0'
      family inet {
        ## '192.168.35.95/24' was inherited from group 're0'
        address 192.168.35.95/24;
      }
    }
  }
}
...
```

## Disabling Inheritance of a Configuration Group in the Routing Matrix

To disable inheritance of a configuration group at any level except the top level of the hierarchy, include the **apply-groups-except** statement:

```
apply-groups-except [ group-names ];
```

This statement is useful when you use the **apply-group** statement at a specific hierarchy level but also want to override the values inherited from the configuration group for a specific parameter.

## Using Special Configuration Groups for the Routing Engines in the Routing Matrix

Using special configuration group names for all Routing Engines in the routing matrix allows you to configure the individual Routing Engines in each router differently. Parameters that are not configured at the **[edit groups]** hierarchy level apply to all Routing Engines in the routing matrix.

To configure configuration groups and apply inheritance for the Routing Engines in a routing matrix, you can include the **groups** statement at the **[edit]** hierarchy level on the TX Matrix Plus router and then include special configuration group names for all the Routing Engines in the routing matrix:

```
[edit]
```

```
groups {
  re0 { # Create the group for the SFC master Routing Engine.
    system {
      host-name sfc0-re0-hostname;
      backup-router ip-address;
      ...
    }
    interfaces {
      em0 {
        unit logical-unit-number {
          ...
        }
      }
    }
  }
  re1 { # Create the group for the SFC backup Routing Engine.
    system {
      host-name sfc0-re1-hostname;
      backup-router ip-address;
      ...
    }
    interfaces {
      em0 {
        unit logical-unit-number {
          ...
        }
      }
    }
  }
  lccn-re0 { # Create the group for the master Routing Engine in a specific LCC.
    system {
      host-name lccN-re0-hostname;
      backup-router ip-address;
      ...
    }
    interfaces {
      em0 {
        unit logical-unit-number {
          ...
        }
      }
    }
  }
  lccn-re1 { # Create the group for the backup Routing Engine in a specific LCC.
    system {
      host-name lccN-re1-hostname;
      backup-router ip-address;
      ...
    }
    interfaces {
      em0 {
        unit logical-unit-number {
          ...
        }
      }
    }
  }
  ...additional-routing-engine-group-configurations...
}
apply-groups [ re0 re1 lccn-re0 lccn-re1 ... ]; # Enable inheritance of the groups.
```

For routers in a routing matrix with a TX Matrix Plus router, you can specify the following special group names:

- **re0**—Configuration statements apply to the Routing Engine in slot 0 (labeled **RE0**) on the TX Matrix Plus router.
- **re1**—Configuration statements apply to the Routing Engine in slot 1 (labeled **RE1**) on the TX Matrix Plus router.
- **lccn-re0**—Configuration statements apply to the Routing Engine in slot 0 (labeled **RE0**) on the router identified as **lccn**, where **n** is the LCC number and has the following values depending on the LCC configuration:
  - From **0** through **3** on a T1600 router in a routing matrix with a TX Matrix Plus router.
  - From **0** through **7** on a T1600 router in a routing matrix with a TX Matrix Plus router with 3D SIBs.
  - **0, 2, 4, or 6** on a T4000 router in a routing matrix with a TX Matrix Plus router with 3D SIBs.
- **lccn-re1**—Configuration statements applied to the Routing Engine in slot 1 (labeled **RE1**) on the router identified **lccn**, where **n** is the LCC number and has the following values depending on the LCC configuration:
  - From **0** through **3** on a T1600 router in a routing matrix with a TX Matrix Plus router.
  - From **0** through **7** on a T1600 router in a routing matrix with a TX Matrix Plus router with 3D SIBs.
  - **0, 2, 4, 6** on a T4000 router in a routing matrix with a TX Matrix Plus router with 3D SIBs.

Because the configuration statements in the special configuration groups for Routing Engines apply to specific Routing Engines in the routing matrix, you can create a single configuration for all of the routers, with each Routing Engine using only the configuration statements that apply to it.

Each Routing Engine configuration group contains at a minimum the configuration for the Routing Engine hostname and the management Ethernet interface (**em0**). In addition, if each Routing Engine uses a different management interface, the group also should contain the configuration for the backup router and static routes.

Note that apply groups can be nested. For example, any configuration statements that are common to **lcc0-re0** and **lcc0-re1** can be included in a separate configuration group and then added as an apply group to the **lcc0-re0** and **lcc0-re1** groups, which in turn are applied to the main configuration.

For more information about configuring and applying configuration groups, see the *CLI User Guide*.

#### Related Documentation

- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
- [Roadmap for Configuring the Routing Matrix on page 31](#)

- [Example Configuration for the Routing Matrix on page 47](#)
- [Example: Configuring a Routing Matrix with a TX Matrix Plus Router in Mixed Mode on page 70](#)
- [Upgrading the Junos OS on the Routing Matrix on page 155](#)

## Using Global FPC Numbering for Interfaces in a Routing Matrix with a TX Matrix Plus Router

---

When configuring interfaces on a routing matrix with a TX Matrix Plus router, you must adjust the routing matrix configuration to accommodate increased FPC numbers used in interface names.

For example, if you have a Gigabit Ethernet interface installed in FPC slot 7, PIC slot 0, port 0 of T1600 router lcc 3, you can configure this interface on the TX Matrix Plus router by including the **ge-31/0/0** statement at the **[edit interfaces]** hierarchy level:

```
[edit]
interfaces {
  ge-31/0/0 { # In a standalone T1600 router, the interface is 'ge-7/0/0'.
    unit 0 {
      family inet {
        address ip-address;
      }
    }
  }
}
```

For more information about converting FPC hardware slot numbers on a T1600 or T4000 router to the global FPC numbers used for interfaces in a routing matrix and vice versa, see [“FPC Numbering for Interfaces in TXP-T4000-3D Configuration” on page 19](#), [“FPC Numbering for Interfaces in TXP-Mixed-LCC-3D Configuration” on page 20](#), [“FPC Numbering for Interfaces in TXP-T1600-3D Configuration” on page 16](#), [“FPC Numbering for Interfaces in TXP-T1600 Configuration” on page 14](#), and [“Displaying Chassis Physical Locations for a Routing Matrix with a TX Matrix Plus Router” on page 141](#).



**NOTE:** When you include the **fpc** statement at the **[edit chassis lcc lcc-number]** hierarchy level, specify the FPC hardware slot number (0 through 7) as labeled on the T1600 router chassis. Do not specify the corresponding global FPC number (0 through 31).

---

For more information about physically connecting a TX Matrix Plus router and T1600 or T4000 routers together in a routing matrix, [TX Matrix Plus Router Hardware Guide](#) For more information about the interface naming conventions for a routing matrix, see the *Junos OS Network Interfaces Library for Routing Devices*.

### Related Documentation

- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
- [Roadmap for Configuring the Routing Matrix on page 31](#)

- [Example Configuration for the Routing Matrix on page 47](#)
- [Example: Configuring a Routing Matrix with a TX Matrix Plus Router in Mixed Mode on page 70](#)
- [Upgrading the Junos OS on the Routing Matrix on page 155](#)

## Configuring Protocols and Other Features on a Routing Matrix with a TX Matrix Plus Router

Other than the expanded range of FPC numbers for interfaces and the requirement to create groups for the T1600 or T4000 routers, the configuration of a routing matrix with a TX Matrix Plus router is exactly the same as for all other Juniper Networks routers. You can configure routing protocols, Multiprotocol Label Switching (MPLS) applications, virtual private networks (VPNs), routing and forwarding options, and other software features as usual.

For more information about configuring Junos OS-based routers, see the Junos OS configuration guides.

### Related Documentation

- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
- [Roadmap for Configuring the Routing Matrix on page 31](#)
- [Example Configuration for the Routing Matrix on page 47](#)
- [Example: Configuring a Routing Matrix with a TX Matrix Plus Router in Mixed Mode on page 70](#)
- [Upgrading the Junos OS on the Routing Matrix on page 155](#)

## Configuring Chassis-Specific Features on a Routing Matrix with a TX Matrix Plus Router

You can configure chassis-specific features on specific T1600 routers in a routing matrix with a TX Matrix Plus router:

- [Configuring PIC-Specific Features on a T1600 or T4000 Router in a Routing Matrix on page 41](#)
- [Configuring an Alarm to Trigger if an LCC in the Routing Matrix Does Not Come Online on page 42](#)
- [Configuring an LCC in the Routing Matrix to Stay Offline on page 42](#)
- [For More Information on page 43](#)

## Configuring PIC-Specific Features on a T1600 or T4000 Router in a Routing Matrix

You can configure PIC-specific features on specific routers in a routing matrix with a TX Matrix Plus router. To configure, include the **lcc lcc-number** statement at the **[edit chassis]** hierarchy level and specify the PIC-specific feature to configure.

```
[edit]
chassis {
  lcc lcc-number {
```

```

fpc slot-number { # Use the T1600 or T4000 router FPC hardware slot number.
  pic pic-number {
    ...pic-specific-configuration...
  }
}
}
}

```



**NOTE:** When you include statements at the `[edit chassis lcc lcc-number]` hierarchy level, specify the actual FPC hardware slot number as labeled on the T1600 or T4000 router chassis. Do not specify the corresponding global FPC number. For details, see [“FPC Numbering for Interfaces in TXP-Mixed-LCC-3D Configuration”](#) on page 20, [“FPC Numbering for Interfaces in TXP-T4000-3D Configuration”](#) on page 19, [“FPC Numbering for Interfaces in TXP-T1600-3D Configuration”](#) on page 16, [“FPC Numbering for Interfaces in TXP-T1600 Configuration”](#) on page 14, and [“Displaying Chassis Physical Locations for a Routing Matrix with a TX Matrix Plus Router”](#) on page 141.

## Configuring an Alarm to Trigger if an LCC in the Routing Matrix Does Not Come Online

By default, the Junos OS allows all T1600 or T4000 routers in the routing matrix to come online. Optionally, you can configure the TX Matrix Plus router to generate an alarm if the T1600 or T4000 routers in the routing matrix do not come online.

To configure, include the **online-expected** statement at the `[edit chassis lcc lcc-number]` hierarchy level on the TX Matrix Plus router:

```

[edit]
chassis{
  lcc lcc-number {
    online-expected;
  }
}

```

If you do not include the **online-expected** statement at any `[edit chassis lcc lcc-number]` hierarchy level on the TX Matrix Plus router, no alarm triggers if any T1600 or T4000 fails to come online.

## Configuring an LCC in the Routing Matrix to Stay Offline

If you do not want a T1600 or T4000 router to be part of the routing matrix, such as while you are performing maintenance on that LCC, you can configure the router to be offline.

To configure a T1600 or T4000 router to be offline, include the **offline** statement at the `[edit chassis lcc lcc-number]` hierarchy level:

```

[edit]
chassis {
  lcc lcc-number {
    offline;
  }
}

```

When you are ready to bring the T1600 or T4000 router back online, delete the **offline** configuration statement at the **[edit chassis lcc *number*]** hierarchy level.



**NOTE:** If you do not include the **offline** statement at any **[edit chassis lcc *lcc-number*]** hierarchy level on the TX Matrix Plus router, any T1600 or T4000 router that is part of the routing matrix is allowed to come online.

## For More Information

For more information about chassis-specific statements, see the *Junos OS Administration Library for Routing Devices*.

### Related Documentation

- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
- [Roadmap for Configuring the Routing Matrix on page 31](#)
- [Example Configuration for the Routing Matrix on page 47](#)
- [Example: Configuring a Routing Matrix with a TX Matrix Plus Router in Mixed Mode on page 70](#)
- [Upgrading the Junos OS on the Routing Matrix on page 155](#)

## Committing Configurations on a Routing Matrix with a TX Matrix Plus Router

On a routing matrix with a TX Matrix Plus router, you must commit configuration changes on the TX Matrix Plus router (also referred as SFC) rather than on the individual T1600 or T4000 routers. All configuration changes you commit on the SFC are distributed to all the T1600 or T4000 routers in the routing matrix and override any configuration changes committed directly on a T1600 or T4000 router.



**NOTE:** If you commit a configuration directly on a T1600 or T4000 router in a routing matrix, the configuration is not distributed to the SFC or to the other T1600 or T4000 routers in the routing matrix.

There are three main ways to commit configurations on a TX Matrix Plus router:

- [Committing a Configuration to Both Master and Backup Routing Engines in the Routing Matrix on page 43](#)
- [Committing a Configuration to the Master Routing Engines \(Only\) in the Routing Matrix on page 44](#)
- [Synchronizing to the Configuration on the Other Routing Engine on page 45](#)

## Committing a Configuration to Both Master and Backup Routing Engines in the Routing Matrix

To commit the same configuration to both the master and backup Routing Engines in the routing matrix, issue the **commit** operational command with the **synchronize** option.

The Routing Engine on which you execute the **commit synchronize** command (the requesting Routing Engine) copies and loads its candidate configuration to the other Routing Engine (the responding Routing Engine). Both Routing Engines then perform a syntax check on the candidate configuration file being committed. If no errors are found, the configuration is activated and becomes the current operational configuration on both Routing Engines.

The **commit synchronize** command makes the active or applied configuration the same for both Routing Engines with the exception of two special configuration groups for Routing Engines:

- Configuration statements specified in the **re0** configuration group are applied only to Routing Engines in slot 0 (designated **re0**).
- Configuration statements specified in the **re1** configuration group are applied only to Routing Engines in slot 1 (designated **re0**).



**NOTE:** If you do not synchronize the configurations between two Routing Engines and one of them fails, the router may not forward traffic correctly because the backup Routing Engine may have a different configuration.

---

The following example shows command output for the **commit** command issued on the TX Matrix Plus router with the **synchronize** option:

```
[edit groups]
user@host> set re0 system hostname sfc0-re0-hostname

user@sfc0-re0-hostname> commit synchronize;
sfc0-re0:
configuration check succeeds
lcc0-re1:
commit complete
lcc0-re0:
commit complete
lcc2-re1:
commit complete
lcc2-re0:
commit complete
sfc0-re1:
commit complete
sfc0-re0:
commit complete
```

## Committing a Configuration to the Master Routing Engines (Only) in the Routing Matrix

In a routing matrix with a TX Matrix Plus router, issuing the basic form of the **commit** operational command on the TX Matrix Plus router commits the candidate configuration only to the master Routing Engines in the routing matrix.

The following example shows command output for the basic form of the **commit** command:

```
user@host# commit
```



```
sfc0-re0:
configuration check succeeds
lcc0-re0:
commit complete
lcc1-re0:
commit complete
sfc0-re0:
commit complete
```

## Synchronizing to the Configuration on the Other Routing Engine

In a routing matrix with at TX Matrix Plus router, issuing the **commit synchronize** command with the **force** option directs one Routing Engine to synchronize its configuration with the other.



**NOTE:** We recommend that you use the **force** option only if you are unable to resolve the issues that caused the **commit synchronize** command to fail.

The Routing Engine on which you issue this command (the requesting Routing Engine) copies and loads its candidate configuration to the other Routing Engine (the responding Routing Engine). Both Routing Engines then perform a syntax check on the candidate configuration file being committed. If no errors are found, the configuration is activated and becomes the current operational configuration on both Routing Engines.

The **commit synchronize** command does not work if the responding Routing Engine has uncommitted configuration changes. However, you can enforce commit synchronization on the Routing Engines by using the **force** option.



**NOTE:** When you issue the **commit synchronize** command with the **force** option from one Routing Engine, the configuration sessions on the other Routing Engine will be terminated and its configuration synchronized with that on the Routing Engine from which you issued the command.

### Related Documentation

- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
- [Roadmap for Configuring the Routing Matrix on page 31](#)
- [Example Configuration for the Routing Matrix on page 47](#)
- [Example: Configuring a Routing Matrix with a TX Matrix Plus Router in Mixed Mode on page 70](#)
- [Upgrading the Junos OS on the Routing Matrix on page 155](#)



## CHAPTER 6

# Configuration Examples

- [Example Configuration for a Routing Matrix with a TX Matrix Plus Router on page 47](#)
- [Example: Configuring a Routing Matrix with a TX Matrix Plus Router in Mixed Mode on page 70](#)

### Example Configuration for a Routing Matrix with a TX Matrix Plus Router

---

The following sections describe an example configuration for a routing matrix with a TX Matrix Plus router:

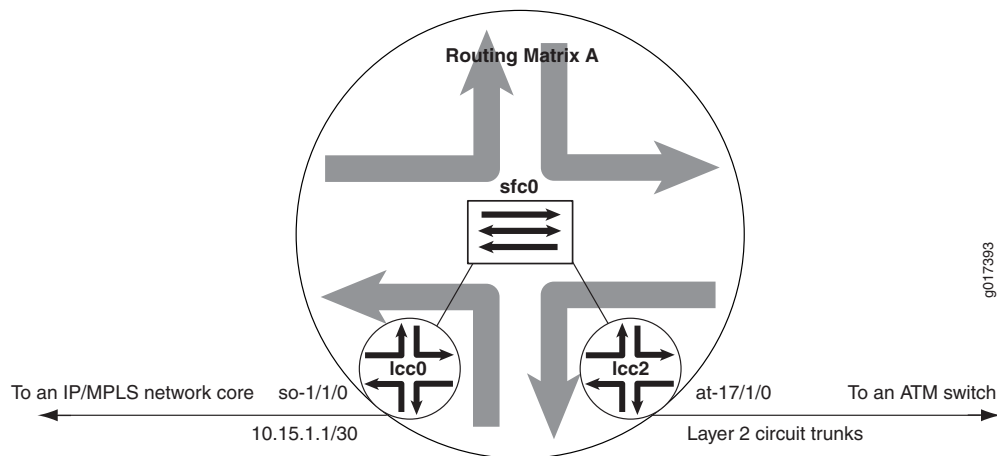
- [Example Routing Matrix Topology on page 47](#)
- [Example Routing Matrix Configuration on page 48](#)
- [Verifying the Configuration of a Routing Matrix with a TX Matrix Plus Router on page 54](#)

### Example Routing Matrix Topology

This example is based on **Routing Matrix A**, a basic routing matrix consisting of a TX Matrix Plus router (**sfc0**) and two T1600 routers (**lcc0** and **lcc2**). [Figure 7 on page 48](#) shows that **Routing Matrix A** is acting as a provider edge (PE) router in a Layer 2 circuit network. SONET interface **so-1/1/0** in the T1600 router designated as **lcc0** connects to an IP/MPLS core network. Asynchronous Transfer Mode 2 (ATM2) intelligent queuing (IQ) interface **at-17/1/0** in the T1600 router designated as **lcc2** runs Layer 2 circuit trunk mode to connect to an ATM switch.

For more information about Layer 2 circuit networks, see the *Junos OS VPNs Library for Routing Devices*.

Figure 7: Example Topology of a Routing Matrix with a TX Matrix Plus Router



Note the following key considerations for this routing matrix configuration:

- For most operations, you will manage the routing matrix as a single router, executing operational commands and committing configurations on the TX Matrix Plus router designated as **sfc0**.
- Create configuration groups for each Routing Engine in the routing matrix by using the special configuration groups for a routing matrix consisting of routers with dual Routing Engines: **re0**, **re1**, **lcc0-re0**, **lcc2-re0**, **lcc0-re1**, and **lcc2-re1**. In these Routing Engine configuration groups, configure hostnames, default routes, and management Ethernet interfaces.
- To configure interfaces, use the routing matrix FPC numbering convention of slots **0** through **31**.
- To enable ATM2 IQ trunk mode and other chassis-based commands, include the **lcc lcc-number** statement at the **[edit chassis]** hierarchy level and use the hardware FPC slot numbers **0** through **7** of node **lcc2**.
- Configure most other processes as usual, such as routing, class of service (CoS), and firewalls.

### Example Routing Matrix Configuration

To configure the example **Routing Matrix A** described in the previous section, commit the following configuration at the TX Matrix Plus router:

```
[edit]
groups { # Create special configuration groups in a routing matrix.
  re0 { # Create a group for the master Routing Engine on TX Matrix Plus router sfc0.
    system {
      host-name sfc0;
      backup-router 192.168.17.254;
    }
  }
  interfaces { # Configure an IP address for the management interface logical port.
    em0 {
      unit 0 {
        family inet {
```

```

        address 192.168.77.158/21;
    }
}
}
}
}
re1 { # Create a group for the backup Routing Engine on TX Matrix Plus router sfc0.
system {
    host-name sfc0_alt_re;
    backup-router 192.168.17.254;
}
interfaces { # Configure an IP address for the management interface logical port.
    em0 {
        unit 0 {
            family inet {
                address 192.168.77.168/21;
            }
        }
    }
}
}
lcc0-re0 { # Create a group for the master Routing Engine on T1600 router lcc0.
system {
    host-name mylcc0;
    backup-router 192.168.17.254 destination [10.0.0.0/8 192.168.0.0/16];
}
interfaces { # Configure an IP address for the management interface logical port.
    em0 {
        unit 0 {
            family inet {
                address 192.168.77.157/21;
            }
        }
    }
}
}
lcc0-re1 { # Create a group for the backup Routing Engine on T1600 router lcc0.
system {
    host-name mylcc0_alt_re;
    backup-router 192.168.17.254 destination [10.0.0.0/8 192.168.0.0/16];
}
interfaces { # Configure an IP address for the management interface logical port.
    em0 {
        unit 0 {
            family inet {
                address 192.168.77.169/21;
            }
        }
    }
}
}
lcc2-re0 { # Create a group for the master Routing Engine on T1600 router lcc2.
system {
    host-name mylcc2;
    backup-router 192.168.17.254 destination [10.0.0.0/8 192.168.0.0/16];
}
}

```

```
interfaces { # Configure an IP address for the management interface logical port.
  em0 {
    unit 0 {
      family inet {
        address 192.168.77.159/21;
      }
    }
  }
}
lcc2-re1 { # Create a group for the backup Routing Engine on T1600 router lcc2.
  system {
    host-name mylcc2_alt_re;
    backup-router 192.168.17.254 destination [10.0.0.0/8 192.168.0.0/16];
  }
  interfaces { # Configure an IP address for the management interface logical port.
    em0 {
      unit 0 {
        family inet {
          address 192.168.77.192/21;
        }
      }
    }
  }
}
}
apply-groups [ re0 re1 lcc0-re1 lcc2-re1 lcc0-re0 lcc2-re0 ]; # Enable inheritance.
system { # Configure system management properties.
  syslog {
    file messages {
      any any;
    }
  }
}
chassis { # You must apply chassis commands to a specific T1600 router.
  lcc 2 { # Specify the T1600 router and the FPC hardware slot of the node.
    fpc 1 { # This FPC is equivalent to slot 17 in the routing matrix.
      pic 1 {
        atm-l2circuit-mode {
          trunk nni;
        }
      }
    }
  }
}
}
interfaces {
  so-1/1/0 { # This is a SONET interface at FPC 1, PIC 1, port 0
    mtu 9192; # on the T1600 router LCC0.
    unit 0 {
      family inet {
        address 10.15.1.1/30 {
          destination 10.15.1.2;
        }
      }
      family iso;
      family mpls {
```

```

        filter {
            input filter_1;
        }
    }
}
}
at-17/1/0 { # This is an ATM2 IQ interface at FPC 1, PIC 1, port 0
    encapsulation atm-ccc-cell-relay; # on the T1600 router LCC2.
    atm-options {
        pic-type atm2;
        scheduler-maps { # CoS on an ATM2 IQ PIC works the same in a routing matrix.
            cos1 { # as it does in a standalone T1600 router.
                forwarding-class ubr {
                    priority low;
                    transmit-weight percent 25;
                }
                forwarding-class nrtvbr {
                    priority low;
                    transmit-weight percent 25;
                }
                forwarding-class rtvbr {
                    priority low;
                    transmit-weight percent 25;
                }
                forwarding-class cbr {
                    priority high;
                    transmit-weight percent 25;
                }
            }
        }
        cos2 {
            forwarding-class ubr {
                priority low;
                transmit-weight percent 10;
            }
            forwarding-class nrtvbr {
                priority low;
                transmit-weight percent 20;
            }
            forwarding-class rtvbr {
                priority low;
                transmit-weight percent 30;
            }
            forwarding-class cbr {
                priority high;
                transmit-weight percent 40;
            }
        }
        cos3 {
            forwarding-class ubr {
                priority low;
                transmit-weight percent 40;
            }
            forwarding-class nrtvbr {
                priority low;
                transmit-weight percent 30;
            }
        }
    }
}

```

```
        forwarding-class rtvbr {
            priority low;
            transmit-weight percent 20;
        }
        forwarding-class cbr {
            priority high;
            transmit-weight percent 10;
        }
    }
}
unit 0 {
    trunk-id 0;
    trunk-bandwidth 10m;
    cell-bundle-size 2;
}
unit 1 {
    trunk-id 1;
    trunk-bandwidth 10m;
    cell-bundle-size 1;
    atm-scheduler-map cos1;
}
unit 2 {
    trunk-id 2;
    trunk-bandwidth 10m;
    cell-bundle-size 2;
    atm-scheduler-map cos2;
}
unit 3 {
    trunk-id 3;
    trunk-bandwidth 10m;
    cell-bundle-size 3;
    atm-scheduler-map cos3;
}
}
lo0 {
    unit 0 {
        family inet {
            address 127.0.0.1/32;
            address 10.255.77.158/32 {
                primary;
            }
        }
        family iso {
            address 47.0005.80ff.f800.0000.0108.0001.0102.5507.0158.00;
        }
        family inet6 {
            address 2001:db8::10:255:77:158/32 {
                primary;
            }
        }
    }
}
}
protocols { # You can configure protocols in the routing matrix as usual.
    mpls {
```



```

        interface so-1/1/0.0;
    }
    isis {
        interface so-1/1/0.0;
        interface lo0.0;
    }
    ldp {
        interface so-1/1/0.0;
        interface lo0.0;
    }
    l2circuit {
        neighbor 10.255.71.97 {
            interface at-17/1/0.0 {
                virtual-circuit-id 100;
            }
            interface at-17/1/0.1 {
                virtual-circuit-id 101;
            }
            interface at-17/1/0.2 {
                virtual-circuit-id 102;
            }
            interface at-17/1/0.3 {
                virtual-circuit-id 103;
            }
        }
    }
}

class-of-service { # You can configure CoS in the routing matrix as usual.
    forwarding-classes {
        queue 0 ubr;
        queue 1 nrtvbr;
        queue 2 rtvbr;
        queue 3 cbr;
    }
    traceoptions {
        flag all;
    }
}

firewall { # You can configure firewalls in the routing matrix as usual.
    family mpls {
        filter filter_1 {
            term plp0 {
                from {
                    exp [ 0 2 4 6 ];
                }
                then {
                    count LOW;
                    loss-priority low;
                }
            }
            term plp1 {
                from {
                    exp [ 1 3 5 7 ];
                }
                then {
                    count HIGH;
                }
            }
        }
    }
}

```

```
        loss-priority high;
    }
}
}
```

## Verifying the Configuration of a Routing Matrix with a TX Matrix Plus Router

In general, when you issue standard operational commands on a TX Matrix Plus router, you receive output from the master Routing Engines of all components in the routing matrix. To display information for the TX Matrix Plus router only, include the **sfc sfc-number** option. To limit the output of information for a specific T1600 router within the routing matrix, include the **lcc lcc-number** option. To display information for all T1600 routers within the routing matrix (selected commands only), include the **all-lcc** option. Any exceptions to this general rule are mentioned next to the appropriate commands.

The following sections contain examples of specific **show** operational commands you can use to verify the configuration of the example:

- [Displaying Junos OS Versions on page 54](#)
- [Displaying Configured Interfaces on page 57](#)
- [Displaying Available Routes on page 58](#)
- [Displaying Alarms and System Uptime on page 59](#)
- [Displaying Craft Interface Messages on page 59](#)
- [Displaying System Uptime on page 62](#)
- [Displaying Chassis Hardware and Status on page 63](#)

### Displaying Junos OS Versions

---

The **show version** command provides an excellent example of how you can select output for various components of the routing matrix with a TX Matrix Plus router. If the TX Matrix Plus router (**sfc sfc-number**) or a T1600 router (**lcc lcc-number**) is not specified in the command, the command displays output for all components.

```
user@host> show version ?
Possible completions:
<[Enter]>      Execute this command
brief          Display brief output
detail         Display detailed output
invoke-on      Remote command execution
lcc            Show software version on specific LCC (0..3)
sfc            Show software version on SFC (0..0)
|              Pipe through a command
```

You can display information about individual software components in the TX Matrix Plus router, in a specific T1600 router, or the entire routing matrix:

- [Displaying Junos OS Versions for All Routers on page 55](#)
- [Displaying Junos OS Version for the SFC Only on page 56](#)

- [Displaying Junos OS Version for a Specific LCC on page 56](#)
- [Displaying Junos OS Versions for All LCCs on page 57](#)

### *Displaying Junos OS Versions for All Routers*

To display the software version for all routing matrix components, issue the **show version** command on the TX Matrix Plus router:

```
user@sfc0> show version
```

```
sfc0-re0:
```

```
-----
Hostname: sfc0
Model: txp
JUNOS Base OS boot [9.6-20090713.1]
JUNOS Base OS Software Suite [9.6-20090713.1]
JUNOS Kernel Software Suite [9.6-20090713.1]
JUNOS Crypto Software Suite [9.6-20090713.1]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090713.1]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090713.1]
JUNOS Online Documentation [9.6-20090713.1]
JUNOS Voice Services Container package [9.6-20090713.1]
JUNOS Border Gateway Function package [9.6-20090713.1]
JUNOS Services AACL Container package [9.6-20090713.1]
JUNOS Services LL-PDF Container package [9.6-20090713.1]
JUNOS Services Stateful Firewall [9.6-20090713.1]
JUNOS AppId Services [9.6-20090713.1]
JUNOS IDP Services [9.6-20090713.1]
JUNOS Routing Software Suite [9.6-20090713.1]
```

```
lcc0-re0:
```

```
-----
Hostname: mylcc0
Model: t1600
JUNOS Base OS boot [9.6-20090713.1]
JUNOS Base OS Software Suite [9.6-20090713.1]
JUNOS Kernel Software Suite [9.6-20090713.1]
JUNOS Crypto Software Suite [9.6-20090713.1]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090713.1]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090713.1]
JUNOS Online Documentation [9.6-20090713.1]
JUNOS Voice Services Container package [9.6-20090713.1]
JUNOS Border Gateway Function package [9.6-20090713.1]
JUNOS Services AACL Container package [9.6-20090713.1]
JUNOS Services LL-PDF Container package [9.6-20090713.1]
JUNOS Services Stateful Firewall [9.6-20090713.1]
JUNOS AppId Services [9.6-20090713.1]
JUNOS IDP Services [9.6-20090713.1]
JUNOS Routing Software Suite [9.6-20090713.1]
```

```
lcc2-re0:
```

```
-----
Hostname: mylcc2
Model: t1600
JUNOS Base OS boot [9.6-20090713.1]
JUNOS Base OS Software Suite [9.6-20090713.1]
JUNOS Kernel Software Suite [9.6-20090713.1]
JUNOS Crypto Software Suite [9.6-20090713.1]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090713.1]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090713.1]
JUNOS Online Documentation [9.6-20090713.1]
JUNOS Voice Services Container package [9.6-20090713.1]
```

```
JUNOS Border Gateway Function package [9.6-20090713.1]
JUNOS Services AACL Container package [9.6-20090713.1]
JUNOS Services LL-PDF Container package [9.6-20090713.1]
JUNOS Services Stateful Firewall [9.6-20090713.1]
JUNOS AppId Services [9.6-20090713.1]
JUNOS IDP Services [9.6-20090713.1]
JUNOS Routing Software Suite [9.6-20090713.1]
```

### *Displaying Junos OS Version for the SFC Only*

To display the software version for the TX Matrix Plus router only, include the **sfc number** option:

```
user@mysfc> show version sfc 0
sfc0-re0
```

```
-----
Hostname: sfc0
Model: txp
JUNOS Base OS boot [9.6-20090713.1]
JUNOS Base OS Software Suite [9.6-20090713.1]
JUNOS Kernel Software Suite [9.6-20090713.1]
JUNOS Crypto Software Suite [9.6-20090713.1]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090713.1]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090713.1]
JUNOS Online Documentation [9.6-20090713.1]
JUNOS Voice Services Container package [9.6-20090713.1]
JUNOS Border Gateway Function package [9.6-20090713.1]
JUNOS Services AACL Container package [9.6-20090713.1]
JUNOS Services LL-PDF Container package [9.6-20090713.1]
JUNOS Services Stateful Firewall [9.6-20090713.1]
JUNOS AppId Services [9.6-20090713.1]
JUNOS IDP Services [9.6-20090713.1]
JUNOS Routing Software Suite [9.6-20090713.1]
```

### *Displaying Junos OS Version for a Specific LCC*

To display the software version for a specific T1600 router, include the **lcc** option:

```
user@host> show version lcc 0
lcc0-re0:
```

```
-----
Hostname: mylcc0
Model: t1600
JUNOS Base OS boot [9.6-20090713.1]
JUNOS Base OS Software Suite [9.6-20090713.1]
JUNOS Kernel Software Suite [9.6-20090713.1]
JUNOS Crypto Software Suite [9.6-20090713.1]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090713.1]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090713.1]
JUNOS Online Documentation [9.6-20090713.1]
JUNOS Voice Services Container package [9.6-20090713.1]
JUNOS Border Gateway Function package [9.6-20090713.1]
JUNOS Services AACL Container package [9.6-20090713.1]
JUNOS Services LL-PDF Container package [9.6-20090713.1]
JUNOS Services Stateful Firewall [9.6-20090713.1]
JUNOS AppId Services [9.6-20090713.1]
JUNOS IDP Services [9.6-20090713.1]
```

JUNOS Routing Software Suite [9.6-20090713.1]

### *Displaying Junos OS Versions for All LCCs*

To display the software versions for all T1600 routers, include the **all-lcc** option:

```
user@host> show version all-lcc
lcc0-re0:
```

```
-----
Hostname: mylcc0
Model: t1600
JUNOS Base OS boot [9.6-20090713.1]
JUNOS Base OS Software Suite [9.6-20090713.1]
JUNOS Kernel Software Suite [9.6-20090713.1]
JUNOS Crypto Software Suite [9.6-20090713.1]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090713.1]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090713.1]
JUNOS Online Documentation [9.6-20090713.1]
JUNOS Voice Services Container package [9.6-20090713.1]
JUNOS Border Gateway Function package [9.6-20090713.1]
JUNOS Services AACL Container package [9.6-20090713.1]
JUNOS Services LL-PDF Container package [9.6-20090713.1]
JUNOS Services Stateful Firewall [9.6-20090713.1]
JUNOS AppId Services [9.6-20090713.1]
JUNOS IDP Services [9.6-20090713.1]
JUNOS Routing Software Suite [9.6-20090713.1]
```

**lcc2-re0**

```
-----
Hostname: mylcc0
Model: t1600
JUNOS Base OS boot [9.6-20090713.1]
JUNOS Base OS Software Suite [9.6-20090713.1]
JUNOS Kernel Software Suite [9.6-20090713.1]
JUNOS Crypto Software Suite [9.6-20090713.1]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090713.1]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090713.1]
JUNOS Online Documentation [9.6-20090713.1]
JUNOS Voice Services Container package [9.6-20090713.1]
JUNOS Border Gateway Function package [9.6-20090713.1]
JUNOS Services AACL Container package [9.6-20090713.1]
JUNOS Services LL-PDF Container package [9.6-20090713.1]
JUNOS Services Stateful Firewall [9.6-20090713.1]
JUNOS AppId Services [9.6-20090713.1]
JUNOS IDP Services [9.6-20090713.1]
JUNOS Routing Software Suite [9.6-20090713.1]
```

### **Displaying Configured Interfaces**

Although individual FPCs are installed in each of the T1600 routers, the routing matrix is designed to collect interface information centrally at the TX Matrix Plus router. To display available interfaces in the routing matrix, issue a **show interfaces** command on the TX Matrix Plus router:

```
user@host> show interfaces terse
```

Interface	Admin	Link	Proto	Local	Remote
so-1/0/0	up	up			
so-1/1/0	up	up			

```

so-1/1/0.0          up    up    inet  10.15.1.1      --> 10.15.1.2
                    up    iso
                    up    mpls

so-1/3/0            up    down
at-2/1/0            up    up
ge-2/2/0            up    up
so-3/3/0            up    up
so-3/3/1            up    up
so-3/3/2            up    down
so-3/3/3            up    down
so-16/0/0           up    down
so-16/0/1           up    down
so-16/0/2           up    down
so-16/0/3           up    up
ge-16/1/0           up    down
so-17/0/0           up    down
at-17/1/0           up    up
at-17/1/0.0         up    up    ccc
at-17/1/0.1         up    up    ccc
at-17/1/0.2         up    up    ccc
at-17/1/0.3         up    up    ccc
at-17/1/1           up    up
ge-17/2/0           up    up
ge-17/2/1           up    up
so-17/3/0           up    down
so-19/0/0           up    down
so-19/1/0           up    down
so-19/2/0           up    down
so-19/3/0           up    down
bcm0                up    up
bcm0.0              up    up    tnp   4
dsc                 up    up
em0                 up    up
em0.0               up    up    tnp   4
fxp0                up    up
fxp0.0              up    up    inet  192.168.77.158/21
gre                 up    up
ipip                up    up
lo0                 up    up
lo0.0               up    up    inet  10.255.70.158      --> 0/0
                                   127.0.0.1      --> 0/0
                                   iso
47.0005.80ff.f800.0000.0108.0001.0102.5507.0158.00
                                   inet6 2001:db8::10:255:70:158
                                   fe80::280:42ff:fe13:269d

lo0.16385           up    up    inet
                                   inet6 fe80::280:42ff:fe13:269d

lsi                 up    up
mtun                up    up
pimd                up    up
pime                up    up
tap                 up    up

```

### Displaying Available Routes

When you need to verify route information for a routing matrix, you must issue operational commands on the TX Matrix Plus router. To display available routes for the routing matrix, issue a **show route** command:

```
user@host> show route summary
```

```

Router ID: 10.255.77.158
inet.0: 13 destinations, 14 routes (12 active, 0 holddown, 1 hidden)
    Direct:    4 routes,    3 active
    Local:    2 routes,    2 active
    Static:    6 routes,    6 active
    IS-IS:    2 routes,    1 active
inet.3: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
    LDP:      1 routes,    1 active
iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
    Direct:    1 routes,    1 active
mpls.0: 7 destinations, 7 routes (7 active, 0 holddown, 0 hidden)
    MPLS:     3 routes,    3 active
    LDP:      2 routes,    2 active
    L2CKT:    2 routes,    2 active
inet6.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
    Direct:    2 routes,    2 active
__juniper_private1__.inet6.0: 1 destinations, 1 routes (1 active, 0 holddown, 0
hidden)
    Direct:    1 routes,    1 active
l2circuit.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
    LDP:      1 routes,    1 active
    L2CKT:    4 routes,    4 active

```

### Displaying Alarms and System Uptime

To display alarms for all routing matrix components, issue the **show chassis alarms** command at the TX Matrix Plus router:

```

user@host> show chassis alarms
sfc0-re0:
-----
2 alarms currently active
Alarm time      Class  Description
2009-07-10 02:27:46 PDT  Minor  LCC 0 Minor Errors
2009-07-09 17:12:29 PDT  Major  LCC 2 Major Errors

```

```

lcc0-re0:
-----
1 alarms currently active
Alarm time      Class  Description
2009-07-10 02:27:46 PDT  Minor  PEM 1 Absent

```

```

lcc2-re0:
-----
1 alarms currently active
Alarm time      Class  Description
2009-07-09 17:12:29 PDT  Major  PEM 1 Not OK

```

### Displaying Craft Interface Messages

To display the messages that are currently displayed on the craft interface for all routing matrix components, issue the **show chassis craft-interface** command at the master Routing Engine of the TX Matrix Plus router:

```

user@host> show chassis craft-interface
sfc0-re0:

```

```

-----
FPM Display Contents:
+-----+
|sfc0      |

```

```
|13 Alarms active |
|R: LCC 0 Major Error|
|R: LCC 2 Minor Error|
+-----+
```

SFC Front Panel Switch Settings:  
SFC Chassis Number : 00  
Config Size : 1

Front Panel System LEDs:  
Routing Engine 0 1

```
-----
OK          *   .
Fail        .   .
Master      *   .
```

Front Panel Alarm Indicators:

```
-----
Red LED     *
Yellow LED  *
Major relay *
Minor relay *
```

Front Panel F13 SIB LEDs:

SIB	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Fail	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
OK	*	*	.	*	*	.	*	*	*	*	.	.	.	.	.	.
Active	*	*	.	*	*	.	*	*	*	*	.	.	.	.	.	.

PS LEDs:

PS	0	1
Red	.	.
Green	*	.

Fan Tray LEDs:

FT	0	1	2	3	4	5
Red	*	.	.	.	*	.
Green	.	*	*	*	.	*

CB LEDs:

CB	0	1
Amber	.	.
Green	*	.
Blue	*	.

lcc0-re0:

FPM Display contents:

```
+-----+
|lcc0   |
|2 Alarms active |
|Y: Spare SIB 4 Absen|
|Y: PEM 1 Absent |
+-----+
```

Front Panel System LEDs:  
Routing Engine 0 1



```

-----
OK                *   .
Fail              .   .
Master            *   .

```

#### Front Panel Alarm Indicators:

```

-----
Red LED          .
Yellow LED       *
Major relay      .
Minor relay      *

```

#### Front Panel FPC LEDs:

```

FPC   0  1  2  3  4  5  6  7
-----
Red   .   .   .   .   .   .   .   .
Green *   *   .   .   .   .   .   *

```

#### CB LEDs:

```

CB   0  1
-----

```

```

Amber .   .
Green *   .
Blue  *   .

```

#### SCG LEDs:

```

SCG  0  1
-----

```

```

Amber .   .
Green *   *
Blue  *   .

```

#### SIB LEDs:

```

SIB  0  1  2  3  4
-----

```

```

Red   .   .   .   .   .
Green *   *   *   *   .

```

#### lcc2-re0:

#### FPM Display contents:

```

+-----+
|lcc2      |
|2 Alarms active|
|Y: Spare SIB 4 Absen|
|Y: PEM 1 Absent  |
+-----+

```

#### Front Panel System LEDs:

```

Routing Engine  0  1
-----

```

```

OK                *   .
Fail              .   .
Master            *   .

```

#### Front Panel Alarm Indicators:

```

-----
Red LED          .
Yellow LED       *
Major relay      .

```

```

Minor relay  *

Front Panel FPC LEDs:
FPC    0    1    2    3    4    5    6    7
-----
Red     .    .    .    .    .    .    .    .
Green  *    *    .    .    .    .    .    *

CB LEDs:
  CB    0    1
-----
Amber   .    .
Green  *    .
Blue   *    .

SCG LEDs:
  SCG    0    1
-----
Amber   .    .
Green  *    *
Blue   *    .

SIB LEDs:
  SIB    0    1    2    3    4
-----
Red     .    .    .    .    .
Green  *    *    *    *    .

```

### Displaying System Uptime

To display the amount of time the routing matrix components have been in operation, issue the **show system uptime** command on the TX Matrix Plus router:

```

user@host> show system uptime
sfc0-re0:
-----
Current time: 2009-07-10 07:55:56 PDT
System booted: 2009-07-09 17:08:41 PDT (14:47:15 ago)
Protocols started: 2009-07-09 17:09:22 PDT (14:46:34 ago)
Last configured: 2009-07-09 17:08:28 PDT (14:47:28 ago) by root
7:55AM up 14:47, 1 user, load averages: 0.00, 0.00, 0.00

lcc0-re0:
-----
Current time: 2009-07-10 07:55:56 PDT
System booted: 2009-07-09 17:07:40 PDT (14:48:16 ago)
Last configured: 2009-07-09 17:08:43 PDT (14:47:13 ago) by root
7:55AM up 14:48, 0 users, load averages: 0.07, 0.02, 0.01

lcc2-re0:
-----
Current time: 2009-07-10 07:55:56 PDT
System booted: 2009-07-09 17:07:33 PDT (14:48:23 ago)
Last configured: 2009-07-09 17:08:47 PDT (14:47:09 ago) by root
7:55AM up 14:48, 0 users, load averages: 0.00, 0.00, 0.00

```

## Displaying Chassis Hardware and Status

To display the hardware inventory for a routing matrix with a TX Matrix Plus router, you can select output for the TX Matrix Plus router only, a specific T1600 router, or all components. If a specific component (**sfc** or **lcc**) is not specified as an option in the command, the default output displays information for the entire routing matrix.

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

Possible completions:

```
<[Enter]>      Execute this command
clei-models    Display CLEI barcode and model number for orderable FRUs
detail        Include RAM and disk information in output
extensive      Display ID EEPROM information
lcc            Display chassis-specific information (0..3)
models        Display serial number and model number for orderable FRUs

sfc            Display chassis-specific information (0..0)
|             Pipe through a command
```

You can display information about individual hardware components in the TX Matrix Plus router, in a specific T1600 router, or the entire routing matrix:

- [Displaying Information About All Hardware Components on page 63](#)
- [Displaying Information About SIBs on page 66](#)
- [Displaying Information About Routing Engines on page 67](#)
- [Displaying Information About FPCs on page 69](#)
- [Displaying Information About LCCs on page 70](#)

### Displaying Information About All Hardware Components

To display all hardware components in a routing matrix, issue the **show chassis hardware** command on the TX Matrix Plus router:

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

```
sfc0-re0:
```

```
-----
Hardware inventory:
```

Item	Version	Part number	Serial number	Description
Chassis			JN1131103AHB	TXP
Midplane	REV 05	710-022574	TS4035	SFC Midplane
FPM Display	REV 01	710-024027	DR4982	TXP FPM Display
CIP 0	REV 02	710-023792	DS4568	TXP CIP
CIP 1	REV 02	710-023792	DS4562	TXP CIP
PEM 1	VER 01	740-027463	123456	Power Entry Module
Routing Engine 0	REV 01	740-026942	737A-1024	RE-DUO-2600
Routing Engine 1	REV 01	740-026942	737A-1008	RE-DUO-2600
CB 0	REV 01	710-022606	DP8889	SFC Control Board
CB 1	REV 05	710-022606	DW1103	SFC Control Board
SPMB 0		BUILTIN		SFC Switch CPU
SPMB 1		BUILTIN		SFC Switch CPU
SIB F13 0	REV 03	750-024564	DT9486	F13 SIB
B Board	REV 02	710-023431	DT6550	F13 SIB Mezz
SIB F13 1	REV 03	750-024564	DT9456	F13 SIB
B Board	REV 02	710-023431	DT6562	F13 SIB
SIB F13 3	REV 04	710-022600	DX0900	F13 SIB
B Board	REV 03	710-023431	DX0957	F13 SIB Mezz
SIB F13 4	REV 04	750-024564	DW5753	F13 SIB

B Board	REV 03	710-023431	DW9034	F13 SIB Mezz
SIB F13 6	REV 03	750-024564	DT9483	F13 SIB
B Board	REV 02	710-023431	DT6558	F13 SIB Mezz
SIB F13 7	REV 04	750-024564	DW5790	F13 SIB
B Board	REV 03	710-023431	DW9072	F13 SIB Mezz
SIB F13 8	REV 04	710-022600	DX0833	F13 SIB
B Board	REV 03	710-023431	DX0938	F13 SIB Mezz
SIB F13 9	REV 03	750-024564	DT9465	F13 SIB
B Board	REV 02	710-023431	DT6574	F13 SIB Mezz
SIB F13 11	REV 04	750-024564	DW5756	F13 SIB
B Board	REV 03	710-023431	DW9072	F13 SIB Mezz
SIB F13 12	REV 04	750-024564	DW5749	F13 SIB
B Board	REV 03	710-023431	DW9050	F13 SIB Mezz
SIB F2S 0/0	REV 03	710-022603	DV0063	F2S SIB
B Board	REV 03	710-023787	DT9917	F2S SIB Mezz
SIB F2S 0/2	REV 03	710-022603	DV0090	F2S SIB
B Board	REV 03	710-023787	DT9994	F2S SIB Mezz
SIB F2S 0/4	REV 03	710-022603	DV0076	F2S SIB
B Board	REV 03	710-023787	DT9930	F2S SIB Mezz
SIB F2S 0/6	REV 03	710-022603	DV0035	F2S SIB
B Board	REV 03	710-023787	DT9951	F2S SIB Mezz
SIB F2S 1/0	REV 03	710-022603	DV0067	F2S SIB
B Board	REV 03	710-023787	DT9922	F2S SIB Mezz
SIB F2S 1/2	REV 03	710-022603	DV0036	F2S SIB
B Board	REV 03	710-023787	DT9950	F2S SIB Mezz
SIB F2S 1/4	REV 03	710-022603	DV0085	F2S SIB
B Board	REV 03	710-023787	DT9935	F2S SIB Mezz
SIB F2S 1/6	REV 03	710-022603	DV0028	F2S SIB
B Board	REV 03	710-023787	DT9960	F2S SIB Mezz
SIB F2S 2/0	REV 03	710-022603	DV0047	F2S SIB
B Board	REV 03	710-023787	DT9965	F2S SIB Mezz
SIB F2S 2/2	REV 03	710-022603	DV0023	F2S SIB
B Board	REV 03	710-023787	DT9927	F2S SIB Mezz
SIB F2S 2/4	REV 03	710-022603	DV0046	F2S SIB
B Board	REV 03	710-023787	DT9946	F2S SIB Mezz
SIB F2S 2/6	REV 03	710-022603	DV0025	F2S SIB
B Board	REV 03	710-023787	DT9914	F2S SIB Mezz
SIB F2S 3/0	REV 03	710-022603	DV0110	F2S SIB
B Board	REV 03	710-023787	DT9944	F2S SIB Mezz
SIB F2S 3/2	REV 03	710-022603	DV0056	F2S SIB
B Board	REV 03	710-023787	DT9979	F2S SIB Mezz
SIB F2S 3/4	REV 03	710-022603	DV0024	F2S SIB
B Board	REV 03	710-023787	DT9920	F2S SIB Mezz
SIB F2S 3/6	REV 03	710-022603	DV0108	F2S SIB
B Board	REV 03	710-023787	DT9989	F2S SIB Mezz
SIB F2S 4/0	REV 02	710-022603	DT2821	F2S SIB
B Board	REV 02	710-023787	DT1719	F2S SIB Mezz
SIB F2S 4/2	REV 03	710-022603	DV0031	F2S SIB
B Board	REV 03	710-023787	DT9953	F2S SIB Mezz
SIB F2S 4/4	REV 03	710-022603	DV0094	F2S SIB
B Board	REV 03	710-023787	DT9918	F2S SIB Mezz
SIB F2S 4/6	REV 03	710-022603	DV0022	F2S SIB
B Board	REV 03	710-023787	DT9943	F2S SIB Mezz
Fan Tray 0	REV 02	710-024029	DP5653	Front Fan Tray
Fan Tray 1	REV 02	760-024497	DP5661	Front Fan Tray
Fan Tray 2	REV 02	760-024502	DP5660	Rear Fan Tray
Fan Tray 3	REV 02	760-024502	DR8267	Rear Fan Tray
Fan Tray 4	REV 02	760-024502	DR8265	Rear Fan Tray
Fan Tray 5	REV 02	760-024502	DR8272	Rear Fan Tray

lcc0-re0:

-----  
Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN1090A04AHA	T1600
Midplane	REV 01	710-017247	RB8601	T-series Backplane
FPM GBUS	REV 09	710-002901	JW7364	T640 FPM Board
FPM Display	REV 05	710-002897	JY6782	FPM Display
CIP	REV 06	710-002895	JW7565	T-series CIP
PEM 0	Rev 14	740-002595	SL26454	Power Entry Module
PEM 1	Rev 15	740-002595	SM30230	Power Entry Module
SCG 0	REV 03	710-003423	HA4517	T640 Sonet Clock Gen.
SCG 1	REV 04	710-003423	HF6049	T640 Sonet Clock Gen.
Routing Engine 0	REV 00	740-026941	737F-1051	RE-DUO-1800
Routing Engine 1	REV 01	740-026941	737F-1095	RE-DUO-1800
CB 0	REV 05	710-022597	DV4262	LCC Control Board
CB 1	REV 06	710-022597	DX4009	LCC Control Board
FPC 7	REV 01	710-010845	JB7158	FPC Type 4
CPU	REV 02	710-011481	JB6048	FPC CPU-Enhanced
MMB 0	REV 06	710-010842	JP1703	ST-MMB
SPMB 0	REV 04	710-023321	DV3863	LCC Switch CPU
SPMB 1	REV 04	710-023321	DW3634	LCC Switch CPU
SIB 1	REV 07	710-022594	DW4208	LCC SIB
B Board	REV 07	710-023185	DW3944	LCC SIB Mezz
SIB 2	REV 07	710-022594	DW4205	LCC SIB
B Board	REV 07	710-023185	DW3945	LCC SIB Mezz
SIB 3	REV 07	710-022594	DW4218	LCC SIB
B Board	REV 07	710-023185	DW3931	LCC SIB Mezz
SIB 4	REV 07	710-022594	DW4183	LCC SIB
B Board	REV 07	710-023185	DW3936	LCC SIB Mezz
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray

lcc2-re0:  
-----

## Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN1102900AHA	T1600
Midplane	REV 03	710-017247	RC3766	T-series Backplane
FPM GBUS	REV 10	710-002901	DR1415	T640 FPM Board
FPM Display	REV 01	710-021387	DN7019	T1600 FPM Display
CIP	REV 06	710-002895	DP6012	T-series CIP
PEM 0	Rev 07	740-017906	UC26613	Power Entry Module 3x80
PEM 1	Rev 07	740-017906	UC26544	Power Entry Module 3x80
SCG 0	REV 15	710-003423	DR0914	T640 Sonet Clock Gen.
Routing Engine 0	REV 01	740-026941	737F-1032	RE-DUO-1800
Routing Engine 1	REV 01	740-026941	737F-1024	RE-DUO-1800
CB 0	REV 05	710-022597	DV4260	LCC Control Board
CB 1	REV 01	710-022597	DM1159	LCC Control Board
FPC 0	REV 12	710-013037	DR1172	FPC Type 4-ES
CPU	REV 08	710-016744	DR0997	ST-PMB2
PIC 0	REV 11	750-017405	DP8833	4x 10GE (LAN/WAN) XFP
Xcvr 0		NON-JNPR	344512071800039	XFP-10G-SR
MMB 0	REV 04	710-016036	DR0651	ST-MMB2
MMB 1	REV 04	710-016036	DR0803	ST-MMB2
FPC 1	REV 07	710-013560	DP9980	E2-FPC Type 3
CPU	REV 05	710-013563	DR0088	FPC CPU-Enhanced
PIC 0	REV 22	750-007141	DR1955	10x 1GE(LAN), 1000 BASE
PIC 1	REV 22	750-007141	DR1944	10x 1GE(LAN), 1000 BASE

PIC 2	REV 22	750-007141	DR1963	10x 1GE(LAN), 1000 BASE
PIC 3	REV 07	750-015217	DN4835	8x 1GE(TYPE3), IQ2
Xcvr 0	REV 01	740-011613	P9F1AQL	SFP-SX
MMB 0	REV 07	710-010171	DP1350	MMB-5M3-288mbit
MMB 1	REV 07	710-010171	DP1386	MMB-5M3-288mbit
FPC 2	REV 14	710-010845	DN1255	FPC Type 4
CPU	REV 06	710-011481	DM9414	FPC CPU-Enhanced
MMB 0	REV 01	710-016606	DP1869	ST-MMB
SPMB 0	REV 04	710-023321	DV3859	LCC Switch CPU
SPMB 1	REV 01	710-023321	DM1161	LCC Switch CPU
SIB 0	REV 07	710-022594	DW4197	LCC SIB
B Board	REV 07	710-023185	DW3916	LCC SIB Mezz
SIB 1	REV 06	710-022594	DT8266	LCC SIB
B Board	REV 06	710-023185	DT5793	LCC SIB Mezz
SIB 2	REV 07	710-022594	DW4184	LCC SIB
B Board	REV 07	710-023185	DW3915	LCC SIB Mezz
SIB 3	REV 06	710-022594	DT8271	LCC SIB
B Board	REV 04	710-023185	DS2323	LCC SIB Mezz
SIB 4	REV 06	710-022594	DT8238	LCC SIB
B Board	REV 06	710-023185	DT5783	LCC SIB Mezz
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray -- Rev 2

### Displaying Information About SIBs

To display all the SIBs in the entire routing matrix, issue the **show chassis sibs** command on the TX Matrix Plus router.

```
user@host> show chassis sibs
sfc0-re0:
```

Slot	State	Type	Uptime
0	Online	SIB F13	1 hour, 27 minutes, 13 seconds
1	Online	SIB F13	1 hour, 26 minutes, 56 seconds
2	Invalid		
3	Online	SIB F13	1 hour, 28 minutes, 23 seconds
4	Online	SIB F13	1 hour, 28 minutes, 20 seconds
5	Invalid		
6	Fault	SIB F13	
7	Online	SIB F13	1 hour, 27 minutes, 56 seconds
8	Online	SIB F13	1 hour, 27 minutes, 48 seconds
9	Online	SIB F13	1 hour, 27 minutes, 31 seconds
10	Invalid		
11	Online	SIB F13	1 hour, 27 minutes, 24 seconds
12	Online	SIB F13	1 hour, 27 minutes, 21 seconds
13	Invalid		
14	Invalid		
15	Invalid		
0/0	Online	SIB F2S	1 hour, 27 minutes, 20 seconds
0/2	Online	SIB F2S	1 hour, 27 minutes, 19 seconds
0/4	Online	SIB F2S	1 hour, 27 minutes, 17 seconds
0/6	Online	SIB F2S	1 hour, 27 minutes, 16 seconds
1/0	Online	SIB F2S	1 hour, 28 minutes, 30 seconds
1/2	Online	SIB F2S	1 hour, 28 minutes, 28 seconds
1/4	Online	SIB F2S	1 hour, 28 minutes, 27 seconds
1/6	Online	SIB F2S	1 hour, 28 minutes, 26 seconds
2/0	Online	SIB F2S	1 hour, 28 minutes, 19 seconds
2/2	Online	SIB F2S	1 hour, 28 minutes, 18 seconds

2/4	Online	SIB F2S	1 hour, 28 minutes, 17 seconds
2/6	Online	SIB F2S	1 hour, 28 minutes, 16 seconds
3/0	Online	SIB F2S	1 hour, 27 minutes, 55 seconds
3/2	Online	SIB F2S	1 hour, 27 minutes, 53 seconds
3/4	Online	SIB F2S	1 hour, 27 minutes, 52 seconds
3/6	Online	SIB F2S	1 hour, 27 minutes, 51 seconds
4/0	Online	SIB F2S	1 hour, 27 minutes, 31 seconds
4/2	Online	SIB F2S	1 hour, 27 minutes, 29 seconds
4/4	Online	SIB F2S	1 hour, 27 minutes, 28 seconds
4/6	Online	SIB F2S	1 hour, 27 minutes, 27 seconds

**lcc0-re0:**

Slot	State	Uptime
0	Empty	
1	Online	1 hour, 1 minute, 55 seconds
2	Fault	
3	Online	1 hour, 1 minute, 51 seconds
4	Online	1 hour, 1 minute, 49 seconds

**lcc2-re0:**

Slot	State	Uptime
0	Online	1 hour, 1 minute, 2 seconds
1	Online	1 hour, 1 minute, 17 seconds
2	Check	1 hour, 1 minute, 15 seconds
3	Online	1 hour, 1 minute, 6 seconds
4	Online	1 hour, 1 minute, 4 seconds

**Displaying Information About Routing Engines**

To display information about all master Routing Engines in the routing matrix, issue the **show chassis routing-engine** command on the TX Matrix Plus router:

```
user@host> show chassis routing-engine
```

**sfc0-re0:****Routing Engine status:****Slot 0:**

Current state	Master
Election priority	Master (default)
Temperature	28 degrees C / 82 degrees F
CPU temperature	42 degrees C / 107 degrees F
DRAM	3327 MB
Memory utilization	13 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	2009-07-09 17:08:13 PDT
Uptime	14 hours, 55 minutes, 39 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	45 degrees C / 113 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-1008
Start time	2009-07-08 12:38:29 PDT
Uptime	1 day, 19 hours, 25 minutes, 35 seconds
Last reboot reason	Router rebooted after a normal shutdown.

## lcc0-re0:

-----  
Routing Engine status:

## Slot 0:

Current state	Master
Election priority	Master (default)
Temperature	33 degrees C / 91 degrees F
CPU temperature	47 degrees C / 116 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-LCC
Serial ID	737F-1051
Start time	2009-07-09 17:06:52 PDT
Uptime	14 hours, 56 minutes, 37 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	33 degrees C / 91 degrees F
CPU temperature	47 degrees C / 116 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-1095
Start time	2009-07-08 12:40:14 PDT
Uptime	1 day, 19 hours, 24 minutes, 1 second
Last reboot reason	Router rebooted after a normal shutdown.



lcc2-re0:

-----  
Routing Engine status:

## Slot 0:

Current state	Master
Election priority	Master (default)
Temperature	30 degrees C / 86 degrees F
CPU temperature	45 degrees C / 113 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-LCC
Serial ID	737F-1032
Start time	2009-07-09 17:06:53 PDT
Uptime	14 hours, 56 minutes, 48 seconds
Last reboot reason	Router rebooted after a normal shutdown.
Load averages:	1 minute    5 minute    15 minute
	0.01            0.01            0.00

## Routing Engine status:

## Slot 1:

Current state	Backup
Election priority	Backup (default)
Temperature	30 degrees C / 86 degrees F
CPU temperature	44 degrees C / 111 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	2009-07-08 12:37:52 PDT
Uptime	1 day, 19 hours, 26 minutes, 22 seconds
Last reboot reason	Router rebooted after a normal shutdown.

**Displaying Information About FPCs**

To display information about FPCs in a routing matrix, issue the **show chassis fpc** command. Because there are no FPCs in a TX Matrix Plus router, there is no **sfc** option available for this command.

user@host&gt; show chassis fpc

lcc0-re0:

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

```

6 Empty
7 Online          49      4          0      1024      7          49

```

**lcc2-re0:**

```

-----
Slot State      Temp  CPU Utilization (%)  Memory  Utilization (%)
              (C)  Total  Interrupt  DRAM (MB) Heap      Buffer
0 Online        47      8          0      2048      6          24
1 Online        28      4          0      1024      4          49
2 Online        39      5          0      1024      7          49
3 Empty
4 Empty
5 Empty
6 Empty
7 Empty

```

### Displaying Information About LCCs

You can also check to see if the TX Matrix Plus router and T1600 routers are communicating correctly within the routing matrix. To verify that the T1600 routers have proper connectivity to the routing matrix, issue the **show chassis lccs** command. In this example, there are two T1600 routers in the routing matrix.

```

user@host> show chassis lccs
Slot  State      Uptime
0     Online      15 hours, 5 minutes, 58 seconds
1     Empty
2     Online      15 hours, 5 minutes, 58 seconds
3     Empty

```

### Related Documentation

- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
- [Roadmap for Configuring the Routing Matrix on page 31](#)
- [Verifying the Configuration of the Routing Matrix](#)
- [Merging Examples on page 97](#)
- [Upgrading the Junos OS on the Routing Matrix on page 155](#)

## Example: Configuring a Routing Matrix with a TX Matrix Plus Router in Mixed Mode

The mixed-mode (TXP-Mixed-LCC-3D) configuration supports the following combinations of T1600 and T4000 routers:

- Six T1600 routers and one T4000 router
- Four T1600 routers and two T4000 routers
- Two T1600 routers and three T4000 routers

This example provides a step-by-step procedure and commands for configuring and verifying a routing matrix with a TX Matrix Plus router and 3D SIBs in a mixed-mode configuration of two T1600 routers and three T4000 routers.

- [Requirements on page 71](#)
- [Overview on page 71](#)
- [Configuration on page 73](#)
- [Verification on page 80](#)

## Requirements

This example uses the following software and hardware components:

- Junos OS Release 13.1 or later.
- One TX Matrix Plus router SFC (also referred to as the switch-fabric chassis (SFC) in a routing matrix).
- Three T4000 routers (also referred to as line-card chassis (LCC) in a routing matrix).
- Two T1600 routers (also referred to as line-card chassis (LCC) in a routing matrix).
- Interchassis UTP Category 5 Ethernet cables that connect the SFC and LCC control planes.
- Equipment racks for the SFC and the LCCs.

Before you configure a routing matrix with a TX Matrix Plus router and 3D SIBs, make sure that you understand how to connect the hardware components, and upgrade to a TX Matrix Plus router with 3D SIBs including setting the SFC configuration size. For more information, see the [TX Matrix Plus Hardware Guide](#).

## Overview

TX Matrix Plus routers with 3D SIBs double the T Series multichassis bandwidth when compared with TX Matrix Plus routers without 3D SIBs. Each T1600 LCC adds up to 1.6 terabits per second (Tbps) full-duplex (3.2 Tbps of any-to-any, nonblocking, half-duplex) switching. Each T4000 LCC adds up to 2.0 Tbps, full-duplex (4.0 Tbps of any-to-any, nonblocking, half-duplex) switching.

In this example, you configure a routing matrix in mixed mode that includes a TX Matrix Plus router with 3D SIBs, and two T1600 and three T4000 LCCs with 3D SIBs.

Note the following key considerations for this routing matrix configuration:

- The TX Matrix Plus router with 3D SIBs, or the SFC, manages the routing matrix as a single router. All the operational commands and configurations required for the connected LCCs are executed on the TX Matrix Plus router with 3D SIBs which is designated as **sfc0**.
- Create configuration groups for each Routing Engine in the routing matrix by using the special configuration groups for a routing matrix consisting of routers with dual Routing Engines: **re0**, **re1**, **lcc0-re0**, **lcc2-re0**, **lcc4-re0**, **lcc6-re0**, **lcc7-re0**, **lcc0-re1**, **lcc2-re1**, **lcc4-re1**,

**lcc6-re1**, and **lcc7-re1**. Configure hostnames, default routes, and management Ethernet interfaces in these Routing Engine configuration groups.

- To configure interfaces, use the routing matrix FPC numbering convention of slots 0 through 63. For details, see the [FPC Numbering for Interfaces in TXP-Mixed-LCC-3D Configuration](#).

---

## Topology

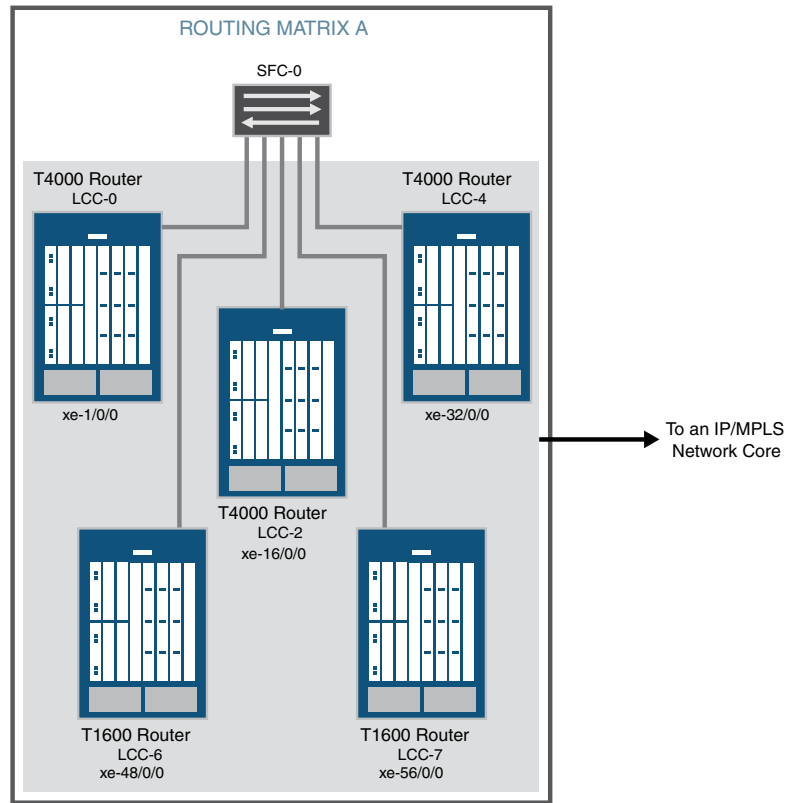
In this example, Routing Matrix A comprises a TX Matrix Plus router (**sfc0**) with 3D SIBs, three T4000 routers with 3D SIBs, and two T1600 routers with 3D SIBs.

In this example, the following hostnames are used for the TX Matrix Plus router and the LCCs:

- **sfc0**—Master Routing Engine on the TX Matrix Plus router
- **sfc0\_alt\_re**—Backup Routing Engine on the TX Matrix Plus router
- **lcc0**—Master Routing Engine on T4000 LCC 0
- **lcc0\_alt\_re**—Backup Routing Engine on T4000 LCC 0
- **lcc2**—Master Routing Engine on T4000 LCC 2
- **lcc2\_alt\_re**—Backup Routing Engine on T4000 LCC 2
- **lcc4**—Master Routing Engine on T4000 LCC 4
- **lcc4\_alt\_re**—Backup Routing Engine on T4000 LCC 4
- **lcc6**—Master Routing Engine on T1600 LCC 6
- **lcc6\_alt\_re**—Backup Routing Engine on T1600 LCC 6
- **lcc7**—Master Routing Engine on T1600 LCC 7
- **lcc7\_alt\_re**—Backup Routing Engine on T1600 LCC 7

[Figure 8 on page 73](#) shows that Routing Matrix A is a provider edge (PE) router in a Layer 2 circuit network. Ethernet interfaces xe-1/0/0 on LCC 0, xe-16/0/0 on LCC 2, xe-32/0/0 on LCC 4, xe-48/0/0 on LCC 6, and xe-56/0/0 on LCC 7 connect to an IP/MPLS core network.

Figure 8: Topology of a Routing Matrix with a TX Matrix Plus Router in a Mixed Mode



g041553

## Configuration

To configure a routing matrix with a TX Matrix Plus router in mixed mode, perform the following tasks:

- [Configuring LCC Mode on page 76](#)
- [Creating Special Configuration Groups on page 77](#)
- [Configuring Interfaces on page 78](#)
- [Configuring Protocols on page 79](#)
- [Configuring Firewall Filters on page 79](#)

### CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them in a text file, remove any line breaks, change any details necessary to match your network configuration, and paste the commands into the CLI at the **[edit]** hierarchy level.

```
set chassis lcc-mode lcc 0 t4000
set chassis lcc-mode lcc 1 empty
set chassis lcc-mode lcc 2 t4000
set chassis lcc-mode lcc 3 empty
set chassis lcc-mode lcc 4 t4000
set chassis lcc-mode lcc 5 empty
set chassis lcc-mode lcc 6 t1600
```

```
set chassis lcc-mode lcc 7 t1600
set groups re0 system host-name sfc0
set groups lcc0-re0 system host-name lcc0
set groups lcc2-re0 system host-name lcc2
set groups lcc4-re0 system host-name lcc4
set groups lcc6-re0 system host-name lcc6
set groups lcc7-re0 system host-name lcc7
set groups re1 system host-name sfc0_alt_re
set groups lcc0-re1 system host-name lcc0_alt_re
set groups lcc2-re1 system host-name lcc2_alt_re
set groups lcc4-re1 system host-name lcc4_alt_re
set groups lcc6-re1 system host-name lcc6_alt_re
set groups lcc7-re1 system host-name lcc7_alt_re
set groups re0 system backup-router 10.216.63.254
set groups lcc0-re0 system backup-router 10.216.63.254
set groups lcc2-re0 system backup-router 10.216.63.254
set groups lcc4-re0 system backup-router 10.216.63.254
set groups lcc6-re0 system backup-router 10.216.63.254
set groups lcc7-re0 system backup-router 10.216.63.254
set groups re1 system backup-router 10.216.63.254
set groups lcc0-re1 system backup-router 10.216.63.254
set groups lcc2-re1 system backup-router 10.216.63.254
set groups lcc4-re1 system backup-router 10.216.63.254
set groups lcc6-re1 system backup-router 10.216.63.254
set groups lcc7-re1 system backup-router 10.216.63.254
set groups lcc0-re1 system backup-router 10.216.63.254
set groups re0 interfaces em0 unit 0 family inet address 10.216.49.204/20
set groups lcc0-re0 interfaces em0 unit 0 family inet address 10.216.49.205/20
set groups lcc2-re0 interfaces em0 unit 0 family inet address 10.216.49.206/20
set groups lcc4-re0 interfaces em0 unit 0 family inet address 10.216.49.207/20
set groups lcc6-re0 interfaces em0 unit 0 family inet address 10.216.49.208/20
set groups lcc7-re0 interfaces em0 unit 0 family inet address 10.216.49.209/20
set groups re1 interfaces em0 unit 0 family inet address 10.216.49.210/20
set groups lcc0-re1 interfaces em0 unit 0 family inet address 10.216.49.211/20
set groups lcc2-re1 interfaces em0 unit 0 family inet address 10.216.49.212/20
set groups lcc4-re1 interfaces em0 unit 0 family inet address 10.216.49.213/20
set groups lcc6-re1 interfaces em0 unit 0 family inet address 10.216.49.214/20
set groups lcc7-re1 interfaces em0 unit 0 family inet address 10.216.49.215/20
set apply-groups [ re0 re1 lcc0-re0 lcc0-re1 lcc2-re0 lcc2-re1 lcc4-re0 lcc4-re1 lcc6-re0
  lcc6-re1 lcc7-re0 lcc7-re1 ]
set interfaces xe-1/0/0 mtu 9192
set interfaces xe-1/0/0 unit 0 family inet address 10.15.1.2/30
set interfaces xe-1/0/0 unit 0 family iso
set interfaces xe-1/0/0 unit 0 family mpls filter input filter_1
set interfaces xe-8/0/0 mtu 9192
set interfaces xe-8/0/0 unit 0 family inet address 11.15.1.2/30
set interfaces xe-8/0/0 unit 0 family iso
set interfaces xe-8/0/0 unit 0 family mpls filter input filter_2
set interfaces xe-32/0/0 mtu 9192
set interfaces xe-32/0/0 unit 0 family inet address 12.15.1.2/30
set interfaces xe-32/0/0 unit 0 family iso
set interfaces xe-32/0/0 unit 0 family mpls filter input filter_3
set interfaces xe-48/0/0 mtu 9192
set interfaces xe-48/0/0 unit 0 family inet address 13.15.1.2/30
set interfaces xe-48/0/0 unit 0 family iso
set interfaces xe-48/0/0 unit 0 family mpls filter input filter_4
```

```

set interfaces xe-56/0/0 mtu 9192
set interfaces xe-56/0/0 unit 0 family inet address 14.15.1.2/30
set interfaces xe-56/0/0 unit 0 family iso
set interfaces xe-56/0/0 unit 0 family mpls filter input filter_5
set interfaces lo0 unit 0 family inet address 127.0.0.1/32
set interfaces lo0 unit 0 family inet address 10.255.77.158/32 primary
set interfaces lo0 unit 0 family inet6 address
    47.0005.80ff.f800.0000.0108.0001.0102.5507.0158.00
set interfaces lo0 unit 0 family inet6 address 2001:db8::10:255:77:158/32 primary
set protocols mpls interface xe-8/0/0
set protocols isis interface xe-8/0/0
set protocols ldp interface xe-8/0/0
set protocols mpls interface xe-16/0/0
set protocols isis interface xe-16/0/0
set protocols ldp interface xe-16/0/0
set protocols mpls interface xe-32/0/0
set protocols isis interface xe-32/0/0
set protocols ldp interface xe-32/0/0
set protocols mpls interface xe-48/0/0
set protocols isis interface xe-48/0/0
set protocols ldp interface xe-48/0/0
set protocols mpls interface xe-56/0/0
set protocols isis interface xe-56/0/0
set protocols ldp interface xe-56/0/0
set firewall family mpls filter filter_1 term plp0 from exp [ 0 2 4 6 ]
set firewall family mpls filter filter_1 term plp0 then count LOW loss-priority low
set firewall family mpls filter filter_1 term plp1 from exp [ 1 3 5 7 ]
set firewall family mpls filter filter_1 term plp1 then count HIGH loss-priority high
set firewall family mpls filter filter_2 term plp2 from exp [ 0 2 4 6 ]
set firewall family mpls filter filter_2 term plp2 then count LOW loss-priority medium-low
set firewall family mpls filter filter_2 term plp3 from exp [ 1 3 5 7 ]
set firewall family mpls filter filter_2 term plp3 then count HIGH loss-priority medium-high
set firewall family mpls filter filter_3 term plp4 from exp [ 1 3 5 7 ]
set firewall family mpls filter filter_3 term plp4 then count LOW loss-priority low
set firewall family mpls filter filter_3 term plp5 from exp [ 0 2 4 6 ]
set firewall family mpls filter filter_3 term plp5 then count HIGH loss-priority high
set firewall family mpls filter filter_4 term plp6 from exp [ 0 1 2 3 ]
set firewall family mpls filter filter_4 term plp6 then count LOW loss-priority low
set firewall family mpls filter filter_4 term plp7 from exp [ 4 5 6 7 ]
set firewall family mpls filter filter_4 term plp7 then count HIGH loss-priority high
set firewall family mpls filter filter_5 term plp8 from exp [ 0 2 4 6 ]
set firewall family mpls filter filter_5 term plp8 then count LOW loss-priority medium-low
set firewall family mpls filter filter_5 term plp9 from exp [ 1 3 5 7 ]
set firewall family mpls filter filter_5 term plp9 then count HIGH loss-priority medium-high

```

## Configuring LCC Mode

**Step-by-Step Procedure** A routing matrix with a TX Matrix Plus router and 3D SIBs supports a combination of T1600 and T4000 LCCs, which is also known as the TXP-Mixed-LCC-3D configuration. To enable the TXP-Mixed-LCC-3D configuration, you must configure the LCC mode on the TX Matrix Plus router. In this example, LCC 0, LCC 2, and LCC 4 are configured as T4000 LCCs and LCC 6 and LCC 7 are configured as T1600 LCCs.



### NOTE:

- By default, the LCC mode is configured to **t1600**.
- The LCC mode **t4000** is supported only on the even-numbered LCCs LCC 0, LCC 2, LCC 4, and LCC 6.
- When you set the LCC mode as **t4000**, you must set the LCC mode for the next (odd-numbered) LCC as **empty**. For example, if you set the LCC mode **t4000** on LCC 2, then you must set the mode for LCC 3 as **empty**. Otherwise, the commit operation fails. Setting the LCC mode for an LCC as **empty** disables the control plane and data plane connections between that LCC and the SFC, so the LCC does not come online.

To configure LCC mode:

1. Configure the LCC mode **t4000** for LCC 0, LCC 2, and LCC 4 and the LCC mode **empty** for the odd-numbered LCCs ( LCC 1, LCC 3, and LCC 5) next to the T4000 LCCs.

```
[edit chassis]
user@sfc0# set lcc-mode lcc 0 t4000
user@sfc0# set lcc-mode lcc 1 empty
user@sfc0# set lcc-mode lcc 2 t4000
user@sfc0# set lcc-mode lcc 3 empty
user@sfc0# set lcc-mode lcc 4 t4000
user@sfc0# set lcc-mode lcc 5 empty
```

2. (Optional) Configure the LCC mode as **t1600** on LCC 6 and LCC 7.

```
[edit chassis]
user@sfc0# set lcc-mode lcc 6 t1600
user@sfc0# set lcc-mode lcc 7 t1600
```



**NOTE:** By default, the LCC mode is set to **t1600**. However, if the LCC mode is set to **t4000** or **empty** due to a previous configuration, then you need to configure the LCC mode as **t1600**. You can verify the LCC mode by using the `show chassis lcc-mode operational mode` command.



### Creating Special Configuration Groups

**Step-by-Step Procedure** The configuration groups featured in Junos OS enable you to create a group containing configuration statements and to direct the inheritance of that group's statements in the rest of the configuration.

Using special configuration group names for all Routing Engines in the routing matrix allows you to configure the individual Routing Engines in each router differently. Because the configuration statements in the special configuration groups for Routing Engines apply to specific Routing Engines in the routing matrix, you can create a single configuration for all of the routers, with each Routing Engine using only the configuration statements that apply to it. For example, the configuration specified in group **re0** is applied only if the current Routing Engine is in slot 0; likewise, the configuration specified in group **re1** is applied only if the current Routing Engine is in slot 1. Therefore, both Routing Engines can use the same configuration file, each using only the configuration statements that apply to it.

To create and apply special configuration groups:

1. Create special groups for the master and the backup Routing Engines on the SFC.

In this example, **re0** and **re1** are the special group names for the master and backup Routing Engines of the SFC.

```
[edit groups]
user@sfc0# set re0 system host-name sfc0
user@sfc0# set re1 system host-name sfc0_alt_re
```

2. Create special groups for the master and the backup Routing Engines on the LCCs.

In this example, **lcc0-re0**, **lcc2-re0**, **lcc4-re0**, **lcc6-re0**, and **lcc7-re0** are the special group names for the master Routing Engines in the LCCs and **lcc0-re1**, **lcc2-re1**, **lcc4-re1**, **lcc6-re1**, and **lcc7-re1** are the special group names for the backup Routing Engines in the LCCs.

```
[edit groups]
user@sfc0# set lcc0-re0 system host-name lcc0
user@sfc0# set lcc0-re1 system host-name lcc0_alt_re
user@sfc0# set lcc2-re0 system host-name lcc2
user@sfc0# set lcc2-re1 system host-name lcc2_alt_re
user@sfc0# set lcc4-re0 system host-name lcc4
user@sfc0# set lcc4-re1 system host-name lcc4_alt_re
user@sfc0# set lcc6-re0 system host-name lcc6
user@sfc0# set lcc6-re1 system host-name lcc6_alt_re
user@sfc0# set lcc7-re0 system host-name lcc7
user@sfc0# set lcc7-re1 system host-name lcc7_alt_re
```

3. Set a default router for the master and backup Routing Engines in the SFC and the LCCs.

```
[edit groups]
user@sfc0# set re0 system backup-router 10.216.63.254
user@sfc0# set re1 system backup-router 10.216.63.254
user@sfc0# set lcc0-re0 system backup-router 10.216.63.254
user@sfc0# set lcc0-re1 system backup-router 10.216.63.254
```

```

user@sfc0# set lcc2-re0 system backup-router 10.216.63.254
user@sfc0# set lcc2-re1 system backup-router 10.216.63.254
user@sfc0# set lcc4-re0 system backup-router 10.216.63.254
user@sfc0# set lcc4-re1 system backup-router 10.216.63.254
user@sfc0# set lcc6-re0 system backup-router 10.216.63.254
user@sfc0# set lcc6-re1 system backup-router 10.216.63.254
user@sfc0# set lcc7-re0 system backup-router 10.216.63.254
user@sfc0# set lcc7-re1 system backup-router 10.216.63.254

```

4. Configure an IP address for the management interface logical port for the SFC and for each LCC.

```

[edit groups]
user@sfc0#set re0 interfaces em0 unit 0 family inet address 10.216.49.204/20
user@sfc0#set lcc0-re0 interfaces em0 unit 0 family inet address 10.216.49.205/20
user@sfc0#set lcc2-re0 interfaces em0 unit 0 family inet address 10.216.49.206/20
user@sfc0#set lcc4-re0 interfaces em0 unit 0 family inet address 10.216.49.207/20
user@sfc0#set lcc6-re0 interfaces em0 unit 0 family inet address 10.216.49.208/20
user@sfc0#set lcc7-re0 interfaces em0 unit 0 family inet address 10.216.49.209/20
user@sfc0#set re1 interfaces em0 unit 0 family inet address 10.216.49.210/20
user@sfc0#set lcc0-re1 interfaces em0 unit 0 family inet address 10.216.49.211/20
user@sfc0#set lcc2-re1 interfaces em0 unit 0 family inet address 10.216.49.212/20
user@sfc0#set lcc4-re1 interfaces em0 unit 0 family inet address 10.216.49.213/20
user@sfc0#set lcc6-re1 interfaces em0 unit 0 family inet address 10.216.49.214/20
user@sfc0#set lcc7-re1 interfaces em0 unit 0 family inet address 10.216.49.215/20

```

5. Enable inheritance to ensure that the group's statements are inherited in the rest of the configuration.

```

[edit]
user@sfc0# set apply-groups [ re0 re1 lcc0-re0 lcc0-re1 lcc2-re0 lcc2-re1 lcc4-re0
lcc4-re1 lcc6-re0 lcc6-re1 lcc7-re0 lcc7-re1 ]

```

## Configuring Interfaces

**Step-by-Step Procedure** Ethernet interfaces xe-1/0/0 on LCC 0, xe-16/0/0 on LCC 2, xe-32/0/0 on LCC 4, xe-48/0/0 on LCC 6, and xe-56/0/0 on LCC 7 connect to an IP/MPLS core network.

To configure the interfaces:

1. Configure the Ethernet interfaces and interface properties.

```

[edit]
user@sfc0# set interfaces xe-1/0/0 mtu 9192
user@sfc0# set interfaces xe-1/0/0 unit 0 family inet address 10.15.1.2/30
user@sfc0# set interfaces xe-1/0/0 unit 0 family iso
user@sfc0# set interfaces xe-8/0/0 mtu 9192
user@sfc0# set interfaces xe-8/0/0 unit 0 family inet address 11.15.1.2/30
user@sfc0# set interfaces xe-8/0/0 unit 0 family iso
user@sfc0# set interfaces xe-32/0/0 mtu 9192
user@sfc0# set interfaces xe-32/0/0 unit 0 family inet address 12.15.1.2/30
user@sfc0# set interfaces xe-32/0/0 unit 0 family iso
user@sfc0# set interfaces xe-48/0/0 mtu 9192
user@sfc0# set interfaces xe-48/0/0 unit 0 family inet address 13.15.1.2/30
user@sfc0# set interfaces xe-48/0/0 unit 0 family iso
user@sfc0# set interfaces xe-56/0/0 mtu 9192
user@sfc0# set interfaces xe-56/0/0 unit 0 family inet address 14.15.1.2/30

```

```
user@sfc0# set interfaces xe-56/0/0 unit 0 family iso
```

2. Configure the loopback interface properties.

You can configure the loopback interface on the routing matrix as usual. In this example, IP and IPv6 addresses are configured on the loopback interface with subnetwork routes.

```
[edit]
user@sfc0# set interfaces lo0 unit 0 family inet address 127.0.0.1/32
user@sfc0# set interfaces lo0 unit 0 family inet address 10.255.77.158/32 primary
user@sfc0# set interfaces lo0 unit 0 family inet6 address
47.0005.80ff.f800.0000.0108.0001.0102.5507.0158.00
user@sfc0# set interfaces lo0 unit 0 family inet6 address 2001:db8::10:255:77:158/32
primary
```

### Configuring Protocols

#### Step-by-Step Procedure

You can configure the protocols as usual. In this example, MPLS, IS-IS, and LDP protocols are configured on the SFC.

To configure the protocols:

- Configure protocols on the configured interfaces in the routing matrix.

```
[edit]
user@sfc0# set protocols mpls interface xe-8/0/0
user@sfc0# set protocols isis interface xe-8/0/0
user@sfc0# set protocols ldp interface xe-8/0/0
user@sfc0# set protocols mpls interface xe-16/0/0
user@sfc0# set protocols isis interface xe-16/0/0
user@sfc0# set protocols ldp interface xe-16/0/0
user@sfc0# set protocols mpls interface xe-32/0/0
user@sfc0# set protocols isis interface xe-32/0/0
user@sfc0# set protocols ldp interface xe-32/0/0
user@sfc0# set protocols mpls interface xe-48/0/0
user@sfc0# set protocols isis interface xe-48/0/0
user@sfc0# set protocols ldp interface xe-48/0/0
user@sfc0# set protocols mpls interface xe-56/0/0
user@sfc0# set protocols isis interface xe-56/0/0
user@sfc0# set protocols ldp interface xe-56/0/0
```

### Configuring Firewall Filters

#### Step-by-Step Procedure

Firewall filters are configured to protect your router and network from excessive incoming traffic or hostile attacks that can disrupt network service, and to control which packets are forwarded from which router interfaces.

In this example, MPLS firewall filters **filter\_1**, **filter\_2**, **filter\_3**, **filter\_4**, and **filter\_5** are configured to count packets based on the EXP bits for the MPLS label in a packet.

To configure firewall filters:

1. Configure firewall filters in the routing matrix.

```
[edit]
```

```
user@sfc0# set firewall family mpls filter filter_1 term plp0 from exp [ 0 2 4 6 ]
user@sfc0# set firewall family mpls filter filter_1 term plp0 then count LOW
    loss-priority low
user@sfc0# set firewall family mpls filter filter_1 term plp1 from exp [ 1 3 5 7 ]
user@sfc0# set firewall family mpls filter filter_1 term plp1 then count HIGH
    loss-priority high
user@sfc0# set firewall family mpls filter filter_2 term plp2 from exp [ 0 2 4 6 ]
user@sfc0# set firewall family mpls filter filter_2 term plp2 then count LOW
    loss-priority medium-low
user@sfc0# set firewall family mpls filter filter_2 term plp3 from exp [ 1 3 5 7 ]
user@sfc0# set firewall family mpls filter filter_2 term plp3 then count HIGH
    loss-priority medium-high
user@sfc0# set firewall family mpls filter filter_3 term plp4 from exp [ 1 3 5 7 ]
user@sfc0# set firewall family mpls filter filter_3 term plp4 then count LOW
    loss-priority low
user@sfc0# set firewall family mpls filter filter_3 term plp5 from exp [ 0 2 4 6 ]
user@sfc0# set firewall family mpls filter filter_3 term plp5 then count HIGH
    loss-priority high
user@sfc0# set firewall family mpls filter filter_4 term plp6 from exp [ 0 1 2 3 ]
user@sfc0# set firewall family mpls filter filter_4 term plp6 then count LOW
    loss-priority low
user@sfc0# set firewall family mpls filter filter_4 term plp7 from exp [ 4 5 6 7 ]
user@sfc0# set firewall family mpls filter filter_4 term plp7 then count HIGH
    loss-priority high
user@sfc0# set firewall family mpls filter filter_5 term plp8 from exp [ 0 2 4 6 ]
user@sfc0# set firewall family mpls filter filter_5 term plp8 then count LOW
    loss-priority medium-low
user@sfc0# set firewall family mpls filter filter_5 term plp9 from exp [ 1 3 5 7 ]
user@sfc0# set firewall family mpls filter filter_5 term plp9 then count HIGH
    loss-priority medium-high
```

2. Apply the MPLS firewall filters to interfaces.

```
[edit]
user@sfc0# set interfaces xe-1/0/0 unit 0 family mpls filter input filter_1
user@sfc0# set interfaces xe-8/0/0 unit 0 family mpls filter input filter_2
user@sfc0# set interfaces xe-32/0/0 unit 0 family mpls filter input filter_3
user@sfc0# set interfaces xe-48/0/0 unit 0 family mpls filter input filter_4
user@sfc0# set interfaces xe-56/0/0 unit 0 family mpls filter input filter_5
```

## Verification

Confirm that the configuration is working properly.

- [Verifying LCC Mode on page 81](#)
- [Verifying LCC Information on page 81](#)
- [Verifying Junos OS Versions for All Routers on page 82](#)
- [Verifying the Configured Interfaces on page 85](#)
- [Verifying the Route Information on page 86](#)
- [Verifying System Uptime on page 86](#)
- [Verifying the Craft Interface Messages on page 88](#)
- [Verifying the Chassis Alarms on page 94](#)

### Verifying LCC Mode

**Purpose** Confirm that the LCC mode is working properly.

**Action** In operational mode, enter the **show chassis lcc-mode** command.

```
[edit]
user@sfc0# show chassis lcc-mode
```

Slot	LCC-mode
0	T4000
1	EMPTY
2	T4000
3	EMPTY
4	T4000
5	EMPTY
6	T1600
7	T1600

**Meaning** The LCC mode is displayed as **T4000** for LCC 0, LCC 2, and LCC 4. The LCC mode is shown as **T1600** for LCC 6 and LCC 7. The LCC mode for the odd-numbered LCCs (LCC 1, LCC 3, and LCC 5) is shown as **empty**.

This means the LCC mode is configured correctly for the TXP-Mixed-LCC-3D configuration.

### Verifying LCC Information

**Purpose** Verify that the TX Matrix Plus router and the connected LCCs are communicating properly within the routing matrix.

**Action** In operational mode, enter the **show chassis lccs** command.

```
[edit]
user@sfc0# show chassis lccs
```

Slot	State	Uptime
0	Online	59 minutes, 41 seconds
1	Empty	
2	Online	59 minutes, 41 seconds
3	Empty	
4	Online	59 minutes, 41 seconds
5	Empty	
6	Online	59 minutes, 41 seconds
7	Online	59 minutes, 41 seconds

**Meaning** The display output includes the following information about the LCCs:

- The **Slot** field displays the LCC slot number in the SFC.
- The **State** field displays the LCC state information.
  - **Online**—The LCC connected to a TX Matrix Plus router with 3D SIBs is online and communicating properly.
  - **Offline**—The LCC is powered down.
  - **Uptime**—The duration since the LCC is online.

**Related Documentation** • [Troubleshooting: Offline LCCs in a Routing Matrix with a TX Matrix Plus Router](#)

---

### Verifying Junos OS Versions for All Routers

---

**Purpose** Verify that the correct version of Junos OS is running for all routing matrix components.

**Action** In operational mode, enter the **show version** command.

```
user@sfc0> show version
sfc0-re0:
```

```
-----
Hostname: sfc0
Model: txp
JUNOS Base OS boot [13.1R1.0]
JUNOS Base OS Software Suite [13.1R1.0]
JUNOS 64-bit Kernel Software Suite [13.1R1.0]
JUNOS Crypto Software Suite [13.1R1.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1R1.0]
JUNOS Packet Forwarding Engine Support (T-Series) [13.1R1.0]
JUNOS Online Documentation [13.1R1.0]
JUNOS Services ACL Container package [13.1R1.0]
JUNOS Services Application Level Gateways [13.1R1.0]
JUNOS AppId Services [13.1R1.0]
JUNOS Border Gateway Function package [13.1R1.0]
JUNOS Services Captive Portal and Content Delivery Container package [13.1R1.0]
JUNOS Services HTTP Content Management package [13.1R1.0]
JUNOS IDP Services [13.1R1.0]
JUNOS Services Jflow Container package [13.1R1.0]
JUNOS Services LL-PDF Container package [13.1R1.0]
JUNOS Services MobileNext Software package [13.1R1.0]
JUNOS Services Mobile Subscriber Service Container package [13.1R1.0]
JUNOS Services NAT [13.1R1.0]
JUNOS Services PTSP Container package [13.1R1.0]
JUNOS Services RPM [13.1R1.0]
JUNOS Services Stateful Firewall [13.1R1.0]
JUNOS Voice Services Container package [13.1R1.0]
JUNOS Services Example Container package [13.1R1.0]
JUNOS Services Crypto [13.1R1.0]
JUNOS Services SSL [13.1R1.0]
JUNOS Services IPSec [13.1R1.0]
JUNOS Runtime Software Suite [13.1R1.0]
JUNOS Routing Software Suite [13.1R1.0]
JUNOS 64-bit Runtime Software Suite [13.1R1.0]
```

```
lcc0-re0:
```

```
-----
Hostname: lcc0
Model: t4000
JUNOS Base OS boot [13.1R1.0]
JUNOS Base OS Software Suite [13.1R1.0]
JUNOS 64-bit Kernel Software Suite [13.1R1.0]
JUNOS Crypto Software Suite [13.1R1.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1R1.0]
JUNOS Packet Forwarding Engine Support (T-Series) [13.1R1.0]
JUNOS Online Documentation [13.1R1.0]
JUNOS Services ACL Container package [13.1R1.0]
JUNOS Services Application Level Gateways [13.1R1.0]
JUNOS AppId Services [13.1R1.0]
JUNOS Border Gateway Function package [13.1R1.0]
```

```

JUNOS Services Captive Portal and Content Delivery Container package [13.1R1.0]
JUNOS Services HTTP Content Management package [13.1R1.0]
JUNOS IDP Services [13.1R1.0]
JUNOS Services Jflow Container package [13.1R1.0]
JUNOS Services LL-PDF Container package [13.1R1.0]
JUNOS Services MobileNext Software package [13.1R1.0]
JUNOS Services Mobile Subscriber Service Container package [13.1R1.0]
JUNOS Services NAT [13.1R1.0]
JUNOS Services PTSP Container package [13.1R1.0]
JUNOS Services RPM [13.1R1.0]
JUNOS Services Stateful Firewall [13.1R1.0]
JUNOS Voice Services Container package [13.1R1.0]
JUNOS Services Example Container package [13.1R1.0]
JUNOS Services Crypto [13.1R1.0]
JUNOS Services SSL [13.1R1.0]
JUNOS Services IPSec [13.1R1.0]
JUNOS Runtime Software Suite [13.1R1.0]
JUNOS Routing Software Suite [13.1R1.0]
JUNOS 64-bit Runtime Software Suite [13.1R1.0]

```

#### lcc2-re0:

```

-----
Hostname: lcc2
Model: t4000
JUNOS Base OS boot [13.1R1.0]
JUNOS Base OS Software Suite [13.1R1.0]
JUNOS 64-bit Kernel Software Suite [13.1R1.0]
JUNOS Crypto Software Suite [13.1R1.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1R1.0]
JUNOS Packet Forwarding Engine Support (T-Series) [13.1R1.0]
JUNOS Online Documentation [13.1R1.0]
JUNOS Services ACL Container package [13.1R1.0]
JUNOS Services Application Level Gateways [13.1R1.0]
JUNOS AppId Services [13.1R1.0]
JUNOS Border Gateway Function package [13.1R1.0]
JUNOS Services Captive Portal and Content Delivery Container package [13.1R1.0]
JUNOS Services HTTP Content Management package [13.1R1.0]
JUNOS IDP Services [13.1R1.0]
JUNOS Services Jflow Container package [13.1R1.0]
JUNOS Services LL-PDF Container package [13.1R1.0]
JUNOS Services MobileNext Software package [13.1R1.0]
JUNOS Services Mobile Subscriber Service Container package [13.1R1.0]
JUNOS Services NAT [13.1R1.0]
JUNOS Services PTSP Container package [13.1R1.0]
JUNOS Services RPM [13.1R1.0]
JUNOS Services Stateful Firewall [13.1R1.0]
JUNOS Voice Services Container package [13.1R1.0]
JUNOS Services Example Container package [13.1R1.0]
JUNOS Services Crypto [13.1R1.0]
JUNOS Services SSL [13.1R1.0]
JUNOS Services IPSec [13.1R1.0]
JUNOS Runtime Software Suite [13.1R1.0]
JUNOS Routing Software Suite [13.1R1.0]
JUNOS 64-bit Runtime Software Suite [13.1R1.0]

```

#### lcc4-re0:

```

-----
Hostname: lcc4
Model: t4000
JUNOS Base OS boot [13.1R1.0]
JUNOS Base OS Software Suite [13.1R1.0]

```

JUNOS 64-bit Kernel Software Suite [13.1R1.0]  
 JUNOS Crypto Software Suite [13.1R1.0]  
 JUNOS Packet Forwarding Engine Support (M/T Common) [13.1R1.0]  
 JUNOS Packet Forwarding Engine Support (T-Series) [13.1R1.0]  
 JUNOS Online Documentation [13.1R1.0]  
 JUNOS Services ACL Container package [13.1R1.0]  
 JUNOS Services Application Level Gateways [13.1R1.0]  
 JUNOS AppId Services [13.1R1.0]  
 JUNOS Border Gateway Function package [13.1R1.0]  
 JUNOS Services Captive Portal and Content Delivery Container package [13.1R1.0]  
 JUNOS Services HTTP Content Management package [13.1R1.0]  
 JUNOS IDP Services [13.1R1.0]  
 JUNOS Services Jflow Container package [13.1R1.0]  
 JUNOS Services LL-PDF Container package [13.1R1.0]  
 JUNOS Services MobileNext Software package [13.1R1.0]  
 JUNOS Services Mobile Subscriber Service Container package [13.1R1.0]  
 JUNOS Services NAT [13.1R1.0]  
 JUNOS Services PTSP Container package [13.1R1.0]  
 JUNOS Services RPM [13.1R1.0]  
 JUNOS Services Stateful Firewall [13.1R1.0]  
 JUNOS Voice Services Container package [13.1R1.0]  
 JUNOS Services Example Container package [13.1R1.0]  
 JUNOS Services Crypto [13.1R1.0]  
 JUNOS Services SSL [13.1R1.0]  
 JUNOS Services IPSec [13.1R1.0]  
 JUNOS Runtime Software Suite [13.1R1.0]  
 JUNOS Routing Software Suite [13.1R1.0]  
 JUNOS 64-bit Runtime Software Suite [13.1R1.0]

lcc6-re0:

-----  
 Hostname: lcc6  
 Model: t1600

JUNOS Base OS boot [13.1R1.0]  
 JUNOS Base OS Software Suite [13.1R1.0]  
 JUNOS 64-bit Kernel Software Suite [13.1R1.0]  
 JUNOS Crypto Software Suite [13.1R1.0]  
 JUNOS Packet Forwarding Engine Support (M/T Common) [13.1R1.0]  
 JUNOS Packet Forwarding Engine Support (T-Series) [13.1R1.0]  
 JUNOS Online Documentation [13.1R1.0]  
 JUNOS Services ACL Container package [13.1R1.0]  
 JUNOS Services Application Level Gateways [13.1R1.0]  
 JUNOS AppId Services [13.1R1.0]  
 JUNOS Border Gateway Function package [13.1R1.0]  
 JUNOS Services Captive Portal and Content Delivery Container package [13.1R1.0]  
 JUNOS Services HTTP Content Management package [13.1R1.0]  
 JUNOS IDP Services [13.1R1.0]  
 JUNOS Services Jflow Container package [13.1R1.0]  
 JUNOS Services LL-PDF Container package [13.1R1.0]  
 JUNOS Services MobileNext Software package [13.1R1.0]  
 JUNOS Services Mobile Subscriber Service Container package [13.1R1.0]  
 JUNOS Services NAT [13.1R1.0]  
 JUNOS Services PTSP Container package [13.1R1.0]  
 JUNOS Services RPM [13.1R1.0]  
 JUNOS Services Stateful Firewall [13.1R1.0]  
 JUNOS Voice Services Container package [13.1R1.0]  
 JUNOS Services Example Container package [13.1R1.0]  
 JUNOS Services Crypto [13.1R1.0]  
 JUNOS Services SSL [13.1R1.0]  
 JUNOS Services IPSec [13.1R1.0]



```
JUNOS Runtime Software Suite [13.1R1.0]
JUNOS Routing Software Suite [13.1R1.0]
JUNOS 64-bit Runtime Software Suite [13.1R1.0]
```

#### lcc7-re0:

```
-----
Hostname: lcc7
Model: t1600

JUNOS Base OS boot [13.1R1.0]
JUNOS Base OS Software Suite [13.1R1.0]
JUNOS 64-bit Kernel Software Suite [13.1R1.0]
JUNOS Crypto Software Suite [13.1R1.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1R1.0]
JUNOS Packet Forwarding Engine Support (T-Series) [13.1R1.0]
JUNOS Online Documentation [13.1R1.0]
JUNOS Services ACL Container package [13.1R1.0]
JUNOS Services Application Level Gateways [13.1R1.0]
JUNOS AppId Services [13.1R1.0]
JUNOS Border Gateway Function package [13.1R1.0]
JUNOS Services Captive Portal and Content Delivery Container package [13.1R1.0]
JUNOS Services HTTP Content Management package [13.1R1.0]
JUNOS IDP Services [13.1R1.0]
JUNOS Services Jflow Container package [13.1R1.0]
JUNOS Services LL-PDF Container package [13.1R1.0]
JUNOS Services MobileNext Software package [13.1R1.0]
JUNOS Services Mobile Subscriber Service Container package [13.1R1.0]
JUNOS Services NAT [13.1R1.0]
JUNOS Services PTSP Container package [13.1R1.0]
JUNOS Services RPM [13.1R1.0]
JUNOS Services Stateful Firewall [13.1R1.0]
JUNOS Voice Services Container package [13.1R1.0]
JUNOS Services Example Container package [13.1R1.0]
JUNOS Services Crypto [13.1R1.0]
JUNOS Services SSL [13.1R1.0]
JUNOS Services IPSec [13.1R1.0]
JUNOS Runtime Software Suite [13.1R1.0]
JUNOS Routing Software Suite [13.1R1.0]
JUNOS 64-bit Runtime Software Suite [13.1R1.0]
```

**Meaning** In this example, all the routers have the same software revision [13.1R1.0]. It indicates that all the routers are running the same 64-bit Junos OS.

### Verifying the Configured Interfaces

**Purpose** Verify that all available interfaces in the routing matrix are up.

**Action** In operational mode, enter the **show interfaces terse** command.

```
user@sfc0> show interfaces terse
```

Interface	Admin	Link	Proto	Local	Remote
xe-1/0/0	up	up			
xe-1/0/0.0	up	up	inet	10.15.1.2/30	
			iso		
			mpls		
xe-8/0/0.0	up	up	inet	11.15.1.2/30	
			iso		

```

                                mpls
xe-32/0/0
xe-32/0/0.0                up    up    inet    12.15.1.2/30
                                iso
                                mpls

xe-48/0/0
xe-48/0/0.0                up    up    inet    13.15.1.2/30
                                iso
                                mpls

xe-56/0/0
xe-56/0/0.0                up    up    inet    14.15.1.2/30
                                iso
                                mpls

em0.0                      up    up    inet    10.216.49.205/20

```

**Meaning** The **Admin** and the **Link** status are shown as **up**, which means that the interfaces are configured and working properly.

### Verifying the Route Information

**Purpose** Verify the route information for the routing matrix.

**Action** In operational mode, enter the **show route summary** command.

```

user@sfc0> show route summary
Router ID: 10.255.77.158
inet.0: 13 destinations, 14 routes (12 active, 0 holddown, 1 hidden)
    Direct:    4 routes,        3 active
    Local:     2 routes,        2 active
    Static:    6 routes,        6 active
    IS-IS:     2 routes,        1 active
iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
    Direct:    1 routes,        1 active
mpls.0: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)
    MPLS:      3 routes,        3 active
inet6.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
    Direct:    2 routes,        2 active
__juniper_private1__.inet6.0: 1 destinations, 1 routes (1 active, 0 holddown, 0
hidden)
    Direct:    1 routes,        1 active

```

**Meaning** The summary statistics about the entries in the routing table are shown based on the configuration.

### Verifying System Uptime

**Purpose** Verify the amount of time the routing matrix components have been in operation.

**Action** In operational mode, enter the **show system uptime** command.

```

user@sfc0> show system uptime
sfc0-re0:
-----
Current time: 2012-12-02 21:16:07 PST
System booted: 2012-12-02 20:03:18 PST (01:12:49 ago)
Protocols started: 2012-12-02 20:53:12 PST (00:22:55 ago)

```

```
Last configured: 2012-12-02 20:41:01 PST (00:35:06 ago) by user
9:16PM up 1:13, 2 users, load averages: 0.06, 0.01, 0.00
```

```
lcc0-re0:
```

```
-----
Current time: 2012-12-02 21:16:07 PST
System booted: 2012-12-02 20:25:06 PST (00:51:01 ago)
Last configured: 2012-12-02 20:40:51 PST (00:35:16 ago) by user
9:16PM up 51 mins, 1 user, load averages: 0.02, 0.06, 0.03
```

```
lcc2-re0:
```

```
-----
Current time: 2012-12-02 21:16:07 PST
System booted: 2012-12-02 20:04:48 PST (01:11:19 ago)
Last configured: 2012-12-02 20:40:53 PST (00:35:14 ago) by user
9:16PM up 1:11, 0 users, load averages: 0.00, 0.02, 0.01
```

```
lcc4-re0:
```

```
-----
Current time: 2012-12-02 21:16:07 PST
System booted: 2012-12-02 20:03:35 PST (01:12:32 ago)
Last configured: 2012-12-02 20:40:53 PST (00:35:14 ago) by user
9:16PM up 1:13, 0 users, load averages: 0.01, 0.06, 0.07
```

```
lcc6-re0:
```

```
-----
Current time: 2012-12-02 21:16:07 PST
System booted: 2012-12-02 20:03:30 PST (01:12:37 ago)
Last configured: 2012-12-02 20:40:53 PST (00:35:14 ago) by user
9:16PM up 1:13, 0 users, load averages: 0.06, 0.03, 0.00
```

```
lcc7-re0:
```

```
-----
Current time: 2012-12-02 21:16:07 PST
System booted: 2012-12-02 20:05:11 PST (01:10:56 ago)
Last configured: 2012-12-02 20:40:53 PST (00:35:14 ago) by user
9:16PM up 1:11, 0 users, load averages: 0.00, 0.00, 0.00
```

**Meaning** The output shows the following information:

- **Current time**—Current system time in UTC.
- **System booted**—Date and time when the Routing Engine on the router was last booted and how long it has been running.
- **Protocols started**—Date and time when the routing protocols were last started and how long they have been running.
- **Last configured**—Date and time when a configuration was last committed. Also shows the name of the user who issued the last commit command.
- **time and up**—Current time, in the local time zone, and how long the router has been operational.
- **users**—Number of users logged in to the router.
- **load averages**—Load averages for the last 1 minute, 5 minutes, and 15 minutes.

### Verifying the Craft Interface Messages

**Purpose** Verify the information on the craft interface. The craft interface allows you to view status and troubleshooting information at a glance and to perform many system control functions.

**Action** In operational mode, enter the **show chassis craft-interface** command.

```
user@sfc0> show chassis craft-interface
sfc0-re0:
```

```
-----
FPM Display Contents:
```

```
+-----+
|sfc0      |
|Up 0 + 01:12|
|          |
|Power OK  |
+-----+
```

```
SFC Front Panel Switch Settings:
```

```
SFC Chassis Number : 00
Config Size         : 3
```

```
Front Panel System LEDs:
```

```
Routing Engine    0    1
```

```
-----
OK                *    .
Fail              .    .
Master            *    .
```

```
Front Panel Alarm Indicators:
```

```
-----
Red LED          .
Yellow LED       .
Major relay      .
Minor relay      .
```

```
Front Panel F13 SIB LEDs:
```

```
SIB    0    1    2    3    4    5    6    7    8    9   10   11   12   13   14   15
-----
Fail    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .
OK      *    *    .    *    *    .    *    *    *    *    .    .    .    .    .
Active  *    *    .    *    *    .    *    *    *    *    .    .    .    .    .
```

```
PS LEDs:
```

```
PS     0    1
-----
Red     .    .
Green   *    .
```

```
Fan Tray LEDs:
```

```
FT     0    1    2    3    4    5
-----
Red     .    .    .    .    .    .
Green   *    *    *    *    *    *
```

```
CB LEDs:
```

```
CB     0    1
-----
```

```

Amber . .
Green * .
Blue  * .

```

```
lcc0-re0:
```

```
-----
FPM Display contents:
```

```

+-----+
|lcc0    |
|Up 0 + 51:01|
|        |
|Power OK|
+-----+

```

```
Front Panel System LEDs:
```

```
Routing Engine    0    1
```

```

-----
OK                *    .
Fail              .    .
Master           *    .

```

```
Front Panel Alarm Indicators:
```

```

-----
Red LED          .
Yellow LED       .
Major relay       .
Minor relay       .

```

```
Front Panel FPC LEDs:
```

```
FPC    0    1    2    3    4    5    6    7
```

```

-----
Red      .    .    .    .    .    .    .    .
Green    .    *    .    .    .    .    .    .

```

```
CB LEDs:
```

```
CB    0    1
```

```

-----
Amber . .
Green * .
Blue  * .

```

```
SCG LEDs:
```

```
SCG    0    1
```

```

-----
Amber . .
Green * *
Blue  * .

```

```
SIB LEDs:
```

```
SIB    0    1    2    3    4
```

```

-----
Red      .    .    .    .    .
Green    *    *    *    *    .

```

```
lcc2-re0:
```

```
-----
FPM Display contents:
```

```

+-----+
|lcc2    |
|Up 0 + 01:11|
|        |

```

```

|Power OK|
+-----+

Front Panel System LEDs:
Routing Engine  0  1
-----
OK              *  .
Fail           .  .
Master         *  .

Front Panel Alarm Indicators:
-----
Red LED        .
Yellow LED     .
Major relay     .
Minor relay     .

Front Panel FPC LEDs:
FPC  0  1  2  3  4  5  6  7
-----
Red   .  .  .  .  .  .  .  .
Green .  *  *  .  .  .  .  .

CB LEDs:
CB  0  1
-----
Amber .  .
Green *  .
Blue  *  .

SCG LEDs:
SCG  0  1
-----
Amber .  .
Green *  *
Blue  *  .

SIB LEDs:
SIB  0  1  2  3  4
-----
Red   .  .  .  .  .
Green *  *  *  *  .

lcc4-re0:
-----
FPM Display contents:
+-----+
|lcc4|
|Up 0 + 01:12|
| |
|Power OK|
+-----+

Front Panel System LEDs:
Routing Engine  0  1
-----
OK              *  .
Fail           .  .
Master         *  .

Front Panel Alarm Indicators:

```

```

-----
Red LED      .
Yellow LED   .
Major relay   .
Minor relay   .

```

```

Front Panel FPC LEDs:
FPC   0  1  2  3  4  5  6  7
-----
Red    .  .  .  .  .  .  .  .
Green  .  *  *  .  .  .  .  .

```

```

CB LEDs:
  CB   0  1
-----

```

```

Amber  .  .
Green  *  .
Blue   *  .

```

```

SCG LEDs:
  SCG  0  1
-----

```

```

Amber  .  .
Green  *  *
Blue   *  .

```

```

SIB LEDs:
  SIB  0  1  2  3  4
-----

```

```

Red    .  .  .  .  .
Green  *  *  *  *  .

```

```

lcc6-re0:
-----

```

```

FPM Display contents:
+-----+
|lcc6      |
|Up 0 + 01:12|
|          |
|Power OK  |
+-----+

```

```

Front Panel System LEDs:
Routing Engine  0  1
-----

```

```

OK          *  .
Fail        .  .
Master      *  .

```

```

Front Panel Alarm Indicators:
-----

```

```

Red LED      .
Yellow LED   .
Major relay   .
Minor relay   .

```

```

Front Panel FPC LEDs:
FPC   0  1  2  3  4  5  6  7
-----
Red    .  .  .  .  .  .  .  .
Green  *  *  .  .  .  .  .  *

```

**CB LEDs:**

CB	0	1
----	---	---

Amber	.	.
Green	*	.
Blue	*	.

**SCG LEDs:**

SCG	0	1
-----	---	---

Amber	.	.
Green	*	*
Blue	*	.

**SIB LEDs:**

SIB	0	1	2	3	4
-----	---	---	---	---	---

Red	.	.	.	.	.
Green	*	*	*	*	.

**lcc7-re0:**
**FPM Display contents:**

```

+-----+
|lcc7      |
|Up 0 + 01:10|
|          |
|Power OK  |
+-----+

```

**Front Panel System LEDs:**

Routing Engine	0	1
----------------	---	---

OK	*	.
Fail	.	.
Master	*	.

**Front Panel Alarm Indicators:**

Red LED	.
Yellow LED	.
Major relay	.
Minor relay	.

**Front Panel FPC LEDs:**

FPC	0	1	2	3	4	5	6	7
-----	---	---	---	---	---	---	---	---

Red	.	.	.	.	.	.	.	.
Green	*	*	.	.	.	.	.	*

**CB LEDs:**

CB	0	1
----	---	---

Amber	.	.
Green	*	.
Blue	*	.

**SCG LEDs:**

SCG	0	1
-----	---	---



```

-----
Amber  .  .
Green  *  *
Blue   *  .

SIB LEDs:
  SIB  0  1  2  3  4
-----
Red    .  .  .  .  .
Green  *  *  *  *  .

```

**Meaning** The output shows the information of the craft interface.

- The **FPM Display Contents** field displays the following contents of the Front Panel Module:
  - First line—TX Matrix Plus router name.
  - Second line—Length of time the TX Matrix Plus router has been running, reported in the following form:

*Up days + hours:minutes*



**NOTE:** During an alarm condition, the second line displays the number of active alarms in the following form:

*alarm-count Alarms active*

- Third and fourth lines—Information about the router traffic load, the power supply status, the fan status, and the temperature status.



**NOTE:** During an alarm condition, the third and fourth lines display individual alarm messages, with the most severe condition shown first. The prefix on each line indicates whether the alarm is a red or yellow alarm. R indicates a major alarm and Y indicates a minor alarm. You can view more information about the error messages associated with the alarm LEDs and the craft interface LCD by issuing the `show chassis alarms operational mode` command.

- The **SFC Chassis Number** field displays 00 and the **Config Size** field displays 3.
- Status of the **Front Panel System LEDs**, **Front Panel F13 SIB LEDs**, **PS LEDs**, **Fan Tray LEDs**, **CB LEDs**, **SIB LEDs**, and **SCG LEDs**. A dot (.) indicates that the LED is not lit. An asterisk (\*) indicates that the LED is lit. For more details on the LEDs and troubleshooting information, see [TX Matrix Plus LED Overview](#).
- Status of the **Front Panel Alarm Indicators**. A dot (.) indicates that the relay is off. An asterisk (\*) indicates that the relay is active.

## Verifying the Chassis Alarms

**Purpose** Verify the information about chassis alarms.

**Action** In operational mode, enter the **show chassis alarms** command.

```
user@sfc0> show chassis alarms
sfc0-re0:
```

```
-----
Alarm time      Class  Description
2012-07-19 10:07:32 UTC  Minor  SIB F13 0 Temperature Warm
2012-07-19 10:07:07 UTC  Minor  SIB F2S 0/6 Temperature Warm
2012-07-19 10:07:07 UTC  Minor  SIB F2S 0/4 Temperature Warm
2012-07-19 10:07:07 UTC  Minor  SIB F2S 0/2 Temperature Warm
2012-07-19 10:07:07 UTC  Minor  SIB F2S 0/0 Temperature Warm
2012-07-19 10:07:07 UTC  Minor  SIB F13 6 Temperature Warm
2012-07-19 10:06:42 UTC  Minor  SIB F2S 2/6 Temperature Warm
2012-07-19 10:06:42 UTC  Minor  SIB F2S 2/4 Temperature Warm
2012-07-19 10:06:42 UTC  Minor  SIB F2S 2/2 Temperature Warm
2012-07-19 10:06:42 UTC  Minor  SIB F2S 2/0 Temperature Warm
2012-07-19 10:06:42 UTC  Minor  SIB F13 3 Temperature Warm
2012-07-19 10:06:17 UTC  Minor  SIB F2S 1/6 Temperature Warm
2012-07-19 10:06:17 UTC  Minor  SIB F2S 1/4 Temperature Warm
2012-07-19 10:06:17 UTC  Minor  SIB F2S 1/2 Temperature Warm
2012-07-19 10:06:17 UTC  Minor  SIB F2S 1/0 Temperature Warm
```

```
lcc0-re0:
```

```
-----
Alarm time      Class  Description
2012-07-19 10:04:13 UTC  Minor  SIB 2 Temperature Warm
2012-07-19 10:04:13 UTC  Minor  SIB 1 Temperature Warm
2012-07-19 10:04:13 UTC  Minor  SIB 0 Temperature Warm
```

```
lcc2-re0:
```

```
-----
Alarm time      Class  Description
2012-07-19 10:04:18 UTC  Minor  SIB 2 Temperature Warm
2012-07-19 10:04:18 UTC  Minor  SIB 1 Temperature Warm
2012-07-19 10:04:18 UTC  Minor  SIB 0 Temperature Warm
```

```
lcc4-re0:
```

```
-----
Alarm time      Class  Description
2012-07-19 10:04:18 UTC  Minor  SIB 2 Temperature Warm
2012-07-19 10:04:18 UTC  Minor  SIB 1 Temperature Warm
2012-07-19 10:04:18 UTC  Minor  SIB 0 Temperature Warm
```

```
lcc6-re0:
```

```
-----
Alarm time      Class  Description
2012-07-19 10:04:18 UTC  Minor  SIB 2 Temperature Warm
2012-07-19 10:04:18 UTC  Minor  SIB 1 Temperature Warm
2012-07-19 10:04:18 UTC  Minor  SIB 0 Temperature Warm
```

```
lcc7-re0:
```

```
-----
Alarm time      Class  Description
2012-07-19 10:04:18 UTC  Minor  SIB 2 Temperature Warm
```

```
2012-07-19 10:04:18 UTC  Minor  SIB 1 Temperature Warm
2012-07-19 10:04:18 UTC  Minor  SIB 0 Temperature Warm
```

**Meaning** The output shows information about the chassis alarms that are active. Verify the following information:

- Date and time the alarm was first recorded.
- Severity class for this alarm: **Minor** or **Major**.
- The **Description** field displays information about chassis components such as the cooling system or power supplies. For example, **Temperature Warm** indicates that the chassis temperature exceeded the warm-temperature threshold, and you must ensure to provide sufficient cooling for the component. For more details on alarm information and actions to be taken, see the [Troubleshooting the TX Matrix Plus Cooling System](#).

- Related Documentation**
- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
  - [FPC Numbering for Interfaces in TXP-Mixed-LCC-3D Configuration on page 20](#)
  - [Displaying TX Matrix Plus SFC and LCC Alarm Messages Information](#)
  - [Connecting the TX Matrix Plus Router to a Network Device](#)



## CHAPTER 7

# Using Configuration Examples

- [Merging Examples on page 97](#)

## Merging Examples

---

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. 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 on page 97](#)
- [Merging a Snippet on page 98](#)
- [For More Information on page 98](#)

## 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 router.

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 router.

```
system {
  scripts {
    commit {
      file ex-script.xsl;
    }
  }
}
interfaces {
  em0 {
    disable;
    unit 0 {
```

```
        family inet {  
            address 10.0.0.1/24;  
        }  
    }  
}
```

2. Merge the contents of the file into your router 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 router.

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 router.

```
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 router 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

For more information about using the **load** command, see *Loading a Configuration from a File* and *Examples: Loading a Configuration from a File* in the CLI User Guide.

### Related Documentation

- [Routing Matrix with a TX Matrix Plus Router Deployment Guide](#)
- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
- [Roadmap for Configuring the Routing Matrix on page 31](#)
- [Example Configuration for the Routing Matrix on page 47](#)
- [Upgrading the Junos OS on the Routing Matrix on page 155](#)

## CHAPTER 8

# Chassis Statements

## alarm (chassis)

---

<b>Syntax</b>	<pre>alarm {     interface-type {         alarm-name (ignore   red   yellow);     } }</pre>
<b>Hierarchy Level</b>	[edit chassis], [edit chassis interconnect-device <i>name</i> ], [edit chassis node-group <i>name</i> ]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 11.1 for the QFX Series. Statement introduced in Junos OS Release 12.2 for the ACX Series.
<b>Description</b>	<p>Configure the chassis alarms and whether they trigger a red or yellow alarm, or whether they are ignored. Red alarm conditions light the <b>RED ALARM</b> LED on either the router's craft interface or the switch's LCD screen and trigger an audible alarm if one is connected to the contact on the craft interface or LCD screen. Yellow alarm conditions light the <b>YELLOW ALARM</b> LED on either the router's craft interface or the switch's LCD screen and trigger an audible alarm if one is connected to the craft interface or LCD screen.</p> <p>To configure more than one alarm, include multiple <i>alarm-name</i> lines.</p>
<b>Options</b>	<p><i>alarm-name</i>—Alarm condition. For a list of conditions, see <i>System-Wide Alarms and Alarms for Each Interface Type</i>.</p> <p><i>ignore</i>—The specified alarm condition does not set off any alarm.</p> <p><i>interface-type</i>—Type of interface on which you are configuring the alarm: <b>atm</b>, <b>ethernet</b>, <b>sonet</b>, or <b>t3</b>.</p> <p><b>red</b>—The specified alarm condition sets off a red alarm.</p> <p><b>yellow</b>—The specified alarm condition sets off a yellow alarm.</p>
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Understanding Alarms</i></li><li>• <i>Chassis Conditions That Trigger Alarms</i></li><li>• <i>Chassis Alarm Messages on a QFX3500 Device</i></li><li>• <i>Interface Alarm Messages</i></li></ul>



## lcc

<b>Syntax</b>	<pre> lcc <i>number</i> {     fpc <i>slot-number</i> {         pic <i>pic-number</i> {             atm-cell-relay-accumulation;             atm-l2circuit-mode (cell   aal5   trunk <i>trunk</i>);             framing (sdh   sonet);             idle-cell-format {                 itu-t;                 payload-pattern <i>payload-pattern-byte</i>;             }             max-queues-per-interface (8   4);             no-concatenate;             no-mcast-replication;         }     }     online-expected;     offline; } q-pic-large-buffer {     large-scale; } </pre>
<b>Hierarchy Level</b>	[edit chassis]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4.
<b>Description</b>	Configure a T640 router (on a routing matrix based on a TX Matrix router) or a T1600 router (on a routing matrix based on a TX Matrix Plus router) or a T4000 router (on a routing matrix based on a TX Matrix Plus router).
<b>Options</b>	<p><b><i>number</i></b>—Specify a T640 router or a T1600 router or a T4000 router on a routing matrix.</p> <p><b>Range:</b></p> <ul style="list-style-type: none"> <li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li> <li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li> <li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> <li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> </ul> <p>The remaining statements are explained separately.</p>
<b>Required Privilege Level</b>	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>

**Related  
Documentation**

- *TX Matrix Router and T640 Router Configuration Overview*
- *Using the Junos OS to Configure a T640 Router Within a Routing Matrix*
- *TX Matrix Plus Router Configuration Overview*
- *Using the Junos OS to Configure a T1600 or T4000 Router Within a Routing Matrix*
- *TX Matrix Router Hardware Guide*
- *TX Matrix Plus Router Hardware Guide*

## lcc-mode

<b>Syntax</b>	<pre>lcc-mode {   lcc <i>lcc_number</i>{     mode <i>mode</i>;   } }</pre>
<b>Hierarchy Level</b>	[edit chassis]
<b>Release Information</b>	Statement introduced in Junos OS Release 13.1 for TX Matrix Plus routers with 3D SIBs.
<b>Description</b>	Set the line-card chassis (LCC) in a routing matrix to function as a T1600 router or a T4000 router. If you set the value of the <i>mode</i> variable as <b>empty</b> , then the line-card chassis goes offline. If the <i>mode</i> statement is not configured, then by default the LCC functions as a T1600 router.
<b>Default</b>	If you do not include the <b>lcc-mode</b> statement, the LCC functions as a T1600 router.
<b>Options</b>	<p><b>lcc <i>number</i></b>—On a TX Matrix Plus router, display hardware information for a specified router (line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"> <li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li> <li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li> <li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> <li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> </ul> <p><b>mode <i>mode</i></b>—Configure the LCC to function as a T1600 or a T4000 router. The value of the <i>mode</i> variable can be set as <b>t1600</b>, <b>t4000</b>, or <b>empty</b>.</p>
<b>Required Privilege Level</b>	interface-control
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">Overview of a Routing Matrix with a TX Matrix Plus Router on page 3</a></li> <li>• <a href="#">Example: Configuring a Routing Matrix with a TX Matrix Plus Router in Mixed Mode on page 70</a></li> </ul>

## lcc

---

<b>Syntax</b>	<code>lcc number fpcs [ slot-numbers ];</code>
<b>Hierarchy Level</b>	[edit chassis system-domains protected-system-domains psdn]
<b>Release Information</b>	Statement introduced in Junos OS Release 11.4.
<b>Description</b>	Assign Flexible PIC Concentrators (FPCs) to a Protected System Domain (PSD).
<b>Options</b>	<p><b>number</b>—Specify a TX Matrix Plus on a routing matrix. <b>Range:</b> 0 through 7</p> <p><b>slot-numbers</b>—Slot numbers for the FPCs to be assigned to the PSD. <b>Range:</b> For Junos OS Release 11.4, supported values are 0 through 7.</p>
<b>Required Privilege Level</b>	<p>view-level—To view this statement in the configuration.</p> <p>control-level—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring an RSD and Creating PSDs</i></li></ul>

## redundancy

<b>Syntax</b>	<pre> redundancy {   cfeb slot (always   preferred);   failover {     on-disk-failure;     on-loss-of-keepalives;   }   feb {     redundancy-group group-name {       description description;       feb slot-number (backup   primary);       no-auto-failover;     }   }   graceful-switchover;   keepalive-time seconds;   routing-engine slot-number (backup   disabled   master);   sfm slot-number (always   preferred);   ssb slot-number (always   preferred); } </pre>
<b>Hierarchy Level</b>	[edit chassis]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4.
<b>Description</b>	Configure redundancy options.
<b>Options</b>	The statements are explained separately.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <i>Chassis Redundancy Hierarchy</i></li> <li>• <i>Configuring Routing Engine Redundancy</i></li> <li>• <i>Configuring CFEB Redundancy on the M10i Router</i></li> <li>• <i>Configuring FEB Redundancy on the M120 Router</i></li> <li>• <i>Configuring SFM Redundancy on M40e and M160 Routers</i></li> <li>• <i>Configuring SSB Redundancy on the M20 Router</i></li> </ul>

## routing-engine (Chassis)

---

<b>Syntax</b>	<pre>routing-engine {   on-disk-failure {     disk-failure-action (halt   reboot);   } }</pre>
<b>Hierarchy Level</b>	[edit chassis]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. The <b>disk-failure-action</b> statement added in Junos OS Release 9.0.
<b>Description</b>	Configure a Routing Engine to halt or reboot automatically when a hard disk error occurs. A hard disk error may cause a Routing Engine to enter a state in which it responds to local pings and interfaces remain up, but no other processes are responding. Rebooting or halting prevents this.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring the Junos OS to Enable a Routing Engine to Reboot on Hard Disk Errors</i></li><li>• <a href="#">Junos High Availability Configuration Guide</a></li></ul>

## CHAPTER 9

# LCC-Specific Chassis Statements

## fpc (TX Matrix and TX Matrix Plus Routers)

---

<b>Syntax</b>	<pre>fpc slot-number {   pic pic-number {     atm-cell-relay-accumulation;     atm-l2circuit-mode (cell   aal5   trunk <i>trunk</i>);     framing (sdh   sonet);     idle-cell-format {       itu-t;       payload-pattern <i>payload-pattern-byte</i>;     }     max-queues-per-interface (8   4);     no-concatenate;     no-mcast-replication;     q-pic-large-buffer (large-scale   small-scale);   } }</pre>
<b>Hierarchy Level</b>	[edit chassis <i>lcc number</i> ]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4.
<b>Description</b>	On a TX Matrix or TX Matrix Plus router, configure properties for the PICs in individual FPCs.
<b>Options</b>	<p><i>slot-number</i>—Slot number in which the FPC is installed.</p> <p><b>Range:</b> 0 through 7</p> <p>The remaining statements are explained separately.</p>
<b>Required Privilege Level</b>	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>TX Matrix Router and T640 Router Configuration Overview</i></li><li>• <i>TX Matrix Plus Router Configuration Overview</i></li><li>• <i>Configuring the Junos OS to Enable SONET/SDH Framing for SONET/SDH PICs</i></li><li>• <i>TX Matrix Router Chassis and Interface Names</i></li><li>• <i>TX Matrix Plus Router Chassis and Interface Names</i></li></ul>



## offline

---

<b>Syntax</b>	offline;
<b>Hierarchy Level</b>	[edit chassis <i>lcc number</i> ]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4.
<b>Description</b>	(Routing matrix based on the TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, configure a T640 router so that it is not part of the routing matrix. On a TX Matrix Plus router, configure a T1600 or T4000 router so that it is not part of the routing matrix.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">online-expected on page 110</a></li> <li>• <i>TX Matrix Router and T640 Router Configuration Overview</i></li> <li>• <i>TX Matrix Plus Router Configuration Overview</i></li> <li>• <i>Configuring the Junos OS to Enable the TX Matrix Router to Generate an Alarm If a T640 Router Stays Offline</i></li> <li>• <i>Configuring the Junos OS to Enable the TX Matrix Plus Router to Generate an Alarm If a T1600 or T4000 Router Stays Offline</i></li> </ul>

## online-expected

---

<b>Syntax</b>	online-expected;
<b>Hierarchy Level</b>	[edit chassis <i>lcc number</i> ]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4.
<b>Description</b>	(TX Matrix and TX Matrix Plus routing matrix only) On a TX Matrix router, configure a T640 router so that if it does not come online, an alarm is sent to the TX Matrix router. On a TX Matrix Plus router, configure a T1600 or a T4000 router so that if it does not come online, an alarm is sent to the TX Matrix Plus router.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>TX Matrix Router and T640 Router Configuration Overview</i></li><li>• <i>TX Matrix Plus Router Configuration Overview</i></li><li>• <i>Configuring the Junos OS to Enable the TX Matrix Router to Generate an Alarm If a T640 Router Stays Offline</i></li><li>• <i>Configuring the Junos OS to Enable the TX Matrix Plus Router to Generate an Alarm If a T1600 or T4000 Router Stays Offline</i></li><li>• <a href="#">offline on page 109</a></li></ul>

# FPC-Specific Chassis Statements

## pic (TX Matrix and TX Matrix Plus Routers)

---

<b>Syntax</b>	<pre> pic <i>pic-number</i> {     aggregate-ports;     atm-cell-relay-accumulation;     atm-l2circuit-mode (cell   aal5   trunk <i>trunk</i>);     egress-policer-overhead (<i>count</i>);     framing (sdh   sonet);     idle-cell-format {         itu-t;         payload-pattern <i>payload-pattern-byte</i>;     }     ingress-policer-overhead (<i>count</i>);     max-queues-per-interface (8   4);     no-concatenate;     no-mcast-replication;     q-pic-large-buffer (large-scale   small-scale); } </pre>
<b>Hierarchy Level</b>	[edit chassis lcc <i>number</i> fpc <i>slot-number</i> ]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4.
<b>Description</b>	On a TX Matrix or TX Matrix Plus router, configure properties for an individual PIC.
<b>Options</b>	<p><b><i>pic-number</i></b>—Slot number in which the PIC is installed.</p> <p><b>Range:</b> 0 through 3</p> <p>The remaining statements are explained separately.</p>
<b>Required Privilege Level</b>	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <i>TX Matrix Router and T640 Router Configuration Overview</i></li> <li>• <i>TX Matrix Plus Router Configuration Overview</i></li> <li>• <i>Configuring the Junos OS to Enable SONET/SDH Framing for SONET/SDH PICs</i></li> </ul>

## power

---

<b>Syntax</b>	<code>power (off   on);</code>
<b>Hierarchy Level</b>	<code>[edit chassis fpc slot-number]</code>
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4.
<b>Description</b>	Configure the Flexible PIC Concentrator (FPC) to stay offline or to come online automatically.
<b>Default</b>	<code>on</code>
<b>Options</b>	<p><code>off</code>—Take the FPC offline, and configure it to stay offline, as, for example, after a system reboot.</p> <p><code>on</code>—Bring the FPC online, and configure it to come online automatically, as, for example, after a system reboot.</p>
<b>Required Privilege Level</b>	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring the Junos OS to Make a Flexible PIC Concentrator Stay Offline</i></li></ul>

# PIC-Specific Chassis Statements

## aggregate-ports

---

<b>Syntax</b>	aggregate-ports;
<b>Hierarchy Level</b>	[edit chassis fpc <i>slot-number</i> pic <i>pic-number</i> ]
<b>Release Information</b>	Statement introduced in Junos OS Release 8.1.
<b>Description</b>	For T Series routers only, specify OC768-over-OC192 mode on the 4-port OC192C PIC. Four OC192 links are aggregated into one OC768 link with one logical interface.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <i>Configuring 4-Port OC192 PIC to Operate in OC768-over-OC192 Mode</i></li> </ul>


## atm-cell-relay-accumulation

---

<b>Syntax</b>	atm-cell-relay-accumulation;
<b>Hierarchy Level</b>	[edit chassis fpc <i>slot-number</i> pic <i>pic-number</i> ], [edit chassis lcc <i>number</i> fpc <i>slot-number</i> pic <i>pic-number</i> ] (Routing Matrix)
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4.
<b>Description</b>	Configure an Asynchronous Transfer Mode (ATM) Physical Interface Card (PIC) in cell-relay accumulation mode.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <i>Configuring the Junos OS to Use ATM Cell-Relay Accumulation Mode on an ATM1 PIC</i></li> </ul>

## atm-l2circuit-mode

---

<b>Syntax</b>	atm-l2circuit-mode (cell   aal5   trunk <i>trunk</i> );
<b>Hierarchy Level</b>	[edit chassis fpc <i>slot-number</i> pic <i>pic-number</i> ], [edit chassis lcc <i>number</i> fpc <i>slot-number</i> pic <i>pic-number</i> ] (Routing Matrix)
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4.
<b>Description</b>	Configure the ATM2 intelligent queuing (IQ) Layer 2 circuit transport mode.
<b>Default</b>	aal5
<b>Options</b>	<b>aal5</b> —Tunnel a stream of ATM cells encoded with ATM Adaptation Layer (AAL5) over an IP Multiprotocol Label Switching (MPLS) backbone.  <b>cell</b> —Tunnel a stream of ATM cells over an IP MPLS backbone.  <b>trunk <i>trunk</i></b> —Transport ATM cells over an MPLS core network that is implemented on some other vendor switches. Trunk mode can be <b>UNI</b> or <b>NNI</b> .
	<div> <b>NOTE:</b> To determine which vendors support Layer 2 circuit trunk mode, contact Juniper Networks Customer Support.</div>
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>Configuring the Junos OS to Enable ATM2 Intelligent Queuing Layer 2 Circuit Transport Mode</li></ul>

## framing

<b>Syntax</b>	<code>framing (sdh   sonet);</code>
<b>Hierarchy Level</b>	<code>[edit chassis fpc slot-number pic pic-number]</code> , <code>[edit chassis lcc number fpc slot-number pic pic-number]</code> (Routing Matrix)
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4.
<b>Description</b>	On SONET/SDH PICs only, configure the framing type.
<b>Default</b>	<code>sonet</code>
<b>Options</b>	<code>sdh</code> —SDH framing.  <code>sonet</code> —SONET framing.
<b>Required Privilege Level</b>	<code>interface</code> —To view this statement in the configuration. <code>interface-control</code> —To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li><i>Configuring the Junos OS to Enable SONET/SDH Framing for SONET/SDH PICs</i></li> </ul>

## idle-cell-format

<b>Syntax</b>	<pre>idle-cell-format {     itu-t;     payload-pattern payload-pattern-byte; }</pre>
<b>Hierarchy Level</b>	<code>[edit chassis fpc slot-number pic pic-number idle-cell-format]</code> , <code>[edit chassis lcc number fpc slot-number pic pic-number idle-cell-format]</code> (Routing Matrix)
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4.
<b>Description</b>	For ATM2 PICs only, configure the format of the idle cell header and payload bytes.
<b>Options</b>	<p><code>itu-t</code>—Configure the idle cell header to use the International Telecommunications Union (ITU-T) standard of 0x00000001.</p> <p><b>Default:</b> (4 bytes): 0x00000000</p> <p><code>payload-pattern-byte</code>—Configure the idle cell payload pattern. The payload pattern byte can range from 0x00 through 0xff.</p> <p><b>Default:</b> cell payload (48 bytes)</p>
<b>Required Privilege Level</b>	<code>interface</code> —To view this statement in the configuration. <code>interface-control</code> —To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li><i>Configuring the Junos OS to Enable Idle Cell Format and Payload Patterns for ATM Devices</i></li> </ul>

## max-queues-per-interface

---

<b>Syntax</b>	max-queues-per-interface (8   4);
<b>Hierarchy Level</b>	[edit chassis fpc <i>slot-number</i> pic <i>pic-number</i> ], [edit chassis lcc <i>number</i> fpc <i>slot-number</i> pic <i>pic-number</i> ] (Routing Matrix)
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Support for TX Matrix and TX Matrix Plus added in Junos OS Release 9.6. On MIC or MPC interfaces on MX Series routers, configure eight egress queues.
<b>Description</b>	On IQ interfaces on M320, T320, T640, TX Matrix, and TX Matrix Plus routers, or on MIC or MPC interfaces on MX Series routers, configure eight egress queues.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring the Junos OS to Support Eight Queues on IQ Interfaces for T Series and M320 Routers</i></li><li>• <i>Configuring Up to 16 Forwarding Classes</i></li><li>• <i>Enabling Eight Queues on ATM Interfaces</i></li><li>• <i>Configuring the Maximum Number of Queues for Trio MPC/MIC Interfaces</i></li></ul>



## no-concatenate

<b>Syntax</b>	no-concatenate;
<b>Hierarchy Level</b>	[edit chassis fpc <i>slot-number</i> pic <i>pic-number</i> ], [edit chassis lcc <i>number</i> fpc <i>slot-number</i> pic <i>pic-number</i> ] (Routing Matrix)
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4.
<b>Description</b>	<p>Do not concatenate (multiplex) the output of a SONET/SDH PIC (an interface with a name <i>so-fpc/pic/port</i>).</p> <p>When configuring and displaying information about interfaces that are operating in channelized mode, you must specify the channel number in the interface name (<i>physical:channel</i>); for example, <i>so-2/2/0:0</i> and <i>so-2/2/0:1</i>.</p> <p>On SONET OC48 interfaces that are configured for channelized (multiplexed) mode, the <b>bytes e1-quiet</b> and <b>bytes f1</b> options in the <b>sonet-options</b> statement have no effect. The <b>bytes f2</b>, <b>bytes z3</b>, <b>bytes z4</b>, and <b>path-trace</b> options work correctly on channel 0. They work in the transmit direction only on channels 1, 2, and 3.</p>
<b>Default</b>	Output is concatenated (multiplexed).
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li><i>Configuring the Junos OS to Enable a SONET PIC to Operate in Channelized (Multiplexed) Mode</i></li> </ul>

## port (Chassis)

<b>Syntax</b>	port <i>port-number</i> ;
<b>Hierarchy Level</b>	[edit chassis fpc <i>slot-number</i> pic <i>pic-number</i> ct3]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4.
<b>Description</b>	Configure the channelized T3 port number on the PIC.
<b>Options</b>	<p><i>port-number</i>—Port number.</p> <p><b>Range:</b> 0 through 1</p>
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li><i>Configuring the Junos OS to Support Channelized DS3-to-DS0 Naming for Channel Groups and Time Slots</i></li> </ul>

## q-pic-large-buffer

---

<b>Syntax</b>	q-pic-large-buffer (large-scale   small-scale);
<b>Hierarchy Level</b>	[edit chassis fpc slot-number pic pic-number] [edit chassis lcc number fpc slot-number pic pic-number (Routing Matrix)]
<b>Release Information</b>	Statement introduced in Junos OS Release 7.4. Support for TX Matrix and TX Matrix Plus hierarchy added in Junos OS Release 9.6.
<b>Description</b>	Configure delay buffers.



**NOTE:** When you commit the configuration after including the **q-pic-large-buffer** statement for a PIC, the Junos OS temporarily takes the PIC offline and brings it back online before the new configuration is activated and becomes the current operational configuration.

**Default**    **small-scale**

**Options**    **large-scale**—(Optional) Set the average packet size used to calculate the number of notification queue entries in the IQ PIC to 256 bytes. Useful for slower interfaces (T1, E1, and NxDS0 interfaces configured on Channelized IQ PICs and Gigabit Ethernet VLANs configured on Gigabit Ethernet IQ PICs).

**small-scale**—(Optional) Set the average packet size used to calculate the number of notification queue entries in the IQ PIC to 40 bytes.




**NOTE:** You cannot configure the **large-scale** and the **small-scale** options on MX Series routers. Include only the **q-pic-large-buffer** statement to enable the large delay buffer size on Enhanced Queuing DPCs on MX Series routers.

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

**Related Documentation**

- *Configuring the Junos OS to Enable Larger Delay Buffers for T1, E1, and DS0 Interfaces Configured on Channelized IQ PICs*
- *Configuring Schedulers*

## red-buffer-occupancy

<b>Syntax</b>	<pre>red-buffer-occupancy {     weighted-averaged [ instant-usage-weight-exponent <i>exponent-value</i> ]; }</pre>
<b>Hierarchy Level</b>	<pre>[edit chassis fpc <i>slot-number</i> pic <i>pic-number</i> ], [edit chassis lcc <i>number</i> fpc <i>slot-number</i> pic <i>pic-number</i>]</pre>
<b>Release Information</b>	Statement introduced in Junos OS Release 8.3.
<b>Description</b>	<p>Configure the IQ PIC to base random early detection (RED) queue management on a <i>simple moving average</i> buffer occupancy calculation. If you do not include this statement, the IQ PIC bases RED on an <i>instantaneous</i> buffer occupancy value. As an option, you can specify that the IQ PIC bases RED on a <i>weighted moving average</i> of buffer occupancy values.</p> <p>If you configure this feature on a channelized OC12 intelligent queuing (IQ) PIC, the PIC reboots.</p>
<b>Options</b>	<p><b>weighted-averaged</b>—Configure the IQ PIC to base RED processing on a simple moving average of instantaneous buffer occupancy values instead of an instantaneous buffer occupancy.</p> <p><b>instant-usage-weight-exponent <i>exponent-value</i></b>—(Optional) Specify the integer to be used as the negative exponent of 2 to express a weight value. The PIC performs weighted RED (WRED) by based on a calculation of average buffer occupancy that applies the specified weight value to the instantaneous buffer occupancy and then factors the weighted value into the calculation of average buffer occupancy. Valid exponent range is from 1 through 31 (weight values from <math>2^{-1}</math> through <math>2^{-31}</math>). If you do not specify this option, the default exponent value is 0, which results in a weight value of <math>2^0 = 1</math>. With a weight value of 1, the calculation of weighted average buffer occupancy yields the same value as the simple average buffer occupancy.</p>
	<div style="display: flex; align-items: flex-start;"> <div style="margin-right: 10px;">  </div> <div> <p><b>NOTE:</b> You can specify an exponent value greater than 31, and the value displays in the output of show commands. However, the PIC replaces the out-of-range value with the <i>operational</i> value of 31, which results in a weight value of <math>2^{-31} = 1 / 2^{31} = 0.0000000004656612873077392578125</math>.</p> </div> </div>
<b>Required Privilege Level</b>	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>Configuring Weighted RED Buffer Occupancy</li> <li>Example: Configuring Weighted RED Buffer Occupancy</li> </ul>

## traffic-manager

---

<b>Syntax</b>	<pre>traffic-manager {     egress-shaping-overhead <i>number</i>;     ingress-shaping-overhead <i>number</i>;     mode <i>session-shaping</i>; }</pre>
<b>Hierarchy Level</b>	[edit chassis fpc <i>slot-number</i> pic <i>pic-number</i> ], [edit chassis lcc <i>number</i> fpc <i>slot-number</i> pic <i>pic-number</i> ] (Routing Matrix)
<b>Release Information</b>	Statement introduced in Junos OS Release 8.3.
<b>Description</b>	Enable CoS queuing, scheduling, and shaping on an L2TP session.



**NOTE:** Committing changes to **traffic-manager** automatically restarts any necessary components (PICs, DPCs, or FPCs).

<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring CoS for L2TP Tunnels on ATM Interfaces</i></li><li>• <i>egress-shaping-overhead</i></li><li>• <i>ingress-shaping-overhead</i></li><li>• <i>mode (Layer 2 Tunneling Protocol Shaping)</i></li></ul>

## CHAPTER 12

# System Statements

### backup-router

---

<b>Syntax</b>	<code>backup-router <i>address</i> &lt;destination <i>destination-address</i>&gt;;</code>
<b>Hierarchy Level</b>	[edit system]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4.
<b>Description</b>	Set a default router (running IP version 4 [IPv4]) to use while the local router (running IPv4) is booting and if the routing protocol processes fail to start. The Junos OS removes the route to this router as soon as the software starts.
<b>Options</b>	<p><b><i>address</i></b>—Address of the default router.</p> <p><b><i>destination</i><i>destination-address</i></b>—(Optional) Destination address that is reachable through the backup router. You can include this option to achieve network reachability while loading, configuring, and recovering the router, but without the risk of installing a default route in the forwarding table.</p> <p><b>Default:</b> All hosts (default route) are reachable through the backup router.</p>
<b>Required Privilege Level</b>	<p>system—To view this statement in the configuration.</p> <p>system-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring a Backup Router</i></li></ul>

## host-name

---

<b>Syntax</b>	<code>host-name <i>hostname</i>;</code>
<b>Hierarchy Level</b>	[edit system]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Set the hostname of the router or switch.
<b>Options</b>	<i>hostname</i> —Name of the router or switch.
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring the Hostname of the Router or Switch</i></li></ul>

## location (System)

<b>Syntax</b>	<pre>location {   altitude <i>feet</i>;   building <i>name</i>;   country-code <i>code</i>;   floor <i>number</i>;   hcoord <i>horizontal-coordinate</i>;   lata <i>service-area</i>;   latitude <i>degrees</i>;   longitude <i>degrees</i>;   npa-nxx <i>number</i>;   postal-code <i>postal-code</i>;   rack <i>number</i>;   vcoord <i>vertical-coordinate</i>; }</pre>
<b>Hierarchy Level</b>	[edit system]
<b>Release Information</b>	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p>
<b>Description</b>	Configure the system location in various formats.
<b>Options</b>	<p><b>altitude <i>feet</i></b>—Number of feet above sea level.</p> <p><b>building <i>name</i></b>—Name of building. The name of the building can be 1 to 28 characters in length. If the string contains spaces, enclose it in quotation marks (" ").</p> <p><b>country-code <i>code</i></b>—Two-letter country code.</p> <p><b>floor <i>number</i></b>—Floor in the building.</p> <p><b>hcoord <i>horizontal-coordinate</i></b>—Bellcore Horizontal Coordinate.</p> <p><b>lata <i>service-area</i></b>—Long-distance service area.</p> <p><b>latitude <i>degrees</i></b>—Latitude in degree format.</p> <p><b>longitude <i>degrees</i></b>—Longitude in degree format.</p> <p><b>npa-nxx <i>number</i></b>—First six digits of the phone number (area code and exchange).</p> <p><b>postal-code <i>postal-code</i></b>—Postal code.</p> <p><b>rack <i>number</i></b>—Rack number.</p> <p><b>vcoord <i>vertical-coordinate</i></b>—Bellcore Vertical Coordinate.</p>
<b>Required Privilege Level</b>	<p>system—To view this statement in the configuration.</p> <p>system-control—To add this statement to the configuration.</p>

- Related Documentation**
- *Configuring the Physical Location of the Router or Switch*



## scripts

```

Syntax  scripts {
        commit {
            allow-transients;
            direct-access;
            file filename {
                checksum (md5 | sha-256 | sha1) hash;
                optional;
                refresh;
                refresh-from url;
                source url;
            }
            max-datasize
            refresh;
            refresh-from url;
            traceoptions {
                file <filename> <files number> <size size> <world-readable | no-world-readable>;
                flag flag;
                no-remote-trace;
            }
        }
        load-scripts-from-flash;
        op {
            file filename {
                arguments {
                    argument-name {
                        description descriptive-text;
                    }
                }
                checksum (md5 | sha-256 | sha1) hash;
                command filename-alias;
                description descriptive-text;
                max-datasize
                refresh;
                refresh-from url;
                source url;
            }
            no-allow-url
            refresh;
            refresh-from url;
            traceoptions {
                file <filename> <files number> <size size> <world-readable | no-world-readable>;
                flag flag;
                no-remote-trace;
            }
        }
        synchronize;
    }

```

Hierarchy Level [edit system]

**Release Information** Statement introduced in Junos OS Release 7.4.  
Statement introduced in Junos OS Release 11.1 for the QFX Series.

**Description** For Junos OS commit or op scripts, configure scripting mechanisms.



.....  
**NOTE:** The `traceoptions` statement is not supported on QFabric systems.  
.....

**Options** The statements are explained separately.

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

**Related** • *Storing and Enabling Scripts*  
**Documentation**

## syslog (System)

```

Syntax  syslog {
        archive {
            (binary-data| no-binary-data);
            files number;
            size maximum-file-size;
            start-time "YYYY-MM-DD.hh:mm";
            transfer-interval minutes;
            (world-readable | no-world-readable);
        }
        console {
            facility severity;
        }
        file filename {
            facility severity;
            explicit-priority;
            match "regular-expression";
            archive {
                (binary-data| no-binary-data);
                files number;
                size maximum-file-size;
                start-time "YYYY-MM-DD.hh:mm";
                transfer-interval minutes;
                (world-readable | no-world-readable);
            }
            structured-data {
                brief;
            }
        }
        host (hostname | other-routing-engine | scc-master) {
            facility severity;
            explicit-priority;
            facility-override facility;
            log-prefix string;
            match "regular-expression";
            source-address source-address;
            structured-data {
                brief;
            }
            port port number;
        }
        log-rotate-frequency frequency;
        server server name;
        source-address source-address;
        time-format(millisecond | year | year millisecond);
        user (username | *) {
            facility severity;
            match "regular-expression";
        }
    }

```

**Hierarchy Level** [edit logical-systems *logical-system-name* system],  
[edit system]

<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 11.1 for the QFX Series. Support at the <b>[edit logical-systems logical-system-name system]</b> hierarchy level introduced in Junos OS Release 11.4.
<b>Description</b>	Configure the types of system log messages to send to files, to a remote destination, to user terminals, or to the system console.  The remaining statements are explained separately.
<b>Options</b>	<b>archive</b> —Define parameters for archiving log messages.  <b>console</b> —Send log messages of a specified class and severity to the console.  <b>file</b> —Send log messages to a named file.  <b>host</b> —Remote location to be notified of specific log messages.  <b>log-rotate-frequency</b> —Configure the interval for checking logfile size and archiving messages.  <b>server</b> —Name of the system log server in the inet.0 routing instance.  <b>source-address</b> —Include a specified address as the source address for log messages.  <b>time-format</b> —Additional information to include in the system log time stamp.  <b>user</b> —Notify a specific user of the log event.
<b>Required Privilege Level</b>	<b>system</b> —To view this statement in the configuration. <b>system-control</b> —To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Junos OS System Log Configuration Overview</i></li><li>• <i>Junos OS System Log Messages Reference</i></li><li>• <i>Overview of Single-Chassis System Logging Configuration</i></li></ul>

## time-zone

<b>Syntax</b>	<code>time-zone (GMT <i>hour-offset</i>   <i>time-zone</i>);</code>
<b>Hierarchy Level</b>	[edit system]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. <b>GMT <i>hour-offset</i></b> option added in Junos OS Release 7.4.
<b>Description</b>	Set the local time zone. To have the time zone change take effect for all processes running on the router or switch, you must reboot the router or switch.
<b>Default</b>	UTC
<b>Options</b>	<p><b>GMT <i>hour-offset</i></b>—Set the time zone relative to UTC time.</p> <p><b>Range:</b> –14 through +12</p> <p><b>Default:</b> 0</p> <p><b><i>time-zone</i></b>—Specify the time zone as <b>UTC</b>, which is the default time zone, or as a string such as PDT (Pacific Daylight Time), or use one of the following continents and major cities:</p> <p>Africa/Abidjan, Africa/Accra, Africa/Addis_Ababa, Africa/Algiers, Africa/Asmera, Africa/Bamako, Africa/Bangui, Africa/Banjul, Africa/Bissau, Africa/Blantyre, Africa/Brazzaville, Africa/Bujumbura, Africa/Cairo, Africa/Casablanca, Africa/Ceuta, Africa/Conakry, Africa/Dakar, Africa/Dar_es_Salaam, Africa/Djibouti, Africa/Douala, Africa/El_Aaiun, Africa/Freetown, Africa/Gaborone, Africa/Harare, Africa/Johannesburg, Africa/Kampala, Africa/Khartoum, Africa/Kigali, Africa/Kinshasa, Africa/Lagos, Africa/Libreville, Africa/Lome, Africa/Luanda, Africa/Lubumbashi, Africa/Lusaka, Africa/Malabo, Africa/Maputo, Africa/Maseru, Africa/Mbabane, Africa/Mogadishu, Africa/Monrovia, Africa/Nairobi, Africa/Ndjamena, Africa/Niamey, Africa/Nouakchott, Africa/Ouagadougou, Africa/Porto-Novo, Africa/Sao_Tome, Africa/Timbuktu, Africa/Tripoli, Africa/Tunis, Africa/Windhoek</p> <p>America/Adak, America/Anchorage, America/Anguilla, America/Antigua, America/Aruba, America/Asuncion, America/Barbados, America/Belize, America/Bogota, America/Boise, America/Buenos_Aires, America/Caracas, America/Catamarca, America/Cayenne, America/Cayman, America/Chicago, America/Cordoba, America/Costa_Rica, America/Cuiaba, America/Curacao, America/Dawson, America/Dawson_Creek, America/Denver, America/Detroit, America/Dominica, America/Edmonton, America/El_Salvador, America/Ensenada, America/Fortaleza, America/Glace_Bay, America/Godthab, America/Goose_Bay, America/Grand_Turk, America/Grenada, America/Guadeloupe, America/Guatemala, America/Guayaquil, America/Guyana, America/Halifax, America/Havana, America/Indiana/Knox, America/Indiana/Marengo, America/Indiana/Vevay, America/Indianapolis, America/Inuvik, America/Iqaluit, America/Jamaica, America/Jujuy, America/Juneau, America/La_Paz, America/Lima, America/Los_Angeles, America/Louisville, America/Maceio, America/Managua, America/Manaus, America/Martinique, America/Mazatlan, America/Mendoza, America/Menominee, America/Mexico_City, America/Miquelon, America/Montevideo, America/Montreal, America/Montserrat, America/Nassau, America/New_York, America/Nipigon, America/Nome, America/Noronha, America/Panama, America/Pangnirtung, America/Paramaribo, America/Phoenix, America/Port-au-Prince,</p>

America/Port\_of\_Spain, America/Porto\_Acre, America/Puerto\_Rico, America/Rainy\_River, America/Rankin\_Inlet, America/Regina, America/Rosario, America/Santiago, America/Santo\_Domingo, America/Sao\_Paulo, America/Scoresbysund, America/Shiprock, America/St\_Johns, America/St\_Kitts, America/St\_Lucia, America/St\_Thomas, America/St\_Vincent, America/Swift\_Current, America/Tegucigalpa, America/Thule, America/Thunder\_Bay, America/Tijuana, America/Tortola, America/Vancouver, America/Whitehorse, America/Winnipeg, America/Yakutat, America/Yellowknife

Antarctica/Casey, Antarctica/DumontDURville, Antarctica/Mawson, Antarctica/McMurdo, Antarctica/Palmer, Antarctica/South\_Pole

Arctic/Longyearbyen

Asia/Aden, Asia/Alma-Ata, Asia/Amman, Asia/Anadyr, Asia/Aqtau, Asia/Aqtobe, Asia/Ashkhabad, Asia/Baghdad, Asia/Bahrain, Asia/Baku, Asia/Bangkok, Asia/Beirut, Asia/Bishkek, Asia/Brunei, Asia/Calcutta, Asia/Chungking, Asia/Colombo, Asia/Dacca, Asia/Damascus, Asia/Dubai, Asia/Dushanbe, Asia/Gaza, Asia/Harbin, Asia/Hong\_Kong, Asia/Irkutsk, Asia/Ishigaki, Asia/Jakarta, Asia/Jayapura, Asia/Jerusalem, Asia/Kabul, Asia/Kamchatka, Asia/Karachi, Asia/Kashgar, Asia/Katmandu, Asia/Krasnoyarsk, Asia/Kuala\_Lumpur, Asia/Kuching, Asia/Kuwait, Asia/Macao, Asia/Magadan, Asia/Manila, Asia/Muscat, Asia/Nicosia, Asia/Novosibirsk, Asia/Omsk, Asia/Phnom\_Penh, Asia/Pyongyang, Asia/Qatar, Asia/Rangoon, Asia/Riyadh, Asia/Saigon, Asia/Seoul, Asia/Shanghai, Asia/Singapore, Asia/Taipei, Asia/Tashkent, Asia/Tbilisi, Asia/Tehran, Asia/Thimbu, Asia/Tokyo, Asia/Ujung\_Pandang, Asia/Ulan\_Bator, Asia/Urumqi, Asia/Vientiane, Asia/Vladivostok, Asia/Yakutsk, Asia/Yekaterinburg, Asia/Yerevan

Atlantic/Azores, Atlantic/Bermuda, Atlantic/Canary, Atlantic/Cape\_Verde, Atlantic/Faeroe, Atlantic/Jan\_Mayen, Atlantic/Madeira, Atlantic/Reykjavik, Atlantic/South\_Georgia, Atlantic/St\_Helena, Atlantic/Stanley

Australia/Adelaide, Australia/Brisbane, Australia/Broken\_Hill, Australia/Darwin, Australia/Hobart, Australia/Lindeman, Australia/Lord\_Howe, Australia/Melbourne, Australia/Perth, Australia/Sydney

Europe/Amsterdam, Europe/Andorra, Europe/Athens, Europe/Belfast, Europe/Belgrade, Europe/Berlin, Europe/Bratislava, Europe/Brussels, Europe/Bucharest, Europe/Budapest, Europe/Chisinau, Europe/Copenhagen, Europe/Dublin, Europe/Gibraltar, Europe/Helsinki, Europe/Istanbul, Europe/Kaliningrad, Europe/Kiev, Europe/Lisbon, Europe/Ljubljana, Europe/London, Europe/Luxembourg, Europe/Madrid, Europe/Malta, Europe/Minsk, Europe/Monaco, Europe/Moscow, Europe/Oslo, Europe/Paris, Europe/Prague, Europe/Riga, Europe/Rome, Europe/Samara, Europe/San\_Marino, Europe/Sarajevo, Europe/Simferopol, Europe/Skopje, Europe/Sofia, Europe/Stockholm, Europe/Tallinn, Europe/Tirane, Europe/Vaduz, Europe/Vatican, Europe/Vienna, Europe/Vilnius, Europe/Warsaw, Europe/Zagreb, Europe/Zurich

Indian/Antananarivo, Indian/Chagos, Indian/Christmas, Indian/Cocos, Indian/Comoro, Indian/Kerguelen, Indian/Mahe, Indian/Maldives, Indian/Mauritius, Indian/Mayotte, Indian/Reunion

Pacific/Apia, Pacific/Auckland, Pacific/Chatham, Pacific/Easter, Pacific/Efate, Pacific/Enderbury, Pacific/Fakaofu, Pacific/Fiji, Pacific/Funafuti, Pacific/Galapagos, Pacific/Gambier, Pacific/Guadalcanal, Pacific/Guam, Pacific/Honolulu, Pacific/Johnston, Pacific/Kiritimati, Pacific/Kosrae, Pacific/Kwajalein, Pacific/Majuro, Pacific/Marquesas, Pacific/Midway, Pacific/Nauru, Pacific/Niue, Pacific/Norfolk, Pacific/Noumea, Pacific/Pago\_Pago, Pacific/Palau, Pacific/Pitcairn, Pacific/Ponape, Pacific/Port\_Moresby, Pacific/Rarotonga, Pacific/Saipan, Pacific/Tahiti, Pacific/Tarawa, Pacific/Tongatapu, Pacific/Truk, Pacific/Wake, Pacific/Wallis, Pacific/Yap

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

- Related Documentation**
- *Modifying the Default Time Zone for a Router or Switch Running Junos OS*
  - *System Management Configuration Statements*





## CHAPTER 13

# Syslog-Specific System Statements

## file (System Logging)

---

Syntax	<pre>file <i>filename</i> {     <i>facility severity</i>;     archive {         files <i>number</i>;         size <i>size</i>;         (no-world-readable   world-readable);     }     explicit-priority;     match "<i>regular-expression</i>";     structured-data {         brief;     } }</pre>
Hierarchy Level	[edit system <a href="#">syslog</a> ]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 11.1 for the QFX Series.
Description	Configure the logging of system messages to a file.
Options	<p><b>facility</b>—Class of messages to log. To specify multiple classes, include multiple <b>facility severity</b> statements. For a list of the facilities, see <i>Junos OS System Logging Facilities and Message Severity Levels</i>.</p> <p><b>file filename</b>—File in the <b>severity</b> directory in which to log messages from the specified facility. To log messages to more than one file, include more than one <b>file</b> statement.</p> <p><b>severity</b>—Severity of the messages that belong to the facility specified by the paired <b>facility</b> name. Messages with severities of the specified level and higher are logged. For a list of the severities, see <i>Junos OS System Logging Facilities and Message Severity Levels</i>.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"><li>• <i>Directing System Log Messages to a Log File</i></li><li>• <i>Junos OS System Log Messages Reference</i></li></ul>

## host (System)

<b>Syntax</b>	<pre> host (hostname   other-routing-engine) {     facility severity;     exclude-hostname     explicit-priority;     facility-override facility;     log-prefix string;     match "regular-expression";     source-address source-address;     structured-data {         brief;     } } </pre>
<b>QFX Series</b>	<pre> host (hostname {     facility severity;     explicit-priority;     facility-override facility;     log-prefix string;     match "regular-expression";     port;     source-address source-address; } </pre>
<b>TX Matrix Router and EX Series Switches</b>	<pre> host (hostname   other-routing-engine   scc-master) {     facility severity;     explicit-priority;     facility-override facility;     log-prefix string;     match "regular-expression";     port;     source-address source-address; } </pre>
<b>TX Matrix Plus Router</b>	<pre> host (hostname   other-routing-engine   sfc0-master) {     facility severity;     allow-duplicates;     explicit-priority;     facility-override facility;     log-prefix string;     match "regular-expression";     port;     source-address source-address; } </pre>
<b>Hierarchy Level</b>	<pre> [edit logical-systems logical-system-name system syslog], [edit system syslog] </pre>
<b>Release Information</b>	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.1 for the QFX Series.</p>
<b>Description</b>	Configure the logging of system messages to a remote destination.

**Options** *facility*—Class of messages to log. To specify multiple classes, include multiple *facility severity* statements. For a list of the facilities, see *Junos OS System Logging Facilities and Message Severity Levels*.

*hostname*—IPv4 address, IPv6 address, or fully qualified hostname of the remote machine to which to direct messages. To direct messages to multiple remote machines, include a **host** statement for each one.

**other-routing-engine**—Direct messages to the other Routing Engine on a router or switch with two Routing Engines installed and operational.



**NOTE:** The **other-routing-engine** option is not applicable to the QFX Series.

**port**—Port number of the remote syslog server that can be modified.

**scc-master**—(TX Matrix routers only) On a T640 router that is part of a routing matrix, direct messages to the TX Matrix router.

*severity*—Severity of the messages that belong to the facility specified by the paired *facility* name. Messages with severities of the specified level and higher are logged. For a list of the severities, see *Junos OS System Logging Facilities and Message Severity Levels*.

**sfc0-master**—(TX Matrix Plus routers only) On a T1600 or T4000 router that is part of a routing matrix, direct messages to the TX Matrix Plus router.

The remaining statements are explained separately.

<b>Required Privilege</b>	system—To view this statement in the configuration.
<b>Level</b>	system-control—To add this statement to the configuration.

- |                              |   |
|------------------------------|---|
| <b>Related Documentation</b> | <ul style="list-style-type: none"><li>• <i>Directing System Log Messages to a Remote Machine or the Other Routing Engine</i></li><li>• <i>Directing Messages to a Remote Destination from the Routing Matrix Based on the TX Matrix Router</i></li><li>• <i>Directing Messages to a Remote Destination from the Routing Matrix Based on a TX Matrix Plus Router</i></li><li>• <i>Junos OS System Log Messages Reference</i></li></ul> |
|------------------------------|---|

## source-address (NTP, RADIUS, System Logging, or TACACS+)

<b>Syntax</b>	<code>source-address <i>source-address</i>;</code>
<b>Hierarchy Level</b>	[edit system accounting destination radius server <i>server-address</i> ], [edit system accounting destination tacplus server <i>server-address</i> ], [edit system ntp], [edit system radius-server <i>server-address</i> ], [edit system <b>syslog</b> ], [edit system tacplus-server <i>server-address</i> ]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Specify a source address for each configured TACACS+ server, RADIUS server, NTP server, or the source address to record in system log messages that are directed to a remote machine.
<b>Options</b>	<b>source-address</b> —A valid IP address configured on one of the router or switch interfaces. For system logging, the address is recorded as the message source in messages sent to the remote machines specified in all <b>host <i>hostname</i></b> statements at the <b>[edit system syslog]</b> hierarchy level, but not for messages directed to the other Routing Engine or to the TX Matrix router or TX Matrix Plus router in a routing matrix based on a TX Matrix router or TX Matrix Plus router.
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <i>Configuring RADIUS Authentication</i></li> <li>• <i>Synchronizing and Coordinating Time Distribution Using NTP</i></li> <li>• <i>Specifying an Alternative Source Address for System Log Messages</i></li> </ul>



## PART 3

# Administration

- [Managing Hardware Components on page 141](#)
- [Managing Files and Processes on page 151](#)
- [Upgrading the Junos OS on page 155](#)
- [Chassis Commands on page 187](#)
- [System Software Commands on page 831](#)





# Managing Hardware Components

- [Displaying Chassis Physical Locations for a Routing Matrix with a TX Matrix Plus Router on page 141](#)
- [Displaying the Status of the Switching Fabric Topology of a Routing Matrix with a TX Matrix Plus Router on page 142](#)
- [Displaying the Status of Control Board Ethernet Switch Ports in a Routing Matrix with a TX Matrix Plus Router on page 143](#)
- [Enabling and Disabling Hardware Components of a Routing Matrix with a TX Matrix Plus Router on page 147](#)
- [Rebooting and Halting Hardware Components of the Routing Matrix with a TX Matrix Plus Router on page 149](#)

## Displaying Chassis Physical Locations for a Routing Matrix with a TX Matrix Plus Router

In a routing matrix with a TX Matrix Plus router, you can use the [show chassis location](#) operational command to display the physical locations of hardware components in the routing matrix:

- To display the router physical location descriptions defined in the [location](#) configuration statement at the **[edit system]** hierarchy level, issue the **show chassis location** operational command. To limit the command output to the **location** configuration settings for the TX Matrix Plus router (SFC) only, include the **sfc 0** option. To limit the command output to the **location** configuration settings for a particular T1600 or T4000 router (LCC), include the **lcc lcc-number** option. For example:

```
user@host> show chassis location sfc 0
sfc0-re0:
```

```
-----
country-code: US
postal-code: 94404
Building: Building 2, Floor: 2
```

- To display the numbers of the connected Flexible PIC Concentrators (FPCs) in both routing matrix “global numbering” mode (0 through 31, as used to specify an interface name in a routing matrix) and associated “local numbering” mode (LCC number and FPC slot number), include the **fpc** option. Example:

```
user@host> show chassis location fpc
```

Global FPC	LCC	Local FPC
1	0	1
2	0	2
3	0	3
16	2	6
17	2	1
19	2	3

- To display the LCC number and FPC number associated with a particular interface name, include the **interface by-name *interface-name*** option. For example:

```
user@host> show chassis location interface by-name ge-16/3/7.1
Interface Name: ge-16/3/7.0, LCC: 2, FPC: 6
```

- To display the interface name associated with a particular FPC, include the **interface by-slot lcc *lcc-number* fpc *fpc-slot-number*** option. For example:

```
user@host> show chassis location interface by-slot lcc 2 fpc 6
Global FPC: 16
```

#### Related Documentation

- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
- [Roadmap for Configuring the Routing Matrix on page 31](#)
- [Example Configuration for the Routing Matrix on page 47](#)
- [Example: Configuring a Routing Matrix with a TX Matrix Plus Router in Mixed Mode on page 70](#)
- [Upgrading the Junos OS on the Routing Matrix on page 155](#)

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## Displaying the Status of the Switching Fabric Topology of a Routing Matrix with a TX Matrix Plus Router

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In a routing matrix with a TX Matrix Plus router, each of the five control planes contains various types of Switch Interface Boards (SIBs) that forward packets from a source Packet Forwarding Engine to a destination Packet Forwarding Engine.

You can use the **show chassis fabric topology** operational command to check the status of the SIB connections between the TX Matrix Plus router and the connected T1600 or T4000 routers:

- To display the fabric topology states for the entire routing matrix, issue the **show chassis fabric topology** command. To limit the command output to a particular SIB, also include the SIB slot number as a command option.
- To display the fabric topology states for the TX Matrix Plus router, include the **sfc *number*** option. To further limit the command output to a particular SIB, also include the SIB slot number as a command option.
- To display the fabric topology states for a particular T1600 or T4000 router, include the **lcc *lcc-number*** option. To further limit the command output to a particular SIB, also include the SIB slot number as a command option.

To display the fabric topology state for the TX Matrix Plus router only, issue the **show fabric topology** command with the **sfc** option. The command output displays the fabric link status for transmit-side links and receive-side links for each of the SIB slots in the TX Matrix Plus router.

#### Related Documentation

- [show chassis fabric topology on page 567](#)
- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
- [Roadmap for Configuring the Routing Matrix on page 31](#)
- [Example Configuration for the Routing Matrix on page 47](#)
- [Example: Configuring a Routing Matrix with a TX Matrix Plus Router in Mixed Mode on page 70](#)
- [Upgrading the Junos OS on the Routing Matrix on page 155](#)

## Displaying the Status of Control Board Ethernet Switch Ports in a Routing Matrix with a TX Matrix Plus Router

The following sections describe the Ethernet switches on the Control Boards in a routing matrix with a TX Matrix Plus router and how you can use the **show chassis ethernet-switch** operational command to display information about the ports on Control Board Ethernet switches:

- [Ethernet Switches on Control Boards in the Routing Matrix on page 143](#)
- [Status of Ports on Control Board Ethernet Switches on page 145](#)
- [Error Statistics for Ports on Control Board Ethernet Switches on page 145](#)
- [Traffic Statistics for Ports on Control Board Ethernet Switches on page 146](#)

### Ethernet Switches on Control Boards in the Routing Matrix

In a routing matrix with a TX Matrix Plus router, the SFC and all connected LCCs contain redundant host subsystems. For each host subsystem in a T1600 or T4000 router in a routing matrix, the Control Board (LCC-CB) contains a Gigabit Ethernet switch. For each host subsystem in a TX Matrix Plus router, the Control Board (TXP-CB) contains a 10-Gigabit Ethernet switch and a Gigabit Ethernet switch, which are connected.

These switches support the following connectivity between Routing Engines in the routing matrix:

- [Connectivity Between SFC and LCC Routing Engines on page 143](#)
- [Connectivity Between SFC Master and Backup Routing Engines on page 144](#)
- [Connectivity Between LCC Master and Backup Routing Engines on page 144](#)

#### Connectivity Between SFC and LCC Routing Engines

In a routing matrix with a TX Matrix Plus router, the SFC master Routing Engine and every LCC master Routing Engine are connected, enabling the multi-chassis system to operate

as a single routing system. The SFC backup Routing Engine and every LCC backup Routing Engine are likewise connected.

This connectivity entails the 10-Gigabit and Gigabit Ethernet switches on the TXP-CB and the Gigabit Ethernet switch on the LCC-CB:

1. The 10-Gigabit Ethernet port on the SFC Routing Engine (automatically configured at the **ixgbe0** internal Ethernet interface) connects to the 10-Gigabit Ethernet switch on the *local Control Board*.
2. On the SFC local Control Board, the 10-Gigabit Ethernet switch connects to the Gigabit Ethernet switch.
3. The Gigabit Ethernet switch on the SFC Control Board connects to the Gigabit Ethernet switch of every LCC Control Board.
4. On every LCC Routing Engine, the Gigabit Ethernet port (automatically configured at the **bcm0** internal Ethernet interface) connects to the Gigabit Ethernet switch on the *local Control Board*.

---

### Connectivity Between SFC Master and Backup Routing Engines

In a routing matrix with a TX Matrix Plus router, the independent control planes of an SFC are connected by two physical links between the two 10-Gigabit Ethernet ports on their respective Routing Engines.

This connectivity entails the 10-Gigabit Ethernet switches on the local and remote TXP-CBs:

- The primary link to the remote Routing Engine is at the **ixgbe0** interface on the SFC Routing Engine. The **ixgbe0** interface—in addition to connecting the SFC Routing Engine to the Routing Engines of the connected LCCs—also connects the SFC Routing Engine to the 10-Gigabit Ethernet port accessed by the **ixgbe1** interface on the *remote Routing Engine*.
- The alternate link to the remote Routing Engine is the 10-Gigabit Ethernet port at the **ixgbe1** interface on the Routing Engine. This second port connects the Routing Engine to the 10-Gigabit Ethernet switch on the *remote Control Board*, which in turn connects to the 10-Gigabit Ethernet port at the **ixgbe0** interface on the *remote Routing Engine*.

If one of the two links between the host subsystems fails, both Routing Engines can use the other link for IP communication.

---

### Connectivity Between LCC Master and Backup Routing Engines

In a routing matrix with a TX Matrix Plus router, the independent control planes of an LCC are connected by two physical links between the two Gigabit Ethernet ports on their respective Routing Engines.

This connectivity entails the Gigabit Ethernet switches on the local and remote LCC-CBs:

- The primary link to the remote Routing Engine is at the **bcm0** interface on the LCC Routing Engine. The **bcm0** interface—in addition to connecting the LCC Routing Engine

to the SFC Routine Engine—also connects the LCC Routing Engine to the Gigabit Ethernet port accessed by the **em1** interface on the *remote Routing Engine*.

- The alternate link to the remote Routing Engine is at the Gigabit Ethernet port at the **em1** interface on the local Routing Engine. This second port connects the local Routing Engine to the Gigabit Ethernet switch on the *remote Control Board*, which in turn connects to the Gigabit Ethernet port at the **bcm0** interface on the *remote Routing Engine*.

If one of the two links between the host subsystems fails, both Routing Engines can use the other link for IP communication.

## Status of Ports on Control Board Ethernet Switches

To display port status information for the ports on the Control Board Ethernet switches in the routing matrix, use the following form of the **show chassis ethernet-switch** operational command:

```
show chassis ethernet-switch <sfc sfc-number | lcc lcc-number>
```

You can control the scope of the command output as follows:

- To display the status of the switch ports on the Control Boards in every router in the routing matrix, issue the **show chassis ethernet-switch** command without any command options.
- To limit the output to the status of the ports on the 10-Gigabit Ethernet switch and the Gigabit Ethernet switch on the two Control Boards in the SFC, issue the **show chassis ethernet-switch** command with the **sfc sfc-number** option, where **sfc-number** is 0.
- To limit the output to the status of the ports on the Gigabit Ethernet switch in the two Control Boards in a specific LCC, issue the **show chassis ethernet-switch** operational command with the **lcc lcc-number** option, where **lcc-number** is a value from 0 through 3.

## Error Statistics for Ports on Control Board Ethernet Switches

To display the numbers and types of errors accumulated on the connected ports of Control Board Ethernet switches in the routing matrix, use the following form of the **show chassis ethernet-switch** operational command:

```
show chassis ethernet-switch errors <sfc sfc-number | lcc lcc-number>  
<switch switch-type-number> <switch-port-number>
```

You can control the scope of the command output as follows:

- To display error information for ports on Control Board Ethernet switches in every router in the routing matrix, issue the **show chassis ethernet-switch errors** command (applying only the **errors** command option).

- To limit the command output, you add any combination of the following command options:
  - Chassis—To filter the output on a specific chassis, you can include either the **sfc sfc-number** option (where **sfc-number** is 0) or the **lcc lcc-number** option.
  - SFC Control Board Ethernet Switch Type—If the command output includes information for Control Board Ethernet switches in an SFC (that is, if you applied either the **errors** option alone or the **errors sfc sfc-number** option), you can filter the SFC portion of the output on a specific switch type. To limit SFC Control Board Ethernet switch port error information, include the **switch switch-type-number** option. The **switch-type-number** value can be 0 (the 10-Gigabit Ethernet switch type) or 1 (the Gigabit Ethernet switch type). The **switch-type-number 2** is reserved for future use.
  - Control Board Ethernet Switch Port Number—To filter the output on a specific switch port number, include the **switch-port-number** option, where **switch-port-number** is a value from 0 through 27.

Related Documentation • [show chassis ethernet-switch on page 419](#)

## Traffic Statistics for Ports on Control Board Ethernet Switches

To display the traffic statistics accumulated on the connected ports of Control Board Ethernet switches in the routing matrix, use the following form of the **show chassis ethernet-switch** operational command:

```
show chassis ethernet-switch statistics <sfc sfc-number | lcc lcc-number>  
<switch switch-type-number> <switch-port-number>
```

You can control the scope of the command output as follows:

- To display traffic statistics for Ethernet ports on Control Board switches in every router in the routing matrix, issue the **show chassis ethernet-switch statistics** command (applying only the **statistics** command option).
- To limit the command output, you can add any combination of the following command options:
  - Chassis—To filter the output on a specific chassis, you can include either the **sfc sfc-number** option (where **sfc-number** is 0) or the **lcc lcc-number** option .
  - SFC Control Board Ethernet Switch Type—If the command output includes information for Control Board Ethernet switches in an SFC (that is, if you applied either the **statistics** option alone or the **statistics sfc sfc-number** option), you can filter the SFC portion of the output on a specific switch type. To limit SFC Control Board Ethernet switch port error information, include the **switch switch-type-number** option. The **switch-type-number** value can be 0 (the 10-Gigabit Ethernet switch type) or 1 (the Gigabit Ethernet switch type). The **switch-type-number 2** is reserved for future use.

- Control Board Ethernet Switch Port Number—To filter the output on a specific switch port number, include the **switch-port-number** option, where **switch-port-number** is a value from 0 through 27.

**Related Documentation**

- [show chassis ethernet-switch on page 419](#)
- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
- [Roadmap for Configuring the Routing Matrix on page 31](#)
- [Example Configuration for the Routing Matrix on page 47](#)
- [Upgrading the Junos OS on the Routing Matrix on page 155](#)

## Enabling and Disabling Hardware Components of a Routing Matrix with a TX Matrix Plus Router

You can temporarily disable certain hardware components (such as FPCs, PICs, and SIBs) that belong to the TX Matrix Plus router and T1600 or T4000 routers in the routing matrix. To do so, issue the appropriate **request chassis** command and include the **sfc** or **lcc** option as needed.



**NOTE:** If you issue a chassis-related command that references FPCs, we recommend that you use the FPC hardware slot number (0 through 7) of the specific T1600 router and specify its corresponding LCC number.

```
user@host> request chassis ?
```

Possible completions:

cb	Change Control Board status
cip	Change Connector Interface Panel status
fpc	Change Flexible PIC Concentrator status
fpm	Change craft interface status
lcc	Change LCC status
pic	Change Physical Interface Card status
routing-engine	Change Routing Engine status
scg	Change SONET Clock Generator status
sib	Change Switch Interface Board status
symb	Change Switch Processor Mezzanine Board status

The routing matrix extends the concept of taking specific hardware components offline or online to include an entire T1600 or T4000 router in a routing matrix. To enable or disable a T1600 or T4000 router in a routing matrix, issue the **request chassis lcc slot lcc-number (offline | online)** command:

Although you can enter the routing matrix-based slot number when you issue the **request chassis fpc** command, output from **show chassis** commands always references the FPC hardware slot number of the specific T1600 or T4000 router and its corresponding LCC number. As a result, we recommend that you include the FPC hardware slot number when you issue **request chassis** or **show chassis** commands, as shown in the following example.

First, issue the **request chassis fpc** command with the routing matrix-based FPC slot number of 19:

```
user@host> request chassis fpc offline slot 19
lcc2-re0:
```

-----  
Offline initiated, use "show chassis fpc" to verify

However, when you issue the **show chassis fpc** command to check the result, the output displays the change using node-centric terminology: FPC slot number 3 on T1600 router **LCC2** (the equivalent of routing matrix slot 19).

```
user@host> show chassis fpc
lcc0-re0:
```

```
-----
Slot State      Temp  CPU Utilization (%)  Memory  Utilization (%)
              (C)  Total  Interrupt          DRAM (MB) Heap      Buffer
0 Empty
1 Online        31    2         0        256         7        44
2 Online        28    1         0        256         7        44
3 Online        31    2         0        256        14        44
4 Empty
5 Empty
6 Empty
7 Empty
```

```
lcc2-re0:
```

```
-----
Slot State      Temp  CPU Utilization (%)  Memory  Utilization (%)
              (C)  Total  Interrupt          DRAM (MB) Heap      Buffer
0 Online        31    2         0        256        14        44
1 Online        30    2         0        256         7        44
2 Empty
3 Offline      --- Offlined by cli command ---
4 Empty
5 Empty
6 Empty
7 Empty
```

To bring the same FPC back online, use the slot number and LCC number from the previous command output:

```
user@host> request chassis fpc online lcc 2 slot 3
lcc2-re0:
```

-----  
Online initiated, use "show chassis fpc" to verify

Once you bring the FPC back online, reissue the **show chassis fpc** command to see that the FPC slot and LCC number you used in the last command now matches the command output:

```
user@host> show chassis fpc
lcc0-re0:
```

```
-----
Slot State      Temp  CPU Utilization (%)  Memory  Utilization (%)
              (C)  Total  Interrupt          DRAM (MB) Heap      Buffer
0 Empty
1 Online        31    1         0        256         7        44
2 Online        28    1         0        256         7        44
3 Online        31    3         0        256        14        44
4 Empty
```



```

5 Empty
6 Empty
7 Empty

```

lcc2-re0:

Slot	State	Temp (C)	CPU Utilization (%)		Memory DRAM (MB)	Utilization (%)	
			Total	Interrupt		Heap	Buffer
0	Online	31	3	0	256	14	44
1	Online	30	1	0	256	7	44
2	Empty						
3	Present	0	0	0	0	0	0
4	Empty						
5	Empty						
6	Empty						
7	Empty						

For more information about converting FPC hardware slot numbers on a T1600 or T4000 router to the global FPC numbers used in a routing matrix and vice versa, see [“FPC Numbering for Interfaces in TXP-T1600 Configuration” on page 14](#), [“FPC Numbering for Interfaces in TXP-T1600-3D Configuration” on page 16](#), [“FPC Numbering for Interfaces in TXP-T4000-3D Configuration” on page 19](#), [“FPC Numbering for Interfaces in TXP-Mixed-LCC-3D Configuration” on page 20](#), [“Displaying Chassis Physical Locations for a Routing Matrix with a TX Matrix Plus Router” on page 141](#).

#### Related Documentation

- [Routing Matrix with a TX Matrix Plus Router Deployment Guide](#)
- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
- [Roadmap for Configuring the Routing Matrix on page 31](#)
- [Example Configuration for the Routing Matrix on page 47](#)
- [Upgrading the Junos OS on the Routing Matrix on page 155](#)

## Rebooting and Halting Hardware Components of the Routing Matrix with a TX Matrix Plus Router

In a routing matrix with a TX Matrix Plus router, you can control which hardware component is rebooted or halted. If you reboot or halt the TX Matrix Plus router, by default you also reboot or halt the master Routing Engines on all T1600 or T4000 routers. To reboot a specific component, issue the **request system reboot** command with the **all-lcc**, **lcc**, or **sfc** option.

```

user@host> request system reboot
Reboot the system ? [yes,no] (no) yes
Rebooting lcc0-re0
Rebooting lcc1-re0

```

To halt a specific component in a routing matrix, issue the **request system halt** command with the **all-lcc**, **lcc**, or **sfc** option.



.....

**CAUTION:** Before entering this command, you must have access to the TX Matrix Plus console port and the console ports of all of the LCCs in order to bring up the Routing Engines.

.....

Issuing the **request system halt both-routing-engines** command on a TX Matrix Plus router halts both Routing Engines in the TX Matrix Plus router and both Routing Engines in all T1600 or T4000 routers in the routing matrix. To reboot a Routing Engine that has been halted, you must connect through the console.

**Related  
Documentation**

- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
- [Roadmap for Configuring the Routing Matrix on page 31](#)
- [Example Configuration for the Routing Matrix on page 47](#)
- [Upgrading the Junos OS on the Routing Matrix on page 155](#)

## CHAPTER 15

# Managing Files and Processes

- [Managing Files on Routing Engines in a Routing Matrix with a TX Matrix Plus Router on page 151](#)
- [Managing System Processes in a Routing Matrix with a TX Matrix Plus Router on page 154](#)

### Managing Files on Routing Engines in a Routing Matrix with a TX Matrix Plus Router

This topic summarizes key file management issues useful in operating a routing matrix with a TX Matrix Plus router:

- [Displaying a List of Files on page 151](#)
- [Displaying the Contents of a File on page 152](#)
- [Copying Files on page 153](#)
- [Renaming Files on page 153](#)
- [Deleting Files on page 153](#)

### Displaying a List of Files

To display a list of files on a Routing Engine in a routing matrix with a TX Matrix Plus router, issue the ***file list*** operational management command.

- To display a list of files on a different chassis, include the LCC chassis number in the directory or file pathname.
- To display a list of files on a different Routing Engine, include the Routing Engine specifier (**re0** or **re1**) in the directory or file pathname.

The following sample command displays the list of files in the **/var/tmp** directory on Routing Engine **re0** in the line-card chassis **lcc0**:

```
user@host> file list lcc0-re0:/var/tmp
lcc0-re0:
```

```
-----
/var/tmp/:
.gdbinit
.pccardd
Test/
chassisd*
chassisd.nathan*
check_time*
cores/
```

```
diagTestPrep*
diagtest*
diagtest.regress*
do_switchovers*
dump_test*
err.manoj.log
esw_clearstats*
esw_counter*
esw_debug*
esw_debug_ge*
esw_filt_test*
esw_filter_tnp_addr*
esw_getstats*
esw_phy*
esw_stats*
```

## Displaying the Contents of a File

To display the contents of a file, issue the **file show** operational command. To specify a file that is not local to the Routing Engine from which the command is issued, include chassis and Routing Engine information in the filename.

The following sample command displays the contents of the **.gdbinit** file in the **/var/tmp** directory on the master Routing Engine of the T1600 router **lcc0**:

```
user@host> file show lcc0-re0:/var/tmp/.gdbinit
lcc0-re0:
-----
#####
# Settings
#####

set print pretty

#####
# Basic stuff
#####

define msgbuf
    printf "%s", msgbuf->msg_ptr
end
# hex dump of a block of memory
# usage: dump address length
define dump
    p $arg0, $arg1
    set $ch = $arg0
    set $j = 0
    set $n = $arg1
    while ($j < $n)
        #printf "%x %x ",&$ch[$j],$ch[$j]
        printf "%x ",$ch[$j]
        set $j = $j + 1
        if (!($j % 16))
            printf "\n"
        end
    end
end
```

```
end
```

## Copying Files

To copy files from one place to another on the same router or between different routers in the routing matrix, use the **file copy** operational management command. To specify a file that is not local to the Routing Engine from which the command is issued, include chassis and Routing Engine information in the filename.

The following sample command is used to copy the file **sample.txt** from the **/tmp** directory on **sfc0-re1** (the backup Routing Engine in the TX Matrix Plus router) to the **/var/tmp** directory on **lcc0-re1** (the backup Routing Engine in one of the connected routers):

```
user@host> file copy sfc0-re1:/tmp/sample.txt lcc0-re1:/var/tmp
```

## Renaming Files

To rename a file, use the **file rename** operational management command. To specify a file that is not local to the Routing Engine from which the command is issued, include chassis and Routing Engine information in the filename.

The following sequence of sample commands lists the files in the **/var/tmp** directory on **sfc0-re0** (the master Routing Engine of the TX Matrix Plus router), renames one of the files (changing **dcd.core** to **dcd.core.990415**), and then lists the files in the **/var/tmp** directory again to show the newly named file:

```
user@host> file list sfc0-re0:/var/tmp
dcd.core
rpd.core
snmpd.core
```

```
user@host> file rename sfc0-re0:/var/tmp/dcd.core /var/tmp/dcd.core.990413
```

```
user@host> file list sfc0-re0:/var/tmp
dcd.core.990413
rpd.core
snmpd.core
```

## Deleting Files

To delete a file, use the **file delete** operational management command. To specify a file that is not local to the Routing Engine from which the command is issued, include chassis and Routing Engine information in the filename.

The following sequence of sample command lists the files in the **/var/tmp** directory on **sfc0-re0** (the master Routing Engine on the TX Matrix Plus router), deletes the file **snmpd.core** from that directory, and then lists the files in the directory again:

```
user@host> file list lcc0-re0:/var/tmp
dcd.core
rpd.core
snmpd.core
```

```
user@host> file delete lcc0-re0:/var/tmp/snmpd.core
```

```
user@host> file list /var/tmp
dcd.core
rpd.core
```

**Related  
Documentation**

- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
- [Roadmap for Configuring the Routing Matrix on page 31](#)
- [Example Configuration for the Routing Matrix on page 47](#)
- [Example: Configuring a Routing Matrix with a TX Matrix Plus Router in Mixed Mode on page 70](#)
- [Upgrading the Junos OS on the Routing Matrix on page 155](#)

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## Managing System Processes in a Routing Matrix with a TX Matrix Plus Router

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Some system processes in a routing matrix with a TX Matrix Plus router run on the SFC and some run on the LCCs. For example, the routing protocol process (rpd) runs exclusively on the SFC. To restart the routing protocol process for the entire routing matrix, issue the **restart routing** command on the SFC:

```
user@host> restart routing ?
Possible completions:
<[Enter]>      Execute this command
gracefully     Gracefully restart the process
immediately    Immediately restart (SIGKILL) the process
logical-system Name of logical system
soft           Soft reset (SIGHUP) the process
|             Pipe through a command
```

Other processes run on both the SFC and the LCCs. To restart the chassis process that manages PICs, FPCs, and other hardware components, issue the **restart chassis-control** command on the SFC and select the **all**, **all-lcc**, or **lcc lcc-number** option:

To restart the SNMP process, issue the **restart snmp** command on the SFC and select the **all**, **all-lcc**, or **lcc lcc-number** option:

**Related  
Documentation**

- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
- [Roadmap for Configuring the Routing Matrix on page 31](#)
- [Example Configuration for the Routing Matrix on page 47](#)
- [Upgrading the Junos OS on the Routing Matrix on page 155](#)

# Upgrading the Junos OS

- [Upgrading the Junos OS on a Routing Matrix with a TX Matrix Plus Router on page 155](#)

## Upgrading the Junos OS on a Routing Matrix with a TX Matrix Plus Router

---

When you upgrade the Junos OS on a routing matrix with a TX Matrix Plus router, the new image is loaded onto the TX Matrix Plus router (**sfc 0**) and distributed to all of the connected routers based on the line-card chassis (LCC) configuration.



**NOTE:** Throughout this task description, the term *switch-fabric chassis (SFC)* refers to the TX Matrix Plus router in the routing matrix, and the term *line-card chassis (LCC)* refers to a T1600 or T4000 router connected to the SFC in the routing matrix.

Before you begin upgrading the Junos OS on a routing matrix, be sure that the following requirements are met:

- Sufficient free disk space on each Routing Engine in the routing matrix. To determine the amount of disk space currently available on all Routing Engines in the routing matrix, issue the [show system storage](#) operational command.
- Sufficient DRAM on each Routing Engine in the routing matrix. To determine the amount of DRAM currently available on all the Routing Engines in the routing matrix, issue the [show chassis routing-engine](#) operational command.
- Both Routing Engines on the SFC must have the same model number. Each LCC must contain two Routing Engines. The Routing Engines on all LCCs must have the same model number.

For more information about which Routing Engines are supported for the TX Matrix Plus router, T1600 router, and T4000 router, see [Supported Routing Engines by Chassis](#).

- For the TXP-T1600 configuration, you must upgrade the router to Junos OS Release 9.6R2 or later. TX Matrix Plus routers in the TXP-T1600 configuration support 32-bit and 64-bit Junos OS. However, the SFC and LCC must run either 32-bit Junos or 64-bit Junos.

- Starting with Junos OS Release 13.1, the TX Matrix Plus routers with 3D SIBs (for the TXP-T1600-3D, TXP-T4000-3D, and TXP-Mixed-LCC-3D configurations) support 64-bit Junos OS.
- The same version of Junos OS must be running on all Routing Engines in the routing matrix.



**NOTE:** The routing matrix does not operate properly unless all master Routing Engines are running the same version of Junos OS.

Different versions of the Junos OS can use different message formats that might be incompatible, particularly when graceful Routing Engine switchover (GRES) is enabled. For more information about GRES, see “*Understanding Graceful Routing Engine Switchover in the Junos OS*” and “*Configuring Graceful Routing Engine Switchover*” in the *Junos OS High Availability Library for Routing Devices*.

Because the procedure for upgrading the Junos OS includes switching of the Routing Engine mastership, we recommend that the same version of Junos OS be running on all Routing Engines in the routing matrix. To determine the versions of Junos OS running on the Routing Engines in a routing matrix, issue the **show version invoke-on** operational command.



**BEST PRACTICE:** By default, the Routing Engine in slot 0 (re0) is the master and the one in slot 1 (re1) is the backup. You can modify the default Routing Engine mastership by including the `routing-engine slot-number (master | backup | disabled)` statement at the `[edit chassis redundancy]` hierarchy level. However, it is considered best practice to make sure that all master Routing Engines are re0 and all backup Routing Engines are re1 (or vice versa). Throughout this task description, the master Routing Engine is re0 and the backup Routing Engine is re1 in all routers in the routing matrix.

This topic includes the following tasks:

1. [Logging In to the Master Routing Engine on the TX Matrix Plus Router on page 157](#)
2. [Disabling Routing Engine Redundancy and GRES on the Routing Matrix on page 157](#)
3. [Installing Junos OS on the Backup Routing Engines on page 159](#)
4. [Loading Software on the Backup Routing Engines on page 167](#)
5. [Switching Routing Engine Mastership to the Backup Routing Engines on page 171](#)
6. [Installing Software on the New Default Master Routing Engines on page 174](#)
7. [Loading Software on the New Default Master Routing Engines on page 175](#)
8. [Optional: Switching Routing Engine Mastership Back to the Default Master Routing Engines on page 179](#)
9. [Restoring the Original Configuration on page 182](#)
10. [Backing Up the Routing Engines on page 183](#)



## Logging In to the Master Routing Engine on the TX Matrix Plus Router

Log in to the master Routing Engine on the SFC.



**NOTE:** During the upgrade process, in-band management connections to the routing matrix are lost each time you reboot the system (first, to load the new software onto the backup Routing Engines and later, to load the new software onto the master Routing Engines). Therefore, we recommend that you perform the software upgrade procedure out-of-band, over a direct console connection to the TX Matrix Plus router using Secure Shell (SSH) or Telnet. Connect the system console device to the asynchronous serial port (labeled **CONSOLE**) on the Control Board (CB) associated with the master Routing Engine.

To log in to the master Routing Engine on the SFC and start the Junos OS CLI:

1. At a management console attached to the master Routing Engine (**re0**) on the TX Matrix Plus router, log in to the Junos OS CLI using a root administration account:

```
login: root
Password: .....
```

```
--- JUNOS 13.1-R1.0 built 2012-11-30 05:40:54 UTC
```



**NOTE:** From the factory, the root administration user account is not associated with a password.

```
Amnesiac (ttyd0)
```

```
login: root
```

However, you must add a password to the root administration account before you can successfully commit a configuration.

2. At the shell prompt (%), start the Junos OS CLI:

```
{master}
root@sfc0-re0>
```

## Disabling Routing Engine Redundancy and GRES on the Routing Matrix

By default, graceful Routing Engine switchover (GRES) is disabled. To enable GRES on a router, you can include the **graceful-switchover** statement at the **[edit chassis redundancy]** hierarchy level:

```
[edit]
chassis {
  redundancy { # This enables Routing Engine redundancy on the router
    graceful-switchover; # This enables GRES on the router
  }
}
```

The procedure for upgrading the Junos OS on a routing matrix with a TX Matrix Plus router includes tasks that entail disruption of traffic processing by the affected Routing Engines:

- Upgrading the software on all the backup Routing Engines.
- Switching the Routing Engine mastership to the backup Routing Engines.
- Upgrading the software on all the master Routing Engines.
- Switching the Routing Engine mastership back to the master Routing Engines.

If GRES is enabled on any routers in the routing matrix, disable this feature.

To disable GRES on all routers in the routing matrix:

1. Enter configuration mode:

```
{master}  
root@sfc0-re0> configure  
Entering configuration mode
```



**NOTE:** In the example shown in this step, the form of CLI prompt (beginning with either {master} or {backup} and displaying either -re0 or -re1 in the hostname portion of the prompt) indicates that GRES is enabled on that router.

2. Display the Routing Engine redundancy stanza:

```
{master}  
[edit]  
root@sfc0-re0# show chassis  
...  
    redundancy {  
        graceful-switchover;  
    }  
...
```

3. Disable Routing Engine redundancy in the candidate configuration. If GRES is enabled, it is removed with the **redundancy** stanza:

```
{master}  
[edit]  
root@sfc0-re0# delete chassis redundancy
```

4. Verify that the **graceful-routing** statement has been removed (if it was previously enabled) with the **redundancy** stanza from the **[edit chassis]** hierarchy level of the candidate configuration:

```
[edit]  
root@sfc0# show chassis
```



**NOTE:** You can also issue the `show system switchover all-chassis operational` command to display Routing Engine graceful switchover information

5. Commit the configuration on all Routing Engines in the routing matrix by using the `commit synchronize and-quit` statement at the `[edit]` hierarchy. If the configuration contains no errors and the commit succeeds, exit CLI configuration mode:

## Installing Junos OS on the Backup Routing Engines

Install the new version of Junos OS on the backup Routing Engines (**re1**) of all the routers in the routing matrix while leaving the currently running version of Junos OS running on the master Routing Engines (**re0**). This allows the master Routing Engines to continue operations, minimizing the disruption to the routing matrix and your network.

To install the new version of Junos OS on all backup Routing Engines in the routing matrix:

1. At a management console attached to the backup Routing Engine (**re1**) on the SFC, log in to the Junos OS CLI using a root administration account:

```
login: root
Password: .....
```

```
--- JUNOS 13.1-R1.0 built 2012-11-30 05:40:54 UTC
```

2. At the shell prompt (`%`), start the Junos OS CLI:

```
root@sfc0_alt_re>
```

3. To install the new Junos OS on the backup Routing Engines (**re1**) in the routing matrix, issue the `request system software add` operational command at the SFC, and specify the new Junos OS image file.

The following example shows sample output for the `request system software add` command:

The following example shows a sample output for the `request system software add` command for a routing matrix with a combination of three T1600 routers and two T4000 routers.

```
root@sfc0_alt_re> request system software add
/var/tmp/jinstall64-13.1R1.0-domestic-signed.tgz
Pushing bundle to lcc0-re1
Pushing bundle to lcc2-re1
Pushing bundle to lcc4-re1
Pushing bundle to lcc6-re1
Pushing bundle to lcc7-re1

Validating on lcc0-re1
Checking compatibility with configuration
Initializing...
Using jbase-13.1R1.0
Verified manifest signed by PackageProduction_13_1_0
Using /var/tmp/jinstall64-13.1R1.0-domestic-signed.tgz
Verified jinstall64-13.1R1.0-domestic.tgz signed by PackageProduction_13_1_0
```

```
Using jinstall64-13.1R1.0-domestic.tgz
Using jbundle64-13.1R1.0-domestic.tgz
Checking jbundle requirements on /
Using jbase-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jbase-13.1R1.0 signed by PackageProduction_13_1_0
Using /var/validate/chroot/tmp/jbundle/jboot-13.1R1.0.tgz
Using jcrypto64-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jcrypto64-13.1R1.0 signed by PackageProduction_13_1_0
Using jdocs-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jdocs-13.1R1.0 signed by PackageProduction_13_1_0
Using jkernel64-13.1R1.0.tgz
Using jpfe-13.1R1.0.tgz
Using jroute-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jroute-13.1R1.0 signed by PackageProduction_13_1_0
Using jruntime-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jruntime-13.1R1.0 signed by PackageProduction_13_1_0
Using jruntime64-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jruntime64-13.1R1.0 signed by PackageProduction_13_1_0
Using jservices-13.1R1.0.tgz
Using jservices-crypto-13.1R1.0.tgz
Hardware Database regeneration succeeded
Validating against /config/juniper.conf.gz
mgd: commit complete
Validation succeeded

Validating on lcc2-re1
Checking compatibility with configuration
Initializing...
Using jbase-13.1-20121123_ib_13_1_psd.0
Verified manifest signed by PackageProduction_13_1_0
Using /var/tmp/jinstall64-13.1R1.0-domestic-signed.tgz
Verified jinstall64-13.1R1.0-domestic.tgz signed by PackageProduction_13_1_0
Using jinstall64-13.1R1.0-domestic.tgz
Using jbundle64-13.1R1.0-domestic.tgz
Checking jbundle requirements on /
Using jbase-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jbase-13.1R1.0 signed by PackageProduction_13_1_0
Using /var/validate/chroot/tmp/jbundle/jboot-13.1R1.0.tgz
Using jcrypto64-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jcrypto64-13.1R1.0 signed by PackageProduction_13_1_0
Using jdocs-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jdocs-13.1R1.0 signed by PackageProduction_13_1_0
Using jkernel64-13.1R1.0.tgz
Using jpfe-13.1R1.0.tgz
Using jroute-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jroute-13.1R1.0 signed by PackageProduction_13_1_0
Using jruntime-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jruntime-13.1R1.0 signed by PackageProduction_13_1_0
Using jruntime64-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
```

```
Verified jruntime64-13.1R1.0 signed by PackageProduction_13_1_0
Using jservices-13.1R1.0.tgz
Using jservices-crypto-13.1R1.0.tgz
Hardware Database regeneration succeeded
Validating against /config/juniper.conf.gz
mgd: commit complete
Validation succeeded

Validating on lcc4-re1
Checking compatibility with configuration
Initializing...
Using jbase-13.1-20121128_ib_13_1_psd.1
Verified manifest signed by PackageProduction_13_1_0
Using /var/tmp/jinstall64-13.1R1.0-domestic-signed.tgz
Verified jinstall64-13.1R1.0-domestic.tgz signed by PackageProduction_13_1_0
Using jinstall64-13.1R1.0-domestic.tgz
Using jbundle64-13.1R1.0-domestic.tgz
Checking jbundle requirements on /
Using jbase-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jbase-13.1R1.0 signed by PackageProduction_13_1_0
Using /var/validate/chroot/tmp/jbundle/jboot-13.1R1.0.tgz
Using jcrypto64-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jcrypto64-13.1R1.0 signed by PackageProduction_13_1_0
Using jdocs-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jdocs-13.1R1.0 signed by PackageProduction_13_1_0
Using jkernel64-13.1R1.0.tgz
Using jpfe-13.1R1.0.tgz
Using jroute-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jroute-13.1R1.0 signed by PackageProduction_13_1_0
Using jruntime-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jruntime-13.1R1.0 signed by PackageProduction_13_1_0
Using jruntime64-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jruntime64-13.1R1.0 signed by PackageProduction_13_1_0
Using jservices-13.1R1.0.tgz
Using jservices-crypto-13.1R1.0.tgz
Hardware Database regeneration succeeded
Validating against /config/juniper.conf.gz
mgd: commit complete
Validation succeeded

Validating on lcc6-re1
Checking compatibility with configuration
Initializing...
Using jbase-13.1-20121123_ib_13_1_psd.0
Verified manifest signed by PackageProduction_13_1_0
Using /var/tmp/jinstall64-13.1R1.0-domestic-signed.tgz
Verified jinstall64-13.1R1.0-domestic.tgz signed by PackageProduction_13_1_0
Using jinstall64-13.1R1.0-domestic.tgz
Using jbundle64-13.1R1.0-domestic.tgz
Checking jbundle requirements on /
Using jbase-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jbase-13.1R1.0 signed by PackageProduction_13_1_0
Using /var/validate/chroot/tmp/jbundle/jboot-13.1R1.0.tgz
Using jcrypto64-13.1R1.0.tgz
```

```
Verified manifest signed by PackageProduction_13_1_0
Verified jcrypto64-13.1R1.0 signed by PackageProduction_13_1_0
Using jdocs-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jdocs-13.1R1.0 signed by PackageProduction_13_1_0
Using jkernel64-13.1R1.0.tgz
Using jpfe-13.1R1.0.tgz
Using jroute-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jroute-13.1R1.0 signed by PackageProduction_13_1_0
Using jruntime-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jruntime-13.1R1.0 signed by PackageProduction_13_1_0
Using jruntime64-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jruntime64-13.1R1.0 signed by PackageProduction_13_1_0
Using jservices-13.1R1.0.tgz
Using jservices-crypto-13.1R1.0.tgz
Hardware Database regeneration succeeded
Validating against /config/juniper.conf.gz
mgd: commit complete
Validation succeeded

Validating on lcc7-re1
Checking compatibility with configuration
Initializing...
Using jbase-13.1-20121123_ib_13_1_psd.0
Verified manifest signed by PackageProduction_13_1_0
Using /var/tmp/jinstall64-13.1R1.0-domestic-signed.tgz
Verified jinstall64-13.1R1.0-domestic.tgz signed by PackageProduction_13_1_0
Using jinstall64-13.1R1.0-domestic.tgz
Using jbundle64-13.1R1.0-domestic.tgz
Checking jbundle requirements on /
Using jbase-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jbase-13.1R1.0 signed by PackageProduction_13_1_0
Using /var/validate/chroot/tmp/jbundle/jboot-13.1R1.0.tgz
Using jcrypto64-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jcrypto64-13.1R1.0 signed by PackageProduction_13_1_0
Using jdocs-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jdocs-13.1R1.0 signed by PackageProduction_13_1_0
Using jkernel64-13.1R1.0.tgz
Using jpfe-13.1R1.0.tgz
Using jroute-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jroute-13.1R1.0 signed by PackageProduction_13_1_0
Using jruntime-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jruntime-13.1R1.0 signed by PackageProduction_13_1_0
Using jruntime64-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jruntime64-13.1R1.0 signed by PackageProduction_13_1_0
Using jservices-13.1R1.0.tgz
Using jservices-crypto-13.1R1.0.tgz
Hardware Database regeneration succeeded
Validating against /config/juniper.conf.gz
mgd: commit complete
Validation succeeded
```

```

Validating on sfc0-re1
Checking compatibility with configuration
Initializing...
Using jbase-13.1-20121123_ib_13_1_psd.0
Verified manifest signed by PackageProduction_13_1_0
Using /var/tmp/jinstall64-13.1R1.0-domestic-signed.tgz
Verified jinstall64-13.1R1.0-domestic.tgz signed by PackageProduction_13_1_0
Using jinstall64-13.1R1.0-domestic.tgz
Using jbundle64-13.1R1.0-domestic.tgz
Checking jbundle requirements on /
Using jbase-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jbase-13.1R1.0 signed by PackageProduction_13_1_0
Using /var/validate/chroot/tmp/jbundle/jboot-13.1R1.0.tgz
Using jcrypto64-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jcrypto64-13.1R1.0 signed by PackageProduction_13_1_0
Using jdocs-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jdocs-13.1R1.0 signed by PackageProduction_13_1_0
Using jkernel64-13.1R1.0.tgz
Using jpfe-13.1R1.0.tgz
Using jroute-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jroute-13.1R1.0 signed by PackageProduction_13_1_0
Using jruntime-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jruntime-13.1R1.0 signed by PackageProduction_13_1_0
Using jruntime64-13.1R1.0.tgz
Verified manifest signed by PackageProduction_13_1_0
Verified jruntime64-13.1R1.0 signed by PackageProduction_13_1_0
Using jservices-13.1R1.0.tgz
Using jservices-crypto-13.1R1.0.tgz
Hardware Database regeneration succeeded
Validating against /config/juniper.conf.gz
mgd: commit complete
Validation succeeded
Done with validate on all chassis

lcc0-re1:
Installing package '/var/tmp/jinstall64-13.1R1.0-domestic-signed.tgz' ...
Verified jinstall64-13.1R1.0-domestic.tgz signed by PackageProduction_13_1_0
Adding jinstall64...

WARNING:    The software that is being installed has limited support.
WARNING:    Run 'file show /etc/notices/unsupported.txt' for details.

Verified manifest signed by PackageProduction_13_1_0

WARNING:    This package will load JUNOS 13.1R1.0 software.
WARNING:    It will save JUNOS configuration files, and SSH keys
WARNING:    (if configured), but erase all other files and information
WARNING:    stored on this machine. It will attempt to preserve dumps
WARNING:    and log files, but this can not be guaranteed. This is the
WARNING:    pre-installation stage and all the software is loaded when
WARNING:    you reboot the system.

Saving the config files ...
NOTICE: uncommitted changes have been saved in
/var/db/config/juniper.conf.pre-install
Installing the bootstrap installer ...

```

```
WARNING: A REBOOT IS REQUIRED TO LOAD THIS SOFTWARE CORRECTLY. Use the
WARNING: 'request system reboot' command when software installation is
WARNING: complete. To abort the installation, do not reboot your system,
WARNING: instead use the 'request system software delete jinstall64'
WARNING: command as soon as this operation completes.
```

```
Saving package file in /var/sw/pkg/jinstall64-13.1R1.0-domestic-signed.tgz ...
Saving state for rollback ...
```

```
lcc2-re1:
Installing package '/var/tmp/jinstall64-13.1R1.0-domestic-signed.tgz' ...
Verified jinstall64-13.1R1.0-domestic.tgz signed by PackageProduction_13_1_0
Adding jinstall64...
```

```
WARNING: The software that is being installed has limited support.
WARNING: Run 'file show /etc/notices/unsupported.txt' for details.
```

```
Verified manifest signed by PackageProduction_13_1_0
```

```
WARNING: This package will load JUNOS 13.1R1.0 software.
WARNING: It will save JUNOS configuration files, and SSH keys
WARNING: (if configured), but erase all other files and information
WARNING: stored on this machine. It will attempt to preserve dumps
WARNING: and log files, but this can not be guaranteed. This is the
WARNING: pre-installation stage and all the software is loaded when
WARNING: you reboot the system.
```

```
Saving the config files ...
NOTICE: uncommitted changes have been saved in
/var/db/config/juniper.conf.pre-install
Installing the bootstrap installer ...
```

```
WARNING: A REBOOT IS REQUIRED TO LOAD THIS SOFTWARE CORRECTLY. Use the
WARNING: 'request system reboot' command when software installation is
WARNING: complete. To abort the installation, do not reboot your system,
WARNING: instead use the 'request system software delete jinstall'
WARNING: command as soon as this operation completes.
```

```
Saving package file in /var/sw/pkg/jinstall64-13.1R1.0-domestic-signed.tgz ...
Saving state for rollback ...
```

```
lcc4-re1:
Installing package '/var/tmp/jinstall64-13.1R1.0-domestic-signed.tgz' ...
Verified jinstall64-13.1R1.0-domestic.tgz signed by PackageProduction_13_1_0
Adding jinstall64...
```

```
WARNING: The software that is being installed has limited support.
WARNING: Run 'file show /etc/notices/unsupported.txt' for details.
```

```
Verified manifest signed by PackageProduction_13_1_0
```

```
WARNING: This package will load JUNOS 13.1R1.0 software.
WARNING: It will save JUNOS configuration files, and SSH keys
WARNING: (if configured), but erase all other files and information
WARNING: stored on this machine. It will attempt to preserve dumps
WARNING: and log files, but this can not be guaranteed. This is the
WARNING: pre-installation stage and all the software is loaded when
WARNING: you reboot the system.
```

```
Saving the config files ...
```



```
NOTICE: uncommitted changes have been saved in
/var/db/config/juniper.conf.pre-install
Installing the bootstrap installer ...
```

```
WARNING: A REBOOT IS REQUIRED TO LOAD THIS SOFTWARE CORRECTLY. Use the
WARNING: 'request system reboot' command when software installation is
WARNING: complete. To abort the installation, do not reboot your system,
WARNING: instead use the 'request system software delete jinstall'
WARNING: command as soon as this operation completes.
```

```
Saving package file in /var/sw/pkg/jinstall64-13.1R1.0-domestic-signed.tgz ...
Saving state for rollback ...
```

```
lcc6-re1:
Installing package '/var/tmp/jinstall64-13.1R1.0-domestic-signed.tgz' ...
Verified jinstall64-13.1R1.0-domestic.tgz signed by PackageProduction_13_1_0
Adding jinstall64...
```

```
WARNING: The software that is being installed has limited support.
WARNING: Run 'file show /etc/notices/unsupported.txt' for details.
```

```
Verified manifest signed by PackageProduction_13_1_0
```

```
WARNING: This package will load JUNOS 13.1R1.0 software.
WARNING: It will save JUNOS configuration files, and SSH keys
WARNING: (if configured), but erase all other files and information
WARNING: stored on this machine. It will attempt to preserve dumps
WARNING: and log files, but this can not be guaranteed. This is the
WARNING: pre-installation stage and all the software is loaded when
WARNING: you reboot the system.
```

```
Saving the config files ...
NOTICE: uncommitted changes have been saved in
/var/db/config/juniper.conf.pre-install
Installing the bootstrap installer ...
```

```
WARNING: A REBOOT IS REQUIRED TO LOAD THIS SOFTWARE CORRECTLY. Use the
WARNING: 'request system reboot' command when software installation is
WARNING: complete. To abort the installation, do not reboot your system,
WARNING: instead use the 'request system software delete jinstall'
WARNING: command as soon as this operation completes.
```

```
Saving package file in /var/sw/pkg/jinstall64-13.1R1.0-domestic-signed.tgz ...
Saving state for rollback ...
```

```
lcc7-re1:
Installing package '/var/tmp/jinstall64-13.1R1.0-domestic-signed.tgz' ...
Verified jinstall64-13.1R1.0-domestic.tgz signed by PackageProduction_13_1_0
Adding jinstall64...
```

```
WARNING: The software that is being installed has limited support.
WARNING: Run 'file show /etc/notices/unsupported.txt' for details.
```

```
Verified manifest signed by PackageProduction_13_1_0
```

```
WARNING: This package will load JUNOS 13.1R1.0 software.
WARNING: It will save JUNOS configuration files, and SSH keys
WARNING: (if configured), but erase all other files and information
WARNING: stored on this machine. It will attempt to preserve dumps
WARNING: and log files, but this can not be guaranteed. This is the
WARNING: pre-installation stage and all the software is loaded when
```

```

WARNING:      you reboot the system.

Saving the config files ...
NOTICE: uncommitted changes have been saved in
/var/db/config/juniper.conf.pre-install
Installing the bootstrap installer ...

WARNING:      A REBOOT IS REQUIRED TO LOAD THIS SOFTWARE CORRECTLY. Use the
WARNING:      'request system reboot' command when software installation is
WARNING:      complete. To abort the installation, do not reboot your system,
WARNING:      instead use the 'request system software delete jinstall'
WARNING:      command as soon as this operation completes.

Saving package file in /var/sw/pkg/jinstall64-13.1R1.0-domestic-signed.tgz ...
Saving state for rollback ...

sfc0-rel:
Installing package '/var/tmp/jinstall64-13.1R1.0-domestic-signed.tgz' ...
Verified jinstall64-13.1R1.0-domestic.tgz signed by PackageProduction_13_1_0
Adding jinstall64...

WARNING:      The software that is being installed has limited support.
WARNING:      Run 'file show /etc/notices/unsupported.txt' for details.

Verified manifest signed by PackageProduction_13_1_0

WARNING:      This package will load JUNOS 13.1R1.0 software.
WARNING:      It will save JUNOS configuration files, and SSH keys
WARNING:      (if configured), but erase all other files and information
WARNING:      stored on this machine. It will attempt to preserve dumps
WARNING:      and log files, but this can not be guaranteed. This is the
WARNING:      pre-installation stage and all the software is loaded when
WARNING:      you reboot the system.

Saving the config files ...
NOTICE: uncommitted changes have been saved in
/var/db/config/juniper.conf.pre-install
Installing the bootstrap installer ...

WARNING:      A REBOOT IS REQUIRED TO LOAD THIS SOFTWARE CORRECTLY. Use the
WARNING:      'request system reboot' command when software installation is
WARNING:      complete. To abort the installation, do not reboot your system,
WARNING:      instead use the 'request system software delete jinstall'
WARNING:      command as soon as this operation completes.

Saving package file in /var/sw/pkg/jinstall64-13.1R1.0-domestic-signed.tgz ...
Saving state for rollback ...

For more information on the request system software add command, see the Junos
OS Operational Mode Commands.

```

## Loading Software on the Backup Routing Engines

To start running the newly installed Junos OS on all the backup Routing Engines in the routing matrix, you must reboot those Routing Engines. The Routing Engines reboot from the boot device on which the software was just installed. Each reboot operation can take between 5 and 10 minutes to complete.



**NOTE:** This is your last chance to abort the upgrade of the Junos OS on the backup Routing Engines. If you want to abort the software upgrade, do not reboot the backup Routing Engines.

If you choose to abort the software upgrade, you can remove the new Junos OS package or bundle from the router by issuing the `request system software delete` operational command and specifying the `jinstall` command.

To start running the new Junos OS on the backup Routing Engines:

1. To reboot all the backup Routing Engines (**re1**), issue the `request system reboot` operational command at the backup Routing Engine one the SFC. At the warning message and prompt, type **yes** to allow the command to proceed:

```
root@sfc0_alt_ret> request system reboot

Reboot the system ? [yes,no] (no) yes

Rebooting 1cc0-re1

Rebooting 1cc2-re1

Rebooting 1cc4-re1

Rebooting 1cc6-re1

Rebooting 1cc7-re1
*** FINAL System shutdown message from root@sankhye1 ***
System going down IMMEDIATELY
Shutdown NOW!
Reboot consistency check bypassed - jinstall 13.1R1.0 will complete installation
upon reboot
[pid 43031]
```

```
root@sfc0_alt_ret
```

All of the backup Routing Engines (**re1**) in the routing matrix reboot from the boot devices on which the software was just installed, which loads the new Junos OS. Each reboot operation can take between 5 and 10 minutes to complete.

When the backup Routing Engine on the SFC (**sfc0-re1**) finishes rebooting, the management console attached to the backup Routing Engine on the TX Matrix Plus router displays the login prompt.

2. Log in to the SFC backup Routing Engine (**sfc0-re1**) and issue the `show version` command to verify the version of the software installed:

```
root@sfc0_alt_re> show version
```

**sfc0-rel:**

```
-----  
Hostname: sfc0_alt_re  
Model: txp  
JUNOS Base OS boot [13.1R1.0]  
JUNOS Base OS Software Suite [13.1R1.0]  
JUNOS 64-bit Kernel Software Suite [13.1R1.0]  
JUNOS Crypto Software Suite [13.1R1.0]  
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1R1.0]  
JUNOS Packet Forwarding Engine Support (T-Series) [13.1R1.0]  
JUNOS Online Documentation [13.1R1.0]  
JUNOS Services AACL Container package [13.1R1.0]  
JUNOS Services Application Level Gateways [13.1R1.0]  
JUNOS AppId Services [13.1R1.0]  
JUNOS Border Gateway Function package [13.1R1.0]  
JUNOS Services Captive Portal and Content Delivery Container package [13.1R1.0]  
JUNOS Services HTTP Content Management package [13.1R1.0]  
JUNOS IDP Services [13.1R1.0]  
JUNOS Services Jflow Container package [13.1R1.0]  
JUNOS Services LL-PDF Container package [13.1R1.0]  
JUNOS Services MobileNext Software package [13.1R1.0]  
JUNOS Services Mobile Subscriber Service Container package [13.1R1.0]  
JUNOS Services NAT [13.1R1.0]  
JUNOS Services PTSP Container package [13.1R1.0]  
JUNOS Services RPM [13.1R1.0]  
JUNOS Services Stateful Firewall [13.1R1.0]  
JUNOS Voice Services Container package [13.1R1.0]  
JUNOS Services Example Container package [13.1R1.0]  
JUNOS Services Crypto [13.1R1.0]  
JUNOS Services SSL [13.1R1.0]  
JUNOS Services IPSec [13.1R1.0]  
JUNOS Runtime Software Suite [13.1R1.0]  
JUNOS Routing Software Suite [13.1R1.0]  
JUNOS 64-bit Runtime Software Suite [13.1R1.0]
```

**lcc0-rel:**

```
-----  
Hostname: mylcc0_alt_re  
Model: t4000  
JUNOS Base OS boot [13.1R1.0]  
JUNOS Base OS Software Suite [13.1R1.0]  
JUNOS 64-bit Kernel Software Suite [13.1R1.0]  
JUNOS Crypto Software Suite [13.1R1.0]  
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1R1.0]  
JUNOS Packet Forwarding Engine Support (T-Series) [13.1R1.0]  
JUNOS Online Documentation [13.1R1.0]  
JUNOS Services AACL Container package [13.1R1.0]  
JUNOS Services Application Level Gateways [13.1R1.0]  
JUNOS AppId Services [13.1R1.0]  
JUNOS Border Gateway Function package [13.1R1.0]  
JUNOS Services Captive Portal and Content Delivery Container package [13.1R1.0]  
JUNOS Services HTTP Content Management package [13.1R1.0]  
JUNOS IDP Services [13.1R1.0]  
JUNOS Services Jflow Container package [13.1R1.0]  
JUNOS Services LL-PDF Container package [13.1R1.0]  
JUNOS Services MobileNext Software package [13.1R1.0]  
JUNOS Services Mobile Subscriber Service Container package [13.1R1.0]  
JUNOS Services NAT [13.1R1.0]  
JUNOS Services PTSP Container package [13.1R1.0]  
JUNOS Services RPM [13.1R1.0]
```

```
JUNOS Services Stateful Firewall [13.1R1.0]
JUNOS Voice Services Container package [13.1R1.0]
JUNOS Services Example Container package [13.1R1.0]
JUNOS Services Crypto [13.1R1.0]
JUNOS Services SSL [13.1R1.0]
JUNOS Services IPSec [13.1R1.0]
JUNOS Runtime Software Suite [13.1R1.0]
JUNOS Routing Software Suite [13.1R1.0]
JUNOS 64-bit Runtime Software Suite [13.1R1.0]
```

#### lcc2-rel:

```
-----
Hostname: mylcc2_alt_re
Model: t1600
JUNOS Base OS boot [13.1R1.0]
JUNOS Base OS Software Suite [13.1R1.0]
JUNOS 64-bit Kernel Software Suite [13.1R1.0]
JUNOS Crypto Software Suite [13.1R1.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1R1.0]
JUNOS Packet Forwarding Engine Support (T-Series) [13.1R1.0]
JUNOS Online Documentation [13.1R1.0]
JUNOS Services AAACL Container package [13.1R1.0]
JUNOS Services Application Level Gateways [13.1R1.0]
JUNOS AppId Services [13.1R1.0]
JUNOS Border Gateway Function package [13.1R1.0]
JUNOS Services Captive Portal and Content Delivery Container package [13.1R1.0]
JUNOS Services HTTP Content Management package [13.1R1.0]
JUNOS IDP Services [13.1R1.0]
JUNOS Services Jflow Container package [13.1R1.0]
JUNOS Services LL-PDF Container package [13.1R1.0]
JUNOS Services MobileNext Software package [13.1R1.0]
JUNOS Services Mobile Subscriber Service Container package [13.1R1.0]
JUNOS Services NAT [13.1R1.0]
JUNOS Services PTSP Container package [13.1R1.0]
JUNOS Services RPM [13.1R1.0]
JUNOS Services Stateful Firewall [13.1R1.0]
JUNOS Voice Services Container package [13.1R1.0]
JUNOS Services Example Container package [13.1R1.0]
JUNOS Services Crypto [13.1R1.0]
JUNOS Services SSL [13.1R1.0]
JUNOS Services IPSec [13.1R1.0]
JUNOS Runtime Software Suite [13.1R1.0]
JUNOS Routing Software Suite [13.1R1.0]
JUNOS 64-bit Runtime Software Suite [13.1R1.0]
```

#### lcc4-rel:

```
-----
Hostname: mylcc4_alt_re
Model: t4000

JUNOS Base OS boot [13.1R1.0]
JUNOS Base OS Software Suite [13.1R1.0]
JUNOS 64-bit Kernel Software Suite [13.1R1.0]
JUNOS Crypto Software Suite [13.1R1.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1R1.0]
JUNOS Packet Forwarding Engine Support (T-Series) [13.1R1.0]
JUNOS Online Documentation [13.1R1.0]
JUNOS Services AAACL Container package [13.1R1.0]
JUNOS Services Application Level Gateways [13.1R1.0]
JUNOS AppId Services [13.1R1.0]
JUNOS Border Gateway Function package [13.1R1.0]
```

JUNOS Services Captive Portal and Content Delivery Container package [13.1R1.0]  
 JUNOS Services HTTP Content Management package [13.1R1.0]  
 JUNOS IDP Services [13.1R1.0]  
 JUNOS Services Jflow Container package [13.1R1.0]  
 JUNOS Services LL-PDF Container package [13.1R1.0]  
 JUNOS Services MobileNext Software package [13.1R1.0]  
 JUNOS Services Mobile Subscriber Service Container package [13.1R1.0]  
 JUNOS Services NAT [13.1R1.0]  
 JUNOS Services PTSP Container package [13.1R1.0]  
 JUNOS Services RPM [13.1R1.0]  
 JUNOS Services Stateful Firewall [13.1R1.0]  
 JUNOS Voice Services Container package [13.1R1.0]  
 JUNOS Services Example Container package [13.1R1.0]  
 JUNOS Services Crypto [13.1R1.0]  
 JUNOS Services SSL [13.1R1.0]  
 JUNOS Services IPSec [13.1R1.0]  
 JUNOS Runtime Software Suite [13.1R1.0]  
 JUNOS Routing Software Suite [13.1R1.0]  
 JUNOS 64-bit Runtime Software Suite [13.1R1.0]

**lcc6-rel:**

-----  
 Hostname: mylcc6\_alt\_re  
 Model: t1600

JUNOS Base OS boot [13.1R1.0]  
 JUNOS Base OS Software Suite [13.1R1.0]  
 JUNOS 64-bit Kernel Software Suite [13.1R1.0]  
 JUNOS Crypto Software Suite [13.1R1.0]  
 JUNOS Packet Forwarding Engine Support (M/T Common) [13.1R1.0]  
 JUNOS Packet Forwarding Engine Support (T-Series) [13.1R1.0]  
 JUNOS Online Documentation [13.1R1.0]  
 JUNOS Services AAACL Container package [13.1R1.0]  
 JUNOS Services Application Level Gateways [13.1R1.0]  
 JUNOS AppId Services [13.1R1.0]  
 JUNOS Border Gateway Function package [13.1R1.0]  
 JUNOS Services Captive Portal and Content Delivery Container package [13.1R1.0]  
 JUNOS Services HTTP Content Management package [13.1R1.0]  
 JUNOS IDP Services [13.1R1.0]  
 JUNOS Services Jflow Container package [13.1R1.0]  
 JUNOS Services LL-PDF Container package [13.1R1.0]  
 JUNOS Services MobileNext Software package [13.1R1.0]  
 JUNOS Services Mobile Subscriber Service Container package [13.1R1.0]  
 JUNOS Services NAT [13.1R1.0]  
 JUNOS Services PTSP Container package [13.1R1.0]  
 JUNOS Services RPM [13.1R1.0]  
 JUNOS Services Stateful Firewall [13.1R1.0]  
 JUNOS Voice Services Container package [13.1R1.0]  
 JUNOS Services Example Container package [13.1R1.0]  
 JUNOS Services Crypto [13.1R1.0]  
 JUNOS Services SSL [13.1R1.0]  
 JUNOS Services IPSec [13.1R1.0]  
 JUNOS Runtime Software Suite [13.1R1.0]  
 JUNOS Routing Software Suite [13.1R1.0]  
 JUNOS 64-bit Runtime Software Suite [13.1R1.0]

**lcc7-rel:**

-----  
 Hostname: mylcc7\_alt\_re  
 Model: t1600

```

JUNOS Base OS boot [13.1R1.0]
JUNOS Base OS Software Suite [13.1R1.0]
JUNOS 64-bit Kernel Software Suite [13.1R1.0]
JUNOS Crypto Software Suite [13.1R1.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1R1.0]
JUNOS Packet Forwarding Engine Support (T-Series) [13.1R1.0]
JUNOS Online Documentation [13.1R1.0]
JUNOS Services AACL Container package [13.1R1.0]
JUNOS Services Application Level Gateways [13.1R1.0]
JUNOS AppId Services [13.1R1.0]
JUNOS Border Gateway Function package [13.1R1.0]
JUNOS Services Captive Portal and Content Delivery Container package [13.1R1.0]
JUNOS Services HTTP Content Management package [13.1R1.0]
JUNOS IDP Services [13.1R1.0]
JUNOS Services JFlow Container package [13.1R1.0]
JUNOS Services LL-PDF Container package [13.1R1.0]
JUNOS Services MobileNext Software package [13.1R1.0]
JUNOS Services Mobile Subscriber Service Container package [13.1R1.0]
JUNOS Services NAT [13.1R1.0]
JUNOS Services PTSP Container package [13.1R1.0]
JUNOS Services RPM [13.1R1.0]
JUNOS Services Stateful Firewall [13.1R1.0]
JUNOS Voice Services Container package [13.1R1.0]
JUNOS Services Example Container package [13.1R1.0]
JUNOS Services Crypto [13.1R1.0]
JUNOS Services SSL [13.1R1.0]
JUNOS Services IPSec [13.1R1.0]
JUNOS Runtime Software Suite [13.1R1.0]
JUNOS Routing Software Suite [13.1R1.0]
JUNOS 64-bit Runtime Software Suite [13.1R1.0]

```

## Switching Routing Engine Mastership to the Backup Routing Engines

The new Junos OS is now running on all the backup Routing Engines (**re1**) in the routing matrix. Next, you must install and load the same new software on the master Routing Engines (**re0**) of the routing matrix.

While the Junos OS is being upgraded (installed and then loaded), the Routing Engine on which you are performing the software upgrade does not route traffic. Therefore, to minimize disruption to network operation, you need to temporarily switch Routing Engine mastership over to the backup Routing Engines (**re1**), which are now running the new version of Junos OS.

To switch Routing Engine mastership over to the backup Routing Engines:

1. At a management console attached to the master Routing Engine (**re0**) on the SFC, log in to the Junos OS CLI using a root administration account:

```
login: root
Password: .....
```

```
--- JUNOS 13.1R1.0 built 2012-11-28 20:11:58 UTC
```

2. At the shell prompt (%), start the Junos OS CLI:

```
root@sfc0>
```

3. To transfer Routing Engine mastership to the backup Routing Engine (**re1**) for all routers in the routing matrix, issue the **request chassis routing-engine master** command with the **switch** and **all-chassis** options.



**CAUTION:** Switching Routing Engine mastership causes traffic to be disrupted.

At the warning message and prompt, type **yes** to allow the command to proceed:

```
root@sfc0> request chassis routing-engine master switch all-chassis
```

```
warning: Traffic will be interrupted while the PFE is re-initialized
Toggle mastership between routing engines ? [yes,no] (no) yes
```

lcc0-re0:

```
-----
warning: Traffic will be interrupted while the PFE is re-initialized
Resolving mastership...
Complete. The other routing engine becomes the master.
```

lcc2-re0:

```
-----
warning: Traffic will be interrupted while the PFE is re-initialized
Resolving mastership...
Complete. The other routing engine becomes the master.
```

lcc4-re0:

```
-----
warning: Traffic will be interrupted while the PFE is re-initialized
Resolving mastership...
Complete. The other routing engine becomes the master.
```

lcc6-re0:

```
-----
warning: Traffic will be interrupted while the PFE is re-initialized
Resolving mastership...
Complete. The other routing engine becomes the master.
```

lcc7-re0:

```
-----
warning: Traffic will be interrupted while the PFE is re-initialized
Resolving mastership...
Complete. The other routing engine becomes the master.
```

sfc0-re0:

```
-----
warning: Traffic will be interrupted while the PFE is re-initialized
Resolving mastership...
Complete. The other routing engine becomes the master.
```

4. To verify that the *default* backup Routing Engines (installed in slot1) are now operating the *elected* master Routing Engines, issue the **show chassis routing-engine** command at the TX Matrix Plus router:

```
root@sfc0> show chassis routing-engine
```

sfc0-re0:

```
-----
Routing Engine status:
```



```

Slot 0:
  Current state          Backup
  Election priority      Master (default)
  ...output_truncated...

Routing Engine status:
Slot 1:
  Current state          Master
  Election priority      Backup (default)
  ...output_truncated...

lcc0-re0:
-----
Routing Engine status:
Slot 0:
  Current state          Backup
  Election priority      Master (default)
  ...output_truncated...

                                0.02      0.07      0.11

Routing Engine status:
Slot 1:
  Current state          Master
  Election priority      Backup (default)
  ...output_truncated...

lcc2-re0:
-----
Routing Engine status:
Slot 0:
  Current state          Backup
  Election priority      Master (default)
  ...output_truncated...

Routing Engine status:
Slot 1:
  Current state          Master
  Election priority      Backup (default)
  ...output_truncated...

lcc4-re0:
-----
Routing Engine status:
Slot 0:
  Current state          Backup
  Election priority      Master (default)
  ...output_truncated...

Routing Engine status:
Slot 1:
  Current state          Master
  Election priority      Backup (default)
  ...output_truncated...

lcc6-re0:
-----
Routing Engine status:
Slot 0:
  Current state          Backup
  Election priority      Master (default)
  ...output_truncated...

```

```
Routing Engine status:
Slot1:
  Current state           Master
  Election priority       Backup (default)
  ...output_truncated...
```

lcc7-re0:

```
-----
Routing Engine status:
Slot0:
  Current state           Backup
  Election priority       Master (default)
  ...output_truncated...
```

```
Routing Engine status:
Slot1:
  Current state           Master
  Election priority       Backup (default)
  ...output_truncated...
```

The default backup Routing Engines (re1), which are now running the new version of Junos OS, are temporarily operating as the elected master Routing Engines. This enables you to avoid disruption to network operation while you install and load the new version of Junos OS on the default master Routing Engines (re0).

## Installing Software on the New Default Master Routing Engines

To install the new version of Junos OS on the new default master Routing Engines (re0) in the routing matrix, issue the **request system software add** operational command at the default master Routing Engine (re0 in this procedure) of the SFC, and specify the new Junos OS image file.



**NOTE:** The default backup Routing Engines (re1), which are now running the new version of Junos OS, are operating as the elected master Routing Engines. This enables you to avoid disruption to network operation while you install and load the new version of Junos OS on the default master Routing Engines (re0).

The following example of the **request system software add** command is truncated, but the command output is similar to the output displayed when you installed the new software on the default backup Routing Engines:

```
root@sfc0> request system software add /var/tmp/jinstall64-13.1R1.1-domestic-signed.tgz
```

```
Pushing bundle to lcc0-re0
Pushing bundle to lcc2-re0
Pushing bundle to lcc4-re0
Pushing bundle to lcc6-re0
Pushing bundle to lcc7-re0
...output_truncated...
```

## Loading Software on the New Default Master Routing Engines

To start running the newly installed Junos OS on all the default master Routing Engines in the routing matrix, you must reboot those Routing Engines. The Routing Engines reboot from the boot device on which the software was just installed. Each reboot operation can take between 5 and 10 minutes to complete.



**NOTE:** This is your last chance to abort the upgrade of the Junos OS on the default master Routing Engines. If you want to abort the software upgrade, do not reboot the default master Routing Engines. However, aborting the software upgrade procedure at this point is not recommended, because the default backup routing Engines are already running the new Junos OS.

If you choose to abort the software upgrade, you can remove the new Junos OS package or bundle from the router by issuing the `request system software delete` operational command and specifying the `jinstall` command.

To start running the new Junos OS on the default master Routing Engines:

1. To reboot all the default master Routing Engines (**re0**), issue the `request system reboot` operational command at the TX Matrix Plus router.

At the warning message and prompt, type **yes** to allow the command to proceed:

```
root@sfc0> request system reboot
Reboot the system ? [yes,no] (no) yes

Rebooting 1cc0-re0
Rebooting 1cc2-re0
Rebooting 1cc4-re0
Rebooting 1cc6-re0
Rebooting 1cc7-re0
*** FINAL System shutdown message from root@sankhye ***
System going down IMMEDIATELY
Shutdown NOW!
Reboot consistency check bypassed - jinstall64 13.1R1.0 will complete
installation upon reboot
[pid 43105]
```

All of the default master Routing Engines (**re0**) in the routing matrix reboot from the boot devices on which the software was just installed, which loads the new Junos OS. Each reboot operation can take between 5 and 10 minutes to complete.

*...router\_boot\_sequence...*

When the default master Routing Engine on the TX Matrix Plus router (**sfc0-re0**) finishes rebooting, the management console attached to the default master Routing Engine on the TX Matrix Plus router displays the login prompt.

```
var/pdb/profile_db initialized

Profile database initialized
Local package initialization:.
```

```
kern.securelevel: -1 -> 1
starting local daemons:.
Fri Nov 30 14:11:00 PDT 2012
```

```
login:
```

The new version of Junos OS is loaded and running on the new default master Routing Engines

2. At a management console attached to the new default master Routing Engine (**re1**) on the SFC, log in to the Junos OS CLI using a root administration account:

```
Fri Nov 30 14:11:00 PDT 2012
```

```
login: root
Password: .....
```

```
--- JUNOS 13.1R1.2 built 2012-11-30 14:11:54 UTC
```

3. Issue the **show version** command to verify the version of the software installed:

```
root@sfc0> show version
sfc0-re0:
```

```
-----
Hostname: sfc0
Model: txp
JUNOS Base OS boot [13.1R1.0]
JUNOS Base OS Software Suite [13.1R1.0]
JUNOS 64-bit Kernel Software Suite [13.1R1.0]
JUNOS Crypto Software Suite [13.1R1.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1R1.0]
JUNOS Packet Forwarding Engine Support (T-Series) [13.1R1.0]
JUNOS Online Documentation [13.1R1.0]
JUNOS Services AACL Container package [13.1R1.0]
JUNOS Services Application Level Gateways [13.1R1.0]
JUNOS AppId Services [13.1R1.0]
JUNOS Border Gateway Function package [13.1R1.0]
JUNOS Services Captive Portal and Content Delivery Container package [13.1R1.0]
JUNOS Services HTTP Content Management package [13.1R1.0]
JUNOS IDP Services [13.1R1.0]
JUNOS Services Jflow Container package [13.1R1.0]
JUNOS Services LL-PDF Container package [13.1R1.0]
JUNOS Services MobileNext Software package [13.1R1.0]
JUNOS Services Mobile Subscriber Service Container package [13.1R1.0]
JUNOS Services NAT [13.1R1.0]
JUNOS Services PTSP Container package [13.1R1.0]
JUNOS Services RPM [13.1R1.0]
JUNOS Services Stateful Firewall [13.1R1.0]
JUNOS Voice Services Container package [13.1R1.0]
JUNOS Services Example Container package [13.1R1.0]
JUNOS Services Crypto [13.1R1.0]
JUNOS Services SSL [13.1R1.0]
JUNOS Services IPSec [13.1R1.0]
JUNOS Runtime Software Suite [13.1R1.0]
JUNOS Routing Software Suite [13.1R1.0]
JUNOS 64-bit Runtime Software Suite [13.1R1.0]
```

```
lcc0-re0:
```

```
-----
Hostname: mylcc0
Model: t4000
JUNOS Base OS boot [13.1R1.0]
```

```

JUNOS Base OS Software Suite [13.1R1.0]
JUNOS 64-bit Kernel Software Suite [13.1R1.0]
JUNOS Crypto Software Suite [13.1R1.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1R1.0]
JUNOS Packet Forwarding Engine Support (T-Series) [13.1R1.0]
JUNOS Online Documentation [13.1R1.0]
JUNOS Services AACL Container package [13.1R1.0]
JUNOS Services Application Level Gateways [13.1R1.0]
JUNOS AppId Services [13.1R1.0]
JUNOS Border Gateway Function package [13.1R1.0]
JUNOS Services Captive Portal and Content Delivery Container package [13.1R1.0]
JUNOS Services HTTP Content Management package [13.1R1.0]
JUNOS IDP Services [13.1R1.0]
JUNOS Services Jflow Container package [13.1R1.0]
JUNOS Services LL-PDF Container package [13.1R1.0]
JUNOS Services MobileNext Software package [13.1R1.0]
JUNOS Services Mobile Subscriber Service Container package [13.1R1.0]
JUNOS Services NAT [13.1R1.0]
JUNOS Services PTSP Container package [13.1R1.0]
JUNOS Services RPM [13.1R1.0]
JUNOS Services Stateful Firewall [13.1R1.0]
JUNOS Voice Services Container package [13.1R1.0]
JUNOS Services Example Container package [13.1R1.0]
JUNOS Services Crypto [13.1R1.0]
JUNOS Services SSL [13.1R1.0]
JUNOS Services IPSec [13.1R1.0]
JUNOS Runtime Software Suite [13.1R1.0]
JUNOS Routing Software Suite [13.1R1.0]
JUNOS 64-bit Runtime Software Suite [13.1R1.0]

```

#### lcc2-re0:

```

-----
Hostname: mylcc2
Model: t1600JUNOS Base OS boot [13.1R1.0]
JUNOS Base OS Software Suite [13.1R1.0]
JUNOS 64-bit Kernel Software Suite [13.1R1.0]
JUNOS Crypto Software Suite [13.1R1.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1R1.0]
JUNOS Packet Forwarding Engine Support (T-Series) [13.1R1.0]
JUNOS Online Documentation [13.1R1.0]
JUNOS Services AACL Container package [13.1R1.0]
JUNOS Services Application Level Gateways [13.1R1.0]
JUNOS AppId Services [13.1R1.0]
JUNOS Border Gateway Function package [13.1R1.0]
JUNOS Services Captive Portal and Content Delivery Container package [13.1R1.0]
JUNOS Services HTTP Content Management package [13.1R1.0]
JUNOS IDP Services [13.1R1.0]
JUNOS Services Jflow Container package [13.1R1.0]
JUNOS Services LL-PDF Container package [13.1R1.0]
JUNOS Services MobileNext Software package [13.1R1.0]
JUNOS Services Mobile Subscriber Service Container package [13.1R1.0]
JUNOS Services NAT [13.1R1.0]
JUNOS Services PTSP Container package [13.1R1.0]
JUNOS Services RPM [13.1R1.0]
JUNOS Services Stateful Firewall [13.1R1.0]
JUNOS Voice Services Container package [13.1R1.0]
JUNOS Services Example Container package [13.1R1.0]
JUNOS Services Crypto [13.1R1.0]
JUNOS Services SSL [13.1R1.0]
JUNOS Services IPSec [13.1R1.0]
JUNOS Runtime Software Suite [13.1R1.0]

```

JUNOS Routing Software Suite [13.1R1.0]  
JUNOS 64-bit Runtime Software Suite [13.1R1.0]

**lcc4-re0:**

-----  
Hostname: mylcc4  
Model: t4000  
JUNOS Base OS boot [13.1R1.0]  
JUNOS Base OS Software Suite [13.1R1.0]  
JUNOS 64-bit Kernel Software Suite [13.1R1.0]  
JUNOS Crypto Software Suite [13.1R1.0]  
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1R1.0]  
JUNOS Packet Forwarding Engine Support (T-Series) [13.1R1.0]  
JUNOS Online Documentation [13.1R1.0]  
JUNOS Services AACL Container package [13.1R1.0]  
JUNOS Services Application Level Gateways [13.1R1.0]  
JUNOS AppId Services [13.1R1.0]  
JUNOS Border Gateway Function package [13.1R1.0]  
JUNOS Services Captive Portal and Content Delivery Container package [13.1R1.0]  
JUNOS Services HTTP Content Management package [13.1R1.0]  
JUNOS IDP Services [13.1R1.0]  
JUNOS Services Jflow Container package [13.1R1.0]  
JUNOS Services LL-PDF Container package [13.1R1.0]  
JUNOS Services MobileNext Software package [13.1R1.0]  
JUNOS Services Mobile Subscriber Service Container package [13.1R1.0]  
JUNOS Services NAT [13.1R1.0]  
JUNOS Services PTSP Container package [13.1R1.0]  
JUNOS Services RPM [13.1R1.0]  
JUNOS Services Stateful Firewall [13.1R1.0]  
JUNOS Voice Services Container package [13.1R1.0]  
JUNOS Services Example Container package [13.1R1.0]  
JUNOS Services Crypto [13.1R1.0]  
JUNOS Services SSL [13.1R1.0]  
JUNOS Services IPSec [13.1R1.0]  
JUNOS Runtime Software Suite [13.1R1.0]  
JUNOS Routing Software Suite [13.1R1.0]  
JUNOS 64-bit Runtime Software Suite [13.1R1.0]

**lcc6-re0:**

-----  
Hostname: mylcc6  
Model: t1600  
  
JUNOS Base OS boot [13.1R1.0]  
JUNOS Base OS Software Suite [13.1R1.0]  
JUNOS 64-bit Kernel Software Suite [13.1R1.0]  
JUNOS Crypto Software Suite [13.1R1.0]  
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1R1.0]  
JUNOS Packet Forwarding Engine Support (T-Series) [13.1R1.0]  
JUNOS Online Documentation [13.1R1.0]  
JUNOS Services AACL Container package [13.1R1.0]  
JUNOS Services Application Level Gateways [13.1R1.0]  
JUNOS AppId Services [13.1R1.0]  
JUNOS Border Gateway Function package [13.1R1.0]  
JUNOS Services Captive Portal and Content Delivery Container package [13.1R1.0]  
JUNOS Services HTTP Content Management package [13.1R1.0]  
JUNOS IDP Services [13.1R1.0]  
JUNOS Services Jflow Container package [13.1R1.0]  
JUNOS Services LL-PDF Container package [13.1R1.0]  
JUNOS Services MobileNext Software package [13.1R1.0]  
JUNOS Services Mobile Subscriber Service Container package [13.1R1.0]

```

JUNOS Services NAT [13.1R1.0]
JUNOS Services PTSP Container package [13.1R1.0]
JUNOS Services RPM [13.1R1.0]
JUNOS Services Stateful Firewall [13.1R1.0]
JUNOS Voice Services Container package [13.1R1.0]
JUNOS Services Example Container package [13.1R1.0]
JUNOS Services Crypto [13.1R1.0]
JUNOS Services SSL [13.1R1.0]
JUNOS Services IPSec [13.1R1.0]
JUNOS Runtime Software Suite [13.1R1.0]
JUNOS Routing Software Suite [13.1R1.0]
JUNOS 64-bit Runtime Software Suite [13.1R1.0]

```

#### lcc7-re0:

```

-----
Hostname: mylcc7
Model: t1600

```

```

JUNOS Base OS boot [13.1R1.0]
JUNOS Base OS Software Suite [13.1R1.0]
JUNOS 64-bit Kernel Software Suite [13.1R1.0]
JUNOS Crypto Software Suite [13.1R1.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1R1.0]
JUNOS Packet Forwarding Engine Support (T-Series) [13.1R1.0]
JUNOS Online Documentation [13.1R1.0]
JUNOS Services AACL Container package [13.1R1.0]
JUNOS Services Application Level Gateways [13.1R1.0]
JUNOS AppId Services [13.1R1.0]
JUNOS Border Gateway Function package [13.1R1.0]
JUNOS Services Captive Portal and Content Delivery Container package [13.1R1.0]
JUNOS Services HTTP Content Management package [13.1R1.0]
JUNOS IDP Services [13.1R1.0]
JUNOS Services Jflow Container package [13.1R1.0]
JUNOS Services LL-PDF Container package [13.1R1.0]
JUNOS Services MobileNext Software package [13.1R1.0]
JUNOS Services Mobile Subscriber Service Container package [13.1R1.0]
JUNOS Services NAT [13.1R1.0]
JUNOS Services PTSP Container package [13.1R1.0]
JUNOS Services RPM [13.1R1.0]
JUNOS Services Stateful Firewall [13.1R1.0]
JUNOS Voice Services Container package [13.1R1.0]
JUNOS Services Example Container package [13.1R1.0]
JUNOS Services Crypto [13.1R1.0]
JUNOS Services SSL [13.1R1.0]
JUNOS Services IPSec [13.1R1.0]
JUNOS Runtime Software Suite [13.1R1.0]
JUNOS Routing Software Suite [13.1R1.0]
JUNOS 64-bit Runtime Software Suite [13.1R1.0]

```

## Optional: Switching Routing Engine Mastership Back to the Default Master Routing Engines

The *default backup* Routing Engines (**re1**) are still operating as the *elected master* Routing Engines while the default master Routing Engines (**re0**) are operating as the elected backup Routing Engines.

To avoid confusion about which Routing Engine in any router is the master and which is the backup, you should switch the Routing Engine mastership assignment back to the original designations (with the **re0** Routing Engines operating as the master Routing Engines and the **re1** Routing Engines operating as the backup Routing Engines).



**NOTE:** Switching Routing Engine mastership causes traffic to be disrupted.

However, if you need to avoid another disruption to traffic while the Routing Engine mastership is switched on all the routers, you can skip this task.

To switch Routing Engine mastership back to the default master Routing Engine (**re0**) on all routers in the routing matrix:

1. Transfer Routing Engine mastership to the backup Routing Engine (**re1**) for all routers in the routing matrix. To do this, issue the **request chassis routing-engine master** command and specify the **switch** and **all-chassis** options.

At the warning message and prompt, type **yes** to allow the command to proceed:

```
root@sfc0> request chassis routing-engine master switch all-chassis
warning: Traffic will be interrupted while the PFE is re-initialized
Toggle mastership between routing engines ? [yes,no] (no) yes
```

lcc0-re0:

```
-----
warning: Traffic will be interrupted while the PFE is re-initialized
Resolving mastership...
Complete. The local routing engine becomes the master.
```

lcc2-re0:

```
-----
warning: Traffic will be interrupted while the PFE is re-initialized
Command aborted. Not ready for mastership switch, try after 47 secs.
```

lcc4-re0:

```
-----
warning: Traffic will be interrupted while the PFE is re-initialized
Command aborted. Not ready for mastership switch, try after 19 secs.
```

lcc6-re0:

```
-----
warning: Traffic will be interrupted while the PFE is re-initialized
Command aborted. Not ready for mastership switch, try after 53 secs.
```

lcc7-re0:

```
-----
warning: Traffic will be interrupted while the PFE is re-initialized
Command aborted. Not ready for mastership switch, try after 45 secs.
```

sfc0-re0:

```
-----
warning: Traffic will be interrupted while the PFE is re-initialized
Command aborted. Not ready for mastership switch, try after 97 secs.
```

2. Verify that Routing Engine mastership has indeed switched back to the default master Routing Engines (**re0**) in the routing matrix. To display Routing Engine mastership information, issue the **show chassis routing-engine** command at the SFC:

```
root@sfc0> show chassis routing-engine
sfc0-re0:
```

```
-----
Routing Engine status:
```



```

Slot 0:
  Current state           Master
  Election priority       Master (default)
  ...output_truncated...

```

Routing Engine status:

```

Slot 1:
  Current state           Backup
  Election priority       Backup (default)
  ...output_truncated...

```

lcc0-re0:

Routing Engine status:

```

Slot 0:
  Current state           Master
  Election priority       Master (default)
  ...output_truncated...

```

Routing Engine status:

```

Slot 1:
  Current state           Backup
  Election priority       Backup (default)
  ...output_truncated...

```

lcc2-re0:

Routing Engine status:

```

Slot 0:
  Current state           Master
  Election priority       Master (default)
  ...output_truncated...

```

Routing Engine status:

```

Slot 1:
  Current state           Backup
  Election priority       Backup (default)
  ...output_truncated...

```

lcc4-re0:

Routing Engine status:

```

Slot 0:
  Current state           Master
  Election priority       Master (default)
  ...output_truncated...

```

Routing Engine status:

```

Slot 1:
  Current state           Backup
  Election priority       Backup (default)
  ...output_truncated...

```

lcc6-re0:

Routing Engine status:

```

Slot 0:
  Current state           Master
  Election priority       Master (default)
  ...output_truncated...

```

```
Routing Engine status:
Slot1:
  Current state           Backup
  Election priority       Backup (default)
  ...output_truncated...
```

lcc7-re0:

```
-----
Routing Engine status:
Slot0:
  Current state           Master
  Election priority       Master (default)
  ...output_truncated...
```

```
Routing Engine status:
Slot1:
  Current state           Backup
  Election priority       Backup (default)
  ...output_truncated...
```

## Restoring the Original Configuration

After you have installed the new Junos OS and are satisfied that it is running properly on all Routing Engines, restore the routing matrix to the original configuration (that existed before you deleted it at the beginning of this procedure) and then back up the configuration change.

To restore the previous configuration and then create a configuration backup, perform the following steps at the master Routing Engine of the SFC:

1. Restore the routing matrix configuration that existed before you deleted it at the start of this procedure:

```
{master}
root@sfc0-re0> configure
Entering configuration mode

{master}
root@sfc0# rollback 1
load complete
```

2. Commit the configuration changes on all Routing Engines, which activates the original configuration, and then return to operational mode:

```
{master}
root@sfc0-re0# commit synchronize and-quit
sfc0-re0:
configuration check succeeds
lcc0-re0:
commit complete
lcc0-re1:
commit complete
lcc2-re1:
commit complete
lcc2-re0:
commit complete
lcc4-re1:
commit complete
```

```

lcc4-re0:
commit complete
lcc6-re1:
commit complete
lcc6-re0:
commit complete
lcc7-re1:
commit complete
lcc7-re0:
commit complete
sfc0-re1:
commit complete
sfc0-re0:
commit complete

{master}
root@sfc0-re0>

```

## Backing Up the Routing Engines

Back up the currently running and active file system partitions on each Routing Engine to standby partitions that are not running. Specifically, the root file system (*/*) is backed up to */altroot*, and */config* is backed up to */altconfig*. The root and */config* file systems are on each Routing Engine's flash drive, and the */altroot* and */altconfig* file systems are on Routing Engine's hard drive.



**CAUTION:** After you run the **request system snapshot** command, you cannot return to the previous version of the software, because the running and backup copies of the software are identical.

To back up the Routing Engines of the routing matrix:

1. To back up the master Routing Engines (**re0**) in the routing matrix, issue the **request system snapshot** command.

The following example shows sample output for backing up the master Routing Engines:

```

{master}
root@sfc0-re0> request system snapshot
sfc0-re0:
-----
Verifying compatibility of destination media partitions...
Running newfs (3GB) on hard-disk media / partition (ad1s1a)...
Running newfs (382MB) on hard-disk media /config partition (ad1s1e)...
Copying '/dev/ad0s1a' to '/dev/ad1s1a' .. (this may take a few minutes)
Copying '/dev/ad0s1e' to '/dev/ad1s1e' .. (this may take a few minutes)
The following filesystems were archived: / /config

lcc0-re0:
-----
Verifying compatibility of destination media partitions...
Running newfs (3GB) on hard-disk media / partition (ad1s1a)...
Running newfs (382MB) on hard-disk media /config partition (ad1s1e)...
Copying '/dev/ad0s1a' to '/dev/ad1s1a' .. (this may take a few minutes)
Copying '/dev/ad0s1e' to '/dev/ad1s1e' .. (this may take a few minutes)

```

The following filesystems were archived: / /config

lcc2-re0:

```
-----
Verifying compatibility of destination media partitions...
Running newfs (3GB) on hard-disk media / partition (ad1s1a)...
Running newfs (382MB) on hard-disk media /config partition (ad1s1e)...
Copying '/dev/ad0s1a' to '/dev/ad1s1a' .. (this may take a few minutes)
Copying '/dev/ad0s1e' to '/dev/ad1s1e' .. (this may take a few minutes)
The following filesystems were archived: / /config
```

lcc4-re0:

```
-----
Verifying compatibility of destination media partitions...
Running newfs (3GB) on hard-disk media / partition (ad1s1a)...
Running newfs (382MB) on hard-disk media /config partition (ad1s1e)...
Copying '/dev/ad0s1a' to '/dev/ad1s1a' .. (this may take a few minutes)
Copying '/dev/ad0s1e' to '/dev/ad1s1e' .. (this may take a few minutes)
The following filesystems were archived: / /config
```

---(more)---

lcc6-re0:

```
-----
Verifying compatibility of destination media partitions...
Running newfs (3GB) on hard-disk media / partition (ad1s1a)...
Running newfs (382MB) on hard-disk media /config partition (ad1s1e)...
Copying '/dev/ad0s1a' to '/dev/ad1s1a' .. (this may take a few minutes)
Copying '/dev/ad0s1e' to '/dev/ad1s1e' .. (this may take a few minutes)
The following filesystems were archived: / /config
```

lcc7-re0:

```
-----
Verifying compatibility of destination media partitions...
Running newfs (3GB) on hard-disk media / partition (ad1s1a)...
Running newfs (382MB) on hard-disk media /config partition (ad1s1e)...
Copying '/dev/ad0s1a' to '/dev/ad1s1a' .. (this may take a few minutes)
Copying '/dev/ad0s1e' to '/dev/ad1s1e' .. (this may take a few minutes)
The following filesystems were archived: / /config
```

2. To transfer Routing Engine mastership back to the default backup Routing Engines, issue the **request chassis routing-engine** command with the **switch** and **all-chassis** options.



**CAUTION:** Switching Routing Engine mastership causes traffic to be disrupted.

At the warning message and prompt, type **yes** to allow the operation to proceed

```
{master}
root@sfc0-re0> request chassis routing-engine master switch all-chassis
Toggle mastership between routing engines ? [yes,no] (no) yes
```

lcc0-re0:

```
-----
Resolving mastership...
Complete. The other routing engine becomes the master.
```

lcc2-re0:

```
-----
Resolving mastership...
Complete. The other routing engine becomes the master.
```

```
lcc4-re0:
```

```
-----
Resolving mastership...
Complete. The other routing engine becomes the master.
```

```
lcc6-re0:
```

```
-----
Resolving mastership...
Complete. The other routing engine becomes the master.
```

```
lcc7-re0:
```

```
-----
Resolving mastership...
Complete. The other routing engine becomes the master.
```

```
sfc0-re0:
```

```
-----
Resolving mastership...
Complete. The other routing engine becomes the master.
```

3. To back up the backup Routing Engines (**re1**), issue the **request system snapshot** operational command at the backup Routing Engine on the TX Matrix Plus router.

The following examples shows sample command output for backing up the backup Routing Engines:

```
{master}
root@sfc0-re1> request system snapshot
lcc0-re1:
```

```
-----
Verifying compatibility of destination media partitions...
Running newfs (3GB) on hard-disk media / partition (ad1s1a)...
Running newfs (381MB) on hard-disk media /config partition (ad1s1e)...
Copying '/dev/ad0s1a' to '/dev/ad1s1a' .. (this may take a few minutes)
Copying '/dev/ad0s1e' to '/dev/ad1s1e' .. (this may take a few minutes)
The following filesystems were archived: / /config
```

```
lcc2-re1:
```

```
-----
Verifying compatibility of destination media partitions...
Running newfs (3GB) on hard-disk media / partition (ad1s1a)...
Running newfs (382MB) on hard-disk media /config partition (ad1s1e)...
Copying '/dev/ad0s1a' to '/dev/ad1s1a' .. (this may take a few minutes)
Copying '/dev/ad0s1e' to '/dev/ad1s1e' .. (this may take a few minutes)
The following filesystems were archived: / /config
```

```
lcc4-re1:
```

```
-----
Verifying compatibility of destination media partitions...
Running newfs (3GB) on hard-disk media / partition (ad1s1a)...
Running newfs (382MB) on hard-disk media /config partition (ad1s1e)...
Copying '/dev/ad0s1a' to '/dev/ad1s1a' .. (this may take a few minutes)
Copying '/dev/ad0s1e' to '/dev/ad1s1e' .. (this may take a few minutes)
The following filesystems were archived: / /config
```

```
---(more)---
```

lcc6-re1:

```
-----  
Verifying compatibility of destination media partitions...  
Running newfs (3GB) on hard-disk media / partition (ad1s1a)...  
Running newfs (382MB) on hard-disk media /config partition (ad1s1e)...  
Copying '/dev/ad0s1a' to '/dev/ad1s1a' .. (this may take a few minutes)  
Copying '/dev/ad0s1e' to '/dev/ad1s1e' .. (this may take a few minutes)  
The following filesystems were archived: / /config
```

lcc7-re1:

```
-----  
Verifying compatibility of destination media partitions...  
Running newfs (3GB) on hard-disk media / partition (ad1s1a)...  
Running newfs (382MB) on hard-disk media /config partition (ad1s1e)...  
Copying '/dev/ad0s1a' to '/dev/ad1s1a' .. (this may take a few minutes)  
Copying '/dev/ad0s1e' to '/dev/ad1s1e' .. (this may take a few minutes)  
The following filesystems were archived: / /config
```

**Related  
Documentation**

- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
- [Roadmap for Configuring the Routing Matrix on page 31](#)
- [Example Configuration for the Routing Matrix on page 47](#)
- [Troubleshooting: Upgrade Failure Due to Insufficient Disk Space on page 1257](#)
- [Troubleshooting: Upgrade Failure Due to Insufficient DRAM on page 1265](#)
- [Troubleshooting: Upgrade Failure Due to Mixed Software on page 1265](#)

## CHAPTER 17

# Chassis Commands

## clear chassis alarms fabric degraded

<b>Syntax (TX Matrix Plus Router with 3D SIBs)</b>	clear chassis alarms fabric degraded lcc <i>number</i> fpc <i>number</i>
<b>Release Information</b>	Command introduced in Junos OS Release 13.2 for a routing matrix with a TX Matrix Plus routers and 3D SIBs.
<b>Description</b>	Clear the fabric degraded alarm for an FPC.
<b>Options</b>	<p><b>lcc <i>number</i></b>—Line-card chassis number.</p> <p>Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"> <li>0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> <li>0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> </ul> <p><b>fpc <i>number</i></b>—Flexible PIC Concentrator (FPC) slot number. On a TX Matrix Plus router in the TXP-T1600-3D, TXP-T4000-3D, or TXP-Mixed-LCC-3D configuration, specify the number of a T1600 or T4000 router by using the <b>lcc <i>number</i></b> option and replace <b>fpc <i>number</i></b> with a value from 0 through 7.</p>
<b>Required Privilege Level</b>	clear
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li><a href="#">show system alarms on page 920</a></li> </ul>

## Sample Output

### show system alarms (TX Matrix Plus router with 3D SIBs)

```

user@host> show system alarms

sfc0-re0:
-----
2 alarms currently active
Alarm time           Class  Description
2013-05-08 18:13:58 UTC Major  LCC 0 Major Errors
2013-05-08 17:48:46 UTC Major  LCC 7 Major Errors

lcc0-re1:
-----
3 alarms currently active
Alarm time           Class  Description
2013-05-08 17:35:34 UTC Minor  SIB 3 Not Online
2013-05-08 17:35:34 UTC Minor  SIB 2 Not Online
2013-05-08 18:19:24 UTC Major  FPC 5 degraded fabric condition detected

user@host> clear chassis alarms fabric degraded lcc 0 fpc 5

```



lcc0-re1:

-----  
user@host> show system alarms

sfc0-re0:

-----  
2 alarms currently active

Alarm time	Class	Description
2013-05-08 18:13:58 UTC	Major	LCC 0 Major Errors
2013-05-08 17:48:46 UTC	Major	LCC 7 Major Errors

lcc0-re1:

-----  
2 alarm currently active

Alarm time	Class	Description
2013-05-08 17:36:34 UTC	Minor	SIB 3 Not Online
2013-05-08 17:36:34 UTC	Minor	SIB 2 Not Online

## clear chassis display message

---

<b>Syntax</b>	clear chassis display message
<b>Syntax (TX Matrix Router)</b>	clear chassis display message <lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	clear chassis display message <lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (QFabric Systems)</b>	clear chassis display message <node-device <i>name</i>   interconnect-device <i>name</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 7.5. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> option for the TX Matrix Plus routers introduced in Junos OS Release 9.6. Command introduced in Junos OS Release 11.1 for the QFX Series.
<b>Description</b>	(M40e, M160, M320, T Series routers, EX Series, and QFabric systems only) Clear or stop a text message on the craft interface display, which is on the front of the router or switch or on the LCD panel display on the router or switch. The craft interface alternates the display of text messages with standard craft interface messages, switching between messages every 2 seconds. By default, on both the router and the switch, the text message is displayed for 5 minutes. The craft interface display has four 20-character lines. The LCD panel display has two 16-character lines, and text messages appear only on the second line.
<b>Options</b>	<b>none</b> —Clear or stop a text message on the craft interface display.  <b>interconnect-device <i>name</i></b> —(QFabric systems only) (Optional) On a QFabric system, clear or stop a text message on the LCD panel display on the specified Interconnect device.  <b>lcc <i>number</i></b> —(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number. Replace <i>number</i> with the following values depending on the LCC configuration: <ul style="list-style-type: none"><li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li><li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li><li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li><li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li></ul>

**node-device *name***—(QFabric systems only) (Optional) On a QFabric system, clear or stop a text message on the LCD panel display on the specified Node device in a Node group.

**scc**—(TX Matrix routers only) (Optional) Clear or stop a text message on the craft interface on the TX Matrix router (switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Clear or stop a text message on the craft interface on the TX Matrix Plus router (or switch-fabric chassis). Replace *number* with 0.

**Required Privilege Level**

clear

**Related Documentation**

- *Configuring the LCD Panel on EX Series Switches (CLI Procedure)*
- [set chassis display message on page 228](#)
- [show chassis craft-interface on page 245](#)

**List of Sample Output** [clear chassis display message on page 191](#)

**Output Fields** See [show chassis craft-interface](#) for an explanation of output fields.

## Sample Output

### clear chassis display message

The following example displays and then clears the text message on the craft interface display:

```
user@host> show chassis craft-interface
Red alarm:      LED off, relay off
Yellow alarm:   LED off, relay off
Host OK LED:    On
Host fail LED:  Off
FPCs           0  1  2  3  4  5  6  7
-----
Green  ..  *..  *  *.
Red    .....
LCD screen:
+-----+
|NOC contact Dusty |
|(888) 526-1234    |
+-----+

user@host> clear chassis display message

user@host> show chassis craft-interface
Red alarm:      LED off, relay off
Yellow alarm:   LED off, relay off
Host OK LED:    On
Host fail LED:  Off
FPCs           0  1  2  3  4  5  6  7
-----
Green  ..  *..  *  *.
Red    .....
LCD screen:
```

```
+-----+
|host    |
|Up: 0+17:05:47|
|        |
|Temperature OK|
+-----+
```

## clear system reboot

<b>Syntax</b>	clear system reboot <both-routing-engines>
<b>Syntax (EX Series Switches)</b>	clear system reboot <all-members> <both-routing-engines> <local> <member <i>member-id</i> >
<b>Syntax (TX Matrix Router)</b>	clear system reboot <both-routing-engines> <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	clear system reboot <both-routing-engines> <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (QFX Series)</b>	clear system reboot <infrastructure <i>name</i> > <interconnect-device <i>name</i> > <node-group <i>name</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> 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.
<b>Description</b>	Clear any pending system software reboots or halts. When issued on a TX Matrix router without any options, the default behavior clears all pending system software reboots or halts on all T640 routers connected to the TX Matrix router. When issued on a TX Matrix Plus router without any options, the default behavior clears all pending system software reboots or halts on all T1600 or T4000 routers connected to the TX Matrix Plus router.
<b>Options</b>	<p><b>none</b>—Clear all pending system software reboots or halts.</p> <p><b>all-chassis</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Clear all halt or reboot requests for all the Routing Engines in the chassis.</p> <p><b>all-lcc</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, clear all halt or reboot requests for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, clear all halt or reboot requests on the l connected T1600 or T4000 LCCs.</p> <p><b>all-members</b>—(EX4200 switches only) (Optional) Clear all halt or reboot requests on all members of the Virtual Chassis configuration.</p> <p><b>both-routing-engines</b>—(Systems with multiple Routing Engines) (Optional) Clear all halt or reboot requests on both Routing Engines. On a TX Matrix router, clear both Routing Engines on all chassis connected to the TX Matrix router. Likewise, on a TX Matrix</p>

Plus router, clear both Routing Engines on all chassis connected to the TX Matrix Plus router.

**infrastructure *name***—(QFabric systems) (Optional) Clear all halt or reboot requests on the fabric control Routing Engines or fabric manager Routing Engines.

**interconnect-device *name***—(QFabric systems) (Optional) Clear all halt or reboot requests on the Interconnect device.

**lcc *number***—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, clear all halt or reboot requests for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, clear all halt or reboot requests for a specific router that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(EX4200 switches only) (Optional) Clear all halt or reboot requests on the local Virtual Chassis member.

**member *member-id***—(EX4200 switches only) (Optional) Clear all halt or reboot requests on the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value from 0 through 9.

**node-group *name***—(QFabric systems) (Optional) Clear all halt or reboot requests on the Node group.

**scc**—(TX Matrix routers only) (Optional) Clear all halt or reboot requests for the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Clear all halt or reboot requests for the TX Matrix Plus router. Replace ***number*** with 0.

**Required Privilege Level**

maintenance

**Related Documentation**

- [request system reboot on page 838](#)
- [request system reboot](#)
- [Rebooting and Halting a QFX Series Product](#)
- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output**   [clear system reboot on page 196](#)  
                                  [clear system reboot \(TX Matrix Router\) on page 196](#)  
                                  [clear system reboot \(QFX Series\) on page 196](#)

**Output Fields**   When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### clear system reboot

```
user@host> clear system reboot
reboot requested by root at Sat Dec 12 19:37:34 1998
[process id 17855]
Terminating...
```

### clear system reboot (TX Matrix Router)



```
user@host> clear system reboot
scc-re0:
-----
No shutdown/reboot scheduled.
lcc0-re0:
-----
No shutdown/reboot scheduled.
lcc2-re0:
-----
No shutdown/reboot scheduled.
```

### clear system reboot (QFX Series)

```
user@switch> clear system reboot node-group node1
No shutdown/reboot scheduled.
```



## request chassis cb

<b>Syntax</b>	request chassis cb (offline   online) slot <i>slot-number</i>
<b>Syntax (TX Matrix Router)</b>	request chassis cb (offline   online) <slot <i>slot-number</i>   lcc <i>number</i> slot <i>cb-slot-number</i>   sfc <i>number</i> slot <i>cb-slot-number</i> >
<b>Syntax (TX Matrix Plus Router)</b>	request chassis cb (offline   online) <slot <i>slot-number</i>   lcc <i>number</i> slot <i>cb-slot-number</i>   sfc <i>number</i> slot <i>cb-slot-number</i> >
<b>Syntax (QFabric System)</b>	request chassis cb (offline   online) interconnect-device <i>name</i> slot <i>slot-number</i> <interconnect-device <i>name</i> slot <i>slot-number</i> (offline   online)>
<b>Release Information</b>	<p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS 9.4 for EX Series switches.</p> <p><b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6.</p> <p>Command introduced in Junos OS 11.3 for QFX Series.</p> <p>Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.</p>
<b>Description</b>	(M120, M320, and MX Series routers and T Series routers, QFabric systems, and EX8200 switches only) Control the operation of the Control Board (CB). For information about the meaning of “CBs” on the switches, see <i>EX Series Switches Hardware and CLI Terminology Mapping</i> .
<b>Options</b>	<p><b>offline</b>—Take the Control Board offline.</p> <div style="margin-top: 10px;">  <p><b>NOTE:</b> On a QFabric system, to bring the backup Control Board on a QFX3008-I Interconnect device offline, issue the <code>request chassis cb slot <i>backup-slot-number</i> offline</code> command.</p> </div> <div style="margin-top: 10px;">  <p><b>NOTE:</b> Only backup Control Board can be turned offline or online. To turn a Control Board offline or to bring it back online, the Routing Engine should be turned offline first.</p> </div> <p><b>online</b>—Bring the Control Board online.</p> <p><b>interconnect-device <i>name</i></b>—(QFabric systems only) (Optional) Bring the QFX3008-I Interconnect device Control Board either offline or online:</p> <p><b>slot <i>slot-number</i></b>—Control Board slot number:</p>

- (TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, if you specify the number of the T640 router by using the **lcc number** option (the recommended method), replace **cb-slot-number** with a value from 0 through 1.

Likewise, on a TX Matrix Plus router, if you specify the number of the T1600 or T4000 router by using the **lcc number** option (the recommended method), replace **cb-slot-number** with a value from 0 through 1.

- M320 router—Replace **slot-number** with a value from 0 through 1.
- MX480/MX240 routers—Replace **slot-number** with a value from 0 through 1.
- MX960 router—Replace **slot-number** with a value from 0 through 2.
- MX2020 and MX2010 routers—Replace **slot-number** with 0 or 1.
- EX8208 switch—Replace **slot-number** with a value from 0 through 2.
- EX8216 switch—Replace **slot-number** with a value from 0 through 1.
- QFabric System—Replace **slot-number** with a value from 0 through 1.

**lcc number**—(TX Matrix, TX Matrix Plus routers only) (Optional) Line-card chassis number. Replace **number** with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**sfc number**—(TX Matrix Plus routers only) (Optional) Change the CB status for the TX Matrix Plus router (switch-fabric chassis). Replace **number** with 0.

Required Privilege Level	maintenance
Related Documentation	<ul style="list-style-type: none"><li>• <a href="#">show chassis environment cb on page 315</a></li><li>• <i>Switching Control Board Redundancy</i></li><li>• <i>Routing Engine and Switching Control Board Redundancy Configuration Statements</i></li></ul>
List of Sample Output	<a href="#">request chassis cb on page 199</a> <a href="#">request chassis cb interconnect-device (QFabric System) on page 199</a> <a href="#">request chassis cb (MX2020 Router) on page 199</a> <a href="#">request chassis cb (MX2010 Router) on page 199</a>
Output Fields	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### request chassis cb

```
user@host> request chassis cb offline slot 1
Backup CB 1 cannot be set offline, backup RE is online
```

### request chassis cb interconnect-device (QFabric System)

```
user@switch> request chassis cb interconnect-device interconnect1 offline slot 1
Backup CB 1 cannot be set offline, backup RE is online
```

### request chassis cb (MX2020 Router)

```
user@host> request chassis cb offline slot 1
Backup CB 1 cannot be set offline, backup RE is online
```

### request chassis cb (MX2010 Router)

```
user@host> request chassis cb offline slot 1
Backup CB 1 cannot be set offline, backup RE is online
```

## request chassis cip

---

<b>Syntax</b>	<code>request chassis cip (offline   online) slot <i>slot-number</i></code>
<b>Release Information</b>	Command introduced for the TX Matrix Plus router in Junos OS Release 9.6.
<b>Description</b>	(TX Matrix Plus routers only) Control the operation of the Connector Interface Panel (CIP).
<b>Options</b>	<p><b>offline</b>—Take the CIP offline.</p> <p><b>online</b>—Bring the CIP online.</p> <p><b>slot <i>slot-number</i></b>—CIP slot number. Replace <i>slot-number</i> with a value ranging from 0 through 1.</p>
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show chassis cip on page 243</a></li><li>• <i>Installing a T1600 CIP</i></li><li>• <i>Installing a T640 CIP</i></li><li>• <i>Installing a TX-CIP</i></li><li>• <i>Installing an M320 CIP</i></li><li>• <i>Installing the M40e CIP</i></li><li>• <i>Installing the T1600 CIP</i></li><li>• <i>Installing the T320 CIP</i></li><li>• <i>CIP Overview</i></li></ul>
<b>List of Sample Output</b>	<a href="#">request chassis cip offline slot (TX Matrix Plus Router) on page 200</a> <a href="#">request chassis cip offline slot (TX Matrix Plus Router) on page 200</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

#### request chassis cip offline slot (TX Matrix Plus Router)

```
user@host > request chassis cip offline slot 0
CIP 0 offline done
```

#### request chassis cip offline slot (TX Matrix Plus Router)

```
user@host > request chassis cip online slot 0
CIP 0 online done
```

## request chassis fpc

<b>Syntax</b>	request chassis fpc (offline   online   restart) slot <i>slot-number</i>
<b>Syntax (TX Matrix and TX Matrix Plus Routers)</b>	request chassis fpc (offline   online   restart) slot <i>slot-number</i> <lcc <i>number</i> >
<b>Syntax (MX Series Routers)</b>	request chassis fpc (offline   online   restart) slot <i>slot-number</i> <all-members> <local> <member <i>member-id</i> >
<b>Syntax (MX2020 3D Universal Edge Routers)</b>	request chassis fpc (offline   online   restart) slot <i>slot-number</i>
<b>Syntax (MX2010 3D Universal Edge Routers)</b>	request chassis fpc (offline   online   restart) slot <i>slot-number</i>
<b>Syntax (QFabric System)</b>	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)>
<b>Syntax (PTX Series Packet Transport Routers)</b>	request chassis fpc (offline   online   restart) slot <i>slot-number</i>
<b>Release Information</b>	<p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Command introduced in Junos OS 11.3 for QFX Series.</p> <p>Command introduced in Junos OS 12.1x48 for PTX Series Packet Transport Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.</p>
<b>Description</b>	(M20, M40, M40e, M120, M160, M320, MX Series, and T Series routers, QFabric systems, EX Series switches, and PTX Series Packet Transport Routers only) Control the operation of the Flexible PIC Concentrator (FPC). For information about the meaning of “FPCs” on the switches, see <i>EX Series Switches Hardware and CLI Terminology Mapping</i> .
<b>Options</b>	<p><b>offline</b>—Take the FPC offline.</p> <p><b>online</b>—Bring the FPC online.</p> <p><b>interconnect-device <i>name</i></b>—(QFabric systems only) Bring the Flexible Port Concentrator (FPC) on the QFX3008-I Interconnect device either offline or online:</p>

- (QFabric System) On a QFabric system, specify the name of the QFX3008-I Interconnect device containing the Flexible Port Concentrator (FPC) you want to bring either offline or online.

**restart**—Restart the FPC.

**slot slot-number**—FPC slot number:

- M20 router—0 through 3.
- M120 router—0 through 5.
- MX240 router—0 through 2. On the MX240 router, slot-number corresponds to the 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.
- MX2020 router—0 through 19.
- MX2010 router—0 through 9.
- TX Matrix and TX Matrix Plus routers only—On the TX Matrix router, if you specify the number of the T640 router by using the **lcc number** option (the recommended method), replace **slot-number** with a value from 0 through 7. Otherwise, replace **slot-number** with a value from 0 through 31.

Likewise, on a TX Matrix Plus router, if you specify the number of the T1600 or T4000 router by using the **lcc number** option (the recommended method), replace **slot-number** with a value from 0 through 7. Otherwise, replace **slot-number** with a value from 0 through 31. In case of TX Matrix Plus router with 3D SIBs, replace **slot-number** with a value from 0 through 63. For example, the following commands have the same result:

```
user@host> request chassis fpc lcc 1 slot 1 offline
user@host> request chassis fpc slot 9 offline
```

- Other routers—0 through 7.
- QFabric System—Replace **slot-number** with a value from 0 through 2.
- EX Series switches:
  - EX4200 switches in a Virtual Chassis configuration—Replace **slot-number** with a value from 0 through 9.
  - EX6210 switches—Replace **slot-number** with a value from 0 through 9.



**NOTE:** These commands are not supported for slots 4 and 5 when a Switch Fabric and Routing Engine (SRE) module is installed in those slots. These commands are supported for slots 4 and 5 only if a line card is installed in them.

- EX8208 switches—Replace **slot-number** with a value from 0 through 7.
- EX8216 switches—Replace **slot-number** with a value from 0 through 15.
- PTX5000 Packet Transport Router—Replace **slot-number** with a value from 0 through 7.

**all-members**—(MX Series routers only) (Optional) Change FPC status of all members of the Virtual Chassis configuration.

**local**—(MX Series routers only) (Optional) Change FPC status of the local Virtual Chassis member.

**member member-id**—(MX Series routers only) (Optional) Change FPC status of the specified member of the Virtual Chassis configuration. Replace **member-id** with a value of 0 or 1.

**lcc number**—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.

Replace **number** with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**Required Privilege Level** maintenance

**Related Documentation**

- [show chassis fpc on page 600](#)
- [show chassis fpc-feb-connectivity](#)
- [show chassis fabric fpcs on page 468](#)
- [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 204](#)  
[request chassis fpc \(MX Series Routers with Media Services Blade \[MSB\]\) on page 204](#)  
[request chassis fpc \(MX2020 Router\) on page 204](#)  
[request chassis fpc \(MX2010 Router\) on page 204](#)

**Output Fields**    When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### [request chassis fpc](#)

```
user@host> request chassis fpc online slot 0
FPC 0 already online
```

### [request chassis fpc \(MX Series Routers with Media Services Blade \[MSB\]\)](#)

```
user@host> request chassis fpc slot 0
Possible completions:
offline           Take FPC offline
online           Bring FPC online
restart          Restart FPC
```

### [request chassis fpc \(MX2020 Router\)](#)

```
user@host >request chassis fpc online slot 2
FPC 2 already online
```

### [request chassis fpc \(MX2010 Router\)](#)

```
user@host >request chassis fpc offline slot 5
Offline initiated, use "show chassis fpc" to verify
```



## request chassis fpm resync

<b>Syntax</b>	request chassis fpm resync
<b>Syntax (TX Matrix Routers)</b>	request chassis fpm resync ( <i>lcc number</i>   <i>scc</i> )
<b>Syntax (TX Matrix Plus Routers)</b>	request chassis fpm resync ( <i>lcc number</i>   <i>sfc number</i> )
<b>Syntax (MX Series Routers)</b>	request chassis fpm resync <all-members> <local> <member <i>member-id</i> >
<b>Syntax (MX2010 3D Universal Edge Routers)</b>	request chassis fpm resync
<b>Syntax (MX2020 3D Universal Edge Routers)</b>	request chassis fpm resync
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. <b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6. Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers. Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.
<b>Description</b>	(M40e, M120, M160, M320, MX Series, and T Series routers only) Resynchronize the craft interface status.
<b>Options</b>	<p><b>all-members</b>—(MX Series routers only) (Optional) Resynchronize the craft interface status on all members of the Virtual Chassis configuration.</p> <p><b>lcc number</b>—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number. Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"> <li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li> <li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li> <li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> <li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> </ul> <p><b>local</b>—(MX Series routers only) (Optional) Resynchronize the craft interface status on the local Virtual Chassis member.</p>

**member *member-id***—(MX Series routers only) (Optional) Resynchronize the craft interface status on the specified member of the Virtual Chassis configuration. Replace *member-id* with a value of 0 or 1.

**scc**—(TX Matrix routers only) Resynchronize the craft interface status on the TX Matrix router (switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) Resynchronize the craft interface status on the TX Matrix Plus router (or switch-fabric chassis). Replace *number* with 0.

**Required Privilege Level** maintenance

**Related Documentation**

- [show chassis environment fpm on page 360](#)
- *Configuring the Junos OS to Resynchronize FPC Sequence Numbers with Active FPCs when an FPC Comes Online*

**List of Sample Output** [request chassis fpm resync on page 206](#)  
[request chassis fpm resync \(MX2010 Router\) on page 206](#)

**Output Fields** When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### [request chassis fpm resync](#)

```
user@host> request chassis fpm resync
Front Panel resynced
```

### [request chassis fpm resync \(MX2010 Router\)](#)

```
user@host > request chassis fpm resync
Front Panel resynced.
```

## request chassis lcc

<b>Syntax (TX Matrix and TX Matrix Plus Routers)</b>	<code>request chassis lcc (offline   online) slot <i>slot-number</i></code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, control the operation of a T640 LCC that is connected to the TX Matrix router. On a TX Matrix Plus router, control the operation of a LCC that is connected to the TX Matrix Plus router.
<b>Options</b>	<p><b>offline</b>—On a routing matrix based on the TX Matrix router (switch-card chassis), take the T640 router (line-card chassis) offline. On a routing matrix based on a TX Matrix Plus router (switch-fabric chassis), take the router (line-card chassis) offline.</p> <p><b>online</b>—On a routing matrix based on the TX Matrix router (switch-card chassis), bring the T640 router (line-card chassis) online. On a routing matrix based on a TX Matrix Plus router (switch-fabric chassis), bring the router (line-card chassis) online.</p> <p><b>slot <i>slot-number</i></b>—On a TX Matrix router (switch-card chassis), the slot number of a T640 router (line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router (switch-fabric chassis), the slot number of a router (line-card chassis) that is connected to the TX Matrix Plus (switch-fabric chassis) router.</p> <p><i>slot-number</i> has the following values depending on the LCC configuration</p> <p>Replace <i>slot-number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"> <li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li> <li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li> <li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> <li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> </ul>
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">show chassis lccs on page 753</a></li> <li>• <i>Configuring Line-Card Upgrade Groups for Nonstop Software Upgrade (CLI Procedure)</i></li> <li>• <i>fpc</i></li> </ul>
<b>List of Sample Output</b>	<a href="#">request chassis lcc on page 208</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

request chassis lcc

```
user@host> request chassis lcc offline slot 0
```

## request chassis pic

<b>Syntax</b>	<code>request chassis pic (offline   online) fpc-slot <i>slot-number</i> pic-slot <i>slot-number</i></code>
<b>Syntax (ACX4000 Series Routers)</b>	<code>request chassis pic (offline   online) fpc-slot <i>slot-number</i> pic-slot <i>slot-number</i></code>
<b>Syntax (TX Matrix and TX Matrix Plus Routers)</b>	<code>request chassis pic (offline   online) fpc-slot <i>slot-number</i> pic-slot <i>slot-number</i> &lt;lcc <i>number</i>&gt;</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. Command introduced in Junos OS Release 12.3 for ACX4000 Routers.
<b>Description</b>	Control the operation of the PIC.



**NOTE:** The `request chassis pic (offline | online) fpc-slot slot number pic-slot slot-number` command is not supported for built-in PICs on MX Series routers.

To view a list of built-in PICs on the router or switch chassis, use the `show chassis hardware` command.



**NOTE:** T1600 routers and TX Matrix Plus routers with 100-Gigabit Ethernet PICs require two adjacent PIC slots, 0 and 1, for each PIC. Therefore, only online and offline command options to PIC slot 0 are allowed. Use of the online and offline command options for PIC slot 1 with the described router and PIC combination is not allowed.



**NOTE:** In T Series routers, when the PIC state is set from offline to online or vice-versa before the processing is complete for the previous command, you are provided feedback on the status of your request. The following sample messages are displayed if you try to set a PIC offline or online:

```
user@switch> request chassis pic fpc-slot 1 pic-slot 0 online
fpc 1 pic 0 online initiated, use "show chassis fpc pic-status" to verify
```

```
user@switch> request chassis pic fpc-slot 1 pic-slot 0 online
FPC 1 PIC 0 already transitioning to online
```

When the same PIC is set to a different state while the transition is in progress, you are provided feedback on the status of your request.

```
user@switch> request chassis pic fpc-slot 1 pic-slot 0 offline
FPC 1, PIC 0 already transitioning to online. Please retry later.
```

**Options**   **offline**—Take the PIC offline.

**online**—Bring the PIC online.

**fpc-slot *slot-number***—Flexible PIC Concentrator (FPC) slot number. Replace *slot-number* with a value appropriate for your router or switch:

- ACX4000 routers—1 or 2.
- EX Series switches:
  - EX3200 switches and EX4200 standalone switches—0.
  - EX4200 switches in a Virtual Chassis configuration—0 through 9 (switch's member ID).
  - EX8208 switches—0 through 7 (line card).
  - EX8216 switches—0 through 15 (line card).
- M5, M7i, M10, and M10i routers—0 or 1.
- M20 routers—0 through 3.
- M40 and M40e routers—0 through 7.
- M120 routers—0 through 5.
- M160 routers—0 through 7.
- M320 routers—0 through 7.
- MX 5, MX10, and MX40 routers—0 or 1.
- MX80 routers—0 or 1.
- MX240 routers—0 through 2
- MX480 routers—0 through 5
- MX2020 routers—0 through 19.
- MX2010 routers—0 through 9.
- MX960 routers—0 through 11.
- PTX5000 routers—0 or 1.
- T Series routers—0 through 7.
- TX Matrix and TX Matrix Plus routers only—On a TX Matrix router, if you specify the number of the T640 router by using the **lcc *number*** option (the recommended method), replace *slot-number* with a value from 0 through 7. Otherwise, replace *slot-number* with a value from 0 through 31.

Likewise, on a TX Matrix Plus router, if you specify the *number* of the T1600 or T4000 router by using the lcc number option (the recommended method), replace *slot-number* with a value from 0 through 7. Otherwise, for the FPC slot number, replace *slot-number* with a value from 0 through 31. On a TX Matrix Plus router with 3D SIBs to assign the FPC slot number, replace *slot-number* with a value from 0 through 63. For example, the following commands have the same result:

```
user@host> request chassis pic fpc-slot 1 lcc 1 pic-slot 0 offline
user@host> request chassis pic fpc-slot 9 pic-slot 0 offline
```

**pic-slot** *slot-number*—PIC slot number.

- EX3200 and EX4200 switches—0 for built-in network interfaces and 1 for interfaces on uplink modules.
- EX8208 and EX8216 switches—0.
- M Series routers—0, 1, 2, or 3
- MX960 router—*slot-number* corresponds to the slot number of the Packet Forwarding Engine.
- PTX5000 routers—0 or 1.
- T320 router—0 or 1.
- T640 router—0, 1, 2, or 3.
- T1600 router—0, 1, 2, or 3.
- T4000 router—0, 1, 2, or 3.

**lcc-number**—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**Required Privilege Level** maintenance

**Related Documentation**

- [show chassis hardware on page 629](#)
- [show chassis pic on page 768](#)
- *Configuring the PIC Type*

**List of Sample Output** [request chassis pic on page 212](#)

**Output Fields** When you enter this command, you are provided feedback on the status of your request.

## Sample Output

request chassis pic

```
user@host> request chassis pic pic-slot 0 online fpc-slot 0
FPC 0, PIC 0 is already online
```



## request chassis routing-engine master

<b>Syntax</b>	request chassis routing-engine master (acquire   release   switch) <force> <no-confirm>
<b>Syntax (TX Matrix Routers)</b>	request chassis routing-engine master (acquire   release   switch) (lcc <i>number</i>   scc   all-chassis) <force> <no-confirm>
<b>Syntax (TX Matrix Plus Routers)</b>	request chassis routing-engine master (acquire   release   switch) (lcc <i>number</i>   sfc   all-chassis   all-lcc) <force> <no-confirm>
<b>Syntax (MX Series Routers)</b>	request chassis routing-engine master (acquire   release   switch) <all-members> <force> <local> <member <i>member-id</i> > <no-confirm>
<b>Syntax (MX104 3D Universal Edge Routers)</b>	request chassis routing-engine master (acquire   release   switch) <no-confirm>
<b>Syntax (MX2010 and MX2020 3D Universal Edge Routers)</b>	request chassis routing-engine master (acquire   release   switch <check>) <no-confirm>
<b>Syntax (QFX Series)</b>	request chassis routing-engine master (release   switch) <check> <interconnect-device <i>name</i> > <node-group <i>name</i> > <no-confirm>
<b>Release Information</b>	<p>Command introduced before Junos OS Release 7.4.</p> <p><b>all-chassis</b> option added in Junos OS Release 8.0.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p><b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6.</p> <p>Command introduced in Junos OS Release 11.3 for QFX Series.</p> <p>Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 13.2 for MX104 3D Universal Edge Routers.</p>
<b>Description</b>	For routers or switches with multiple Routing Engines, control which Routing Engine is the master.



**CAUTION:** (Routing matrix based on the TX Matrix or TX Matrix Plus routers only) Within the routing matrix, we recommend that all Routing Engines run

the same Junos OS Release. If you run different releases on the Routing Engines and a change in mastership occurs on any backup Routing Engine in the routing matrix, one or all routers (in a routing matrix based on the TX Matrix router or in a routing matrix based on a TX Matrix Plus router) might become logically disconnected from the TX Matrix router and cause data loss. For more information, see the [TX Matrix Router Hardware Guide](#) or the *Junos OS High Availability Library for Routing Devices*.



**NOTE:** Successive graceful Routing Engine switchover events must be a minimum of 240 seconds (4 minutes) apart after both Routing Engines have come up.

If the router or switch displays a warning message similar to “Standby Routing Engine is not ready for graceful switchover. Packet Forwarding Engines that are not ready for graceful switchover might be reset,” do not attempt switchover. If you choose to proceed with switchover, only the Packet Forwarding Engines that were not ready for graceful switchover are reset. None of the Flexible PIC concentrators (FPCs) should spontaneously restart. We recommend that you wait until the warning no longer appears and then proceed with the switchover.

You will receive an error message stating “Command aborted. Not ready for mastership switch, try after n seconds” when this command is re-entered before 240 seconds have elapsed on EX Series switches.



**NOTE:** On a QFabric system, to avoid traffic loss on the network Node group, switch mastership of the routing engine to the backup routing engine, and then reboot.

---

**Options**    **acquire**—Attempt to become the master Routing Engine.

**release**—Request that the other Routing Engine become the master.

**switch**—Toggle mastership between Routing Engines.

The **acquire**, **release**, and **switch** options have the following suboptions:

**all-chassis**—(TX Matrix and TX Matrix Plus routers only) On a routing matrix composed of a TX Matrix router and the attached T640 routers, switch mastership on all the Routing Engines in the routing matrix. Likewise, on a routing matrix composed of a TX Matrix Plus router and the attached T1600 or T4000 routers, switch mastership on all the Routing Engines in the routing matrix.

**all-lcc**—(TX Matrix Plus routers only) Request to acquire mastership for all line-card chassis (LCC).

**all-members**—(MX Series routers only) (Optional) Control Routing Engine mastership on the Routing Engines in all member routers of the Virtual Chassis configuration.

**check**—(QFabric systems, MX240, MX480, MX960, MX2010, and MX2020 routers only) (Optional) Available only with the **switch** option. Check graceful switchover status of the standby Routing Engine before toggling mastership between Routing Engines.

**interconnect-device *name***—(QFabric systems only) (Optional) Control Routing Engine mastership on the Routing Engines on an Interconnect device.

**lcc *number***—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(MX Series routers only) (Optional) Control Routing Engine mastership on the Routing Engines in the local Virtual Chassis member.

**member *member-id***—(MX Series routers only) (Optional) Control Routing Engine mastership on the Routing Engines of the specified member in the Virtual Chassis Configuration. Replace *member-id* with a value of 0 or 1.

**no-confirm**—(Optional) Do not request confirmation for the switch.

**node-group *name***—(QFabric systems only) (Optional) Control Routing Engine mastership on the Routing Engines on a Node group.

**scc**—(TX Matrix routers only) TX Matrix (switch-card chassis).

**sfc**—(TX Matrix Plus routers only) TX Matrix Plus router (or switch-fabric chassis).

**force**—(Optional) Available only with the acquire option. Force the change to a new master Routing Engine.



**NOTE:** The **force** option is not supported on the MX104 router.

**Additional Information** Because both Routing Engines are always running, the transition from one to the other as the master Routing Engine is immediate. However, the changeover interrupts communication to the System and Switch Board (SSB). The SSB takes several seconds to reinitialize the Flexible PIC Concentrators (FPCs) and restart the PICs. Interior gateway protocol (IGP) and BGP convergence times depend on the specific network environment.

By default, the Routing Engine in slot 0 (**RE0**) is the master and the Routing Engine in slot 1 (**RE1**) is the backup. To change the default master Routing Engine, include the **routing-engine** statement at the **[edit chassis redundancy]** hierarchy level in the configuration. For more information, see the *Junos OS Administration Library for Routing Devices*

To have the backup Routing Engine become the master Routing Engine, use the **request chassis routing-engine master switch** command. If you use this command to change the master and then restart the chassis software for any reason, the master reverts to the default setting.



**NOTE:** Although the configurations on the two Routing Engines do not have to be the same and are not automatically synchronized, we recommend making both configurations the same.

**Required Privilege Level** maintenance

**Related Documentation**

- [show chassis routing-engine on page 782](#)
- [Configuring Routing Engine Redundancy](#)
- [Switching the Global Master and Backup Roles in a Virtual Chassis Configuration](#)

**List of Sample Output** [request chassis routing-engine master acquire on page 216](#)  
[request chassis routing-engine master switch on page 216](#)

**Output Fields** When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### [request chassis routing-engine master acquire](#)

```
user@host> request chassis routing-engine master acquire

warning: Traffic will be interrupted while the PFE is re-initialized

warning: The other routing engine's file system could be corrupted

Reset other routing engine and become master ? [yes,no] (no)
```

### [request chassis routing-engine master switch](#)

```
user@host> request chassis routing-engine master switch

warning: Traffic will be interrupted while the PFE is re-initialized
```

Toggle mastership between Routing Engines ? [yes,no] (no) yes

Resolving mastership...

Complete. The other Routing Engine becomes the master.

Switch mastership back to the local Routing Engine:

user@host> **request chassis routing-engine master switch**

warning: Traffic will be interrupted while the PFE is re-initialized

Toggle mastership between routing engines ? [yes,no] (no) yes

Resolving mastership...

Complete. The local routing engine becomes the master.

## request chassis scg

---

<b>Syntax</b>	request chassis scg (offline   online) slot <i>slot-number</i>
<b>Syntax (TX Matrix and TX Matrix Plus Routers)</b>	request chassis scg lcc <i>number</i> (offline   online) slot <i>slot-number</i>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(T Series routers only) Control the operation of the specified SONET Clock Generator (SCG).
<b>Options</b>	<p><b>lcc <i>number</i></b>—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.</p> <p>Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"><li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li><li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li><li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li><li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li></ul> <p><b>offline</b>—Take the SCG offline. When you change the SCG status to offline, the unit is not powered down.</p> <p><b>online</b>—Bring the SCG online.</p> <p><b>slot <i>slot-number</i></b>—SCG slot number. Replace <i>slot-number</i> with 0 or 1.</p>
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show chassis environment scg on page 385</a></li><li>• <i>Configuring the Clock Source</i></li><li>• <i>T320 SONET Clock Generator (SCG) Description</i></li></ul>
<b>List of Sample Output</b>	<a href="#">request chassis scg on page 219</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### request chassis scg

```
user@host> request chassis scg online slot 0  
Online initiated, use "show chassis environment scg" to verify
```

## request chassis sib

---

<b>Syntax</b>	request chassis sib (offline   online) slot <i>slot-number</i>
<b>Syntax (TX Matrix Router)</b>	request chassis sib (all-chassis   lcc <i>number</i>   scc) (offline   online) slot <i>slot-number</i> (start-receiver <i>number</i>   stop-receiver <i>number</i> )
<b>Syntax (TX Matrix Plus Router)</b>	request chassis sib (all-lcc   f13 <i>slot-number</i>   f2s <i>sib-slot/sib-f2s-slot-number</i>   lcc <i>number</i>   (offline   online) slot <i>slot-number</i> )
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. f13 and f2s options for the TX Matrix Plus router introduced in Junos OS Release 9.6.
<b>Description</b>	(M320 routers and T Series routers only) Control the operation of the specified Switch Interface Board (SIB).
<b>Options</b>	<p><b>all-chassis</b>—(TX Matrix routers only) Control the status of the specified SIB.</p> <p><b>all-lcc</b>—(TX Matrix Plus router only) On TX Matrix Plus router, control the operation of the SIB on all routers connected to the TX Matrix Plus router.</p> <p><b>f13 slot-number</b>—Control the operation of F13 SIBs. Replace <i>slot-number</i> with a value 0, 1, 3, 4, 6, 7, 8, 9, 11, or 12.</p> <p><b>f2s sib-slot/sib-f2s-slot-number</b>—(TX Matrix Plus routers only) (Optional) Control the operation of the SIB F2s. Replace <i>sib-slot</i> with a value from 0 through 4, followed by a <i>sib-f2s-slot-number</i> value 0, 2, 4 or 6.</p> <p><b>lcc number</b>—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number. Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"><li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li><li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li><li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li><li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li></ul> <p><b>scc</b>—(TX Matrix router only) TX Matrix router (switch-card chassis) on a routing matrix.</p> <p><b>offline</b>—Take the SIB offline.</p>





**NOTE:** On PTX5000, when the last sib is taken offline, a message displays that if no SIB is brought online within 10 seconds, system will take action to address the fabric down condition. When all SIBs go offline on PTX5000, the system detects fabric black hole condition and if no SIBs come online within 10 seconds, automate fabric blackhole actions are taken to stop the traffic black hole condition. For details on black hole condition, see *Traffic Black Hole Caused by Fabric Degradation*.

**online**—Bring the SIB online.

**slot *slot-number***—SIB slot number. For the T320 router, replace *slot-number* with a value from 0 through 2. For the T640 router, TX Matrix router, and T1600 router in a routing matrix, replace *slot-number* with a value from 0 through 4.

**start-receiver *number***—(TX Matrix routers only) Start the SIB optical receiver. Replace *number* with a value from 0 through 3.

**stop-receiver *number***—(TX Matrix routers only) Stop the SIB optical receiver. Replace *number* with a value from 0 through 3.

**Required Privilege Level** maintenance

**Related Documentation**

- [show chassis sibs on page 803](#)
- [show chassis environment sib on page 393](#)
- *Configuring the Junos OS to Upgrade and Downgrade Switch Interface Boards on a TX Matrix Router*
- *M320 SIB Description*

**List of Sample Output** [request chassis sib on page 221](#)  
[request chassis sib on page 221](#)

**Output Fields** When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### request chassis sib

```
user@host> request chassis sib slot 0 online
Online initiated, use "show chassis sibs" to verify
```

### request chassis sib

```
user@host> request chassis sib f13 slot 0 offline
Offline initiated, use "show chassis sibs" to verify
```

## request chassis sib train-link-transmit slot

---

<b>Syntax</b>	<code>request chassis sib train-link-transmit slot <i>LCC-SIB-ST-SIB-L-slot-num</i></code>
<b>Syntax (TX Matrix Plus Routing Platform)</b>	<code>request chassis sib train-link-receive slot <i>LCC-SIB-ST-SIB-L-slot-num</i></code>
<b>Release Information</b>	Command introduced in Junos OS Release 10.1.
<b>Description</b>	(T1600 Router (LCC), T4000 (LCC) and TX Matrix Plus router only) Control the transmission link of the specified Switch Interface Board (SIB) of the LCC.
<b>Options</b>	<code>slot <i>LCC-SIB-ST-SIB-L-slot-num</i></code> — LCC SIB slot number. Replace it with a value from 0 through 4.
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">request chassis sib train-link-receive slot on page 223</a></li><li>• <i>Configuring the Junos OS to Upgrade the T1600 Router Chassis to LCC0 of a TX Matrix Plus Routing Platform</i></li></ul>
<b>List of Sample Output</b>	<a href="#">request chassis sib train-link-transmit slot on page 222</a>
<b>Output Fields</b>	When you enter this command, the LCC is ready to transmit traffic to the SFC.

### Sample Output

#### request chassis sib train-link-transmit slot

```
user@host> request chassis sib train-link-transmit slot 0
```

## request chassis sib train-link-receive slot

---

<b>Syntax</b>	<code>request chassis sib train-link-receive slot <i>LCC-SIB-ST-SIB-L-slot-num</i></code>
<b>Release Information</b>	Command introduced in Junos OS Release 10.1.
<b>Description</b>	(T1600 Router (LCC), T4000 Router (LCC), and TX Matrix Plus router only) Control the receiving link of the specified Switch Interface Board (SIB) of the LCC.
<b>Options</b>	<code>slot <i>LCC-SIB-ST-SIB-L-slot-num</i></code> — LCC SIB slot number. Replace it with a value from 0 through 4.
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">request chassis sib train-link-transmit slot on page 222</a></li> <li>• <i>Configuring the Junos OS to Upgrade the T1600 Router Chassis to LCC0 of a TX Matrix Plus Routing Platform</i></li> </ul>
<b>List of Sample Output</b>	<a href="#">request chassis sib train-link-receive slot on page 223</a>
<b>Output Fields</b>	When you enter this command, the LCC is ready to receive traffic from the SFC.

### Sample Output

#### request chassis sib train-link-receive slot

```
user@host> request chassis sib train-link-receive slot 0
```

## request chassis sib f13 train-link-transmit slot

---

<b>Syntax</b>	<code>request chassis sib f13 train-link-transmit slot <i>SFC-SIB-F13-slot-num</i></code>
<b>Release Information</b>	Command introduced in Junos OS Release 10.1.
<b>Description</b>	(TX Matrix Plus router only) Control the transmission link of the specified Switch Interface Board (SIB) of the SFC.
<b>Options</b>	<b>slot</b> <i>SFC-SIB-F13-slot-num</i> —SFC SIB slot number. Replace it with 0, 3, 6, 8 or 11.
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">request chassis sib f13 train-link-receive slot on page 225</a></li><li>• <i>Configuring the Junos OS to Upgrade the T1600 Router Chassis to LCC0 of a TX Matrix Plus Routing Platform</i></li></ul>
<b>List of Sample Output</b>	<a href="#">request chassis sib f13 train-link-transmit slot on page 224</a>
<b>Output Fields</b>	When you enter this command, the SFC is ready to transmit traffic to the T1600 or T4000 router (LCC).

### Sample Output

#### request chassis sib f13 train-link-transmit slot

```
user@host> request chassis sib f13 train-link-transmit slot 0
```

## request chassis sib f13 train-link-receive slot

<b>Syntax</b>	request chassis sib f13 train-link-receive slot <i>SFC-SIB-F13-slot-num</i>
<b>Syntax (TX Matrix Plus Router)</b>	request chassis sib f13 train-link-receive slot <i>SFC-SIB-F13-slot-num</i>
<b>Release Information</b>	Command introduced in Junos OS Release 10.1.
<b>Description</b>	(TX Matrix Plus router only) Control the receiving link of the specified Switch Interface Board (SIB) of the SFC.
<b>Options</b>	slot <i>SFC-SIB-F13-slot-num</i> — SFC SIB slot number. Replace it with 0, 3, 6, 8 or 11.
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">request chassis sib f13 train-link-transmit slot on page 224</a></li> <li>• <i>Configuring the Junos OS to Upgrade the T1600 Router Chassis to LCC0 of a TX Matrix Plus Routing Platform</i></li> </ul>
<b>List of Sample Output</b>	<a href="#">request chassis sib f13 train-link-receive slot on page 225</a>
<b>Output Fields</b>	When you enter this command, the SFC is ready to receive traffic from the T1600 or T4000 router (LCC).

## Sample Output

### request chassis sib f13 train-link-receive slot

```
user@host> request chassis sib f13 train-link-receive slot 0
```

## request chassis spmb restart

---

<b>Syntax</b>	request chassis spmb restart slot <i>slot-number</i>
<b>Syntax (TX Matrix Router)</b>	request chassis spmb restart ( <i>lcc number</i>   <i>scc</i> ) slot <i>slot-number</i>
<b>Syntax (TX Matrix Plus Router)</b>	request chassis spmb restart ( <i>lcc number</i>   <i>sfc number</i> ) slot <i>slot-number</i>
<b>Release Information</b>	<p>Command introduced before Junos OS Release 7.4.</p> <p><b>sfc</b> option for the TX Matrix Plus router introduced in Junos OS Release 9.6.</p> <p>Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.</p>
<b>Description</b>	Restart the specified Switch Processor Mezzanine Board (SPMB) on the Control Board (CB).
<b>Options</b>	<p><b>lcc <i>number</i></b>—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.</p> <p>Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"><li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li><li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li><li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li><li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li></ul> <p><b>scc</b>—(TX Matrix routers only) TX Matrix router (switch-card chassis) in the routing matrix.</p> <p><b>sfc <i>number</i></b>—(TX Matrix Plus routers only) The switch-fabric chassis number of the TX Matrix Plus router. Replace the <i>number</i> variable with a value 0.</p> <p><b>slot <i>slot-number</i></b>—The SPMB slot number. Replace <i>slot-number</i> with 0 or 1.</p>
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show chassis spmb on page 814</a></li><li>• <a href="#">show chassis spmb sibs on page 824</a></li></ul>
<b>List of Sample Output</b>	<p><a href="#">request chassis spmb restart on page 227</a></p> <p><a href="#">request chassis spmb restart (MX2010 Router) on page 227</a></p>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

request chassis spmb restart

```
user@host> request chassis spmb restart slot 0
```

request chassis spmb restart (MX2010 Router)

```
user@host> request chassis spmb restart slot 0
Restart initiated, use "show chassis spmb" to verify
```

## set chassis display message

---

<b>Syntax</b>	set chassis display message " <i>message</i> " <permanent>
<b>Syntax (TX Matrix Router)</b>	set chassis display message " <i>message</i> " ( <i>lcc number</i>   <i>scc</i> ) <permanent>
<b>Syntax (TX Matrix Plus Router)</b>	set chassis display message " <i>message</i> " ( <i>fpc-slot slot-number</i>   <i>lcc number</i>   <i>sfc number</i> ) <permanent>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> option for TX Matrix Plus router introduced in Junos OS Release 9.6.
<b>Description</b>	Display or stop a text message on the craft interface display, which is on the front of the router, or on the LCD panel display on the switch. The craft interface alternates the display of text messages with standard craft interface messages three times, switching between messages every 60 seconds.



**NOTE:** On T Series routers, when this command is executed with the **permanent** option, the display of the text message alternates with that of the standard craft interface message continuously every 60 seconds.

By default, on both the router and the switch, the text message is displayed for 5 minutes. The craft interface display has four 20-character lines. The LCD panel display has two 16-character lines, and text messages appear only on the second line.

**Options**    **"message"**—Message to display. On the craft interface display, if the message is longer than 20 characters, it wraps onto the next line. If a word does not fit on one line, the entire word moves down to the next line. Any portion of the message that does not fit on the display is truncated. An empty pair of quotation marks ("" ) deletes the text message from the craft interface display. On the LCD panel display, the message is limited to 16 characters.

**fpc-slot slot-number**—(TX Matrix Plus routers and EX4200 and QFX Series only) On the router or switch, display the text message on the craft interface for a specific Flexible PIC Concentrator (FPC). Replace **slot-number** with a value from 0 through 31. On the switch, display the text message for a specific member of a Virtual Chassis, where **fpc-slot slot-number** corresponds to the member ID. Replace **slot-number** with a value from 0 through 9. On the QFX Series, the **slot-number** is always 0. On a TX Matrix Plus router with 3D SIBs replace **slot-number** with a value from 0 through 63.

**lcc number**—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.



Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**permanent**—(Optional) Display a text message on the craft interface display or LCD panel display permanently.

**scc**—(TX Matrix routers only) Display the text message on the craft interface display of the TX Matrix router (switch-card chassis).

**sfc number**—(TX Matrix Plus routers only) Display the text message on the craft interface display of the TX Matrix Plus router (or switch-fabric chassis).

**Required Privilege Level**

clear

**Related Documentation**

- *Configuring the LCD Panel on EX Series Switches (CLI Procedure)*
- [clear chassis display message on page 190](#)
- [show chassis craft-interface on page 245](#)
- *Understanding the Implementation of System Log Messages on the QFabric System*

**List of Sample Output**

[set chassis display message \(Creating\) on page 229](#)  
[set chassis display message \(Deleting\) on page 230](#)

**Output Fields**

See [show chassis craft-interface](#) for an explanation of output fields.

## Sample Output

### set chassis display message (Creating)

The following example shows how to set the display message and verify the result:

```
user@host> set chassis display message "NOC contact Dusty (888) 555-1234"
message sent

user@host> show chassis craft-interface
Red alarm:      LED off, relay off
Yellow alarm:   LED off, relay off
Host OK LED:    On
Host fail LED:  Off
FPCs           0  1  2  3  4  5  6  7
-----
Green  ..  *..  *  *.
Red    .....

```

LCD screen:

```
+-----+
|NOC contact Dusty |
|(888) 555-1234    |
+-----+
```

### set chassis display message (Deleting)

The following example shows how to delete the display message and verify that the message is removed:

```
user@host> set chassis display message ""
message sent
```

```
user@host> show chassis craft-interface
Red alarm:      LED off, relay off
Yellow alarm:   LED off, relay off
Host OK LED:    On
Host fail LED:  Off
FPCs           0  1  2  3  4  5  6  7
```

```
-----
Green  ..  *..  *  *.
Red    .....
```

LCD screen:

```
+-----+
|host
|Up: 0+17:05:47
|
|Temperature OK
+-----+
```

## show chassis alarms

<b>Syntax</b>	show chassis alarms
<b>Syntax (TX Matrix Routers)</b>	show chassis alarms <lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Routers)</b>	show chassis alarms <lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (MX Series Routers)</b>	show chassis alarms <all-members> <local> <member <i>member-id</i> >
<b>Syntax (MX104, MX2010, and MX2020 3D Universal Edge Routers)</b>	show chassis alarms
<b>Syntax (QFX Series)</b>	show chassis alarms <interconnect-device <i>name</i> > <node-device <i>name</i> >
<b>Syntax (PTX Series Packet Transport Routers)</b>	show chassis alarms
<b>Syntax (ACX Series Universal Access Routers)</b>	show chassis alarms
<b>Release Information</b>	<p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p><b>sfc</b> option for the TX Matrix Plus router introduced 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 PTX Series Packet Transport Routers.</p> <p>Command introduced in Junos OS Release 12.2 for the ACX Series Universal Access Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 13.2 for MX104 3D Universal Edge Routers.</p>
<b>Description</b>	Display information about the conditions that have been configured to trigger alarms.
<b>Options</b>	<p><b>none</b>—Display information about the conditions that have been configured to trigger alarms.</p> <p><b>all-members</b>—(MX Series routers only) (Optional) Display information about alarm conditions for all the member routers of the Virtual Chassis configuration.</p>

**interconnect-device *name***—(QFabric systems only) (Optional) Display information about alarm conditions for the Interconnect device.

**lcc *number***—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(MX Series routers only) (Optional) Display information about alarm conditions for the local Virtual Chassis member.

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

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

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

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

**Additional Information** You cannot clear the alarms for chassis components. Instead, you must remedy the cause of the alarm. When a chassis alarm LED is lit, it indicates that you are running the router or switch in a manner that we do not recommend.

On routers, you can manually silence external devices connected to the alarm relay contacts by pressing the alarm cutoff button, located on the craft interface. Silencing the device does not remove the alarm messages from the display (if present on the router) or extinguish the alarm LEDs. In addition, new alarms that occur after you silence an external device reactivate the external device.

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.

You may often see the following error messages, in which only the error code is shown and no other information is provided:

```
Apr 12 08:04:10 send: red alarm set, device FPC 6, reason FPC 6 Major Errors - Error code:
257
```

```
Apr 12 08:04:19 send: red alarm set, device FPC 1, reason FPC 1 Major Errors - Error code:
559
```

To understand what CM\_ALARM error codes mean, you need to first identify the structure of the CM Alarm codes. A CM\_ALARM code has the following structure:

Bits:	Error type:
1-31	Major (1)
0	Minor (0)

According to the table above, the LSB (bit 0) identifies the **Error Type** (major alarm, if the bit is set and minor alarm if the bit is unset). The rest of the bits (1 - 31) identify the actual error code.

Take an example of the following error code, which was logged on a T1600:

```
Apr 12 08:04:10 send: red alarm set, device FPC 1, reason FPC 1 Major Errors - Error code:
559
```

First, you have to convert 559 to binary; that is **1000101111**. The LSB in this case is 1, which means that this is a major alarm. After removing the LSB, you are left with **100010111**, which is equal to 279 in decimal. This is the actual error code, its meaning can be found from the following list:

Chip Type: L Chip	Code
CMALARM_LCHIP_LOUT_DESRD_PARITY_ERR	1
CMALARM_LCHIP_LOUT_DESRD_UNINIT_ERR	2
CMALARM_LCHIP_LOUT_DESRD_ILLEGALLINK_ERR	3
CMALARM_LCHIP_LOUT_DESRD_ILLEGALSIZERR	4
CMALARM_LCHIP_LOUT_HDRF_TOERR_ERR	5
CMALARM_LCHIP_LOUT_HDRF_PARITY_ERR	6
CMALARM_LCHIP_LOUT_HDRF_UCERR_ERR	7
CMALARM_LCHIP_LOUT_NLIF_CRCDROP_ERR	8

CMALARM_LCHIP_LOUT_NLIF_CRCERR_ERR	9
CMALARM_LCHIP_UCODE_TIMEOUT_ERR	10
CMALARM_LCHIP_LIN_SRCTL_ACCT_DROP_ERR	11
CMALARM_LCHIP_LIN_SRCTL_ACCT_ADDR_SIZE_ERR	12
CMALARM_LCHIP_SRAM_PARITY_ERR	13
CMALARM_LCHIP_UCODE_OVFLW_ERR	14
CMALARM_LCHIP_LOUT_HDRF_MTU_ERR	15
<hr/>	
<b>Chip Type: M Chip</b>	<b>Code</b>
CMALARM_MCHIP_ECC_UNCORRECT_ERR	128
<hr/>	
<b>Chip Type: N Chip</b>	<b>Code</b>
CMALARM_NCHIP_RDDMA_JBUS_TIMEOUT_ERR	256
CMALARM_NCHIP_RDDMA_FIFO_OVFLW_ERR	257
CMALARM_NCHIP_RDDMA_FIFO_UNFLW_ERR	258
CMALARM_NCHIP_RDDMA_SIZE_ERR	259
CMALARM_NCHIP_RDDMA_JBUS_CRC_ERR	260
CMALARM_NCHIP_WRDMA_PKTR_ERR	261
CMALARM_NCHIP_WRDMA_PKT_CRC_ERR	262
CMALARM_NCHIP_WRDMA_JBUS_TIMEOUT_ERR	263
CMALARM_NCHIP_WRDMA_FIFO_OVFLW_ERR	264
CMALARM_NCHIP_WRDMA_FIFO_UNFLW_ERR	265
CMALARM_NCHIP_WRDMA_PKT_LEN_ERR	266
CMALARM_NCHIP_WRDMA_JBUS_CRC_ERR	267
CMALARM_NCHIP_PKTR_DMA_AGE_ERR	268
CMALARM_NCHIP_PKTR_ICELLSIG_ERR	269
CMALARM_NCHIP_PKTR_FTTL_ERR	270

CMALARM_NCHIP_RODR_OFFSET_OVFLW_ERR	271
CMALARM_NCHIP_PKTR_TMO_CELL_ERR	272
CMALARM_NCHIP_PKTR_TMO_OUTRANGE_ERR	273
CMALARM_NCHIP_PKTR_MD_REQUEST_Q_OVFLW_ERR	274
CMALARM_NCHIP_PKTR_DMA_BUFFER_OVFLW_ERR	275
CMALARM_NCHIP_PKTR_GRT_OVFLW_ERR	276
CMALARM_NCHIP_FRQ_ERR	277
CMALARM_NCHIP_RODR_IN_Q_OVFLW_ERR	278
CMALARM_NCHIP_DBUF_CRC_ERR	279
<hr/>	
<b>Chip Type: R Chip</b>	<b>Code</b>
CMALARM_RCHIP_SRAM_PARITY_ERR	512
<hr/>	
<b>Chip Type: R Chip</b>	<b>Code</b>
CMALARM_ICHIP_WO_DESRD_ID_ERR	601
CMALARM_ICHIP_WO_DESRD_DATA_ERR	602
CMALARM_ICHIP_WO_DESRD_OFLOW_ERR	603
CMALARM_ICHIP_WO_HDRF_UCERR_ERR	604
CMALARM_ICHIP_WO_HDRF_MTUERR_ERR	605
CMALARM_ICHIP_WO_HDRF_PARITY_ERR	606
CMALARM_ICHIP_WO_HDRF_TOERR_ERR	607
CMALARM_ICHIP_WO_IP_CRC_ERR	608
CMALARM_ICHIP_WO_IP_INTER_ERR	609
CMALARM_ICHIP_WI_WAN_TIMEOUT_ERR	625
CMALARM_ICHIP_WI_FAB_TIMEOUT_ERR	626
CMALARM_ICHIP_RLDRAM_BIST_ERR	630
CMALARM_ICHIP_SDRAM_BIST_ERR	631

CMALARM_ICHIP_RLDRAM_PARITY_ERR	632
CMALARM_ICHIP_SDRAM_UNCORRECT_ERR	633
CMALARM_ICHIP_SDRAM_CORRECT_ERR	634
CMALARM_ICHIP_FUSE_DONE_ERR	635

According to the table above, the **279** error code corresponds to **CMALARM\_NCHIP\_DBUF\_CRC\_ERR**; this means that new CRC errors were seen on the NCHIP of this particular FPC, which is FPC as per the logs.

If you do not want to convert decimal to binary and vice versa, you may use the following shortcut:

For major alarms, the **Actual Error Code = (Error Code - 1)/2**, where **Error Code** is the code that you get in the log message. For example, if you get the following log:

Apr 12 08:04:10 send: red alarm set, device FPC 6, reason FPC 6 Major Errors - Error code: 257

Actual Error Code =  $(257-1)/2 = 128$ . Similarly, for minor alarms, Actual Error Code =  $(\text{Error Code})/2$

**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 237](#)
- [show chassis alarms \(No Alarms Active\) on page 237](#)
- [show chassis alarms \(Fan Tray\) on page 237](#)
- [show chassis alarms \(MX104 Router\) on page 237](#)
- [show chassis alarms \(MX2010 Router\) on page 237](#)
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**Output Fields** Table 9 on page 237 lists the output fields for the **show chassis alarms** command. Output fields are listed in the approximate order in which they appear.

**Table 9: 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: <b>Minor</b> or <b>Major</b> .
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 (MX104 Router)

```

user@host > show chassis alarms
1 alarms currently active
Alarm time          Class  Description
2013-06-05 14:43:31 IST Minor Backup RE Active

```

### show chassis alarms (MX2010 Router)

```

user@host> show chassis alarms

```

```
7 alarms currently active
Alarm time      Class Description
2012-08-07 00:46:06 PDT Major Fan Tray 2 Failure
2012-08-06 18:24:36 PDT Minor Redundant feed missing for PSM 6
2012-08-06 07:41:04 PDT Minor Redundant feed missing for PSM 8
2012-08-04 02:42:06 PDT Minor Redundant feed missing for PSM 5
2012-08-03 21:14:24 PDT Minor Loss of communication with Backup RE
2012-08-03 12:26:03 PDT Minor Redundant feed missing for PSM 4
2012-08-03 10:40:18 PDT Minor Redundant feed missing for PSM 7
```

#### show chassis alarms (MX2020 Router)

```
user@host> show chassis alarms
1 alarms currently active
Alarm time Class Description
2012-10-03 12:14:59 PDT Minor Plane 0 not online
```

#### show chassis alarms (T4000 Router)

```
user@host> show chassis alarms
9 alarms currently active
Alarm time      Class Description
2007-06-02 01:41:10 UTC Minor RE 0 Not Supported
2007-06-02 01:41:10 UTC Minor CB 0 Not Supported
2007-06-02 01:41:10 UTC Minor Mixed Master and Backup RE types
2007-05-30 19:37:33 UTC Major SPMB 1 not online
2007-05-30 19:37:29 UTC Minor Front Bottom Fan Tray Absent
2007-05-30 19:37:13 UTC Major PEM 1 Input Failure
2007-05-30 19:37:13 UTC Major PEM 0 Not OK
2007-05-30 19:37:03 UTC Major PEM 0 Improper for Platform
2007-05-30 19:37:03 UTC Minor Backup RE Active
```

#### show chassis alarms (Unreachable Destinations Present on a T Series Router)

```
user@host> show chassis alarms
10 alarms currently active
Alarm time      Class Description
2011-08-30 18:43:53 PDT Major FPC 7 has unreachable destinations
2011-08-30 18:43:53 PDT Major FPC 5 has unreachable destinations
2011-08-30 18:43:52 PDT Major FPC 3 has unreachable destinations
2011-08-30 18:43:52 PDT Major FPC 2 has unreachable destinations
2011-08-30 18:43:52 PDT Minor SIB 0 Not Online
2011-08-30 18:43:33 PDT Minor SIB 4 Not Online
2011-08-30 18:43:28 PDT Minor SIB 3 Not Online
2011-08-30 18:43:05 PDT Minor SIB 2 Not Online
2011-08-30 18:43:28 PDT Minor SIB 1 Not Online
2011-08-30 18:43:05 PDT Major PEM 1 Not Ok
```

#### show chassis alarms (FPC Offline Due to Unreachable Destinations on a T Series Router)

```
user@host> show chassis alarms
10 alarms currently active
Alarm time      Class Description
2011-08-30 18:43:53 PDT Major FPC 7 offline due to unreachable destinations
2011-08-30 18:43:53 PDT Major FPC 5 offline due to unreachable destinations
2011-08-30 18:43:52 PDT Major FPC 3 offline due to unreachable destinations
2011-08-30 18:43:52 PDT Major FPC 2 offline due to unreachable destinations
2011-08-30 18:43:52 PDT Minor SIB 0 Not Online
2011-08-30 18:43:33 PDT Minor SIB 4 Not Online
2011-08-30 18:43:28 PDT Minor SIB 3 Not Online
2011-08-30 18:43:05 PDT Minor SIB 2 Not Online
```

```

2011-08-30 18:43:28 PDT Minor SIB 1 Not Online
2011-08-30 18:43:05 PDT Major PEM 1 Not Ok

```

#### show chassis alarms (SCG Absent on a T Series Router)

```

user@host> show chassis alarms
4 alarms currently active
Alarm time          Class Description
2011-01-23 21:42:46 PST Major SCG 0 NO EXT CLK MEAS-BKUP SCG ABS

```

#### show chassis alarms (Alarms Active on a TX Matrix Router)

```

user@host> show chassis alarms
scc-re0:
-----
8 alarms currently active
Alarm time          Class Description
2004-08-05 18:43:53 PDT Minor LCC 0 Minor Errors
2004-08-05 18:43:53 PDT Minor SIB 3 Not Online
2004-08-05 18:43:52 PDT Major SIB 2 Absent
2004-08-05 18:43:52 PDT Major SIB 1 Absent
2004-08-05 18:43:52 PDT Major SIB 0 Absent
2004-08-05 18:43:33 PDT Major LCC 2 Major Errors
2004-08-05 18:43:28 PDT Major LCC 0 Major Errors
2004-08-05 18:43:05 PDT Minor LCC 2 Minor Errors
lcc0-re0:
-----
5 alarms currently active
Alarm time          Class Description
2004-08-05 18:43:53 PDT Minor SIB 3 Not Online
2004-08-05 18:43:49 PDT Major SIB 2 Absent
2004-08-05 18:43:49 PDT Major SIB 1 Absent
2004-08-05 18:43:49 PDT Major SIB 0 Absent
2004-08-05 18:43:28 PDT Major PEM 0 Not OK
lcc2-re0:
-----
5 alarms currently active
Alarm time          Class Description
2004-08-05 18:43:35 PDT Minor SIB 3 Not Online
2004-08-05 18:43:33 PDT Major SIB 2 Absent
2004-08-05 18:43:33 PDT Major SIB 1 Absent
2004-08-05 18:43:33 PDT Major SIB 0 Absent
2004-08-05 18:43:05 PDT Minor PEM 1 Absent

```

#### show chassis alarms (TX Matrix Plus router with 3D SIBs)

```

user@host> show chassis alarms
sfc0-re0:
-----
Alarm time          Class Description
2012-07-19 10:07:32 UTC Minor SIB F13 0 Temperature Warm
2012-07-19 10:07:07 UTC Minor SIB F2S 0/6 Temperature Warm
2012-07-19 10:07:07 UTC Minor SIB F2S 0/4 Temperature Warm
2012-07-19 10:07:07 UTC Minor SIB F2S 0/2 Temperature Warm
2012-07-19 10:07:07 UTC Minor SIB F2S 0/0 Temperature Warm
2012-07-19 10:07:07 UTC Minor SIB F13 6 Temperature Warm
2012-07-19 10:06:42 UTC Minor SIB F2S 2/6 Temperature Warm
2012-07-19 10:06:42 UTC Minor SIB F2S 2/4 Temperature Warm
2012-07-19 10:06:42 UTC Minor SIB F2S 2/2 Temperature Warm
2012-07-19 10:06:42 UTC Minor SIB F2S 2/0 Temperature Warm
2012-07-19 10:06:42 UTC Minor SIB F13 3 Temperature Warm
2012-07-19 10:06:17 UTC Minor Temperature Warm

```

```

2012-07-19 10:06:17 UTC Minor SIB F2S 1/6 Temperature Warm
2012-07-19 10:06:17 UTC Minor SIB F2S 1/4 Temperature Warm
2012-07-19 10:06:17 UTC Minor SIB F2S 1/2 Temperature Warm
2012-07-19 10:06:17 UTC Minor SIB F2S 1/0 Temperature Warm
1cc0-re0:

```

```

-----
Alarm time          Class Description
2012-07-19 10:04:13 UTC Minor Temperature Warm
2012-07-19 10:04:13 UTC Minor SIB 2 Temperature Warm
2012-07-19 10:04:13 UTC Minor SIB 1 Temperature Warm
2012-07-19 10:04:13 UTC Minor SIB 0 Temperature Warm

```

```
1cc2-re0:
```

```

-----
Alarm time          Class Description
2012-07-19 10:04:18 UTC Minor Temperature Warm
2012-07-19 10:04:18 UTC Minor SIB 2 Temperature Warm
2012-07-19 10:04:18 UTC Minor SIB 1 Temperature Warm
2012-07-19 10:04:18 UTC Minor SIB 0 Temperature Warm

```

### show chassis alarms (Alarms on a T4000 Router After the enhanced-mode Statement is Enabled)

To enable improved virtual private LAN service (VPLS) MAC address learning on T4000 routers, you must include the **enhanced-mode** statement at the **[edit chassis network-services]** hierarchy level and reboot the router. When router reboots, only the T4000 Type 5 FPCs are required to be present on the router. If there are any other FPCs (apart from T4000 Type 5 FPCs) on the T4000 router, such FPCs become offline, and FPC misconfiguration alarms are generated. The **show chassis alarm** command output displays FPC misconfiguration (**FPC *fpc-slot* misconfig**) as the reason for the generation of the alarms.

```

user@host> show chassis alarms
2 alarms currently active
Alarm time          Class Description
2011-10-22 10:10:47 PDT Major FPC 1 misconfig
2011-10-22 10:10:46 PDT Major FPC 0 misconfig

```

### show chassis alarms (Backup Routing Engine)

```

user@host> show chassis alarms
2 alarms are currently active
Alarm time          Class Description
2005-04-07 10:12:22 PDT Minor Host 1 Boot from alternate media
2005-04-07 10:11:54 PDT Major Host 1 compact-flash missing in Boot List

```

### show chassis alarms (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 System)

```

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 System)

```

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 Router)

```

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 alarms (Alarms Active on an ACX2000 Universal Access Router)**

```
user@host> show chassis alarms
7 alarms currently active
Alarm time          Class  Description
2012-05-22 11:19:09 UTC Major  xe-0/3/1: Link down
2012-05-22 11:19:09 UTC Major  xe-0/3/0: Link down
2012-05-22 11:19:09 UTC Major  ge-0/1/7: Link down
2012-05-22 11:19:09 UTC Major  ge-0/1/6: Link down
2012-05-22 11:19:09 UTC Major  ge-0/1/3: Link down
2012-05-22 11:19:09 UTC Major  ge-0/1/2: Link down
2012-05-22 11:19:09 UTC Major  ge-0/1/1: Link down
```

## show chassis cip

<b>Syntax (TX Matrix Plus Router)</b>	show chassis cip
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	(TX Matrix Plus routers only) Display environmental information about the Connector Interface Panel (CIP) that provides Ethernet Control Plane connectivity to line-card chassis (LCCs), switch fabric chassis, and other devices.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">request chassis cip on page 200</a></li> <li>• <i>Installing a T1600 CIP</i></li> <li>• <i>Installing a T640 CIP</i></li> <li>• <i>Installing a TX-CIP</i></li> <li>• <i>Installing an M320 CIP</i></li> <li>• <i>Installing an M320 CIP</i></li> <li>• <i>Installing the T1600 CIP</i></li> <li>• <i>Installing the T320 CIP</i></li> <li>• <i>CIP Overview</i></li> </ul>
<b>Output Fields</b>	<a href="#">Table 10 on page 243</a> lists the output fields for the <b>show chassis cip</b> command. Output fields are listed in the approximate order in which they appear.

**Table 10: show chassis cip Output Fields**

Field Name	Field Description
<b>Eswitch</b>	Ethernet switch used to connect to the LCC or to a JCS1200: 0 or 1.
<b>Port</b>	<p>Physical port number of the Ethernet switch:</p> <ul style="list-style-type: none"> <li>• Port numbers: 4 to 8 on Ethernet switch 0 can be used to connect up to four (reserved for future use) other SFCs or optional JCS1200s.</li> </ul> <p><b>NOTE:</b> The current configuration of the routing matrix based on a TX Matrix Plus router supports only one SFC.</p> <ul style="list-style-type: none"> <li>• Port numbers 0 to 15 on Ethernet switch 1 can be used to connect up to 16 LCCs.</li> </ul> <p><b>NOTE:</b> The current configuration of a routing matrix based on a TX Matrix Plus router supports only up to eight LCCs. You can connect LCCs to the port numbers corresponding to LCC0 to LCC7 (0 to 15) on the Ethernet switch 1.</p>

Table 10: show chassis cip Output Fields (*continued*)

Field Name	Field Description
Type	Type of CIP: <ul style="list-style-type: none"> <li><b>XE</b>—Ethernet switch 0 ports used for connections to the SFC control plane or other devices such as JCS1200.</li> <li><b>GE</b>—Ethernet switch 1 ports used for connections to the LCC control plane.</li> </ul>
Connected-to	Show control plane connection to a specific LCC or SFC.
Link	State of the connection to an LCC control plane, SFC control plane, or other devices: <b>Up</b> or <b>Down</b> .
Speed	Ethernet link speed.
Duplex	Type of Ethernet link: <b>Full</b> or <b>Half Duplex</b> .
Auto-neg	Status of autonegotiation for the CIP connection to the LCC, SFC, or other devices: <b>On</b> or <b>Off</b> .

**show chassis cip (TX Matrix Plus Router)**

```

user@host> show chassis cip
sfc0-cip0
Eswitch Port Type Connected-to Link Speed Duplex Auto-Neg
0 4 XE SFC1 Down 0 Full Off
0 5 XE SFC0 Down 0 Full Off
0 6 XE SFC3 Down 0 Full Off
0 7 XE SFC2 Down 0 Full Off
0 8 XE SFC4 Down 0 Full Off
1 0 GE LCC0 Up 1000Mbps Full On
1 1 GE LCC8 Down 0 Half On
1 2 GE LCC1 Up 1000Mbps Full On
1 3 GE LCC9 Down 0 Half On
1 4 GE LCC2 Up 1000Mbps Full On
1 5 GE LCC10 Down 0 Half On
1 6 GE LCC3 Up 1000Mbps Full On
1 7 GE LCC11 Down 0 Half On
1 8 GE LCC4 Down 0 Half On
1 9 GE LCC12 Down 0 Half On
1 10 GE LCC5 Down 0 Half On
1 11 GE LCC13 Down 0 Half On
1 12 GE LCC6 Down 0 Half On
1 13 GE LCC14 Down 0 Half On
1 14 GE LCC7 Down 0 Half On
1 15 GE LCC15 Down 0 Half On
1 16 GE GE17 Up 1000Mbps Full On
1 17 GE GE16 Down 0 Half On

```



## show chassis craft-interface

<b>Syntax</b>	show chassis craft-interface
<b>Syntax (MX Series Routers)</b>	show chassis craft-interface <all-members> <local> <member <i>member-id</i> >
<b>Syntax (MX104, MX2010, and MX2020 3D Universal Edge Routers)</b>	show chassis craft-interface
<b>Syntax (TX Matrix Routers)</b>	show chassis craft-interface <lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Routers)</b>	show chassis craft-interface <lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (ACX Series Universal Access Routers)</b>	show chassis craft-interface
<b>Release Information</b>	<p>Command introduced before Junos OS Release 7.4.</p> <p><b>sfc</b> option for the TX Matrix Plus router introduced in Junos OS Release 9.6.</p> <p>Command introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 13.2 for MX104 3D Universal Edge Routers.</p>
<b>Description</b>	For routers or switches that have a display on the craft interface, show the messages that are currently displayed. On all routers except for the M20 router, you must enter this command on the master Routing Engine.
<b>Options</b>	<p><b>none</b>—(TX Matrix, TX Matrix Plus routers, MX104, MX2010, and MX2020 routers, and ACX Series routers only) On a TX Matrix router, show messages that are currently displayed on the craft interface on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, show messages that are currently displayed on the craft interface on the TX Matrix Plus router and its attached routers.</p> <p><b>all-members</b>—(MX Series routers only) (Optional) Display information currently on the craft interface for all members of the Virtual Chassis configuration.</p> <p><b>lcc <i>number</i></b>—(TX Matrix, TX Matrix Plus routers only) (Optional) On a TX Matrix router, show messages that are currently displayed on the craft interface for a specified T640 router (line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, show messages that are currently displayed on the craft interface for a specified router (line-card chassis) that is connected to the TX Matrix Plus router.</p>

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(MX Series routers only) (Optional) Display information currently on the craft interface for the local Virtual Chassis member.

**member *member-id***—(MX Series routers only) (Optional) Display information currently on the craft interface for the specified member of the Virtual Chassis configuration. For an MX Series Virtual Chassis, replace *member-id* with a value of 0 or 1.

**scc**—(TX Matrix router only) (Optional) Show messages that are currently displayed on the craft interface for the TX Matrix router (switch-card chassis).

**sfc *number***—(TX Matrix Plus router only) (Optional) Show messages that are currently displayed on the craft interface for the respective TX Matrix Plus router (switch-fabric chassis). Replace *number* variable with 0.

**Required Privilege Level** view

**Related Documentation**

- [clear chassis display message on page 190](#)
- [set chassis display message on page 228](#)

**List of Sample Output**

- [show chassis craft-interface \(M20 Router\) on page 248](#)
- [show chassis craft-interface \(M40 Router\) on page 248](#)
- [show chassis craft-interface \(M120 Router\) on page 249](#)
- [show chassis craft-interface \(M160 Router\) on page 249](#)
- [show chassis craft-interface \(MX104 Router\) on page 250](#)
- [show chassis craft-interface \(MX2010 Router\) on page 251](#)
- [show chassis craft-interface \(MX2020 Router\) on page 251](#)
- [show chassis craft-interface \(T4000 Router\) on page 252](#)
- [show chassis craft-interface \(TX Matrix Routing Matrix\) on page 253](#)
- [show chassis craft-interface \(TX Matrix Plus Routing Matrix\) on page 255](#)
- [show chassis craft-interface \(TX Matrix Plus router with 3D SIBs\) on page 258](#)
- [show chassis craft-interface \(ACX2000 Universal Access Router\) on page 260](#)

**Output Fields** [Table 11 on page 247](#) lists the output fields for the **show chassis craft-interface** command. Output fields are listed in the approximate order in which they appear.

Table 11: show chassis craft-interface Output Fields

Field Name	Field Description
LCD screen or FPM Display Contents	<p>Contents of the Front Panel Module display:</p> <ul style="list-style-type: none"> <li>• <b>router-name</b>—Name of the router.</li> <li>• <b>Up</b>—How long the router has been operational, in days, hours, minutes, and seconds.</li> <li>• <b>message</b>—Information about the router traffic load, the power supply status, the fan status, and the temperature status. The display of this information changes every 2 seconds. If a text message has been created with the <b>set chassis display</b> command, this message appears on all four lines of the craft interface display. The display alternates between the text message and the standard system status messages every 2 seconds.</li> </ul>
SFC Front Panel Switch Settings	<p>(TX Matrix Plus Routers)—Display the SFC front panel switch settings:</p> <p><b>SFC Chassis Number</b> and <b>Config Size</b> are settings on physical switches located on the left side of the craft interface of the TX Matrix Plus router.</p> <ul style="list-style-type: none"> <li>• <b>SFC Chassis Number</b>—This field always displays the value <b>00</b>.</li> <li>• <b>Config Size</b>—The value of this field is <b>0</b> for the TX Matrix Plus router. The value of this field is <b>3</b> for TX Matrix Plus router with 3D SIBs.</li> </ul>
Front Panel System LEDs	(MX104, MX2010, and MX2020 Routers) Status of the Front Panel System LEDs. A dot (.) indicates the LED is not lit. An asterisk (*) indicates the LED is lit.
Front Panel Alarm Indicators	(MX104, MX2010, and MX2020 Routers) Status of the Front Panel Alarm indicators. A dot (.) indicates the relay is off. An asterisk (*) indicates the relay is active.
Input Relay	Status of the configured input relay ports—0 through 3. The mode is normally open or closed. The status is clear or raised.
Output Relay	Status of the configured output ports—0 or 1. The mode is normally open or closed. The status is clear or raised.
Front Panel FPC LEDs	(MX2010 and MX2020 Routers) Status of the Front Panel Flexible PIC Concentrator (FPC) LEDs. A dot (.) indicates the LED is not lit. An asterisk (*) indicates the LED is lit. On MX2010 routers, there are 10 (0-9) FPCs LEDs. On MX2020 routers, there are 20 (0-9 and 10-19) FPCs LEDs.
CB LEDs	Status of the Control Board (CB) LEDs. A dot (.) indicates the LED is not lit. An asterisk (*) indicates the LED is lit.
PS LEDs	(MX2010 and MX2020 Routers) Status of the Power Supply (PS) LEDs. A dot (.) indicates the LED is not lit. An asterisk (*) indicates the LED is lit. On MX2010 routers, there are 9 (0-8) PS LEDs. On MX2020 routers, there are 18 (0-8 and 9-17) PS LEDs.
PS Status	(MX104 Routers) Status of the Power Supply (PS). Green indicates that the power supply is functioning. Red indicates that the power supply is not functioning. A dot (.) indicates the LED is not lit. An asterisk (*) indicates the LED is lit.
FAN Tray LEDs	(MX2010 and MX2020 Routers) Status of the Fan Tray LEDs. A dot (.) indicates the LED is not lit. An asterisk (*) indicates the LED is lit.
Front Panel SFB LEDs	(MX2010 and MX2020 Routers) Status of the Front Panel Switch Fabric Boards (SFB) LEDs. A dot (.) indicates the LED is not lit. An asterisk (*) indicates the LED is lit.

Table 11: show chassis craft-interface Output Fields (*continued*)

Field Name	Field Description
<b>Front Panel Chassis Info</b>	(MX2010 and MX2020 Routers) Information about the chassis such as the chassis number and role. User can set the chassis number in multi-chassis configurations.
<b>MCS and SFM LEDs</b>	Status of the Miscellaneous Control Subsystem (MCS) and Switching and Forwarding Module (SFM) LEDs. A dot (.) indicates the LED is not lit. An asterisk (*) indicates the LED is lit. When neither a dot nor an asterisk is displayed, there is no board in that slot.
<b>SIB LEDs</b>	Status of the Switch Interface Board (SIB) LEDs. A dot (.) indicates the LED is not lit. An asterisk (*) indicates the LED is lit.
<b>SCG LEDs</b>	Status of the SONET Clock Generator (SCG) LEDs. A dot (.) indicates the LED is not lit. An asterisk (*) indicates the LED is lit.

## Sample Output

### show chassis craft-interface (M20 Router)

```

user@host> show chassis craft-interface
Red alarm:      LED off, relay off
Yellow alarm:   LED on, relay on
Host OK LED:    On
Host fail LED:  Off
FPCs           0  1  2  3
-----
Green  .  *  *.
Red    ....
LCD screen:
+-----+
| host   |
| 1 Alarm active |
| Y: FERF |
|       |
+-----+

```

### show chassis craft-interface (M40 Router)

```

user@host> show chassis craft-interface
Front Panel LCD Display: enabled
Red alarm:      LED off, relay off
Yellow alarm:   LED off, relay off
Host OK LED:    On
Host Fail LED:  Off
NICs           0  1  2  3  4  5  6  7
-----
Green  *.  *.  *.  *.
Red    .....
LCD Screen:
+-----+
| host   |
| Up: 27+18:52:37 |
|       |
+-----+

```

```
|52.649kpps Load      |
+-----+
```

### show chassis craft-interface (M120 Router)

```
user@host> show chassis craft-interface
Front Panel System LEDs:
Routing Engine    0    1
-----
OK                *    .
Fail              .    .
Master            *    .

Front Panel Alarm Indicators:
-----
Red LED          *
Yellow LED       .
Major relay       *
Minor relay       .

Front Panel FPC LEDs:
FPC    0    1    2    3    4    5
-----
Red     .    .    .    .    .    .
Green   .    *    .    *    *    *

CB LEDs:
CB     0    1
-----
Amber   .    .
Green   *    *

PS LEDs:
PS     0    1
-----
Red     .    .
Green   *    *

FEB LEDs:
FEB    0    1    2    3    4    5
-----
Red     .    .    .    .    .    .
Green   .    .    .    *    *    *
Active  .    .    .    *    *    *
```

### show chassis craft-interface (M160 Router)

```
user@host> show chassis craft-interface
FPM Display contents:
+-----+
|hosts   |
|Up: 1+16:46|
|        |
|Fans OK |
+-----+

Front Panel System LEDs:
Host    0    1
-----
OK       .    *
Fail     .    .
```

```

Master .      *

Front Panel Alarm Indicators:
-----
Red LED      .
Yellow LED   .
Major relay.
Minor relay.

Front Panel FPC LEDs:
FPC   0  1  2  3  4  5  6  7
-----
Red   .  .  .  .  .  .  .  .
Green *  *  .  .  .  .  .  .

MCS and SFM LEDs:
MCS   0  1      SFM   0  1  2  3
-----
Amber  .          .  .
Green  .          .  .
Blue   .  *      .  *  *

```

#### show chassis craft-interface (MX104 Router)

```

user@host > show chassis craft-interface
Front Panel System LEDs:
Routing Engine   0  1
-----
OK               *  .
Fail             .  .
Master           *  .

Front Panel Alarm Indicators:
-----
Red LED         .
Yellow LED      *
Major relay     .
Minor relay     *

Input relay:
-----
Port   Mode   Status
0      Open   Clear
1      Open   Clear
2      Open   Clear
3      Open   Clear

Output relay:
-----
Port   Mode   Status
0      Open   Clear
1      Open   Clear

PS Status:
PS     0  1
-----
Red    .  .
Green  *  .

```

**show chassis craft-interface (MX2010 Router)**

```

user@host > show chassis craft-interface
Front Panel System LEDs:
Routing Engine    0    1
-----
OK                *    .
Fail              .    *
Master            *    .

Front Panel Alarm Indicators:
-----
Red LED          .
Yellow LED       *
Major relay      .
Minor relay      *

Front Panel FPC LEDs:
FPC    0    1    2    3    4    5    6    7    8    9
-----
Red     .    .    .    .    .    .    .    .    .    .
Green  *    *    .    .    .    .    .    .    *    *

CB LEDs:
CB     0    1
-----
Amber   .    .
Green  *    *

PS LEDs:
PS     0    1    2    3    4    5    6    7    8
-----
Red     .    .    .    .    .    .    .    .    .
Green   .    .    .    .    *    *    *    *    *

Fan Tray LEDs:
FT     0    1    2    3
-----
Red     .    .    .    .
Green  *    *    *    *

Front Panel SFB LEDs:
SFB     0    1    2    3    4    5    6    7
-----
Red     .    .    .    .    .    .    .    .
Green  *    *    *    *    *    *    *    *

Front Panel Chassis Info:
Chassis Number    0x0
Chassis Role      S

```

**show chassis craft-interface (MX2020 Router)**

```

user@host > show chassis craft-interface
Front Panel System LEDs:
Routing Engine 0 1
-----
OK * *
Fail . .
Master * .

```

## Front Panel Alarm Indicators:

```

-----
Red LED .
Yellow LED .
Major relay .
Minor relay .
Front Panel FPC LEDs:
FPC 0 1 2 3 4 5 6 7 8 9
-----

```

```

Red . . . . .
Green * * * * *
Front Panel FPC LEDs:
FPC 10 11 12 13 14 15 16 17 18 19
-----

```

```

Red . . . . .
Green * * * * *
CB LEDs:
CB 0 1
-----

```

```

Amber . .
Green * *
PS LEDs:
PS 0 1 2 3 4 5 6 7 8
-----

```

```

Red . . . . .
Green * * * * * . . * *
PS LEDs:
PS 9 10 11 12 13 14 15 16 17
-----

```

```

Red . . . . .
Green * * * * *
Fan Tray LEDs:
FT 0 1 2 3
-----

```

```

Red . . . .
Green * * * *
Front Panel SFB LEDs:
SFB 0 1 2 3 4 5 6 7
-----

```

```

Red . . . . .
Green * * * * *
Front Panel Chassis Info:
Chassis Number 0x57
Chassis Role M

```

**show chassis craft-interface (T4000 Router)**

```

user@host> show chassis craft-interface
FPM Display contents:

```

```

+-----+
|stymphalian      |
|2 Alarms active  |
|R: Front Top Fan Tra|
|Y: PEM 1 Absent   |
+-----+

```

```

Front Panel System LEDs:
Routing Engine    0    1
-----
OK                *    *
Fail              .    .

```



```

Master          *      .

Front Panel Alarm Indicators:
-----
Red LED         *
Yellow LED      *
Major relay     *
Minor relay     *

Front Panel FPC LEDs:
FPC   0   1   2   3   4   5   6   7
-----
Red    .   .   .   .   .   .   .   .
Green  *   .   .   *   .   *   *   .

CB LEDs:
CB    0   1
-----
Amber  .   .
Green  *   *
Blue   *   .

SCG LEDs:
SCG   0   1
-----
Amber  .   .
Green  *   *
Blue   *   .

SIB LEDs:
SIB   0   1   2   3   4
-----
Red    .   .   .   .   .
Green  *   *   *   *   *

```

### show chassis craft-interface (TX Matrix Routing Matrix)

```

user@host> show chassis craft-interface
scc-re0:

```

```

-----
FPM Display contents:
+-----+
|bradley          |
|8 Alarms active  |
|R: SIB 2 Absent  |
|R: SIB 1 Absent  |
+-----+

```

```

Front Panel System LEDs:
Routing Engine   0   1

```

```

-----
OK              *      .
Fail            .      .
Master          *      .

```

```

Front Panel Alarm Indicators:
-----
Red LED         *
Yellow LED      *
Major relay     *
Minor relay     *

```

## CB LEDs:

CB 0 1

Amber. .

Green \* .

Blue \* .

## SIB LEDs:

SIB 0 1 2 3 4

Fail . . . . .

OK . . . . \*

Active . . . . \*

## lcc0-re0:

## FPM Display contents:

```

+-----+
|hybrid          |
|5 Alarms active  |
|R: SIB 2 Absent  |
|R: SIB 1 Absent  |
+-----+

```

## Front Panel System LEDs:

Routing Engine 0 1

OK \* .

Fail . .

Master \* .

## Front Panel Alarm Indicators:

Red LED \*

Yellow LED \*

Major relay \*

Minor relay \*

## Front Panel FPC LEDs:

FPC 0 1 2 3 4 5 6 7

Red . . . . .

Green. \* \* . . . . .

## CB LEDs:

CB 0 1

Amber. .

Green \* .

Blue \* .

## SCG LEDs:

SCG 0 1

Amber. .

Green \* .

Blue \* .

## SIB LEDs:

SIB 0 1 2 3 4

```

Red . . . . .
Green. . . . *

lcc2-re0:
-----
FPM Display contents:
+-----+
| prius          |
| 5 Alarms active |
| R: SIB 2 Absent |
| R: SIB 1 Absent |
+-----+

Front Panel System LEDs:
Routing Engine    0    1
-----
OK                *    .
Fail              .    .
Master            *    .

Front Panel Alarm Indicators:
-----
Red LED          *
Yellow LED       *
Major relay      *
Minor relay      *

Front Panel FPC LEDs:
FPC    0    1    2    3    4    5    6    7
-----
Red    .    .    .    .    .    .    .    .
Green  *    *    *    .    .    .    .    .

CB LEDs:
CB      0    1
-----
Amber.  .
Green  *    .
Blue   *    .

SCG LEDs:
SCG     0    1
-----
Amber.  .
Green  *    .
Blue   *    .

SIB LEDs:
SIB      0    1    2    3    4
-----
Red      .    .    .    .    .
Green.   .    .    .    *

```

#### show chassis craft-interface (TX Matrix Plus Routing Matrix)

```

user@host> show chassis craft-interface
sfc0-re0:
-----
FPM Display Contents:
+-----+
| noname          |

```

```

|12 Alarms active |
|R: SIB F13 12 Absent|
|R: SIB F13 9 Absent |
+-----+

```

## SFC Front Panel Switch Settings:

SFC Chassis Number : 00

Config Size : 1

## Front Panel System LEDs:

Routing Engine 0 1

```

-----
OK          *   *
Fail        .   .
Master      *   .

```

## Front Panel Alarm Indicators:

```

-----
Red LED     *
Yellow LED  *
Major relay  *
Minor relay  *

```

## Front Panel F13 SIB LEDs:

SIB	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Fail	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
OK	*	.	.	*	.	.	*	.	*	.	.	*	.	.	.	.
Active	.	.	.	*	.	.	*	.	*	.	.	*	.	.	.	.

## PS LEDs:

PS 0 1

```

-----
Red      .   *
Green    *   .

```

## Fan Tray LEDs:

FT 0 1 2 3 4 5

```

-----
Red      .   .   .   .   *   *
Green    *   *   *   *   .   .

```

## CB LEDs:

CB 0 1

```

-----
Amber    .   .
Green    *   *
Blue     *   .

```

## 1cc0-re0:

## FPM Display contents:

```

+-----+
|noname1 |
|1 Alarm active |
|R: PEM 1 Not OK |
| |
+-----+

```

## Front Panel System LEDs:

Routing Engine 0 1

```

-----
OK                *      *
Fail              .      .
Master            *      .

Front Panel Alarm Indicators:
-----
Red LED           *
Yellow LED        .
Major relay        *
Minor relay        .

Front Panel FPC LEDs:
FPC    0    1    2    3    4    5    6    7
-----
Red     .    .    .    .    .    .    .    .
Green   .    *    .    *    *    .    .    *

CB LEDs:
  CB    0    1
-----
Amber   .    .
Green   *    *
Blue    *    .

SCG LEDs:
  SCG   0    1
-----
Amber   .    .
Green   *    *
Blue    *    .

SIB LEDs:
  SIB   0    1    2    3    4
-----
Red     .    .    .    .    .
Green   *    *    *    *    *

lcc1-re0:
-----
FPM Display contents:
+-----+
|noname2          |
|2 Alarms active  |
|R: FPC 0 PIC 0 Failu|
|R: PEM 1 Not OK   |
+-----+

Front Panel System LEDs:
Routing Engine    0    1
-----
OK                *      *
Fail              .      .
Master            *      .

Front Panel Alarm Indicators:
-----
Red LED           *
Yellow LED        .
Major relay        *
Minor relay        .

```

```

Front Panel FPC LEDs:
FPC    0    1    2    3    4    5    6    7
-----
Red      .    .    .    .    .    .    .    .
Green    *    *    *    .    .    *    .    .

CB LEDs:
CB      0    1
-----
Amber    .    .
Green    *    *
Blue     *    .

SCG LEDs:
SCG      0    1
-----
Amber    .    .
Green    *    *
Blue     *    .

SIB LEDs:
SIB      0    1    2    3    4
-----
Red      .    .    .    .    .
Green    *    *    *    *    *

```

#### show chassis craft-interface (TX Matrix Plus router with 3D SIBs)

```

user@host> show chassis craft-interface
sfc0-re0:

```

```

-----
FPM Display Contents:
+-----+
|noname      |
|48 Alarms active |
|R: LCC 2 Major Error|
|R: LCC 0 Major Error|
+-----+

```

```

SFC Front Panel Switch Settings:
SFC Chassis Number : 00
Config Size        : 3

```

```

Front Panel System LEDs:
Routing Engine    0    1
-----
OK                  *    *
Fail                .    .
Master              *    .

```

```

Front Panel Alarm Indicators:
-----
Red LED            *
Yellow LED         *
Major relay        *
Minor relay        *

```

```

Front Panel F13 SIB LEDs:
SIB    0    1    2    3    4    5    6    7    8    9    10   11   12   13   14   15
-----

```

```

Fail      .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
OK        *   .   .   *   .   .   *   .   .   .   .   .   .   .   .   .
Active    *   .   .   *   .   .   *   .   .   .   .   .   .   .   .   .

```

## PS LEDs:

```

PS      0   1
-----

```

```

Red      *   .
Green    .   *

```

## Fan Tray LEDs:

```

FT      0   1   2   3   4   5
-----

```

```

Red      .   .   .   .   .   *
Green    *   *   *   *   *   .

```

## CB LEDs:

```

CB      0   1
-----

```

```

Amber    .   .
Green    *   *
Blue     *   .

```

## lcc0-re0:

## FPM Display contents:

```

+-----+
|noname1      |
|14 Alarms active|
|R: PEM 1 Not OK|
|R: FPC 7 misconfig|
+-----+

```

## Front Panel System LEDs:

```

Routing Engine    0   1
-----

```

```

OK              *   *
Fail            .   .
Master          *   .

```

## Front Panel Alarm Indicators:

```

-----
Red LED          *
Yellow LED       *
Major relay      *
Minor relay      *

```

## Front Panel FPC LEDs:

```

FPC      0   1   2   3   4   5   6   7
-----

```

```

Red      .   .   .   .   .   .   .   .
Green    .   .   .   .   *   .   .   .

```

## CB LEDs:

```

CB      0   1
-----

```

```

Amber    .   .
Green    *   *
Blue     *   .

```

## SCG LEDs:

```
SCG 0 1
-----
Amber . .
Green * *
Blue  * .

SIB LEDs:
SIB 0 1 2 3 4
-----
Red . . . . .
Green * * * . .
```

#### show chassis craft-interface (ACX2000 Universal Access Router)

```
user@host> show chassis craft-interface
```

```
Front Panel System LEDs:
```

```
Routing Engine
```

```
-----
OK . . . . .
Fail . . . . .
```

```
Front Panel Alarm Indicators:
```

```
-----
Red LED . . . . .
Yellow LED . . . . .
Major relay . . . . .
Minor relay . . . . .
```

```
Input relay:
```

```
-----
Port Mode Status
0 Open Clear
1 Open Clear
2 Open Clear
3 Open Clear
```

```
Output relay:
```

```
-----
Port Mode Status
0 Open Clear
1 Open Clear
```

```
PS Status:
```

```
PS 0 1
-----
Red . .
Green * *
```



## show chassis environment

Syntax	show chassis environment
Syntax (T320, T640, T1600, and T4000 Routers)	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>re-slot-number</i> > <scg <i>scg-slot-number</i> > <sib <i>sib-slot-number</i> >
Syntax (TX Matrix Routers)	show chassis environment <lcc <i>number</i>   scc>
Syntax (TX Matrix Plus Routers)	show chassis environment <cb <i>cb-slot-number</i> > <cip <i>cip-slot-number</i> > <fpc <i>fpc-slot-number</i> > <fpm> <lcc <i>number</i> > <pem <i>pem-slot-number</i> > <routing-engine <i>re-slot-number</i> > <scg <i>scg-slot-number</i> > < sfc <i>number</i> > <sib <i>sib-slot-number</i> >
Syntax (MX Series Routers)	show chassis environment <all-members> <local> <member <i>member-id</i> >
Syntax (MX104 3D Universal Edge Routers)	show chassis environment <cb> <pem <i>pem-slot-number</i> > <routing-engine <i>re-slot-number</i> >
Syntax (MX2010 and MX2020 3D Universal Edge Routers)	show chassis environment <adc <i>adc-slot-number</i> > <cb <i>cb-slot-number</i> > <fpc <i>fpc-slot-number</i> > <fpm> <monitored> <psm <i>psm-slot-number</i> > <routing-engine <i>re-slot-number</i> > <sfb <i>sfb-slot-number</i> >
Syntax (EX Series Switch)	show chassis environment <all-members> <cb <i>cb-slot-number</i> > <fpc <i>fpc-slot-number</i> > <local>

	<code>&lt;member <i>member-id</i>&gt;</code> <code>&lt;routing-engine <i>re-slot-number</i>&gt;</code>
Syntax (EX Series Switch)	<code>show chassis environment</code> <code>&lt;all-members&gt;</code> <code>&lt;cb <i>cb-slot-number</i>&gt;</code> <code>&lt;fpc <i>fpc-slot-number</i>&gt;</code> <code>&lt;local&gt;</code> <code>&lt;member <i>member-id</i>&gt;</code> <code>&lt;power-supply-unit <i>psu-slot-number</i>&gt;</code> <code>&lt;routing-engine <i>slot-number</i>&gt;</code>
Syntax (QFX Series)	<code>show chassis environment</code> <code>&lt;cb <i>slot-number</i> &lt;interconnect-device name&gt;&gt;</code> <code>&lt;fpc <i>slot-number</i> &lt;interconnect-device name&gt;&gt;</code> <code>&lt;interconnect-device name &lt;slot-number&gt;</code> <code>&lt;node-device name&gt;</code> <code>&lt;pem <i>slot-number</i> (interconnect-device name <i>slot-number</i>)   (node-device name)&gt;</code> <code>&lt;routing-engine name &lt;interconnect-device name <i>slot-number</i>&gt;&gt;</code>
Syntax (PTX Series Packet Transport Routers)	<code>show chassis environment</code> <code>&lt;cb <i>cb-slot-number</i>&gt;</code> <code>&lt;ccg <i>ccg-slot-number</i> &gt;</code> <code>&lt;fpc <i>fpc-slot-number</i>&gt;</code> <code>&lt;fpm&gt;</code> <code>&lt;monitored&gt;</code> <code>&lt;pdu <i>pdu-slot-number</i>&gt;</code> <code>&lt;routing-engine <i>re-slot-number</i>&gt;</code> <code>&lt;sib <i>sib-slot-number</i>&gt;</code>
Syntax (ACX Series Universal Access Routers)	<code>show chassis environment</code> <code>&lt;cb <i>cb-slot-number</i>&gt;</code> <code>&lt;pem <i>pem-slot-number</i>&gt;</code> <code>&lt;routing-engine <i>re-slot-number</i>&gt;</code>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6. Command introduced in Junos OS Release 11.1 for QFX Series. Command introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers. <b>monitored</b> option added in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers. Command introduced in Junos OS Release 12.1 for T4000 Core Routers. Command introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers. Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers. Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers. <b>pem</b> option introduced in Junos OS Release 12.3 for ACX4000 Universal Access Routers. Command introduced in Junos OS Release 13.2 for MX104 3D Universal Edge Routers.
Description	Display environmental information about the router or switch chassis, including the temperature and information about the fans, power supplies, and Routing Engine.

In addition on ACX4000 routers, display temperature information about the different channels of a Modular Interface Card (MIC). The number of channels displayed depends on the type of MIC installed.

- Options** **none**—Display environmental information about the router or switch chassis. On a TX Matrix router, display environmental information about the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about the TX Matrix Plus router and its attached routers.
- all-members**—(MX Series routers and EX Series switches only) (Optional) Display chassis environmental information for all the members of the Virtual Chassis configuration.
- adc *adc-slot-number***—(MX2020 and MX2010 routers only) (Optional) Display chassis environmental information for the adapter cards. For MX2020 routers, replace ***adc-slot-number*** with a value from 0 through 19. For MX2010 routers, replace ***adc-slot-number*** with a value from 0 through 9.
- cb *cb-slot-number***—(ACX Series Universal Access Routers, EX Series switches, M120, M320, and M40e routers, MX Series routers, MX2020 routers, MX2010 routers, PTX Series Packet Transport Routers, QFX Series, and T Series routers, and TX Matrix Plus routers only) (Optional) Display chassis environmental information for the Control Board. On devices other than EX Series switches, replace ***cb-slot*** with 0 or 1. For the EX Series switches, see *EX Series Switches Hardware and CLI Terminology Mapping* for information on CB slot numbering.
- cip *cip-slot-number***—(TX Matrix Plus routers only) (Optional) Display chassis environmental information for the Connection Interface Panel (CIP). Replace the ***cip-slot-number*** variable with a value of 0 or 1.
- cb interconnect-device *name***—(QFabric systems only) (Optional) Display chassis environmental information for the Control Board on an Interconnect device.
- ccg *ccg-slot-number***—(PTX Series only) (Optional) Display chassis environmental information for the Centralized Clock Generator. Replace ***cb-slot*** with a value of 0 or 1.
- fpc *fpc-slot***—(EX Series switches, M120, M320, and M40e routers, MX Series routers, MX2010 routers, MX2020 routers, PTX Series Packet Transport Routers, QFX Series, QFX3500 switches, QFabric systems, T Series routers, and TX Matrix Plus routers) (Optional) Display chassis environmental information for a specified Flexible PIC Concentrator. For MX2010 routers, replace ***fpc-slot*** with a value from 0 through 9. For MX2020 routers, replace ***fpc-slot*** with a value from 0 through 19. For information about FPC numbering, see [show chassis environment fpc](#). On a QFabric system, display chassis environmental information for a specified Flexible PIC Concentrator on an Interconnect device. On an EX Series switch, display chassis environmental information for a specified Flexible PIC Concentrator; see *EX Series Switches Hardware and CLI Terminology Mapping* for information on FPC numbering. On a TX Matrix Plus router with 3D SIBs replace ***fpc-slot*** with a value from 0 through 63.

**fpm**—(M120, M320, and M40e routers, MX2010 routers, MX2020 routers, PTX Series, Packet Transport Routers, T Series routers, and TX Matrix Plus routers only) (Optional) Display chassis environmental information for the craft interface (FPM).

**interconnect-device *name***—(QFabric systems only) (Optional) Display chassis environmental information for the Interconnect device.

**monitored**—(MX2020 routers and PTX Series Packet Transport Routers only) (Optional) Display chassis environmental information for monitored temperatures only. Temperatures that are not included in temperature alarm computations are not displayed.

**lcc *number***—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(MX Series routers and EX Series switches) (Optional) Display chassis environmental information for the local Virtual Chassis member.

**member *member-id***—(MX Series routers and EX Series switches only) (Optional) Display chassis environmental information for the specified member of the Virtual Chassis configuration. On MX Series routers, replace *member-id* variable with a value of 0 or 1. For EX Series switches, see *member* for member ID values.

**node-device *name***—(QFabric systems only) (Optional) Display chassis environmental information for the Node device.

**pdu *pdu-slot-number***—(PTX Series only) (Optional) Display chassis environmental information for the specified power distribution unit.

**pem**—(QFX3500 switches and QFabric systems only) (Optional) Display chassis environmental information for the Power Entry Module on the specified Interconnect device or Node device.

**pem *pem-slot-number***—(ACX Series Universal Access Routers, M120, M320, and M40e routers, MX Series routers, MX104 routers, QFX Series, and T Series routers only) (Optional) Display chassis environmental information for the Power Entry Module on the specified Power Entry Module. For information about the options, see [show chassis environment pem](#).

**psm *psm-slot-number***—(MX2020 and MX2010 routers only) (Optional) Display chassis environmental information for the power supply module. For MX2020 routers, replace ***psm-slot-number*** with a value from 0 through 17. For MX2010 routers, replace ***psm-slot-number*** with a value from 0 through 8.

**psu *psu-slot-number***—(EX Series switches only) (Optional) Display chassis environmental information for a specified power supply. See *EX Series Switches Hardware and CLI Terminology Mapping* for detailed information.

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

**routing-engine *re-slot-number***—(Optional) Display chassis environmental information for the specified Routing Engine. For information about the options, see [show chassis environment routing-engine](#).

**scg**—(T Series routers only) (Optional) Display chassis environmental information about the SONET Clock Generator.

**scc**—(TX Matrix routers only) (Optional) Display chassis environmental information about the TX Matrix router (switch-card chassis).

**sfb *sfb-slot-number***—(MX2020 and MX2010 routers only) (Optional) Display chassis environmental information for the power supply module. Replace ***sfb-slot-number*** with a value from 0 through 7.

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

**sib *sib-slot-number***—(M320 routers, PTX Series Packet Transport Routers, and T Series routers only) (Optional) Display chassis environmental information about the specified switch interface board. For information about the options, see [show chassis environment sib](#).

**Required Privilege Level**

view

**Related Documentation**

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- [show chassis environment cb on page 315](#)
- [show chassis environment ccg](#)
- [show chassis environment cip on page 333](#)
- [show chassis environment fpc on page 335](#)
- [show chassis environment fpm on page 360](#)
- [show chassis environment lcc on page 366](#)
- [show chassis environment mcs](#)

- *show chassis environment monitored*
- *show chassis environment pcg*
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- *show chassis environment psm*
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- [show chassis environment routing-engine on page 380](#)
- [show chassis environment scg on page 385](#)
- *show chassis environment sfb*
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#### List of Sample Output

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**Output Fields** Table 12 on page 267 lists the output fields for the **show chassis environment** command. Output fields are listed in the approximate order in which they appear.

**Table 12: show chassis environment Output Fields**

Field Name	Field Description
<b>Class</b>	<p>Information about the category or class of chassis component:</p> <ul style="list-style-type: none"> <li>• <b>Power:</b> Power information: <ul style="list-style-type: none"> <li>• (M5, M10, M20, and M40 routers and EX Series switches only) Power supply status: <b>OK</b>, <b>Testing</b>, (during initial power-on), <b>Failed</b>, or <b>Absent</b>.</li> <li>• (M7i, M10i, M40e, M120, M160, M320, and T Series routers and EX Series switches only) Power Entry Modules status: <b>OK</b>, <b>Testing</b>, (during initial power-on), <b>Check</b>, <b>Failed</b>, or <b>Absent</b>.</li> <li>• (PTX Series only) Power information is reported in PDU or PSM combinations. The status is: <b>OK</b>, <b>Testing</b>, (during initial power-on), <b>Check</b>, <b>Failed</b>, or <b>Absent</b>.</li> </ul> </li> <li>• <b>Temp:</b> Temperature of air flowing through the chassis in degrees Celsius (C) and Fahrenheit (F). On PTX Series Packet Transport Routers and MX2010 and MX2020 Routers, multiple cooling zones are supported. FRU temperatures in each zone are coordinated with the fan speed of fan trays in those zones.</li> <li>• <b>Pic:</b> On ACX4000 Routers, multiple temperature channels on a MIC. The status is: <b>OK</b> and the <b>Measurement</b> is in degrees Celsius (C) and Fahrenheit (F).</li> <li>• <b>Fan:</b> Fan status: <b>OK</b>, <b>Testing</b> (during initial power-on), <b>Failed</b>, or <b>Absent</b>. On PTX Series Packet Transport Routers and MX2010 and MX2020 Routers, multiple fan trays are supported. Fan status is reported in Fan Tray or Fan combinations. <b>Measurement</b> indicates actual fan RPM (PTX and MX2010 and MX2020 Routers only).</li> <li>• <b>Misc:</b> Information about other components of the chassis. <ul style="list-style-type: none"> <li>• On some routers, this field indicates the status of one or more additional components.</li> <li>• On the M40e, M160, and M320 router, <b>Misc</b> includes <b>CIP</b> (Connector Interface Panel). <b>OK</b> indicates that the CIP is present. <b>Absent</b> indicates that the CIP is not present.</li> <li>• On T Series routers, <b>Misc</b> includes <b>CIP</b> and <b>SPMB</b> (Switch Processor Mezzanine Board). <b>OK</b> indicates that the <b>CIP</b> or <b>SPMB</b> is present. <b>Absent</b> indicates that the <b>CIP</b> or <b>SPMB</b> is not present.</li> <li>• On PTX Series Packet Transport Routers, <b>Misc</b> includes the <b>SPMB</b> (Switch Processor Mezzanine Board). The SPMB is located on the control boards. <b>OK</b> indicates that the control board is present. <b>Absent</b> indicates that the control board is not present.</li> </ul> </li> </ul>
<b>Item</b>	<p>(MX2010 and MX2020 Routers) Information about the chassis component: Routing Engines, Controls Boards (CBs), Switch Fabric Boards (SFBs), PICs, Flexible PIC Concentrators (FPCs), and Adapter Cards (ADCs).</p> <p>(MX104 Routers) Information about the chassis components: Routing Engines, Control Board (CB), Power Entry Module (PEM), and Compact Forwarding Engine Board (AFEB).</p>

Table 12: show chassis environment Output Fields (*continued*)

Field Name	Field Description
<b>Status</b>	<p>(MX104, MX2010, and MX2020 Routers) Status of the specified chassis component. For example, if the Class is Fan, the fan status can be:</p> <ul style="list-style-type: none"> <li>• <b>OK:</b> The fans are operational.</li> <li>• <b>Testing:</b> The fans are being tested during initial power-on.</li> <li>• <b>Failed:</b> The fans have failed or the fans are not spinning.</li> <li>• <b>Absent:</b> The fan tray is not installed.</li> </ul> <p>If the Class is Power, the power supply status can be:</p> <ul style="list-style-type: none"> <li>• <b>OK:</b> The power component is operational.</li> <li>• <b>Testing:</b> The power component is being tested during initial power-on.</li> <li>• <b>Check:</b> There is insufficient power---that is, fewer than the minimum required feeds are connected.</li> <li>• <b>Failed:</b> The inputs leads have failed.</li> <li>• <b>Absent:</b> The power component is not installed.</li> </ul>
<b>Measurement</b>	<p>(MX104, MX2010, and MX2020 Routers) Dependant on the Class. For example, if the Class is Temp, indicates the temperature in degree Celsius and degrees Fahrenheit. If the Class is Fan, indicates actual fan RPM.</p>

## 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 1                  OK

```

### show chassis environment (M5 Router)

```

user@host> show chassis environment
Class Item                Status    Measurement
Power Power Supply A       OK
      Power Supply B       Absent
Temp  FPC 0                  OK        30 degrees C / 86 degrees F
      FEB                   OK        33 degrees C / 91 degrees F
      PS Intake              OK        27 degrees C / 80 degrees F
      PS Exhaust             OK        27 degrees C / 80 degrees F
      Routing Engine         OK        34 degrees C / 93 degrees F
Fans  Left Fan 1            OK        Spinning at normal speed
      Left Fan 2            OK        Spinning at normal speed
      Left Fan 3            OK        Spinning at normal speed
      Left Fan 4            OK        Spinning at normal speed

```



```
Misc  Craft Interface      OK
```

### show chassis environment (M7i Router)

```
user@host> show chassis environment
Class Item                Status      Measurement
Power Power Supply 0       OK
        Power Supply 1     Absent
Temp  Intake              OK          22 degrees C / 71 degrees F
        FPC 0              OK          23 degrees C / 73 degrees F
        Power Supplies      OK          23 degrees C / 73 degrees F
        CFEB Intake         OK          24 degrees C / 75 degrees F
        CFEB Exhaust        OK          29 degrees C / 84 degrees F
        Routing Engine      OK          26 degrees C / 78 degrees F
Fans  Fan 1               OK          Spinning at normal speed
        Fan 2              OK          Spinning at normal speed
        Fan 3              OK          Spinning at normal speed
        Fan 4              OK          Spinning at normal speed
```

### show chassis environment (M10 Router)

```
user@host> show chassis environment
Class Item                Status      Measurement
Power Power Supply A       OK
        Power Supply B     Failed
Temp  FPC 0               OK          36 degrees C / 96 degrees F
        FPC 1              OK          35 degrees C / 95 degrees F
        FEB                OK          34 degrees C / 93 degrees F
        PS Intake          OK          31 degrees C / 87 degrees F
        PS Exhaust         OK          34 degrees C / 93 degrees F
        Routing Engine      OK          35 degrees C / 95 degrees F
Fans  Left Fan 1          OK          Spinning at normal speed
        Left Fan 2          OK          Spinning at normal speed
        Left Fan 3          OK          Spinning at normal speed
        Left Fan 4          OK          Spinning at normal speed
Misc  Craft Interface      OK
```

### show chassis environment (M10i Router)

```
user@host> show chassis environment
Class Item                Status      Measurement
Power Power Supply 0       OK
        Power Supply 1     OK
        Power Supply 2     Absent
        Power Supply 3     Absent
Temp  Intake              OK          26 degrees C / 78 degrees F
        FPC 0              OK          27 degrees C / 80 degrees F
        FPC 1              OK          28 degrees C / 82 degrees F
        Lower Power Supplies OK          29 degrees C / 84 degrees F
        Upper Power Supplies OK          28 degrees C / 82 degrees F
        CFEB Intake        OK          27 degrees C / 80 degrees F
        CFEB Exhaust        OK          36 degrees C / 96 degrees F
        Routing Engine 0    OK          31 degrees C / 87 degrees F
        Routing Engine 1    OK          27 degrees C / 80 degrees F
Fans  Fan Tray 0 Fan 1     OK          Spinning at normal speed
        Fan Tray 0 Fan 2     OK          Spinning at normal speed
        Fan Tray 0 Fan 3     OK          Spinning at normal speed
        Fan Tray 0 Fan 4     OK          Spinning at normal speed
        Fan Tray 0 Fan 5     OK          Spinning at normal speed
```

Fan Tray 0 Fan 6	OK	Spinning at normal speed
Fan Tray 0 Fan 7	OK	Spinning at normal speed
Fan Tray 0 Fan 8	OK	Spinning at normal speed
Fan Tray 1 Fan 1	Absent	
Fan Tray 1 Fan 2	Absent	
Fan Tray 1 Fan 3	Absent	
Fan Tray 1 Fan 4	Absent	
Fan Tray 1 Fan 5	Absent	
Fan Tray 1 Fan 6	Absent	
Fan Tray 1 Fan 7	Absent	
Fan Tray 1 Fan 8	Absent	

**show chassis environment (M20 Router)**

```
user@host> show chassis environment
```

Class	Item	Status	Measurement
Power	Power Supply A	OK	
	Power Supply B	Absent	
Temp	FPC 0	OK	28 degrees C / 82 degrees F
	FPC 1	OK	27 degrees C / 80 degrees F
	Power Supply A	OK	22 degrees C / 71 degrees F
	Power Supply B	Absent	
	SSB 0	OK	30 degrees C / 86 degrees F
	Backplane	OK	22 degrees C / 71 degrees F
Fans	Routing Engine 0	OK	26 degrees C / 78 degrees F
	Routing Engine 1	Testing	
	Rear Fan	OK	Spinning at normal speed
	Front Upper Fan	OK	Spinning at normal speed
	Front Middle Fan	OK	Spinning at normal speed
	Front Bottom Fan	OK	Spinning at normal speed
Misc	Craft Interface	OK	

**show chassis environment (M40 Router)**

```
user@host> show chassis environment
```

Class	Item	Status	Measurement
Power	Power Supply A	OK	
	Power Supply B	Absent	
Temp	FPC 3	OK	24 degrees C / 75 degrees F
	FPC 6	OK	26 degrees C / 78 degrees F
	SCB	OK	26 degrees C / 78 degrees F
	Backplane @ A1	OK	28 degrees C / 82 degrees F
	Backplane @ A2	OK	23 degrees C / 73 degrees F
	Routing Engine	OK	26 degrees C / 78 degrees F
Fans	Top Impeller	OK	Spinning at normal speed
	Bottom impeller	OK	Spinning at normal speed
	Rear Left Fan	OK	Spinning at normal speed
	Rear Center Fan	OK	Spinning at normal speed
	Rear Right Fan	OK	Spinning at normal speed
Misc	Craft Interface	OK	

**show chassis environment (M40e Router)**

```
user@host> show chassis environment
```

Class	Item	Status	Measurement
Power	PEM 0	OK	
	PEM 1	Absent	
Temp	PCG 0	OK	44 degrees C / 111 degrees F
	PCG 1	OK	47 degrees C / 116 degrees F

	Routing Engine 0	OK	40 degrees C / 104 degrees F
	Routing Engine 1	OK	37 degrees C / 98 degrees F
	MCS 0	OK	45 degrees C / 113 degrees F
	MCS 1	OK	42 degrees C / 107 degrees F
	SFM 0 SPP	OK	40 degrees C / 104 degrees F
	SFM 0 SPR	OK	44 degrees C / 111 degrees F
	SFM 1 SPP	OK	43 degrees C / 109 degrees F
	SFM 1 SPR	OK	45 degrees C / 113 degrees F
	FPC 0	OK	38 degrees C / 100 degrees F
	FPC 1	OK	40 degrees C / 104 degrees F
	FPC 2	OK	38 degrees C / 100 degrees F
	FPC 4	OK	34 degrees C / 93 degrees F
	FPC 5	OK	43 degrees C / 109 degrees F
	FPC 6	OK	41 degrees C / 105 degrees F
	FPC 7	OK	43 degrees C / 109 degrees F
	FPM CMB	OK	28 degrees C / 82 degrees F
	FPM Display	OK	28 degrees C / 82 degrees F
Fans	Rear Bottom Blower	OK	Spinning at normal speed
	Rear Top Blower	OK	Spinning at normal speed
	Front Top Blower	OK	Spinning at normal speed
	Fan Tray Rear Left	OK	Spinning at normal speed
	Fan Tray Rear Right	OK	Spinning at normal speed
	Fan Tray Front Left	OK	Spinning at normal speed
	Fan Tray Front Right	OK	Spinning at normal speed
Misc	CIP	OK	

#### show chassis environment (M120 Router)

```
user@host> show chassis environment
```

Class	Item	Status	Measurement
Temp	PEM 0	OK	
	PEM 1	OK	
	Routing Engine 0	OK	43 degrees C / 109 degrees F
	Routing Engine 1	OK	44 degrees C / 111 degrees F
	CB 0 Intake	OK	33 degrees C / 91 degrees F
	CB 0 Exhaust A	OK	36 degrees C / 96 degrees F
	CB 0 Exhaust B	OK	35 degrees C / 95 degrees F
	CB 1 Intake	OK	34 degrees C / 93 degrees F
	CB 1 Exhaust A	OK	38 degrees C / 100 degrees F
	CB 1 Exhaust B	OK	35 degrees C / 95 degrees F
	FEB 3 Intake	OK	35 degrees C / 95 degrees F
	FEB 3 Exhaust A	OK	37 degrees C / 98 degrees F
	FEB 3 Exhaust B	OK	39 degrees C / 102 degrees F
	FEB 4 Intake	OK	33 degrees C / 91 degrees F
	FEB 4 Exhaust A	OK	39 degrees C / 102 degrees F
	FEB 4 Exhaust B	OK	36 degrees C / 96 degrees F
	FPC 2 Exhaust A	OK	32 degrees C / 89 degrees F
	FPC 2 Exhaust B	OK	31 degrees C / 87 degrees F
	FPC 3 Exhaust A	OK	32 degrees C / 89 degrees F
	FPC 3 Exhaust B	OK	33 degrees C / 91 degrees F
	FPC 4 Exhaust A	OK	32 degrees C / 89 degrees F
	FPC 4 Exhaust B	OK	30 degrees C / 86 degrees F
Fans	Front Top Tray Fan 1	OK	Spinning at normal speed
	Front Top Tray Fan 2	OK	Spinning at normal speed
	Front Top Tray Fan 3	OK	Spinning at normal speed
	Front Top Tray Fan 4	OK	Spinning at normal speed
	Front Top Tray Fan 5	OK	Spinning at normal speed
	Front Top Tray Fan 6	OK	Spinning at normal speed
	Front Top Tray Fan 7	OK	Spinning at normal speed
	Front Top Tray Fan 8	OK	Spinning at normal speed

Front Bottom Tray Fan 1	OK	Spinning at normal speed
Front Bottom Tray Fan 2	OK	Spinning at normal speed
Front Bottom Tray Fan 3	OK	Spinning at normal speed
Front Bottom Tray Fan 4	OK	Spinning at normal speed
Front Bottom Tray Fan 5	OK	Spinning at normal speed
Front Bottom Tray Fan 6	OK	Spinning at normal speed
Front Bottom Tray Fan 7	OK	Spinning at normal speed
Front Bottom Tray Fan 8	OK	Spinning at normal speed
Rear Top Tray Fan 1	OK	Spinning at normal speed
Rear Top Tray Fan 2	OK	Spinning at normal speed
Rear Top Tray Fan 3	OK	Spinning at normal speed
Rear Top Tray Fan 4	OK	Spinning at normal speed
Rear Top Tray Fan 5	OK	Spinning at normal speed
Rear Top Tray Fan 6	OK	Spinning at normal speed
Rear Top Tray Fan 7	OK	Spinning at normal speed
Rear Top Tray Fan 8	OK	Spinning at normal speed
Rear Bottom Tray Fan 1	OK	Spinning at normal speed
Rear Bottom Tray Fan 2	OK	Spinning at normal speed
Rear Bottom Tray Fan 3	OK	Spinning at normal speed
Rear Bottom Tray Fan 4	OK	Spinning at normal speed
Rear Bottom Tray Fan 5	OK	Spinning at normal speed
Rear Bottom Tray Fan 6	OK	Spinning at normal speed
Rear Bottom Tray Fan 7	OK	Spinning at normal speed
Rear Bottom Tray Fan 8	OK	Spinning at normal speed

#### show chassis environment (M160 Router)

```

user@host> show chassis environment

```

Class	Item	Status	Measurement
Power	PEM 0	OK	PEM 1
			Absent
Temp	PCG 0	OK	45 degrees C / 113 degrees F
	PCG 1	Absent	
	Routing Engine 0	OK	35 degrees C / 95 degrees F
	Routing Engine 1	Absent	
	MCS 0	OK	50 degrees C / 122 degrees F
	SFM 0 SPP	OK	47 degrees C / 116 degrees F
	SFM 0 SPR	OK	49 degrees C / 120 degrees F
	SFM 1 SPP	OK	50 degrees C / 122 degrees F
	SFM 1 SPR	OK	50 degrees C / 122 degrees F
	SFM 2 SPP	OK	51 degrees C / 123 degrees F
	SFM 2 SPR	OK	52 degrees C / 125 degrees F
	SFM 3 SPP	OK	52 degrees C / 125 degrees F
	SFM 3 SPR	OK	48 degrees C / 118 degrees F
	FPC 0	OK	45 degrees C / 113 degrees F
	FPC 6	OK	43 degrees C / 109 degrees F
	FPM CMB	OK	31 degrees C / 87 degrees F
	FPM Display	OK	33 degrees C / 91 degrees F
Fans	Rear Bottom Blower	OK	Spinning at normal speed
	Rear Top Blower	OK	Spinning at normal speed
	Front Top Blower	OK	Spinning at normal speed
	Fan Tray Rear Left	OK	Spinning at normal speed
	Fan Tray Rear Right	OK	Spinning at normal speed
	Fan Tray Front Left	OK	Spinning at normal speed
	Fan Tray Front Right	OK	Spinning at normal speed
Misc	CIP	OK	

#### show chassis environment (M320 Router)

```

user@host> show chassis environment

```

Class	Item	Status	Measurement
Temp	PEM 0	Absent	
	PEM 1	Absent	
	PEM 2	OK	
	PEM 3	OK	
	Routing Engine 0	OK	33 degrees C / 91 degrees F
	Routing Engine 1	OK	32 degrees C / 89 degrees F
	CB 0	OK	36 degrees C / 96 degrees F
	CB 1	OK	36 degrees C / 96 degrees F
	SIB 0	OK	38 degrees C / 100 degrees F
	SIB 1	OK	29 degrees C / 84 degrees F
	SIB 2	OK	38 degrees C / 100 degrees F
	SIB 3	OK	41 degrees C / 105 degrees F
	FPC 0 Intake	OK	28 degrees C / 82 degrees F
	FPC 0 Exhaust	OK	40 degrees C / 104 degrees F
	FPC 1 Intake	OK	29 degrees C / 84 degrees F
	FPC 1 Exhaust	OK	39 degrees C / 102 degrees F
	FPC 2 Intake	OK	28 degrees C / 82 degrees F
	FPC 2 Exhaust	OK	38 degrees C / 100 degrees F
	FPC 3 Intake	OK	28 degrees C / 82 degrees F
	FPC 3 Exhaust	OK	39 degrees C / 102 degrees F
	FPC 6 Intake	OK	27 degrees C / 80 degrees F
	FPC 6 Exhaust	OK	39 degrees C / 102 degrees F
	FPC 7 Intake	OK	27 degrees C / 80 degrees F
	FPC 7 Exhaust	OK	42 degrees C / 107 degrees F
	FPM GBUS	OK	30 degrees C / 86 degrees F
Fan	Top Left Front fan	OK	Spinning at normal speed
	Top Right Rear fan	OK	Spinning at normal speed
	Top Right Front fan	OK	Spinning at normal speed
	Top Left Rear fan	OK	Spinning at normal speed
	Bottom Left Front fan	OK	Spinning at normal speed
	Bottom Right Rear fan	OK	Spinning at normal speed
	Bottom Right Front fan	OK	Spinning at normal speed
	Bottom Left Rear fan	OK	Spinning at normal speed
	Rear Fan 1 (TOP)	OK	Spinning at normal speed
	Rear Fan 2	OK	Spinning at normal speed
	Rear Fan 3	OK	Spinning at normal speed
	Rear Fan 4	OK	Spinning at normal speed
	Rear Fan 5	OK	Spinning at normal speed
	Rear Fan 6	OK	Spinning at normal speed
	Rear Fan 7 (Bottom)	OK	Spinning at normal speed
Misc	CIP	OK	

### show chassis environment (MX104 Router)

```
user@host> show chassis environment
```

Class	Item	Status	Measurement
Temp	PEM 0	OK	34 degrees C / 93 degrees F
	PEM 1	Absent	
	ABB 0 Intake	OK	33 degrees C / 91 degrees F
	ABB 0 Exhaust A	OK	42 degrees C / 107 degrees F
	ABB 0 Exhaust B	OK	43 degrees C / 109 degrees F
	ABB 1 Intake	Absent	
	ABB 1 Exhaust A	Absent	
	ABB 1 Exhaust B	Absent	
	Routing Engine 0	OK	34 degrees C / 93 degrees F
	Routing Engine 0 CPU	OK	46 degrees C / 114 degrees F
	Routing Engine 1	Absent	
	Routing Engine 1 CPU	Absent	
	AFEB 0 AFEB Processor	OK	33 degrees C / 91 degrees F

Fans	Fan 1	OK	Spinning at normal speed
	Fan 2	OK	Spinning at normal speed
	Fan 3	OK	Spinning at normal speed
	Fan 4	OK	Spinning at normal speed
	Fan 5	OK	Spinning at normal speed

**show chassis environment (MX240 Router)**

user@host&gt; 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&gt; 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&gt; 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

Fans	FPC 10 IA 1 Chip	OK	42 degrees C / 107 degrees F
	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 (MX2020 Router)

```
user@host> show chassis environment
```

Class	Item	Status	Measurement
Temp	PSM 0	Absent	
	PSM 1	Absent	
	PSM 2	OK	41 degrees C / 105 degrees F
	PSM 3	OK	39 degrees C / 102 degrees F
	PSM 4	OK	39 degrees C / 102 degrees F
	PSM 5	OK	38 degrees C / 100 degrees F
	PSM 6	OK	38 degrees C / 100 degrees F
	PSM 7	OK	38 degrees C / 100 degrees F
	PSM 8	OK	37 degrees C / 98 degrees F
	PSM 9	Absent	
	PSM 10	Absent	
	PSM 11	OK	47 degrees C / 116 degrees F
	PSM 12	OK	45 degrees C / 113 degrees F
	PSM 13	OK	44 degrees C / 111 degrees F
	PSM 14	OK	44 degrees C / 111 degrees F
	PSM 15	OK	43 degrees C / 109 degrees F
	PSM 16	OK	42 degrees C / 107 degrees F
	PSM 17	OK	41 degrees C / 105 degrees F
	PDM 0	OK	
	PDM 1	Absent	
	PDM 2	Absent	
	PDM 3	OK	
	CB 0 IntakeA-Zone0	OK	45 degrees C / 113 degrees F
	CB 0 IntakeB-Zone1	OK	34 degrees C / 93 degrees F
	CB 0 IntakeC-Zone0	OK	48 degrees C / 118 degrees F
	CB 0 ExhaustA-Zone0	OK	45 degrees C / 113 degrees F
	CB 0 ExhaustB-Zone1	OK	37 degrees C / 98 degrees F
	CB 0 TCBC-Zone0	OK	41 degrees C / 105 degrees F
	CB 1 IntakeA-Zone0	OK	46 degrees C / 114 degrees F
	CB 1 IntakeB-Zone1	OK	42 degrees C / 107 degrees F
	CB 1 IntakeC-Zone0	OK	49 degrees C / 120 degrees F
	CB 1 ExhaustA-Zone0	OK	46 degrees C / 114 degrees F
	CB 1 ExhaustB-Zone1	OK	41 degrees C / 105 degrees F
	CB 1 TCBC-Zone0	OK	46 degrees C / 114 degrees F
	SPMB 0 Intake	OK	33 degrees C / 91 degrees F
	SPMB 1 Intake	OK	42 degrees C / 107 degrees F
	Routing Engine 0	OK	35 degrees C / 95 degrees F
	Routing Engine 0 CPU	OK	34 degrees C / 93 degrees F
	Routing Engine 1	OK	44 degrees C / 111 degrees F
	Routing Engine 1 CPU	OK	42 degrees C / 107 degrees F
	SFB 0 Intake-Zone0	OK	55 degrees C / 131 degrees F

SFB 0 Exhaust-Zone1	OK	48 degrees C / 118 degrees F
SFB 0 IntakeA-Zone0	OK	50 degrees C / 122 degrees F
SFB 0 IntakeB-Zone1	OK	40 degrees C / 104 degrees F
SFB 0 Exhaust-Zone0	OK	52 degrees C / 125 degrees F
SFB 0 SFB-XF2-Zone1	OK	61 degrees C / 141 degrees F
SFB 0 SFB-XF1-Zone0	OK	69 degrees C / 156 degrees F
SFB 0 SFB-XF0-Zone0	OK	68 degrees C / 154 degrees F
SFB 1 Intake-Zone0	OK	56 degrees C / 132 degrees F
SFB 1 Exhaust-Zone1	OK	47 degrees C / 116 degrees F
SFB 1 IntakeA-Zone0	OK	51 degrees C / 123 degrees F
SFB 1 IntakeB-Zone1	OK	40 degrees C / 104 degrees F
SFB 1 Exhaust-Zone0	OK	51 degrees C / 123 degrees F
SFB 1 SFB-XF2-Zone1	OK	62 degrees C / 143 degrees F
SFB 1 SFB-XF1-Zone0	OK	67 degrees C / 152 degrees F
SFB 1 SFB-XF0-Zone0	OK	69 degrees C / 156 degrees F
SFB 2 Intake-Zone0	OK	56 degrees C / 132 degrees F
SFB 2 Exhaust-Zone1	OK	47 degrees C / 116 degrees F
SFB 2 IntakeA-Zone0	OK	51 degrees C / 123 degrees F
SFB 2 IntakeB-Zone1	OK	40 degrees C / 104 degrees F
SFB 2 Exhaust-Zone0	OK	53 degrees C / 127 degrees F
SFB 2 SFB-XF2-Zone1	OK	65 degrees C / 149 degrees F
SFB 2 SFB-XF1-Zone0	OK	69 degrees C / 156 degrees F
SFB 2 SFB-XF0-Zone0	OK	70 degrees C / 158 degrees F
SFB 3 Intake-Zone0	OK	57 degrees C / 134 degrees F
SFB 3 Exhaust-Zone1	OK	48 degrees C / 118 degrees F
SFB 3 IntakeA-Zone0	OK	52 degrees C / 125 degrees F
SFB 3 IntakeB-Zone1	OK	41 degrees C / 105 degrees F
SFB 3 Exhaust-Zone0	OK	53 degrees C / 127 degrees F
SFB 3 SFB-XF2-Zone1	OK	66 degrees C / 150 degrees F
SFB 3 SFB-XF1-Zone0	OK	69 degrees C / 156 degrees F
SFB 3 SFB-XF0-Zone0	OK	71 degrees C / 159 degrees F
SFB 4 Intake-Zone0	OK	58 degrees C / 136 degrees F
SFB 4 Exhaust-Zone1	OK	49 degrees C / 120 degrees F
SFB 4 IntakeA-Zone0	OK	54 degrees C / 129 degrees F
SFB 4 IntakeB-Zone1	OK	42 degrees C / 107 degrees F
SFB 4 Exhaust-Zone0	OK	53 degrees C / 127 degrees F
SFB 4 SFB-XF2-Zone1	OK	64 degrees C / 147 degrees F
SFB 4 SFB-XF1-Zone0	OK	68 degrees C / 154 degrees F
SFB 4 SFB-XF0-Zone0	OK	71 degrees C / 159 degrees F
SFB 5 Intake-Zone0	OK	58 degrees C / 136 degrees F
SFB 5 Exhaust-Zone1	OK	50 degrees C / 122 degrees F
SFB 5 IntakeA-Zone0	OK	53 degrees C / 127 degrees F
SFB 5 IntakeB-Zone1	OK	43 degrees C / 109 degrees F
SFB 5 Exhaust-Zone0	OK	54 degrees C / 129 degrees F
SFB 5 SFB-XF2-Zone1	OK	66 degrees C / 150 degrees F
SFB 5 SFB-XF1-Zone0	OK	69 degrees C / 156 degrees F
SFB 5 SFB-XF0-Zone0	OK	74 degrees C / 165 degrees F
SFB 6 Intake-Zone0	OK	58 degrees C / 136 degrees F
SFB 6 Exhaust-Zone1	OK	49 degrees C / 120 degrees F
SFB 6 IntakeA-Zone0	OK	53 degrees C / 127 degrees F
SFB 6 IntakeB-Zone1	OK	43 degrees C / 109 degrees F
SFB 6 Exhaust-Zone0	OK	53 degrees C / 127 degrees F
SFB 6 SFB-XF2-Zone1	OK	65 degrees C / 149 degrees F
SFB 6 SFB-XF1-Zone0	OK	68 degrees C / 154 degrees F
SFB 6 SFB-XF0-Zone0	OK	72 degrees C / 161 degrees F
SFB 7 Intake-Zone0	OK	57 degrees C / 134 degrees F
SFB 7 Exhaust-Zone1	OK	50 degrees C / 122 degrees F
SFB 7 IntakeA-Zone0	OK	53 degrees C / 127 degrees F
SFB 7 IntakeB-Zone1	OK	43 degrees C / 109 degrees F
SFB 7 Exhaust-Zone0	OK	54 degrees C / 129 degrees F
SFB 7 SFB-XF2-Zone1	OK	68 degrees C / 154 degrees F

SFB 7 SFB-XF1-Zone0	OK	69 degrees C / 156 degrees F
SFB 7 SFB-XF0-Zone0	OK	73 degrees C / 163 degrees F
FPC 0 Intake	OK	41 degrees C / 105 degrees F
FPC 0 Exhaust A	OK	48 degrees C / 118 degrees F
FPC 0 Exhaust B	OK	62 degrees C / 143 degrees F
FPC 0 LU 0 TSen	OK	59 degrees C / 138 degrees F
FPC 0 LU 0 Chip	OK	62 degrees C / 143 degrees F
FPC 0 LU 1 TSen	OK	59 degrees C / 138 degrees F
FPC 0 LU 1 Chip	OK	64 degrees C / 147 degrees F
FPC 0 LU 2 TSen	OK	59 degrees C / 138 degrees F
FPC 0 LU 2 Chip	OK	53 degrees C / 127 degrees F
FPC 0 LU 3 TSen	OK	59 degrees C / 138 degrees F
FPC 0 LU 3 Chip	OK	53 degrees C / 127 degrees F
FPC 0 MQ 0 TSen	OK	47 degrees C / 116 degrees F
FPC 0 MQ 0 Chip	OK	49 degrees C / 120 degrees F
FPC 0 MQ 1 TSen	OK	47 degrees C / 116 degrees F
FPC 0 MQ 1 Chip	OK	51 degrees C / 123 degrees F
FPC 0 MQ 2 TSen	OK	47 degrees C / 116 degrees F
FPC 0 MQ 2 Chip	OK	44 degrees C / 111 degrees F
FPC 0 MQ 3 TSen	OK	47 degrees C / 116 degrees F
FPC 0 MQ 3 Chip	OK	45 degrees C / 113 degrees F
FPC 1 Intake	OK	40 degrees C / 104 degrees F
FPC 1 Exhaust A	OK	49 degrees C / 120 degrees F
FPC 1 Exhaust B	OK	58 degrees C / 136 degrees F
FPC 1 LU 0 TSen	OK	55 degrees C / 131 degrees F
FPC 1 LU 0 Chip	OK	56 degrees C / 132 degrees F
FPC 1 LU 1 TSen	OK	55 degrees C / 131 degrees F
FPC 1 LU 1 Chip	OK	58 degrees C / 136 degrees F
FPC 1 LU 2 TSen	OK	55 degrees C / 131 degrees F
FPC 1 LU 2 Chip	OK	49 degrees C / 120 degrees F
FPC 1 LU 3 TSen	OK	55 degrees C / 131 degrees F
FPC 1 LU 3 Chip	OK	51 degrees C / 123 degrees F
FPC 1 MQ 0 TSen	OK	47 degrees C / 116 degrees F
FPC 1 MQ 0 Chip	OK	48 degrees C / 118 degrees F
FPC 1 MQ 1 TSen	OK	47 degrees C / 116 degrees F
FPC 1 MQ 1 Chip	OK	50 degrees C / 122 degrees F
FPC 1 MQ 2 TSen	OK	47 degrees C / 116 degrees F
FPC 1 MQ 2 Chip	OK	44 degrees C / 111 degrees F
FPC 1 MQ 3 TSen	OK	47 degrees C / 116 degrees F
FPC 1 MQ 3 Chip	OK	44 degrees C / 111 degrees F
FPC 2 Intake	OK	39 degrees C / 102 degrees F
FPC 2 Exhaust A	OK	49 degrees C / 120 degrees F
FPC 2 Exhaust B	OK	61 degrees C / 141 degrees F
FPC 2 LU 0 TSen	OK	58 degrees C / 136 degrees F
FPC 2 LU 0 Chip	OK	60 degrees C / 140 degrees F
FPC 2 LU 1 TSen	OK	58 degrees C / 136 degrees F
FPC 2 LU 1 Chip	OK	65 degrees C / 149 degrees F
FPC 2 LU 2 TSen	OK	58 degrees C / 136 degrees F
FPC 2 LU 2 Chip	OK	51 degrees C / 123 degrees F
FPC 2 LU 3 TSen	OK	58 degrees C / 136 degrees F
FPC 2 LU 3 Chip	OK	53 degrees C / 127 degrees F
FPC 2 MQ 0 TSen	OK	47 degrees C / 116 degrees F
FPC 2 MQ 0 Chip	OK	50 degrees C / 122 degrees F
FPC 2 MQ 1 TSen	OK	47 degrees C / 116 degrees F
FPC 2 MQ 1 Chip	OK	52 degrees C / 125 degrees F
FPC 2 MQ 2 TSen	OK	47 degrees C / 116 degrees F
FPC 2 MQ 2 Chip	OK	45 degrees C / 113 degrees F
FPC 2 MQ 3 TSen	OK	47 degrees C / 116 degrees F
FPC 2 MQ 3 Chip	OK	46 degrees C / 114 degrees F
FPC 3 Intake	OK	40 degrees C / 104 degrees F
FPC 3 Exhaust A	OK	49 degrees C / 120 degrees F

FPC 3 Exhaust B	OK	61 degrees C / 141 degrees F
FPC 3 LU 0 TSen	OK	58 degrees C / 136 degrees F
FPC 3 LU 0 Chip	OK	61 degrees C / 141 degrees F
FPC 3 LU 1 TSen	OK	58 degrees C / 136 degrees F
FPC 3 LU 1 Chip	OK	62 degrees C / 143 degrees F
FPC 3 LU 2 TSen	OK	58 degrees C / 136 degrees F
FPC 3 LU 2 Chip	OK	51 degrees C / 123 degrees F
FPC 3 LU 3 TSen	OK	58 degrees C / 136 degrees F
FPC 3 LU 3 Chip	OK	53 degrees C / 127 degrees F
FPC 3 MQ 0 TSen	OK	48 degrees C / 118 degrees F
FPC 3 MQ 0 Chip	OK	50 degrees C / 122 degrees F
FPC 3 MQ 1 TSen	OK	48 degrees C / 118 degrees F
FPC 3 MQ 1 Chip	OK	54 degrees C / 129 degrees F
FPC 3 MQ 2 TSen	OK	48 degrees C / 118 degrees F
FPC 3 MQ 2 Chip	OK	45 degrees C / 113 degrees F
FPC 3 MQ 3 TSen	OK	48 degrees C / 118 degrees F
FPC 3 MQ 3 Chip	OK	48 degrees C / 118 degrees F
FPC 4 Intake	OK	40 degrees C / 104 degrees F
FPC 4 Exhaust A	OK	49 degrees C / 120 degrees F
FPC 4 Exhaust B	OK	62 degrees C / 143 degrees F
FPC 4 LU 0 TSen	OK	59 degrees C / 138 degrees F
FPC 4 LU 0 Chip	OK	62 degrees C / 143 degrees F
FPC 4 LU 1 TSen	OK	59 degrees C / 138 degrees F
FPC 4 LU 1 Chip	OK	65 degrees C / 149 degrees F
FPC 4 LU 2 TSen	OK	59 degrees C / 138 degrees F
FPC 4 LU 2 Chip	OK	51 degrees C / 123 degrees F
FPC 4 LU 3 TSen	OK	59 degrees C / 138 degrees F
FPC 4 LU 3 Chip	OK	53 degrees C / 127 degrees F
FPC 4 MQ 0 TSen	OK	48 degrees C / 118 degrees F
FPC 4 MQ 0 Chip	OK	52 degrees C / 125 degrees F
FPC 4 MQ 1 TSen	OK	48 degrees C / 118 degrees F
FPC 4 MQ 1 Chip	OK	53 degrees C / 127 degrees F
FPC 4 MQ 2 TSen	OK	48 degrees C / 118 degrees F
FPC 4 MQ 2 Chip	OK	46 degrees C / 114 degrees F
FPC 4 MQ 3 TSen	OK	48 degrees C / 118 degrees F
FPC 4 MQ 3 Chip	OK	47 degrees C / 116 degrees F
FPC 5 Intake	OK	41 degrees C / 105 degrees F
FPC 5 Exhaust A	OK	50 degrees C / 122 degrees F
FPC 5 Exhaust B	OK	63 degrees C / 145 degrees F
FPC 5 LU 0 TSen	OK	60 degrees C / 140 degrees F
FPC 5 LU 0 Chip	OK	63 degrees C / 145 degrees F
FPC 5 LU 1 TSen	OK	60 degrees C / 140 degrees F
FPC 5 LU 1 Chip	OK	66 degrees C / 150 degrees F
FPC 5 LU 2 TSen	OK	60 degrees C / 140 degrees F
FPC 5 LU 2 Chip	OK	56 degrees C / 132 degrees F
FPC 5 LU 3 TSen	OK	60 degrees C / 140 degrees F
FPC 5 LU 3 Chip	OK	54 degrees C / 129 degrees F
FPC 5 MQ 0 TSen	OK	49 degrees C / 120 degrees F
FPC 5 MQ 0 Chip	OK	52 degrees C / 125 degrees F
FPC 5 MQ 1 TSen	OK	49 degrees C / 120 degrees F
FPC 5 MQ 1 Chip	OK	53 degrees C / 127 degrees F
FPC 5 MQ 2 TSen	OK	49 degrees C / 120 degrees F
FPC 5 MQ 2 Chip	OK	48 degrees C / 118 degrees F
FPC 5 MQ 3 TSen	OK	49 degrees C / 120 degrees F
FPC 5 MQ 3 Chip	OK	47 degrees C / 116 degrees F
FPC 6 Intake	OK	42 degrees C / 107 degrees F
FPC 6 Exhaust A	OK	51 degrees C / 123 degrees F
FPC 6 Exhaust B	OK	63 degrees C / 145 degrees F
FPC 6 LU 0 TSen	OK	61 degrees C / 141 degrees F
FPC 6 LU 0 Chip	OK	64 degrees C / 147 degrees F
FPC 6 LU 1 TSen	OK	61 degrees C / 141 degrees F



FPC 6 LU 1 Chip	OK	66 degrees C / 150 degrees F
FPC 6 LU 2 TSen	OK	61 degrees C / 141 degrees F
FPC 6 LU 2 Chip	OK	56 degrees C / 132 degrees F
FPC 6 LU 3 TSen	OK	61 degrees C / 141 degrees F
FPC 6 LU 3 Chip	OK	56 degrees C / 132 degrees F
FPC 6 MQ 0 TSen	OK	50 degrees C / 122 degrees F
FPC 6 MQ 0 Chip	OK	56 degrees C / 132 degrees F
FPC 6 MQ 1 TSen	OK	50 degrees C / 122 degrees F
FPC 6 MQ 1 Chip	OK	59 degrees C / 138 degrees F
FPC 6 MQ 2 TSen	OK	50 degrees C / 122 degrees F
FPC 6 MQ 2 Chip	OK	49 degrees C / 120 degrees F
FPC 6 MQ 3 TSen	OK	50 degrees C / 122 degrees F
FPC 6 MQ 3 Chip	OK	49 degrees C / 120 degrees F
FPC 7 Intake	OK	41 degrees C / 105 degrees F
FPC 7 Exhaust A	OK	51 degrees C / 123 degrees F
FPC 7 Exhaust B	OK	63 degrees C / 145 degrees F
FPC 7 LU 0 TSen	OK	60 degrees C / 140 degrees F
FPC 7 LU 0 Chip	OK	61 degrees C / 141 degrees F
FPC 7 LU 1 TSen	OK	60 degrees C / 140 degrees F
FPC 7 LU 1 Chip	OK	65 degrees C / 149 degrees F
FPC 7 LU 2 TSen	OK	60 degrees C / 140 degrees F
FPC 7 LU 2 Chip	OK	54 degrees C / 129 degrees F
FPC 7 LU 3 TSen	OK	60 degrees C / 140 degrees F
FPC 7 LU 3 Chip	OK	53 degrees C / 127 degrees F
FPC 7 MQ 0 TSen	OK	50 degrees C / 122 degrees F
FPC 7 MQ 0 Chip	OK	53 degrees C / 127 degrees F
FPC 7 MQ 1 TSen	OK	50 degrees C / 122 degrees F
FPC 7 MQ 1 Chip	OK	54 degrees C / 129 degrees F
FPC 7 MQ 2 TSen	OK	50 degrees C / 122 degrees F
FPC 7 MQ 2 Chip	OK	47 degrees C / 116 degrees F
FPC 7 MQ 3 TSen	OK	50 degrees C / 122 degrees F
FPC 7 MQ 3 Chip	OK	47 degrees C / 116 degrees F
FPC 8 Intake	OK	41 degrees C / 105 degrees F
FPC 8 Exhaust A	OK	50 degrees C / 122 degrees F
FPC 8 Exhaust B	OK	62 degrees C / 143 degrees F
FPC 8 LU 0 TSen	OK	59 degrees C / 138 degrees F
FPC 8 LU 0 Chip	OK	62 degrees C / 143 degrees F
FPC 8 LU 1 TSen	OK	59 degrees C / 138 degrees F
FPC 8 LU 1 Chip	OK	64 degrees C / 147 degrees F
FPC 8 LU 2 TSen	OK	59 degrees C / 138 degrees F
FPC 8 LU 2 Chip	OK	55 degrees C / 131 degrees F
FPC 8 LU 3 TSen	OK	59 degrees C / 138 degrees F
FPC 8 LU 3 Chip	OK	54 degrees C / 129 degrees F
FPC 8 MQ 0 TSen	OK	49 degrees C / 120 degrees F
FPC 8 MQ 0 Chip	OK	51 degrees C / 123 degrees F
FPC 8 MQ 1 TSen	OK	49 degrees C / 120 degrees F
FPC 8 MQ 1 Chip	OK	52 degrees C / 125 degrees F
FPC 8 MQ 2 TSen	OK	49 degrees C / 120 degrees F
FPC 8 MQ 2 Chip	OK	46 degrees C / 114 degrees F
FPC 8 MQ 3 TSen	OK	49 degrees C / 120 degrees F
FPC 8 MQ 3 Chip	OK	47 degrees C / 116 degrees F
FPC 9 Intake	OK	42 degrees C / 107 degrees F
FPC 9 Exhaust A	OK	51 degrees C / 123 degrees F
FPC 9 Exhaust B	OK	63 degrees C / 145 degrees F
FPC 9 LU 0 TSen	OK	60 degrees C / 140 degrees F
FPC 9 LU 0 Chip	OK	65 degrees C / 149 degrees F
FPC 9 LU 1 TSen	OK	60 degrees C / 140 degrees F
FPC 9 LU 1 Chip	OK	67 degrees C / 152 degrees F
FPC 9 LU 2 TSen	OK	60 degrees C / 140 degrees F
FPC 9 LU 2 Chip	OK	54 degrees C / 129 degrees F
FPC 9 LU 3 TSen	OK	60 degrees C / 140 degrees F

FPC 9 LU 3 Chip	OK	54 degrees C / 129 degrees F
FPC 9 MQ 0 TSen	OK	51 degrees C / 123 degrees F
FPC 9 MQ 0 Chip	OK	55 degrees C / 131 degrees F
FPC 9 MQ 1 TSen	OK	51 degrees C / 123 degrees F
FPC 9 MQ 1 Chip	OK	59 degrees C / 138 degrees F
FPC 9 MQ 2 TSen	OK	51 degrees C / 123 degrees F
FPC 9 MQ 2 Chip	OK	49 degrees C / 120 degrees F
FPC 9 MQ 3 TSen	OK	51 degrees C / 123 degrees F
FPC 9 MQ 3 Chip	OK	49 degrees C / 120 degrees F
FPC 10 Intake	OK	44 degrees C / 111 degrees F
FPC 10 Exhaust A	OK	49 degrees C / 120 degrees F
FPC 10 Exhaust B	OK	55 degrees C / 131 degrees F
FPC 10 LU 0 TSen	OK	54 degrees C / 129 degrees F
FPC 10 LU 0 Chip	OK	55 degrees C / 131 degrees F
FPC 10 LU 1 TSen	OK	54 degrees C / 129 degrees F
FPC 10 LU 1 Chip	OK	59 degrees C / 138 degrees F
FPC 10 LU 2 TSen	OK	54 degrees C / 129 degrees F
FPC 10 LU 2 Chip	OK	52 degrees C / 125 degrees F
FPC 10 LU 3 TSen	OK	54 degrees C / 129 degrees F
FPC 10 LU 3 Chip	OK	51 degrees C / 123 degrees F
FPC 10 MQ 0 TSen	OK	48 degrees C / 118 degrees F
FPC 10 MQ 0 Chip	OK	49 degrees C / 120 degrees F
FPC 10 MQ 1 TSen	OK	48 degrees C / 118 degrees F
FPC 10 MQ 1 Chip	OK	52 degrees C / 125 degrees F
FPC 10 MQ 2 TSen	OK	48 degrees C / 118 degrees F
FPC 10 MQ 2 Chip	OK	47 degrees C / 116 degrees F
FPC 10 MQ 3 TSen	OK	48 degrees C / 118 degrees F
FPC 10 MQ 3 Chip	OK	47 degrees C / 116 degrees F
FPC 11 Intake	OK	30 degrees C / 86 degrees F
FPC 11 Exhaust A	OK	35 degrees C / 95 degrees F
FPC 11 Exhaust B	OK	30 degrees C / 86 degrees F
FPC 11 LU 0 TSen	OK	57 degrees C / 134 degrees F
FPC 11 LU 0 Chip	OK	58 degrees C / 136 degrees F
FPC 11 LU 1 TSen	OK	57 degrees C / 134 degrees F
FPC 11 LU 1 Chip	OK	62 degrees C / 143 degrees F
FPC 11 LU 2 TSen	OK	57 degrees C / 134 degrees F
FPC 11 LU 2 Chip	OK	53 degrees C / 127 degrees F
FPC 11 LU 3 TSen	OK	57 degrees C / 134 degrees F
FPC 11 LU 3 Chip	OK	54 degrees C / 129 degrees F
FPC 11 MQ 0 TSen	OK	52 degrees C / 125 degrees F
FPC 11 MQ 0 Chip	OK	52 degrees C / 125 degrees F
FPC 11 MQ 1 TSen	OK	52 degrees C / 125 degrees F
FPC 11 MQ 1 Chip	OK	57 degrees C / 134 degrees F
FPC 11 MQ 2 TSen	OK	52 degrees C / 125 degrees F
FPC 11 MQ 2 Chip	OK	48 degrees C / 118 degrees F
FPC 11 MQ 3 TSen	OK	52 degrees C / 125 degrees F
FPC 11 MQ 3 Chip	OK	52 degrees C / 125 degrees F
FPC 12 Intake	OK	40 degrees C / 104 degrees F
FPC 12 Exhaust A	OK	47 degrees C / 116 degrees F
FPC 12 Exhaust B	OK	52 degrees C / 125 degrees F
FPC 12 LU 0 TSen	OK	51 degrees C / 123 degrees F
FPC 12 LU 0 Chip	OK	52 degrees C / 125 degrees F
FPC 12 LU 1 TSen	OK	51 degrees C / 123 degrees F
FPC 12 LU 1 Chip	OK	55 degrees C / 131 degrees F
FPC 12 LU 2 TSen	OK	51 degrees C / 123 degrees F
FPC 12 LU 2 Chip	OK	47 degrees C / 116 degrees F
FPC 12 LU 3 TSen	OK	51 degrees C / 123 degrees F
FPC 12 LU 3 Chip	OK	50 degrees C / 122 degrees F
FPC 12 MQ 0 TSen	OK	46 degrees C / 114 degrees F
FPC 12 MQ 0 Chip	OK	46 degrees C / 114 degrees F
FPC 12 MQ 1 TSen	OK	46 degrees C / 114 degrees F

FPC 12 MQ 1 Chip	OK	50 degrees C / 122 degrees F
FPC 12 MQ 2 TSen	OK	46 degrees C / 114 degrees F
FPC 12 MQ 2 Chip	OK	44 degrees C / 111 degrees F
FPC 12 MQ 3 TSen	OK	46 degrees C / 114 degrees F
FPC 12 MQ 3 Chip	OK	46 degrees C / 114 degrees F
FPC 13 Intake	OK	40 degrees C / 104 degrees F
FPC 13 Exhaust A	OK	48 degrees C / 118 degrees F
FPC 13 Exhaust B	OK	52 degrees C / 125 degrees F
FPC 13 LU 0 TSen	OK	51 degrees C / 123 degrees F
FPC 13 LU 0 Chip	OK	52 degrees C / 125 degrees F
FPC 13 LU 1 TSen	OK	51 degrees C / 123 degrees F
FPC 13 LU 1 Chip	OK	55 degrees C / 131 degrees F
FPC 13 LU 2 TSen	OK	51 degrees C / 123 degrees F
FPC 13 LU 2 Chip	OK	48 degrees C / 118 degrees F
FPC 13 LU 3 TSen	OK	51 degrees C / 123 degrees F
FPC 13 LU 3 Chip	OK	48 degrees C / 118 degrees F
FPC 13 MQ 0 TSen	OK	46 degrees C / 114 degrees F
FPC 13 MQ 0 Chip	OK	46 degrees C / 114 degrees F
FPC 13 MQ 1 TSen	OK	46 degrees C / 114 degrees F
FPC 13 MQ 1 Chip	OK	50 degrees C / 122 degrees F
FPC 13 MQ 2 TSen	OK	46 degrees C / 114 degrees F
FPC 13 MQ 2 Chip	OK	44 degrees C / 111 degrees F
FPC 13 MQ 3 TSen	OK	46 degrees C / 114 degrees F
FPC 13 MQ 3 Chip	OK	46 degrees C / 114 degrees F
FPC 14 Intake	OK	40 degrees C / 104 degrees F
FPC 14 Exhaust A	OK	50 degrees C / 122 degrees F
FPC 14 Exhaust B	OK	51 degrees C / 123 degrees F
FPC 14 LU 0 TSen	OK	50 degrees C / 122 degrees F
FPC 14 LU 0 Chip	OK	50 degrees C / 122 degrees F
FPC 14 LU 1 TSen	OK	50 degrees C / 122 degrees F
FPC 14 LU 1 Chip	OK	54 degrees C / 129 degrees F
FPC 14 LU 2 TSen	OK	50 degrees C / 122 degrees F
FPC 14 LU 2 Chip	OK	47 degrees C / 116 degrees F
FPC 14 LU 3 TSen	OK	50 degrees C / 122 degrees F
FPC 14 LU 3 Chip	OK	49 degrees C / 120 degrees F
FPC 14 MQ 0 TSen	OK	47 degrees C / 116 degrees F
FPC 14 MQ 0 Chip	OK	46 degrees C / 114 degrees F
FPC 14 MQ 1 TSen	OK	47 degrees C / 116 degrees F
FPC 14 MQ 1 Chip	OK	51 degrees C / 123 degrees F
FPC 14 MQ 2 TSen	OK	47 degrees C / 116 degrees F
FPC 14 MQ 2 Chip	OK	45 degrees C / 113 degrees F
FPC 14 MQ 3 TSen	OK	47 degrees C / 116 degrees F
FPC 14 MQ 3 Chip	OK	48 degrees C / 118 degrees F
FPC 15 Intake	OK	44 degrees C / 111 degrees F
FPC 15 Exhaust A	OK	49 degrees C / 120 degrees F
FPC 15 Exhaust B	OK	60 degrees C / 140 degrees F
FPC 15 LU 0 TSen	OK	50 degrees C / 122 degrees F
FPC 15 LU 0 Chip	OK	56 degrees C / 132 degrees F
FPC 15 LU 1 TSen	OK	50 degrees C / 122 degrees F
FPC 15 LU 1 Chip	OK	50 degrees C / 122 degrees F
FPC 15 LU 2 TSen	OK	50 degrees C / 122 degrees F
FPC 15 LU 2 Chip	OK	58 degrees C / 136 degrees F
FPC 15 LU 3 TSen	OK	50 degrees C / 122 degrees F
FPC 15 LU 3 Chip	OK	63 degrees C / 145 degrees F
FPC 15 XM 0 TSen	OK	50 degrees C / 122 degrees F
FPC 15 XM 0 Chip	OK	56 degrees C / 132 degrees F
FPC 15 XF 0 TSen	OK	50 degrees C / 122 degrees F
FPC 15 XF 0 Chip	OK	68 degrees C / 154 degrees F
FPC 15 PLX Switch TSen	OK	50 degrees C / 122 degrees F
FPC 15 PLX Switch Chip	OK	56 degrees C / 132 degrees F
FPC 16 Intake	OK	42 degrees C / 107 degrees F

FPC 16 Exhaust A	OK	51 degrees C / 123 degrees F
FPC 16 Exhaust B	OK	53 degrees C / 127 degrees F
FPC 16 LU 0 TSen	OK	51 degrees C / 123 degrees F
FPC 16 LU 0 Chip	OK	52 degrees C / 125 degrees F
FPC 16 LU 1 TSen	OK	51 degrees C / 123 degrees F
FPC 16 LU 1 Chip	OK	55 degrees C / 131 degrees F
FPC 16 LU 2 TSen	OK	51 degrees C / 123 degrees F
FPC 16 LU 2 Chip	OK	48 degrees C / 118 degrees F
FPC 16 LU 3 TSen	OK	51 degrees C / 123 degrees F
FPC 16 LU 3 Chip	OK	49 degrees C / 120 degrees F
FPC 16 MQ 0 TSen	OK	49 degrees C / 120 degrees F
FPC 16 MQ 0 Chip	OK	48 degrees C / 118 degrees F
FPC 16 MQ 1 TSen	OK	49 degrees C / 120 degrees F
FPC 16 MQ 1 Chip	OK	53 degrees C / 127 degrees F
FPC 16 MQ 2 TSen	OK	49 degrees C / 120 degrees F
FPC 16 MQ 2 Chip	OK	46 degrees C / 114 degrees F
FPC 16 MQ 3 TSen	OK	49 degrees C / 120 degrees F
FPC 16 MQ 3 Chip	OK	49 degrees C / 120 degrees F
FPC 17 Intake	OK	43 degrees C / 109 degrees F
FPC 17 Exhaust A	OK	51 degrees C / 123 degrees F
FPC 17 Exhaust B	OK	55 degrees C / 131 degrees F
FPC 17 LU 0 TSen	OK	54 degrees C / 129 degrees F
FPC 17 LU 0 Chip	OK	57 degrees C / 134 degrees F
FPC 17 LU 1 TSen	OK	54 degrees C / 129 degrees F
FPC 17 LU 1 Chip	OK	60 degrees C / 140 degrees F
FPC 17 LU 2 TSen	OK	54 degrees C / 129 degrees F
FPC 17 LU 2 Chip	OK	53 degrees C / 127 degrees F
FPC 17 LU 3 TSen	OK	54 degrees C / 129 degrees F
FPC 17 LU 3 Chip	OK	53 degrees C / 127 degrees F
FPC 17 MQ 0 TSen	OK	49 degrees C / 120 degrees F
FPC 17 MQ 0 Chip	OK	50 degrees C / 122 degrees F
FPC 17 MQ 1 TSen	OK	49 degrees C / 120 degrees F
FPC 17 MQ 1 Chip	OK	54 degrees C / 129 degrees F
FPC 17 MQ 2 TSen	OK	49 degrees C / 120 degrees F
FPC 17 MQ 2 Chip	OK	47 degrees C / 116 degrees F
FPC 17 MQ 3 TSen	OK	49 degrees C / 120 degrees F
FPC 17 MQ 3 Chip	OK	51 degrees C / 123 degrees F
FPC 18 Intake	OK	44 degrees C / 111 degrees F
FPC 18 Exhaust A	OK	53 degrees C / 127 degrees F
FPC 18 Exhaust B	OK	57 degrees C / 134 degrees F
FPC 18 LU 0 TSen	OK	56 degrees C / 132 degrees F
FPC 18 LU 0 Chip	OK	57 degrees C / 134 degrees F
FPC 18 LU 1 TSen	OK	56 degrees C / 132 degrees F
FPC 18 LU 1 Chip	OK	62 degrees C / 143 degrees F
FPC 18 LU 2 TSen	OK	56 degrees C / 132 degrees F
FPC 18 LU 2 Chip	OK	53 degrees C / 127 degrees F
FPC 18 LU 3 TSen	OK	56 degrees C / 132 degrees F
FPC 18 LU 3 Chip	OK	55 degrees C / 131 degrees F
FPC 18 MQ 0 TSen	OK	51 degrees C / 123 degrees F
FPC 18 MQ 0 Chip	OK	54 degrees C / 129 degrees F
FPC 18 MQ 1 TSen	OK	51 degrees C / 123 degrees F
FPC 18 MQ 1 Chip	OK	58 degrees C / 136 degrees F
FPC 18 MQ 2 TSen	OK	51 degrees C / 123 degrees F
FPC 18 MQ 2 Chip	OK	50 degrees C / 122 degrees F
FPC 18 MQ 3 TSen	OK	51 degrees C / 123 degrees F
FPC 18 MQ 3 Chip	OK	53 degrees C / 127 degrees F
FPC 19 Intake	OK	48 degrees C / 118 degrees F
FPC 19 Exhaust A	OK	56 degrees C / 132 degrees F
FPC 19 Exhaust B	OK	64 degrees C / 147 degrees F
FPC 19 LU 0 TSen	OK	63 degrees C / 145 degrees F
FPC 19 LU 0 Chip	OK	64 degrees C / 147 degrees F

FPC 19 LU 1 TSen	OK	63 degrees C / 145 degrees F
FPC 19 LU 1 Chip	OK	70 degrees C / 158 degrees F
FPC 19 LU 2 TSen	OK	63 degrees C / 145 degrees F
FPC 19 LU 2 Chip	OK	61 degrees C / 141 degrees F
FPC 19 LU 3 TSen	OK	63 degrees C / 145 degrees F
FPC 19 LU 3 Chip	OK	62 degrees C / 143 degrees F
FPC 19 MQ 0 TSen	OK	56 degrees C / 132 degrees F
FPC 19 MQ 0 Chip	OK	60 degrees C / 140 degrees F
FPC 19 MQ 1 TSen	OK	56 degrees C / 132 degrees F
FPC 19 MQ 1 Chip	OK	62 degrees C / 143 degrees F
FPC 19 MQ 2 TSen	OK	56 degrees C / 132 degrees F
FPC 19 MQ 2 Chip	OK	56 degrees C / 132 degrees F
FPC 19 MQ 3 TSen	OK	56 degrees C / 132 degrees F
FPC 19 MQ 3 Chip	OK	57 degrees C / 134 degrees F
ADC 0 Intake	OK	40 degrees C / 104 degrees F
ADC 0 Exhaust	OK	52 degrees C / 125 degrees F
ADC 0 ADC-XF1	OK	59 degrees C / 138 degrees F
ADC 0 ADC-XF0	OK	66 degrees C / 150 degrees F
ADC 1 Intake	OK	38 degrees C / 100 degrees F
ADC 1 Exhaust	OK	50 degrees C / 122 degrees F
ADC 1 ADC-XF1	OK	59 degrees C / 138 degrees F
ADC 1 ADC-XF0	OK	63 degrees C / 145 degrees F
ADC 2 Intake	OK	37 degrees C / 98 degrees F
ADC 2 Exhaust	OK	52 degrees C / 125 degrees F
ADC 2 ADC-XF1	OK	53 degrees C / 127 degrees F
ADC 2 ADC-XF0	OK	61 degrees C / 141 degrees F
ADC 3 Intake	OK	40 degrees C / 104 degrees F
ADC 3 Exhaust	OK	51 degrees C / 123 degrees F
ADC 3 ADC-XF1	OK	61 degrees C / 141 degrees F
ADC 3 ADC-XF0	OK	64 degrees C / 147 degrees F
ADC 4 Intake	OK	39 degrees C / 102 degrees F
ADC 4 Exhaust	OK	51 degrees C / 123 degrees F
ADC 4 ADC-XF1	OK	60 degrees C / 140 degrees F
ADC 4 ADC-XF0	OK	63 degrees C / 145 degrees F
ADC 5 Intake	OK	38 degrees C / 100 degrees F
ADC 5 Exhaust	OK	54 degrees C / 129 degrees F
ADC 5 ADC-XF1	OK	56 degrees C / 132 degrees F
ADC 5 ADC-XF0	OK	67 degrees C / 152 degrees F
ADC 6 Intake	OK	39 degrees C / 102 degrees F
ADC 6 Exhaust	OK	52 degrees C / 125 degrees F
ADC 6 ADC-XF1	OK	59 degrees C / 138 degrees F
ADC 6 ADC-XF0	OK	66 degrees C / 150 degrees F
ADC 7 Intake	OK	39 degrees C / 102 degrees F
ADC 7 Exhaust	OK	54 degrees C / 129 degrees F
ADC 7 ADC-XF1	OK	62 degrees C / 143 degrees F
ADC 7 ADC-XF0	OK	70 degrees C / 158 degrees F
ADC 8 Intake	OK	39 degrees C / 102 degrees F
ADC 8 Exhaust	OK	52 degrees C / 125 degrees F
ADC 8 ADC-XF1	OK	61 degrees C / 141 degrees F
ADC 8 ADC-XF0	OK	65 degrees C / 149 degrees F
ADC 9 Intake	OK	41 degrees C / 105 degrees F
ADC 9 Exhaust	OK	51 degrees C / 123 degrees F
ADC 9 ADC-XF1	OK	63 degrees C / 145 degrees F
ADC 9 ADC-XF0	OK	63 degrees C / 145 degrees F
ADC 10 Intake	OK	48 degrees C / 118 degrees F
ADC 10 Exhaust	OK	53 degrees C / 127 degrees F
ADC 10 ADC-XF1	OK	67 degrees C / 152 degrees F
ADC 10 ADC-XF0	OK	66 degrees C / 150 degrees F
ADC 12 Intake	OK	49 degrees C / 120 degrees F
ADC 12 Exhaust	OK	54 degrees C / 129 degrees F
ADC 12 ADC-XF1	OK	67 degrees C / 152 degrees F

	ADC 12	ADC-XF0	OK	67 degrees C / 152 degrees F
	ADC 13	Intake	OK	49 degrees C / 120 degrees F
	ADC 13	Exhaust	OK	57 degrees C / 134 degrees F
	ADC 13	ADC-XF1	OK	66 degrees C / 150 degrees F
	ADC 13	ADC-XF0	OK	69 degrees C / 156 degrees F
	ADC 14	Intake	OK	51 degrees C / 123 degrees F
	ADC 14	Exhaust	OK	59 degrees C / 138 degrees F
	ADC 14	ADC-XF1	OK	69 degrees C / 156 degrees F
	ADC 14	ADC-XF0	OK	74 degrees C / 165 degrees F
	ADC 15	Intake	OK	50 degrees C / 122 degrees F
	ADC 15	Exhaust	OK	59 degrees C / 138 degrees F
	ADC 15	ADC-XF1	OK	68 degrees C / 154 degrees F
	ADC 15	ADC-XF0	OK	69 degrees C / 156 degrees F
	ADC 16	Intake	OK	52 degrees C / 125 degrees F
	ADC 16	Exhaust	OK	58 degrees C / 136 degrees F
	ADC 16	ADC-XF1	OK	68 degrees C / 154 degrees F
	ADC 16	ADC-XF0	OK	70 degrees C / 158 degrees F
	ADC 17	Intake	OK	52 degrees C / 125 degrees F
	ADC 17	Exhaust	OK	59 degrees C / 138 degrees F
	ADC 17	ADC-XF1	OK	69 degrees C / 156 degrees F
	ADC 17	ADC-XF0	OK	71 degrees C / 159 degrees F
	ADC 18	Intake	OK	53 degrees C / 127 degrees F
	ADC 18	Exhaust	OK	59 degrees C / 138 degrees F
	ADC 18	ADC-XF1	OK	68 degrees C / 154 degrees F
	ADC 18	ADC-XF0	OK	73 degrees C / 163 degrees F
	ADC 19	Intake	OK	50 degrees C / 122 degrees F
	ADC 19	Exhaust	OK	59 degrees C / 138 degrees F
	ADC 19	ADC-XF1	OK	68 degrees C / 154 degrees F
	ADC 19	ADC-XF0	OK	72 degrees C / 161 degrees F
Fans	Fan Tray 0	Fan 1	OK	7440 RPM
	Fan Tray 0	Fan 2	OK	7200 RPM
	Fan Tray 0	Fan 3	OK	6960 RPM
	Fan Tray 0	Fan 4	OK	7200 RPM
	Fan Tray 0	Fan 5	OK	7080 RPM
	Fan Tray 0	Fan 6	OK	6840 RPM
	Fan Tray 1	Fan 1	OK	6840 RPM
	Fan Tray 1	Fan 2	OK	6960 RPM
	Fan Tray 1	Fan 3	OK	6960 RPM
	Fan Tray 1	Fan 4	OK	7080 RPM
	Fan Tray 1	Fan 5	OK	6960 RPM
	Fan Tray 1	Fan 6	OK	6960 RPM
	Fan Tray 2	Fan 1	OK	8640 RPM
	Fan Tray 2	Fan 2	OK	8640 RPM
	Fan Tray 2	Fan 3	OK	8760 RPM
	Fan Tray 2	Fan 4	OK	8760 RPM
	Fan Tray 2	Fan 5	OK	8640 RPM
	Fan Tray 2	Fan 6	OK	8640 RPM
	Fan Tray 3	Fan 1	OK	8520 RPM
	Fan Tray 3	Fan 2	OK	8520 RPM
	Fan Tray 3	Fan 3	OK	8640 RPM
	Fan Tray 3	Fan 4	OK	8640 RPM
	Fan Tray 3	Fan 5	OK	8520 RPM
	Fan Tray 3	Fan 6	OK	8520 RPM

## show chassis environment (MX2010 Router)

user@host&gt; show chassis environment

Class	Item	Status	Measurement
Temp	PSM 0	OK	7 degrees C / 44 degrees F
	PSM 1	OK	7 degrees C / 44 degrees F
	PSM 2	OK	7 degrees C / 44 degrees F

PSM 3	OK	6 degrees C / 42 degrees F
PSM 4	OK	6 degrees C / 42 degrees F
PSM 5	OK	6 degrees C / 42 degrees F
PSM 6	OK	6 degrees C / 42 degrees F
PSM 7	OK	7 degrees C / 44 degrees F
PSM 8	OK	7 degrees C / 44 degrees F
PDM 0	OK	
PDM 1	Absent	
CB 0 IntakeA-Zone0	OK	14 degrees C / 57 degrees F
CB 0 IntakeB-Zone1	OK	7 degrees C / 44 degrees F
CB 0 IntakeC-Zone0	OK	22 degrees C / 71 degrees F
CB 0 ExhaustA-Zone0	OK	14 degrees C / 57 degrees F
CB 0 ExhaustB-Zone1	OK	9 degrees C / 48 degrees F
CB 0 TCBC-Zone0	OK	11 degrees C / 51 degrees F
CB 1 IntakeA-Zone0	OK	9 degrees C / 48 degrees F
CB 1 IntakeB-Zone1	OK	5 degrees C / 41 degrees F
CB 1 IntakeC-Zone0	OK	20 degrees C / 68 degrees F
CB 1 ExhaustA-Zone0	OK	12 degrees C / 53 degrees F
CB 1 ExhaustB-Zone1	OK	7 degrees C / 44 degrees F
CB 1 TCBC-Zone0	OK	10 degrees C / 50 degrees F
SPMB 0 Intake	OK	5 degrees C / 41 degrees F
SPMB 1 Intake	OK	4 degrees C / 39 degrees F
Routing Engine 0	OK	9 degrees C / 48 degrees F
Routing Engine 0 CPU	OK	9 degrees C / 48 degrees F
Routing Engine 1	OK	6 degrees C / 42 degrees F
Routing Engine 1 CPU	OK	6 degrees C / 42 degrees F
SFB 0 Intake-Zone0	OK	26 degrees C / 78 degrees F
SFB 0 Exhaust-Zone1	OK	17 degrees C / 62 degrees F
SFB 0 IntakeA-Zone0	OK	16 degrees C / 60 degrees F
SFB 0 IntakeB-Zone1	OK	11 degrees C / 51 degrees F
SFB 0 Exhaust-Zone0	OK	18 degrees C / 64 degrees F
SFB 0 SFB-XF2-Zone1	OK	25 degrees C / 77 degrees F
SFB 0 SFB-XF1-Zone0	OK	23 degrees C / 73 degrees F
SFB 0 SFB-XF0-Zone0	OK	33 degrees C / 91 degrees F
SFB 1 Intake-Zone0	OK	27 degrees C / 80 degrees F
SFB 1 Exhaust-Zone1	OK	15 degrees C / 59 degrees F
SFB 1 IntakeA-Zone0	OK	20 degrees C / 68 degrees F
SFB 1 IntakeB-Zone1	OK	10 degrees C / 50 degrees F
SFB 1 Exhaust-Zone0	OK	19 degrees C / 66 degrees F
SFB 1 SFB-XF2-Zone1	OK	26 degrees C / 78 degrees F
SFB 1 SFB-XF1-Zone0	OK	27 degrees C / 80 degrees F
SFB 1 SFB-XF0-Zone0	OK	32 degrees C / 89 degrees F
SFB 2 Intake-Zone0	OK	21 degrees C / 69 degrees F
SFB 2 Exhaust-Zone1	OK	13 degrees C / 55 degrees F
SFB 2 IntakeA-Zone0	OK	18 degrees C / 64 degrees F
SFB 2 IntakeB-Zone1	OK	9 degrees C / 48 degrees F
SFB 2 Exhaust-Zone0	OK	16 degrees C / 60 degrees F
SFB 2 SFB-XF2-Zone1	OK	24 degrees C / 75 degrees F
SFB 2 SFB-XF1-Zone0	OK	21 degrees C / 69 degrees F
SFB 2 SFB-XF0-Zone0	OK	26 degrees C / 78 degrees F
SFB 4 Intake-Zone0	OK	28 degrees C / 82 degrees F
SFB 4 Exhaust-Zone1	OK	16 degrees C / 60 degrees F
SFB 4 IntakeA-Zone0	OK	18 degrees C / 64 degrees F
SFB 4 IntakeB-Zone1	OK	11 degrees C / 51 degrees F
SFB 4 Exhaust-Zone0	OK	19 degrees C / 66 degrees F
SFB 4 SFB-XF2-Zone1	OK	27 degrees C / 80 degrees F
SFB 4 SFB-XF1-Zone0	OK	27 degrees C / 80 degrees F
SFB 4 SFB-XF0-Zone0	OK	32 degrees C / 89 degrees F
SFB 5 Intake-Zone0	OK	22 degrees C / 71 degrees F
SFB 5 Exhaust-Zone1	OK	14 degrees C / 57 degrees F
SFB 5 IntakeA-Zone0	OK	18 degrees C / 64 degrees F

SFB 5 IntakeB-Zone1	OK	10 degrees C / 50 degrees F
SFB 5 Exhaust-Zone0	OK	17 degrees C / 62 degrees F
SFB 5 SFB-XF2-Zone1	OK	22 degrees C / 71 degrees F
SFB 5 SFB-XF1-Zone0	OK	29 degrees C / 84 degrees F
SFB 5 SFB-XF0-Zone0	OK	27 degrees C / 80 degrees F
SFB 6 Intake-Zone0	OK	27 degrees C / 80 degrees F
SFB 6 Exhaust-Zone1	OK	13 degrees C / 55 degrees F
SFB 6 IntakeA-Zone0	OK	19 degrees C / 66 degrees F
SFB 6 IntakeB-Zone1	OK	10 degrees C / 50 degrees F
SFB 6 Exhaust-Zone0	OK	20 degrees C / 68 degrees F
SFB 6 SFB-XF2-Zone1	OK	24 degrees C / 75 degrees F
SFB 6 SFB-XF1-Zone0	OK	32 degrees C / 89 degrees F
SFB 6 SFB-XF0-Zone0	OK	33 degrees C / 91 degrees F
SFB 7 Intake-Zone0	OK	25 degrees C / 77 degrees F
SFB 7 Exhaust-Zone1	OK	13 degrees C / 55 degrees F
SFB 7 IntakeA-Zone0	OK	14 degrees C / 57 degrees F
SFB 7 IntakeB-Zone1	OK	8 degrees C / 46 degrees F
SFB 7 Exhaust-Zone0	OK	17 degrees C / 62 degrees F
SFB 7 SFB-XF2-Zone1	OK	21 degrees C / 69 degrees F
SFB 7 SFB-XF1-Zone0	OK	21 degrees C / 69 degrees F
SFB 7 SFB-XF0-Zone0	OK	33 degrees C / 91 degrees F
FPC 0 Intake	OK	13 degrees C / 55 degrees F
FPC 0 Exhaust A	OK	13 degrees C / 55 degrees F
FPC 0 Exhaust B	OK	14 degrees C / 57 degrees F
FPC 0 LU 0 TSen	OK	28 degrees C / 82 degrees F
FPC 0 LU 0 Chip	OK	25 degrees C / 77 degrees F
FPC 0 LU 1 TSen	OK	28 degrees C / 82 degrees F
FPC 0 LU 1 Chip	OK	27 degrees C / 80 degrees F
FPC 0 LU 2 TSen	OK	28 degrees C / 82 degrees F
FPC 0 LU 2 Chip	OK	19 degrees C / 66 degrees F
FPC 0 LU 3 TSen	OK	28 degrees C / 82 degrees F
FPC 0 LU 3 Chip	OK	23 degrees C / 73 degrees F
FPC 0 XM 0 TSen	OK	28 degrees C / 82 degrees F
FPC 0 XM 0 Chip	OK	33 degrees C / 91 degrees F
FPC 0 XM 1 TSen	OK	28 degrees C / 82 degrees F
FPC 0 XM 1 Chip	OK	26 degrees C / 78 degrees F
FPC 0 PLX Switch TSen	OK	28 degrees C / 82 degrees F
FPC 0 PLX Switch Chip	OK	26 degrees C / 78 degrees F
FPC 1 Intake	OK	10 degrees C / 50 degrees F
FPC 1 Exhaust A	OK	24 degrees C / 75 degrees F
FPC 1 Exhaust B	OK	28 degrees C / 82 degrees F
FPC 1 LU 0 TSen	OK	22 degrees C / 71 degrees F
FPC 1 LU 0 Chip	OK	31 degrees C / 87 degrees F
FPC 1 LU 1 TSen	OK	22 degrees C / 71 degrees F
FPC 1 LU 1 Chip	OK	21 degrees C / 69 degrees F
FPC 1 LU 2 TSen	OK	22 degrees C / 71 degrees F
FPC 1 LU 2 Chip	OK	25 degrees C / 77 degrees F
FPC 1 LU 3 TSen	OK	22 degrees C / 71 degrees F
FPC 1 LU 3 Chip	OK	33 degrees C / 91 degrees F
FPC 1 XM 0 TSen	OK	22 degrees C / 71 degrees F
FPC 1 XM 0 Chip	OK	30 degrees C / 86 degrees F
FPC 1 XF 0 TSen	OK	22 degrees C / 71 degrees F
FPC 1 XF 0 Chip	OK	37 degrees C / 98 degrees F
FPC 1 PLX Switch TSen	OK	22 degrees C / 71 degrees F
FPC 1 PLX Switch Chip	OK	22 degrees C / 71 degrees F
FPC 2 Intake	OK	9 degrees C / 48 degrees F
FPC 2 Exhaust A	OK	10 degrees C / 50 degrees F
FPC 2 Exhaust B	OK	10 degrees C / 50 degrees F
FPC 2 LU 0 TSen	OK	26 degrees C / 78 degrees F
FPC 2 LU 0 Chip	OK	25 degrees C / 77 degrees F
FPC 2 LU 1 TSen	OK	26 degrees C / 78 degrees F



FPC 2 LU 1 Chip	OK	26 degrees C / 78 degrees F
FPC 2 LU 2 TSen	OK	26 degrees C / 78 degrees F
FPC 2 LU 2 Chip	OK	17 degrees C / 62 degrees F
FPC 2 LU 3 TSen	OK	26 degrees C / 78 degrees F
FPC 2 LU 3 Chip	OK	22 degrees C / 71 degrees F
FPC 2 XM 0 TSen	OK	26 degrees C / 78 degrees F
FPC 2 XM 0 Chip	OK	34 degrees C / 93 degrees F
FPC 2 XM 1 TSen	OK	26 degrees C / 78 degrees F
FPC 2 XM 1 Chip	OK	26 degrees C / 78 degrees F
FPC 2 PLX Switch TSen	OK	26 degrees C / 78 degrees F
FPC 2 PLX Switch Chip	OK	20 degrees C / 68 degrees F
FPC 3 Intake	OK	12 degrees C / 53 degrees F
FPC 3 Exhaust A	OK	16 degrees C / 60 degrees F
FPC 3 Exhaust B	OK	26 degrees C / 78 degrees F
FPC 3 LU 0 TSen	OK	23 degrees C / 73 degrees F
FPC 3 LU 0 Chip	OK	26 degrees C / 78 degrees F
FPC 3 LU 1 TSen	OK	23 degrees C / 73 degrees F
FPC 3 LU 1 Chip	OK	27 degrees C / 80 degrees F
FPC 3 LU 2 TSen	OK	23 degrees C / 73 degrees F
FPC 3 LU 2 Chip	OK	22 degrees C / 71 degrees F
FPC 3 LU 3 TSen	OK	23 degrees C / 73 degrees F
FPC 3 LU 3 Chip	OK	21 degrees C / 69 degrees F
FPC 3 MQ 0 TSen	OK	15 degrees C / 59 degrees F
FPC 3 MQ 0 Chip	OK	18 degrees C / 64 degrees F
FPC 3 MQ 1 TSen	OK	15 degrees C / 59 degrees F
FPC 3 MQ 1 Chip	OK	20 degrees C / 68 degrees F
FPC 3 MQ 2 TSen	OK	15 degrees C / 59 degrees F
FPC 3 MQ 2 Chip	OK	17 degrees C / 62 degrees F
FPC 3 MQ 3 TSen	OK	15 degrees C / 59 degrees F
FPC 3 MQ 3 Chip	OK	16 degrees C / 60 degrees F
FPC 4 Intake	OK	11 degrees C / 51 degrees F
FPC 4 Exhaust A	OK	22 degrees C / 71 degrees F
FPC 4 Exhaust B	OK	28 degrees C / 82 degrees F
FPC 4 LU 0 TSen	OK	22 degrees C / 71 degrees F
FPC 4 LU 0 Chip	OK	33 degrees C / 91 degrees F
FPC 4 LU 1 TSen	OK	22 degrees C / 71 degrees F
FPC 4 LU 1 Chip	OK	21 degrees C / 69 degrees F
FPC 4 LU 2 TSen	OK	22 degrees C / 71 degrees F
FPC 4 LU 2 Chip	OK	26 degrees C / 78 degrees F
FPC 4 LU 3 TSen	OK	22 degrees C / 71 degrees F
FPC 4 LU 3 Chip	OK	33 degrees C / 91 degrees F
FPC 4 XM 0 TSen	OK	22 degrees C / 71 degrees F
FPC 4 XM 0 Chip	OK	30 degrees C / 86 degrees F
FPC 4 XF 0 TSen	OK	22 degrees C / 71 degrees F
FPC 4 XF 0 Chip	OK	37 degrees C / 98 degrees F
FPC 4 PLX Switch TSen	OK	22 degrees C / 71 degrees F
FPC 4 PLX Switch Chip	OK	23 degrees C / 73 degrees F
FPC 5 Intake	OK	12 degrees C / 53 degrees F
FPC 5 Exhaust A	OK	12 degrees C / 53 degrees F
FPC 5 Exhaust B	OK	12 degrees C / 53 degrees F
FPC 5 LU 0 TSen	OK	27 degrees C / 80 degrees F
FPC 5 LU 0 Chip	OK	28 degrees C / 82 degrees F
FPC 5 LU 1 TSen	OK	27 degrees C / 80 degrees F
FPC 5 LU 1 Chip	OK	27 degrees C / 80 degrees F
FPC 5 LU 2 TSen	OK	27 degrees C / 80 degrees F
FPC 5 LU 2 Chip	OK	19 degrees C / 66 degrees F
FPC 5 LU 3 TSen	OK	27 degrees C / 80 degrees F
FPC 5 LU 3 Chip	OK	22 degrees C / 71 degrees F
FPC 5 XM 0 TSen	OK	27 degrees C / 80 degrees F
FPC 5 XM 0 Chip	OK	36 degrees C / 96 degrees F
FPC 5 XM 1 TSen	OK	27 degrees C / 80 degrees F

FPC 5 XM 1 Chip	OK	26 degrees C / 78 degrees F
FPC 5 PLX Switch TSen	OK	27 degrees C / 80 degrees F
FPC 5 PLX Switch Chip	OK	24 degrees C / 75 degrees F
FPC 6 Intake	OK	12 degrees C / 53 degrees F
FPC 6 Exhaust A	OK	17 degrees C / 62 degrees F
FPC 6 Exhaust B	OK	28 degrees C / 82 degrees F
FPC 6 LU 0 TSen	OK	24 degrees C / 75 degrees F
FPC 6 LU 0 Chip	OK	29 degrees C / 84 degrees F
FPC 6 LU 1 TSen	OK	24 degrees C / 75 degrees F
FPC 6 LU 1 Chip	OK	30 degrees C / 86 degrees F
FPC 6 LU 2 TSen	OK	24 degrees C / 75 degrees F
FPC 6 LU 2 Chip	OK	24 degrees C / 75 degrees F
FPC 6 LU 3 TSen	OK	24 degrees C / 75 degrees F
FPC 6 LU 3 Chip	OK	22 degrees C / 71 degrees F
FPC 6 MQ 0 TSen	OK	16 degrees C / 60 degrees F
FPC 6 MQ 0 Chip	OK	19 degrees C / 66 degrees F
FPC 6 MQ 1 TSen	OK	16 degrees C / 60 degrees F
FPC 6 MQ 1 Chip	OK	20 degrees C / 68 degrees F
FPC 6 MQ 2 TSen	OK	16 degrees C / 60 degrees F
FPC 6 MQ 2 Chip	OK	17 degrees C / 62 degrees F
FPC 6 MQ 3 TSen	OK	16 degrees C / 60 degrees F
FPC 6 MQ 3 Chip	OK	16 degrees C / 60 degrees F
FPC 7 Intake	OK	10 degrees C / 50 degrees F
FPC 7 Exhaust A	OK	10 degrees C / 50 degrees F
FPC 7 Exhaust B	OK	11 degrees C / 51 degrees F
FPC 7 LU 0 TSen	OK	26 degrees C / 78 degrees F
FPC 7 LU 0 Chip	OK	26 degrees C / 78 degrees F
FPC 7 LU 1 TSen	OK	26 degrees C / 78 degrees F
FPC 7 LU 1 Chip	OK	29 degrees C / 84 degrees F
FPC 7 LU 2 TSen	OK	26 degrees C / 78 degrees F
FPC 7 LU 2 Chip	OK	19 degrees C / 66 degrees F
FPC 7 LU 3 TSen	OK	26 degrees C / 78 degrees F
FPC 7 LU 3 Chip	OK	24 degrees C / 75 degrees F
FPC 7 XM 0 TSen	OK	26 degrees C / 78 degrees F
FPC 7 XM 0 Chip	OK	34 degrees C / 93 degrees F
FPC 7 XM 1 TSen	OK	26 degrees C / 78 degrees F
FPC 7 XM 1 Chip	OK	32 degrees C / 89 degrees F
FPC 7 PLX Switch TSen	OK	26 degrees C / 78 degrees F
FPC 7 PLX Switch Chip	OK	22 degrees C / 71 degrees F
FPC 8 Intake	OK	10 degrees C / 50 degrees F
FPC 8 Exhaust A	OK	22 degrees C / 71 degrees F
FPC 8 Exhaust B	OK	28 degrees C / 82 degrees F
FPC 8 LU 0 TSen	OK	20 degrees C / 68 degrees F
FPC 8 LU 0 Chip	OK	33 degrees C / 91 degrees F
FPC 8 LU 1 TSen	OK	20 degrees C / 68 degrees F
FPC 8 LU 1 Chip	OK	23 degrees C / 73 degrees F
FPC 8 LU 2 TSen	OK	20 degrees C / 68 degrees F
FPC 8 LU 2 Chip	OK	26 degrees C / 78 degrees F
FPC 8 LU 3 TSen	OK	20 degrees C / 68 degrees F
FPC 8 LU 3 Chip	OK	33 degrees C / 91 degrees F
FPC 8 XM 0 TSen	OK	20 degrees C / 68 degrees F
FPC 8 XM 0 Chip	OK	29 degrees C / 84 degrees F
FPC 8 XF 0 TSen	OK	20 degrees C / 68 degrees F
FPC 8 XF 0 Chip	OK	38 degrees C / 100 degrees F
FPC 8 PLX Switch TSen	OK	20 degrees C / 68 degrees F
FPC 8 PLX Switch Chip	OK	24 degrees C / 75 degrees F
FPC 9 Intake	OK	11 degrees C / 51 degrees F
FPC 9 Exhaust A	OK	11 degrees C / 51 degrees F
FPC 9 Exhaust B	OK	11 degrees C / 51 degrees F
FPC 9 LU 0 TSen	OK	25 degrees C / 77 degrees F
FPC 9 LU 0 Chip	OK	24 degrees C / 75 degrees F

FPC 9 LU 1 TSen	OK	25 degrees C / 77 degrees F
FPC 9 LU 1 Chip	OK	26 degrees C / 78 degrees F
FPC 9 LU 2 TSen	OK	25 degrees C / 77 degrees F
FPC 9 LU 2 Chip	OK	16 degrees C / 60 degrees F
FPC 9 LU 3 TSen	OK	25 degrees C / 77 degrees F
FPC 9 LU 3 Chip	OK	21 degrees C / 69 degrees F
FPC 9 XM 0 TSen	OK	25 degrees C / 77 degrees F
FPC 9 XM 0 Chip	OK	32 degrees C / 89 degrees F
FPC 9 XM 1 TSen	OK	25 degrees C / 77 degrees F
FPC 9 XM 1 Chip	OK	25 degrees C / 77 degrees F
FPC 9 PLX Switch TSen	OK	25 degrees C / 77 degrees F
FPC 9 PLX Switch Chip	OK	21 degrees C / 69 degrees F
ADC 0 Intake	OK	12 degrees C / 53 degrees F
ADC 0 Exhaust	OK	20 degrees C / 68 degrees F
ADC 0 ADC-XF1	OK	26 degrees C / 78 degrees F
ADC 0 ADC-XF0	OK	32 degrees C / 89 degrees F
ADC 1 Intake	OK	11 degrees C / 51 degrees F
ADC 1 Exhaust	OK	21 degrees C / 69 degrees F
ADC 1 ADC-XF1	OK	24 degrees C / 75 degrees F
ADC 1 ADC-XF0	OK	31 degrees C / 87 degrees F
ADC 2 Intake	OK	14 degrees C / 57 degrees F
ADC 2 Exhaust	OK	21 degrees C / 69 degrees F
ADC 2 ADC-XF1	OK	28 degrees C / 82 degrees F
ADC 2 ADC-XF0	OK	34 degrees C / 93 degrees F
ADC 3 Intake	OK	13 degrees C / 55 degrees F
ADC 3 Exhaust	OK	19 degrees C / 66 degrees F
ADC 3 ADC-XF1	OK	24 degrees C / 75 degrees F
ADC 3 ADC-XF0	OK	31 degrees C / 87 degrees F
ADC 4 Intake	OK	9 degrees C / 48 degrees F
ADC 4 Exhaust	OK	22 degrees C / 71 degrees F
ADC 4 ADC-XF1	OK	28 degrees C / 82 degrees F
ADC 4 ADC-XF0	OK	35 degrees C / 95 degrees F
ADC 5 Intake	OK	12 degrees C / 53 degrees F
ADC 5 Exhaust	OK	22 degrees C / 71 degrees F
ADC 5 ADC-XF1	OK	28 degrees C / 82 degrees F
ADC 5 ADC-XF0	OK	34 degrees C / 93 degrees F
ADC 6 Intake	OK	11 degrees C / 51 degrees F
ADC 6 Exhaust	OK	21 degrees C / 69 degrees F
ADC 6 ADC-XF1	OK	26 degrees C / 78 degrees F
ADC 6 ADC-XF0	OK	35 degrees C / 95 degrees F
ADC 7 Intake	OK	14 degrees C / 57 degrees F
ADC 7 Exhaust	OK	22 degrees C / 71 degrees F
ADC 7 ADC-XF1	OK	26 degrees C / 78 degrees F
ADC 7 ADC-XF0	OK	34 degrees C / 93 degrees F
ADC 8 Intake	OK	14 degrees C / 57 degrees F
ADC 8 Exhaust	OK	21 degrees C / 69 degrees F
ADC 8 ADC-XF1	OK	24 degrees C / 75 degrees F
ADC 8 ADC-XF0	OK	31 degrees C / 87 degrees F
ADC 9 Intake	OK	10 degrees C / 50 degrees F
ADC 9 Exhaust	OK	22 degrees C / 71 degrees F
ADC 9 ADC-XF1	OK	28 degrees C / 82 degrees F
ADC 9 ADC-XF0	OK	36 degrees C / 96 degrees F
Fans Fan Tray 0 Fan 1	OK	3480 RPM
Fan Tray 0 Fan 2	OK	3480 RPM
Fan Tray 0 Fan 3	OK	3480 RPM
Fan Tray 0 Fan 4	OK	3360 RPM
Fan Tray 0 Fan 5	OK	3360 RPM
Fan Tray 0 Fan 6	OK	3480 RPM
Fan Tray 1 Fan 1	OK	3360 RPM
Fan Tray 1 Fan 2	OK	3360 RPM
Fan Tray 1 Fan 3	OK	3360 RPM

Fan Tray 1 Fan 4	OK	3480 RPM
Fan Tray 1 Fan 5	OK	3480 RPM
Fan Tray 1 Fan 6	OK	3480 RPM
Fan Tray 2 Fan 1	OK	3360 RPM
Fan Tray 2 Fan 2	OK	3360 RPM
Fan Tray 2 Fan 3	OK	3480 RPM
Fan Tray 2 Fan 4	OK	3480 RPM
Fan Tray 2 Fan 5	OK	3360 RPM
Fan Tray 2 Fan 6	OK	3480 RPM
Fan Tray 3 Fan 1	OK	3360 RPM
Fan Tray 3 Fan 2	OK	3360 RPM
Fan Tray 3 Fan 3	OK	3480 RPM
Fan Tray 3 Fan 4	OK	3480 RPM
Fan Tray 3 Fan 5	OK	3480 RPM
Fan Tray 3 Fan 6	OK	3360 RPM

**show chassis environment (T320 Router)**

```

user@host> show chassis environment
Class Item                Status      Measurement
Power PEM 0                OK
      PEM 1                Absent
Temp  SCG 0                OK          28 degrees C / 82 degrees F
      SCG 1                OK          28 degrees C / 82 degrees F
      Routing Engine 0     OK          31 degrees C / 87 degrees F
      Routing Engine 1     OK          30 degrees C / 86 degrees F
      CB 0                 OK          32 degrees C / 89 degrees F
      CB 1                 OK          32 degrees C / 89 degrees F
      SIB 0                OK          33 degrees C / 91 degrees F
      SIB 1                OK          33 degrees C / 91 degrees F
      SIB 2                OK          34 degrees C / 93 degrees F
      FPC 0 Top            OK          38 degrees C / 100 degrees F
      FPC 0 Bottom        OK          32 degrees C / 89 degrees F
      FPC 1 Top            OK          38 degrees C / 100 degrees F
      FPC 1 Bottom        OK          33 degrees C / 91 degrees F
      FPC 2 Top            OK          36 degrees C / 96 degrees F
      FPC 2 Bottom        OK          31 degrees C / 87 degrees F
      FPM GBUS             OK          26 degrees C / 78 degrees F
      FPM Display          OK          29 degrees C / 84 degrees F
Fans  Top Left Front fan   OK          Spinning at normal speed
      Top Left Middle fan  OK          Spinning at normal speed
      Top Left Rear fan    OK          Spinning at normal speed
      Top Right Front fan  OK          Spinning at normal speed
      Top Right Middle fan OK          Spinning at normal speed
      Top Right Rear fan   OK          Spinning at normal speed
      Bottom Left Front fan OK          Spinning at normal speed
      Bottom Left Middle fan OK         Spinning at normal speed
      Bottom Left Rear fan OK          Spinning at normal speed
      Bottom Right Front fan OK         Spinning at normal speed
      Bottom Right Middle fan OK        Spinning at normal speed
      Bottom Right Rear fan OK         Spinning at normal speed
      Rear Tray Top fan    OK          Spinning at normal speed
      Rear Tray Second fan OK          Spinning at normal speed
      Rear Tray Middle fan OK          Spinning at normal speed
      Rear Tray Fourth fan OK          Spinning at normal speed
      Rear Tray Bottom fan OK          Spinning at normal speed
Misc  CIP                   OK
      SPMB 0               OK

```

SPMB 1 OK

### show chassis environment (T640 Router)

```

user@host> show chassis environment
Class Item                Status      Measurement
Temp  PEM 0                 Absent
      PEM 1                 OK          22 degrees C / 71 degrees F
      SCG 0                 OK          30 degrees C / 86 degrees F
      SCG 1                 OK          30 degrees C / 86 degrees F
      Routing Engine 0      Present
      Routing Engine 1      OK          27 degrees C / 80 degrees F
      CB 0                  Present
      CB 1                  OK          33 degrees C / 91 degrees F
      SIB 0                 Absent
      SIB 1                 Absent
      SIB 2                 Absent
      SIB 3                 Absent
      SIB 4                 Absent
      FPC 4 Top             Testing
      FPC 4 Bottom          Testing
      FPC 5 Top             Testing
      FPC 5 Bottom          Testing
      FPC 6 Top             Testing
      FPC 6 Bottom          Testing
      FPM GBUS              OK          23 degrees C / 73 degrees F
      FPM Display           Absent
Fans  Top Left Front fan    OK          Spinning at normal speed
      Top Left Middle fan   OK          Spinning at normal speed
      Top Left Rear fan     OK          Spinning at normal speed
      Top Right Front fan   OK          Spinning at normal speed
      Top Right Middle fan  OK          Spinning at normal speed
      Top Right Rear fan    OK          Spinning at normal speed
      Bottom Left Front fan OK          Spinning at normal speed
      Bottom Left Middle fan OK         Spinning at normal speed
      Bottom Left Rear fan  OK          Spinning at normal speed
      Bottom Right Front fan OK         Spinning at normal speed
      Bottom Right Middle fan OK        Spinning at normal speed
      Bottom Right Rear fan OK         Spinning at normal speed
      Fourth Blower from top OK         Spinning at normal speed
      Bottom Blower         OK          Spinning at normal speed
      Middle Blower         OK          Spinning at normal speed
      Top Blower            OK          Spinning at normal speed
      Second Blower from top OK         Spinning at normal speed
Misc  CIP                    OK
      SPMB 0                OK
      SPMB 1                OK

```

### show chassis environment (T4000 Router)

```

user@host> show chassis environment
Class Item                Status      Measurement
Temp  PEM 0                 OK          33 degrees C / 91 degrees F
      PEM 1                 Absent
      SCG 0                 OK          33 degrees C / 91 degrees F
      SCG 1                 OK          33 degrees C / 91 degrees F
      Routing Engine 0      OK          33 degrees C / 91 degrees F
      Routing Engine 0 CPU  OK          50 degrees C / 122 degrees F
      Routing Engine 1      OK          32 degrees C / 89 degrees F

```

Routing Engine 1 CPU	OK	46 degrees C / 114 degrees F
CB 0	OK	32 degrees C / 89 degrees F
CB 1	OK	33 degrees C / 91 degrees F
SIB 0	OK	42 degrees C / 107 degrees F
SIB 1	OK	42 degrees C / 107 degrees F
SIB 2	OK	42 degrees C / 107 degrees F
SIB 3	OK	43 degrees C / 109 degrees F
SIB 4	OK	45 degrees C / 113 degrees F
FPC 0 Fan Intake	OK	34 degrees C / 93 degrees F
FPC 0 Fan Exhaust	OK	48 degrees C / 118 degrees F
FPC 0 PMB	OK	47 degrees C / 116 degrees F
FPC 0 LMB0	OK	50 degrees C / 122 degrees F
FPC 0 LMB1	OK	41 degrees C / 105 degrees F
FPC 0 LMB2	OK	35 degrees C / 95 degrees F
FPC 0 PFE1 LU2	OK	46 degrees C / 114 degrees F
FPC 0 PFE1 LU0	OK	41 degrees C / 105 degrees F
FPC 0 PFE0 LU0	OK	57 degrees C / 134 degrees F
FPC 0 XF1	OK	46 degrees C / 114 degrees F
FPC 0 XF0	OK	52 degrees C / 125 degrees F
FPC 0 XM1	OK	41 degrees C / 105 degrees F
FPC 0 XM0	OK	50 degrees C / 122 degrees F
FPC 0 PFE0 LU1	OK	56 degrees C / 132 degrees F
FPC 0 PFE0 LU2	OK	45 degrees C / 113 degrees F
FPC 0 PFE1 LU1	OK	37 degrees C / 98 degrees F
FPC 3 Fan Intake	OK	36 degrees C / 96 degrees F
FPC 3 Fan Exhaust	OK	51 degrees C / 123 degrees F
FPC 3 PMB	OK	43 degrees C / 109 degrees F
FPC 3 LMB0	OK	57 degrees C / 134 degrees F
FPC 3 LMB1	OK	54 degrees C / 129 degrees F
FPC 3 LMB2	OK	38 degrees C / 100 degrees F
FPC 3 PFE1 LU2	OK	63 degrees C / 145 degrees F
FPC 3 PFE1 LU0	OK	45 degrees C / 113 degrees F
FPC 3 PFE0 LU0	OK	69 degrees C / 156 degrees F
FPC 3 XF1	OK	62 degrees C / 143 degrees F
FPC 3 XF0	OK	63 degrees C / 145 degrees F
FPC 3 XM1	OK	43 degrees C / 109 degrees F
FPC 3 XM0	OK	67 degrees C / 152 degrees F
FPC 3 PFE0 LU1	OK	63 degrees C / 145 degrees F
FPC 3 PFE0 LU2	OK	66 degrees C / 150 degrees F
FPC 3 PFE1 LU1	OK	41 degrees C / 105 degrees F
FPC 5 Top	OK	39 degrees C / 102 degrees F
FPC 5 Bottom	OK	38 degrees C / 100 degrees F
FPC 6 Fan Intake	OK	33 degrees C / 91 degrees F
FPC 6 Fan Exhaust	OK	49 degrees C / 120 degrees F
FPC 6 PMB	OK	40 degrees C / 104 degrees F
FPC 6 LMB0	OK	60 degrees C / 140 degrees F
FPC 6 LMB1	OK	58 degrees C / 136 degrees F
FPC 6 LMB2	OK	40 degrees C / 104 degrees F
FPC 6 PFE1 LU2	OK	69 degrees C / 156 degrees F
FPC 6 PFE1 LU0	OK	45 degrees C / 113 degrees F
FPC 6 PFE0 LU0	OK	71 degrees C / 159 degrees F
FPC 6 XF1	OK	58 degrees C / 136 degrees F
FPC 6 XF0	OK	65 degrees C / 149 degrees F
FPC 6 XM1	OK	39 degrees C / 102 degrees F
FPC 6 XM0	OK	66 degrees C / 150 degrees F
FPC 6 PFE0 LU1	OK	69 degrees C / 156 degrees F
FPC 6 PFE0 LU2	OK	69 degrees C / 156 degrees F
FPC 6 PFE1 LU1	OK	42 degrees C / 107 degrees F
FPM GBUS	OK	24 degrees C / 75 degrees F
FPM Display	OK	27 degrees C / 80 degrees F
Fans Top Left Front fan	OK	Spinning at high speed

	Top Left Middle fan	OK	Spinning at high speed
	Top Left Rear fan	OK	Spinning at high speed
	Top Right Front fan	OK	Spinning at high speed
	Top Right Middle fan	OK	Spinning at high speed
	Top Right Rear fan	OK	Spinning at high speed
	Bottom Left Front fan	OK	Spinning at high speed
	Bottom Left Middle fan	OK	Spinning at high speed
	Bottom Left Rear fan	OK	Spinning at high speed
	Bottom Right Front fan	OK	Spinning at high speed
	Bottom Right Middle fan	OK	Spinning at high speed
	Bottom Right Rear fan	OK	Spinning at high speed
	Rear Tray Top fan	OK	Spinning at high speed
	Rear Tray Second fan	OK	Spinning at high speed
	Rear Tray Third fan	OK	Spinning at high speed
	Rear Tray Fourth fan	OK	Spinning at high speed
	Rear Tray Fifth fan	OK	Spinning at high speed
	Rear Tray Sixth fan	OK	Spinning at high speed
	Rear Tray Seventh fan	OK	Spinning at high speed
	Rear Tray Bottom fan	OK	Spinning at high speed
Misc	CIP	OK	
	SPMB 0	OK	
	SPMB 1	OK	

### show chassis environment (TX Matrix Router)

```
user@host> show chassis environment
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	

## 1cc2-re0:

Class	Item	Status	Measurement
Temp	PEM 0	OK	29 degrees C / 84 degrees F
	PEM 1	Absent	
	SCG 0	OK	32 degrees C / 89 degrees F
	SCG 1	Absent	
	Routing Engine 0	OK	31 degrees C / 87 degrees F
	Routing Engine 1	OK	32 degrees C / 89 degrees F
	CB 0	OK	30 degrees C / 86 degrees F
	SIB 0	OK	38 degrees C / 100 degrees F
	SIB 0 (B)	OK	49 degrees C / 120 degrees F
	FPC 0 Top	OK	45 degrees C / 113 degrees F
	FPC 0 Bottom	OK	33 degrees C / 91 degrees F
	FPC 1 Top	OK	37 degrees C / 98 degrees F



```

FPC 1 Bottom          OK          33 degrees C / 91 degrees F
FPM GBUS              OK          30 degrees C / 86 degrees F
FPM Display           OK          34 degrees C / 93 degrees F
Fans Top Left Front fan OK          Spinning at normal speed
Top Left Middle fan   OK          Spinning at normal speed
...

```

### show chassis environment (T1600 Router)

```

user@host> show chassis environment
Class Item              Status      Measurement
Temp PEM 0              OK          27 degrees C / 80 degrees F
      PEM 1              Absent
      SCG 0              OK          31 degrees C / 87 degrees F
      SCG 1              OK          35 degrees C / 95 degrees F
      Routing Engine 0   OK          30 degrees C / 86 degrees F
      Routing Engine 1   OK          30 degrees C / 86 degrees F
      CB 0               OK          31 degrees C / 87 degrees F
      CB 1               OK          31 degrees C / 87 degrees F
      SIB 0              OK          41 degrees C / 105 degrees F
      SIB 0 (B)          OK          34 degrees C / 93 degrees F
      SIB 1              OK          0 degrees C / 32 degrees F
      SIB 1 (B)          OK          0 degrees C / 32 degrees F
      SIB 2              OK          0 degrees C / 32 degrees F
      SIB 2 (B)          OK          0 degrees C / 32 degrees F
      SIB 3              OK          0 degrees C / 32 degrees F
      SIB 3 (B)          OK          0 degrees C / 32 degrees F
      SIB 4              OK          0 degrees C / 32 degrees F
      SIB 4 (B)          OK          0 degrees C / 32 degrees F
      FPC 0 Top          OK          49 degrees C / 120 degrees F
      FPC 0 Bottom       OK          50 degrees C / 122 degrees F
      FPC 1 Top          OK          48 degrees C / 118 degrees F
      FPC 1 Bottom       OK          49 degrees C / 120 degrees F
      FPM GBUS           OK          27 degrees C / 80 degrees F
      FPM Display        OK          30 degrees C / 86 degrees F
Fans  Top Left Front fan OK          Spinning at normal speed
      Top Left Middle fan OK          Spinning at normal speed
      Top Left Rear fan  OK          Spinning at normal speed
      Top Right Front fan OK          Spinning at normal speed
      Top Right Middle fan OK          Spinning at normal speed
      Top Right Rear fan  OK          Spinning at normal speed
      Bottom Left Front fan OK          Spinning at normal speed
      Bottom Left Middle fan OK          Spinning at normal speed
      Bottom Left Rear fan OK          Spinning at normal speed
      Bottom Right Front fan OK          Spinning at normal speed
      Bottom Right Middle fan OK          Spinning at normal speed
      Bottom Right Rear fan OK          Spinning at normal speed
      Rear Tray Top fan   OK          Spinning at normal speed
      Rear Tray Second fan OK          Spinning at normal speed
      Rear Tray Third fan  OK          Spinning at normal speed
      Rear Tray Fourth fan OK          Spinning at normal speed
      Rear Tray Fifth fan  OK          Spinning at normal speed
      Rear Tray Sixth fan  OK          Spinning at normal speed
      Rear Tray Seventh fan OK          Spinning at normal speed
      Rear Tray Bottom fan OK          Spinning at normal speed
Misc  CIP                OK
      SPMB 0             OK
      SPMB 1             OK

```

## show chassis environment (TX Matrix Plus Router)

```
user@host> show chassis environment
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
      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	

```
1cc0-re0:
```

Class	Item	Status	Measurement
Temp	PEM 0	OK	27 degrees C / 80 degrees F
	PEM 1	Absent	
	SCG 0	OK	31 degrees C / 87 degrees F
	SCG 1	OK	35 degrees C / 95 degrees F
	Routing Engine 0	OK	30 degrees C / 86 degrees F
	Routing Engine 1	OK	30 degrees C / 86 degrees F
	CB 0	OK	31 degrees C / 87 degrees F
	CB 1	OK	31 degrees C / 87 degrees F
	SIB 0	OK	41 degrees C / 105 degrees F
	SIB 0 (B)	OK	34 degrees C / 93 degrees F
	SIB 1	OK	0 degrees C / 32 degrees F
	SIB 1 (B)	OK	0 degrees C / 32 degrees F
	SIB 2	OK	0 degrees C / 32 degrees F
	SIB 2 (B)	OK	0 degrees C / 32 degrees F
	SIB 3	OK	0 degrees C / 32 degrees F
	SIB 3 (B)	OK	0 degrees C / 32 degrees F
	SIB 4	OK	0 degrees C / 32 degrees F
	SIB 4 (B)	OK	0 degrees C / 32 degrees F
	FPC 0 Top	OK	49 degrees C / 120 degrees F
	FPC 0 Bottom	OK	50 degrees C / 122 degrees F
	FPC 1 Top	OK	48 degrees C / 118 degrees F
	FPC 1 Bottom	OK	49 degrees C / 120 degrees F
	FPM GBUS	OK	27 degrees C / 80 degrees F
	FPM Display	OK	30 degrees C / 86 degrees F
Fans	Top Left Front fan	OK	Spinning at normal speed
	Top Left Middle fan	OK	Spinning at normal speed
	Top Left Rear fan	OK	Spinning at normal speed
	Top Right Front fan	OK	Spinning at normal speed
	Top Right Middle fan	OK	Spinning at normal speed
	Top Right Rear fan	OK	Spinning at normal speed
	Bottom Left Front fan	OK	Spinning at normal speed

Bottom Left Middle fan	OK	Spinning at normal speed
Bottom Left Rear fan	OK	Spinning at normal speed
Bottom Right Front fan	OK	Spinning at normal speed
Bottom Right Middle fan	OK	Spinning at normal speed
Bottom Right Rear fan	OK	Spinning at normal speed
Rear Tray Top fan	OK	Spinning at normal speed
Rear Tray Second fan	OK	Spinning at normal speed
Rear Tray Third fan	OK	Spinning at normal speed
Rear Tray Fourth fan	OK	Spinning at normal speed
Rear Tray Fifth fan	OK	Spinning at normal speed
Rear Tray Sixth fan	OK	Spinning at normal speed
Rear Tray Seventh fan	OK	Spinning at normal speed
Rear Tray Bottom fan	OK	Spinning at normal speed
Misc CIP	OK	
SPMB 0	OK	
SPMB 1	OK	

### show chassis environment (TX Matrix Plus router with 3D SIBs)

```
user@host> show chassis environment
sfc0-re0:
```

Class	Item	Status	Measurement
Temp	PEM 0	Check	30 degrees C / 86 degrees F
	PEM 1	OK	33 degrees C / 91 degrees F
	Routing Engine 0	OK	28 degrees C / 82 degrees F
	Routing Engine 0 CPU	OK	42 degrees C / 107 degrees F
	Routing Engine 1	OK	29 degrees C / 84 degrees F
	Routing Engine 1 CPU	OK	44 degrees C / 111 degrees F
	CB 0 Intake	OK	30 degrees C / 86 degrees F
	CB 0 Exhaust A	OK	28 degrees C / 82 degrees F
	CB 0 Exhaust B	OK	30 degrees C / 86 degrees F
	CB 1 Intake	OK	31 degrees C / 87 degrees F
	CB 1 Exhaust A	OK	27 degrees C / 80 degrees F
	CB 1 Exhaust B	OK	31 degrees C / 87 degrees F
	SIB F13 0 Board	OK	44 degrees C / 111 degrees F
	SIB F13 0 XF Junction	OK	62 degrees C / 143 degrees F
	SIB F13 3 Board	OK	45 degrees C / 113 degrees F
	SIB F13 3 XF Junction	OK	60 degrees C / 140 degrees F
	SIB F13 6 Board	OK	47 degrees C / 116 degrees F
	SIB F13 6 XF Junction	OK	62 degrees C / 143 degrees F
	SIB F2S 0/0 Board	OK	32 degrees C / 89 degrees F
	SIB F2S 0/0 XF Junction	OK	42 degrees C / 107 degrees F
	SIB F2S 0/2 Board	OK	31 degrees C / 87 degrees F
	SIB F2S 0/2 XF Junction	OK	41 degrees C / 105 degrees F
	SIB F2S 0/4 Board	OK	31 degrees C / 87 degrees F
	SIB F2S 0/4 XF Junction	OK	42 degrees C / 107 degrees F
	SIB F2S 0/6 Board	OK	31 degrees C / 87 degrees F
	SIB F2S 0/6 XF Junction	OK	41 degrees C / 105 degrees F
	SIB F2S 1/0 Board	OK	31 degrees C / 87 degrees F
	SIB F2S 1/0 XF Junction	OK	41 degrees C / 105 degrees F
	SIB F2S 1/2 Board	OK	29 degrees C / 84 degrees F
	SIB F2S 1/2 XF Junction	OK	39 degrees C / 102 degrees F
	SIB F2S 1/4 Board	OK	29 degrees C / 84 degrees F
	SIB F2S 1/4 XF Junction	OK	35 degrees C / 95 degrees F
	SIB F2S 1/6 Board	OK	30 degrees C / 86 degrees F
	SIB F2S 1/6 XF Junction	OK	41 degrees C / 105 degrees F
	SIB F2S 2/0 Board	OK	30 degrees C / 86 degrees F
	SIB F2S 2/0 XF Junction	OK	42 degrees C / 107 degrees F
	SIB F2S 2/2 Board	OK	28 degrees C / 82 degrees F
	SIB F2S 2/2 XF Junction	OK	39 degrees C / 102 degrees F

	SIB F2S 2/4 Board	OK	29 degrees C / 84 degrees F
	SIB F2S 2/4 XF Junction	OK	42 degrees C / 107 degrees F
	SIB F2S 2/6 Board	OK	29 degrees C / 84 degrees F
	SIB F2S 2/6 XF Junction	OK	41 degrees C / 105 degrees F
	CIP 0 Intake	OK	25 degrees C / 77 degrees F
	CIP 0 Exhaust A	OK	26 degrees C / 78 degrees F
	CIP 0 Exhaust B	OK	26 degrees C / 78 degrees F
	CIP 1 Intake	OK	26 degrees C / 78 degrees F
	CIP 1 Exhaust A	OK	27 degrees C / 80 degrees F
	CIP 1 Exhaust B	OK	27 degrees C / 80 degrees F
Fans	Fan Tray 0 Fan 1	OK	Spinning at normal speed
	Fan Tray 0 Fan 2	OK	Spinning at normal speed
	Fan Tray 0 Fan 3	OK	Spinning at normal speed
	Fan Tray 0 Fan 4	OK	Spinning at normal speed
	Fan Tray 0 Fan 5	OK	Spinning at normal speed
	Fan Tray 0 Fan 6	OK	Spinning at normal speed
	Fan Tray 1 Fan 1	OK	Spinning at normal speed
	Fan Tray 1 Fan 2	OK	Spinning at normal speed
	Fan Tray 1 Fan 3	OK	Spinning at normal speed
	Fan Tray 1 Fan 4	OK	Spinning at normal speed
	Fan Tray 1 Fan 5	OK	Spinning at normal speed
	Fan Tray 1 Fan 6	OK	Spinning at normal speed
	Fan Tray 2 Fan 1	OK	Spinning at normal speed
	Fan Tray 2 Fan 2	OK	Spinning at normal speed
	Fan Tray 2 Fan 3	OK	Spinning at normal speed
	Fan Tray 2 Fan 4	OK	Spinning at normal speed
	Fan Tray 2 Fan 5	OK	Spinning at normal speed
	Fan Tray 2 Fan 6	OK	Spinning at normal speed
	Fan Tray 2 Fan 7	OK	Spinning at normal speed
	Fan Tray 2 Fan 8	OK	Spinning at normal speed
	Fan Tray 2 Fan 9	OK	Spinning at normal speed
	Fan Tray 3 Fan 1	OK	Spinning at normal speed
	Fan Tray 3 Fan 2	OK	Spinning at normal speed
	Fan Tray 3 Fan 3	OK	Spinning at normal speed
	Fan Tray 3 Fan 4	OK	Spinning at normal speed
	Fan Tray 3 Fan 5	OK	Spinning at normal speed
	Fan Tray 3 Fan 6	OK	Spinning at normal speed
	Fan Tray 3 Fan 7	OK	Spinning at normal speed
	Fan Tray 3 Fan 8	OK	Spinning at normal speed
	Fan Tray 3 Fan 9	OK	Spinning at normal speed
	Fan Tray 4 Fan 1	OK	Spinning at normal speed
	Fan Tray 4 Fan 2	OK	Spinning at normal speed
	Fan Tray 4 Fan 3	OK	Spinning at normal speed
	Fan Tray 4 Fan 4	OK	Spinning at normal speed
	Fan Tray 4 Fan 5	OK	Spinning at normal speed
	Fan Tray 4 Fan 6	OK	Spinning at normal speed
	Fan Tray 4 Fan 7	OK	Spinning at normal speed
	Fan Tray 4 Fan 8	OK	Spinning at normal speed
	Fan Tray 4 Fan 9	OK	Spinning at normal speed
	Fan Tray 5 Fan 1	OK	Spinning at normal speed
	Fan Tray 5 Fan 2	OK	Spinning at normal speed
	Fan Tray 5 Fan 3	OK	Spinning at normal speed
	Fan Tray 5 Fan 4	OK	Spinning at normal speed
	Fan Tray 5 Fan 5	OK	Spinning at normal speed
	Fan Tray 5 Fan 6	OK	Spinning at normal speed
	Fan Tray 5 Fan 7	OK	Spinning at normal speed
	Fan Tray 5 Fan 8	OK	Spinning at normal speed
	Fan Tray 5 Fan 9	Check	
Misc	SPMB 0	OK	
	SPMB 1	OK	

1cc0-re0:

Class	Item	Status	Measurement
Temp	PEM 0	OK	29 degrees C / 84 degrees F
	PEM 1	Check	29 degrees C / 84 degrees F
	SCG 0	OK	32 degrees C / 89 degrees F
	SCG 1	OK	33 degrees C / 91 degrees F
	Routing Engine 0	OK	32 degrees C / 89 degrees F
	Routing Engine 0 CPU	OK	51 degrees C / 123 degrees F
	Routing Engine 1	OK	32 degrees C / 89 degrees F
	Routing Engine 1 CPU	OK	49 degrees C / 120 degrees F
	CB 0	OK	34 degrees C / 93 degrees F
	CB 1	OK	34 degrees C / 93 degrees F
	SIB 0	OK	39 degrees C / 102 degrees F
	SIB 0 (B)	Absent	
	SIB 1	OK	39 degrees C / 102 degrees F
	SIB 1 (B)	Absent	
	SIB 2	OK	39 degrees C / 102 degrees F
	SIB 2 (B)	Absent	
	FPC 4 Top	OK	43 degrees C / 109 degrees F
	FPC 4 Bottom	OK	43 degrees C / 109 degrees F
	FPC 7 Fan Intake	OK	35 degrees C / 95 degrees F
	FPC 7 Fan Exhaust	OK	50 degrees C / 122 degrees F
	FPC 7 PMB	OK	50 degrees C / 122 degrees F
	FPC 7 LMB0	OK	55 degrees C / 131 degrees F
	FPC 7 LMB1	OK	49 degrees C / 120 degrees F
	FPC 7 LMB2	OK	39 degrees C / 102 degrees F
	FPC 7 PFE1 LU2	OK	55 degrees C / 131 degrees F
	FPC 7 PFE1 LU0	OK	45 degrees C / 113 degrees F
	FPC 7 PFE0 LU0	OK	62 degrees C / 143 degrees F
	FPC 7 XF1	OK	52 degrees C / 125 degrees F
	FPC 7 XF0	OK	61 degrees C / 141 degrees F
	FPC 7 XM1	OK	39 degrees C / 102 degrees F
	FPC 7 XM0	OK	56 degrees C / 132 degrees F
	FPC 7 PFE0 LU1	OK	60 degrees C / 140 degrees F
	FPC 7 PFE0 LU2	OK	55 degrees C / 131 degrees F
	FPC 7 PFE1 LU1	OK	41 degrees C / 105 degrees F
	FPM GBUS	OK	24 degrees C / 75 degrees F
	FPM Display	OK	28 degrees C / 82 degrees F
Fans	Top Left Front fan	OK	Spinning at normal speed
	Top Left Middle fan	OK	Spinning at normal speed
	Top Left Rear fan	OK	Spinning at normal speed
	Top Right Front fan	OK	Spinning at normal speed
	Top Right Middle fan	OK	Spinning at normal speed
	Top Right Rear fan	OK	Spinning at normal speed
	Bottom Left Front fan	OK	Spinning at normal speed
	Bottom Left Middle fan	OK	Spinning at normal speed
	Bottom Left Rear fan	OK	Spinning at normal speed
	Bottom Right Front fan	OK	Spinning at normal speed
	Bottom Right Middle fan	OK	Spinning at normal speed
	Bottom Right Rear fan	OK	Spinning at normal speed
	Rear Tray fan 1 (Top)	OK	Spinning at normal speed
	Rear Tray fan 2	OK	Spinning at normal speed
	Rear Tray fan 3	OK	Spinning at normal speed
	Rear Tray fan 4	OK	Spinning at normal speed
	Rear Tray fan 5	OK	Spinning at normal speed
	Rear Tray fan 6	OK	Spinning at normal speed
	Rear Tray fan 7	OK	Spinning at normal speed
	Rear Tray fan 8	OK	Spinning at normal speed
	Rear Tray fan 9	OK	Spinning at normal speed
	Rear Tray fan 10	OK	Spinning at normal speed

	Rear Tray fan 11	OK	Spinning at normal speed
	Rear Tray fan 12	OK	Spinning at normal speed
	Rear Tray fan 13	OK	Spinning at normal speed
	Rear Tray fan 14	OK	Spinning at normal speed
	Rear Tray fan 15	OK	Spinning at normal speed
	Rear Tray fan 16 (Bottom)	OK	Spinning at normal speed
Misc	CIP	OK	
	SPMB 0	OK	
	SPMB 1	OK	

#### show chassis environment (EX4200 Standalone Switch)

```
user@switch> show chassis environment
```

Class	Item	Status	Measurement
Power	FPC 0 Power Supply 0	OK	
	FPC 0 Power Supply 1	Absent	
Temp	FPC 0 CPU	OK	41 degrees C / 105 degrees F
	FPC 0 EX-PFE1	OK	42 degrees C / 107 degrees F
	FPC 0 EX-PFE2	OK	46 degrees C / 114 degrees F
	FPC 0 GEPHY Front Left	OK	25 degrees C / 77 degrees F
	FPC 0 GEPHY Front Right	OK	27 degrees C / 80 degrees F
	FPC 0 Uplink Conn	OK	29 degrees C / 84 degrees F
Fans	FPC 0 Fan 1	OK	Spinning at normal speed
	FPC 0 Fan 2	OK	Spinning at normal speed
	FPC 0 Fan 3	OK	Spinning at normal speed

#### show chassis environment (EX8216 Switch)

```
user@switch> show chassis environment
```

Class	Item	Status	Measurement
Power	PSU 0	OK	
	PSU 1	OK	
	PSU 2	OK	
	PSU 3	Check	
	PSU 4	Absent	
	PSU 5	Absent	
Temp	CB 0 Intake	OK	23 degrees C / 73 degrees F
	CB 0 Exhaust	OK	26 degrees C / 78 degrees F
	CB 1 Intake	OK	22 degrees C / 71 degrees F
	CB 1 Exhaust	OK	25 degrees C / 77 degrees F
	FPC 4 Intake	OK	49 degrees C / 120 degrees F
	FPC 4 Exhaust	OK	59 degrees C / 138 degrees F
	SIB 5 Intake	OK	25 degrees C / 77 degrees F
	SIB 5 Exhaust	OK	35 degrees C / 95 degrees F
	SIB 6 Intake	OK	25 degrees C / 77 degrees F
	SIB 6 Exhaust	OK	38 degrees C / 100 degrees F
Fans	Top Fan 1	OK	Spinning at normal speed
	Top Fan 2	OK	Spinning at normal speed
	Top Fan 3	OK	Spinning at normal speed
	Top Fan 4	OK	Spinning at normal speed
	Top Fan 5	OK	Spinning at normal speed
	Top Fan 6	OK	Spinning at normal speed
	Top Fan 7	OK	Spinning at normal speed
	Top Fan 8	OK	Spinning at normal speed
	Top Fan 9	OK	Spinning at normal speed
	Bottom Fan 1	OK	Spinning at normal speed
	Bottom Fan 2	OK	Spinning at normal speed
	Bottom Fan 3	OK	Spinning at normal speed
	Bottom Fan 4	OK	Spinning at normal speed
	Bottom Fan 5	OK	Spinning at normal speed
	Bottom Fan 6	OK	Spinning at normal speed

Bottom Fan 7	OK	Spinning at normal speed
Bottom Fan 8	OK	Spinning at normal speed
Bottom Fan 9	OK	Spinning at normal speed

**show chassis environment (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 interconnect-device (QFabric System)**

```
user@switch> show chassis environment interconnect-device IC-A0004
```

Class	Item	Status	Measurement
CB 0			
	CB 0 L Intake	OK	30 degrees C / 86 degrees F
	CB 0 R Intake	OK	31 degrees C / 87 degrees F
	CB 0 L Exhaust	OK	32 degrees C / 89 degrees F
	CB 0 R Exhaust	OK	33 degrees C / 91 degrees F
	Routing Engine 0 CPU temp	OK	51 degrees C / 123 degrees F
CB 1			
	CB 1 L Intake	OK	27 degrees C / 80 degrees F
	CB 1 R Intake	OK	29 degrees C / 84 degrees F
	CB 1 L Exhaust	OK	31 degrees C / 87 degrees F
	CB 1 R Exhaust	OK	32 degrees C / 89 degrees F
	Routing Engine 1 CPU temp	OK	40 degrees C / 104 degrees F
FC 0 FPC 0			
	FPC 0 L Intake	OK	25 degrees C / 77 degrees F
	FPC 0 R Intake	OK	28 degrees C / 82 degrees F
	FPC 0 L Exhaust	OK	28 degrees C / 82 degrees F
	FPC 0 R Exhaust	OK	29 degrees C / 84 degrees F
FC 7 FPC 7			
	FPC 7 L Intake	OK	25 degrees C / 77 degrees F
	FPC 7 R Intake	OK	26 degrees C / 78 degrees F
	FPC 7 L Exhaust	OK	28 degrees C / 82 degrees F
	FPC 7 R Exhaust	OK	29 degrees C / 84 degrees F
RC 0 FPC 8			
	FPC 8 L Intake	OK	25 degrees C / 77 degrees F
	FPC 8 R Intake	OK	26 degrees C / 78 degrees F
	FPC 8 L Exhaust	OK	32 degrees C / 89 degrees F
	FPC 8 R Exhaust	OK	30 degrees C / 86 degrees F
RC 7 FPC 15			
	FPC 15 L Intake	OK	24 degrees C / 75 degrees F
	FPC 15 R Intake	OK	25 degrees C / 77 degrees F
	FPC 15 L Exhaust	OK	33 degrees C / 91 degrees F
	FPC 15 R Exhaust	OK	31 degrees C / 87 degrees F



[illegible]

Fans	SFT 6 Fan 0 Rotor 1	OK	Spinning at normal speed
Fans	SFT 6 Fan 1 Rotor 0	OK	Spinning at normal speed
Fans	SFT 6 Fan 1 Rotor 1	OK	Spinning at normal speed
Fans	SFT 6 Fan 2 Rotor 0	OK	Spinning at normal speed
Fans	SFT 6 Fan 2 Rotor 1	OK	Spinning at normal speed
Fans	SFT 6 Fan 3 Rotor 0	OK	Spinning at normal speed
Fans	SFT 6 Fan 3 Rotor 1	OK	Spinning at normal speed
Fans	SFT 7 Fan 0 Rotor 0	OK	Spinning at normal speed
Fans	SFT 7 Fan 0 Rotor 1	OK	Spinning at normal speed
Fans	SFT 7 Fan 1 Rotor 0	OK	Spinning at normal speed
Fans	SFT 7 Fan 1 Rotor 1	OK	Spinning at normal speed
Fans	SFT 7 Fan 2 Rotor 0	OK	Spinning at normal speed
Fans	SFT 7 Fan 2 Rotor 1	OK	Spinning at normal speed
Fans	SFT 7 Fan 3 Rotor 0	OK	Spinning at normal speed
Fans	SFT 7 Fan 3 Rotor 1	OK	Spinning at normal speed
Power	PEM 0	OK	30 degrees C / 86 degrees F
Power	PEM 1	OK	30 degrees C / 86 degrees F
Power	PEM 2	OK	30 degrees C / 86 degrees F
Power	PEM 3	Absent	
Power	PEM 4	Absent	
Power	PEM 5	Absent	

#### show chassis environment node-device (QFabric System)

```
user@switch> show chassis environment node-device node1
```

Class	Item	Status	Measurement
Power	node1 Power Supply 0	Absent	
	node1 Power Supply 1	Absent	
Fans	node1 Fan Tray 0	Testing	
	node1 Fan Tray 1	Testing	
	node1 Fan Tray 2	Testing	

#### show chassis environment pem node-device (QFabric System)

```
user@switch> show chassis environment pem node-device node1
```

FPC 0 PEM 0 status:

State	Check
Airflow	Front to Back
Temperature	OK
AC Input:	OK
DC Output	Voltage(V) Current(A) Power(W) Load(%)
	12 10 120 18

FPC 0 PEM 1 status:

State	Online
Airflow	Back to Front
Temperature	OK
AC Input:	OK
DC Output	Voltage(V) Current(A) Power(W) Load(%)
	11 10 110 17

#### show chassis environment (PTX5000 Packet Transport Router)

```
user@switch> show chassis environment
```

Class	Item	Status	Measurement
Temp	PDU 0	OK	
	PDU 0 PSM 0	OK	36 degrees C / 96 degrees F
	PDU 0 PSM 1	OK	38 degrees C / 100 degrees F
	PDU 0 PSM 2	OK	38 degrees C / 100 degrees F
	PDU 0 PSM 3	OK	37 degrees C / 98 degrees F
	PDU 1	Absent	
	CCG 0	OK	44 degrees C / 111 degrees F
	CCG 1	OK	44 degrees C / 111 degrees F

Routing Engine 0	OK	62 degrees C / 143 degrees F
Routing Engine 0 CPU	OK	75 degrees C / 167 degrees F
Routing Engine 1	OK	51 degrees C / 123 degrees F
Routing Engine 1 CPU	OK	64 degrees C / 147 degrees F
CB 0 Intake	OK	38 degrees C / 100 degrees F
CB 0 Exhaust A	OK	46 degrees C / 114 degrees F
CB 0 Exhaust B	OK	42 degrees C / 107 degrees F
CB 1 Intake	OK	35 degrees C / 95 degrees F
CB 1 Exhaust A	OK	39 degrees C / 102 degrees F
CB 1 Exhaust B	OK	36 degrees C / 96 degrees F
SIB 0 Exhaust	OK	47 degrees C / 116 degrees F
SIB 0 Junction	OK	45 degrees C / 113 degrees F
SIB 1 Exhaust	OK	44 degrees C / 111 degrees F
SIB 1 Junction	OK	43 degrees C / 109 degrees F
SIB 2 Exhaust	OK	47 degrees C / 116 degrees F
SIB 2 Junction	OK	42 degrees C / 107 degrees F
SIB 3 Exhaust	OK	43 degrees C / 109 degrees F
SIB 3 Junction	OK	43 degrees C / 109 degrees F
SIB 4 Exhaust	OK	47 degrees C / 116 degrees F
SIB 4 Junction	OK	42 degrees C / 107 degrees F
SIB 5 Exhaust	OK	42 degrees C / 107 degrees F
SIB 5 Junction	OK	40 degrees C / 104 degrees F
SIB 6 Exhaust	OK	46 degrees C / 114 degrees F
SIB 6 Junction	OK	42 degrees C / 107 degrees F
SIB 7 Exhaust	OK	43 degrees C / 109 degrees F
SIB 7 Junction	OK	39 degrees C / 102 degrees F
SIB 8 Exhaust	OK	44 degrees C / 111 degrees F
SIB 8 Junction	OK	41 degrees C / 105 degrees F
FPC 0 PMB	OK	35 degrees C / 95 degrees F
FPC 0 Intake	OK	33 degrees C / 91 degrees F
FPC 0 Exhaust A	OK	51 degrees C / 123 degrees F
FPC 0 Exhaust B	OK	43 degrees C / 109 degrees F
FPC 0 TL0	OK	48 degrees C / 118 degrees F
FPC 0 TQ0	OK	53 degrees C / 127 degrees F
FPC 0 TL1	OK	56 degrees C / 132 degrees F
FPC 0 TQ1	OK	58 degrees C / 136 degrees F
FPC 0 TL2	OK	55 degrees C / 131 degrees F
FPC 0 TQ2	OK	56 degrees C / 132 degrees F
FPC 0 TL3	OK	59 degrees C / 138 degrees F
FPC 0 TQ3	OK	59 degrees C / 138 degrees F
FPC 2 PMB	OK	35 degrees C / 95 degrees F
FPC 2 Intake	OK	34 degrees C / 93 degrees F
FPC 2 Exhaust A	OK	51 degrees C / 123 degrees F
FPC 2 Exhaust B	OK	52 degrees C / 125 degrees F
FPC 2 TL0	OK	53 degrees C / 127 degrees F
FPC 2 TQ0	OK	53 degrees C / 127 degrees F
FPC 2 TL1	OK	57 degrees C / 134 degrees F
FPC 2 TQ1	OK	58 degrees C / 136 degrees F
FPC 2 TL2	OK	54 degrees C / 129 degrees F
FPC 2 TQ2	OK	59 degrees C / 138 degrees F
FPC 2 TL3	OK	60 degrees C / 140 degrees F
FPC 2 TQ3	OK	64 degrees C / 147 degrees F
PIC 2/0 Ambient	OK	49 degrees C / 120 degrees F
FPC 3 PMB	OK	34 degrees C / 93 degrees F
FPC 3 Intake	OK	35 degrees C / 95 degrees F
FPC 3 Exhaust A	OK	54 degrees C / 129 degrees F
FPC 3 Exhaust B	OK	49 degrees C / 120 degrees F
FPC 3 TL0	OK	49 degrees C / 120 degrees F
FPC 3 TQ0	OK	55 degrees C / 131 degrees F
FPC 3 TL1	OK	56 degrees C / 132 degrees F
FPC 3 TQ1	OK	58 degrees C / 136 degrees F

FPC 3 TL2	OK	56 degrees C / 132 degrees F
FPC 3 TQ2	OK	59 degrees C / 138 degrees F
FPC 3 TL3	OK	62 degrees C / 143 degrees F
FPC 3 TQ3	OK	63 degrees C / 145 degrees F
PIC 3/1	Absent	
FPC 5 PMB	OK	35 degrees C / 95 degrees F
FPC 5 Intake	OK	34 degrees C / 93 degrees F
FPC 5 Exhaust A	OK	51 degrees C / 123 degrees F
FPC 5 Exhaust B	OK	53 degrees C / 127 degrees F
FPC 5 TL0	OK	54 degrees C / 129 degrees F
FPC 5 TQ0	OK	52 degrees C / 125 degrees F
FPC 5 TL1	OK	61 degrees C / 141 degrees F
FPC 5 TQ1	OK	60 degrees C / 140 degrees F
FPC 5 TL2	OK	55 degrees C / 131 degrees F
FPC 5 TQ2	OK	55 degrees C / 131 degrees F
FPC 5 TL3	OK	59 degrees C / 138 degrees F
FPC 5 TQ3	OK	58 degrees C / 136 degrees F
PIC 5/0 Ambient	OK	51 degrees C / 123 degrees F
PIC 5/1 Ambient	OK	34 degrees C / 93 degrees F
PIC 5/1 cfp-5/1/0	OK	34 degrees C / 93 degrees F
PIC 5/1 cfp-5/1/1	OK	36 degrees C / 96 degrees F
FPC 6 PMB	OK	36 degrees C / 96 degrees F
FPC 6 Intake	OK	33 degrees C / 91 degrees F
FPC 6 Exhaust A	OK	51 degrees C / 123 degrees F
FPC 6 Exhaust B	OK	39 degrees C / 102 degrees F
FPC 6 TL0	OK	44 degrees C / 111 degrees F
FPC 6 TQ0	OK	54 degrees C / 129 degrees F
FPC 6 TL1	OK	59 degrees C / 138 degrees F
FPC 6 TQ1	OK	58 degrees C / 136 degrees F
FPC 6 TL2	OK	60 degrees C / 140 degrees F
FPC 6 TQ2	OK	57 degrees C / 134 degrees F
FPC 6 TL3	OK	65 degrees C / 149 degrees F
FPC 6 TQ3	OK	60 degrees C / 140 degrees F
FPC 7 PMB	OK	35 degrees C / 95 degrees F
FPC 7 Intake	OK	33 degrees C / 91 degrees F
FPC 7 Exhaust A	OK	53 degrees C / 127 degrees F
FPC 7 Exhaust B	OK	40 degrees C / 104 degrees F
FPC 7 TL0	OK	46 degrees C / 114 degrees F
FPC 7 TQ0	OK	58 degrees C / 136 degrees F
FPC 7 TL1	OK	53 degrees C / 127 degrees F
FPC 7 TQ1	OK	59 degrees C / 138 degrees F
FPC 7 TL2	OK	56 degrees C / 132 degrees F
FPC 7 TQ2	OK	61 degrees C / 141 degrees F
FPC 7 TL3	OK	63 degrees C / 145 degrees F
FPC 7 TQ3	OK	63 degrees C / 145 degrees F
FPM I2CS	OK	37 degrees C / 98 degrees F
Fans Fan Tray 0 Fan 1	OK	3042 RPM
Fans Fan Tray 0 Fan 2	OK	3042 RPM
Fans Fan Tray 0 Fan 3	OK	3000 RPM
Fans Fan Tray 0 Fan 4	OK	3042 RPM
Fans Fan Tray 0 Fan 5	OK	3000 RPM
Fans Fan Tray 0 Fan 6	OK	3042 RPM
Fans Fan Tray 0 Fan 7	OK	3085 RPM
Fans Fan Tray 0 Fan 8	OK	3042 RPM
Fans Fan Tray 0 Fan 9	OK	3042 RPM
Fans Fan Tray 0 Fan 10	OK	3085 RPM
Fans Fan Tray 0 Fan 11	OK	3085 RPM
Fans Fan Tray 0 Fan 12	OK	3128 RPM
Fans Fan Tray 0 Fan 13	OK	3128 RPM
Fans Fan Tray 0 Fan 14	OK	3042 RPM
Fans 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 (ACX2000 Universal Access Router)

```
user@host> show chassis environment
```

Class	Item	Status	Measurement
	PCB Left	OK	44 degrees C / 111 degrees F
	SFP+ Xcvr	OK	50 degrees C / 122 degrees F
	FEb	OK	70 degrees C / 158 degrees F
	PCB Up	OK	63 degrees C / 145 degrees F
	PCB Mid	OK	66 degrees C / 150 degrees F
	Telecom Mod	OK	65 degrees C / 149 degrees F
	Routing Engine	OK	54 degrees C / 129 degrees F
	Heater off		

#### show chassis environment (ACX4000 Universal Access Router)

On the ACX4000 router, the MIC output of the **show chassis environment** command varies depending on the number of temperature channels present in the installed MIC.

```
user@host> show chassis environment
```

Class	Item	Status	Measurement
Temp	PEM 0	OK	33 degrees C / 91 degrees F
	PEM 1	Absent	
	PCB Bottom	OK	30 degrees C / 86 degrees F
	PCB Middle	OK	34 degrees C / 93 degrees F
	BCM56445	OK	33 degrees C / 91 degrees F
	SFP+ Xcvr	OK	32 degrees C / 89 degrees F
	Fan tray inlet	OK	39 degrees C / 102 degrees F
	Exhaust	OK	30 degrees C / 86 degrees F
	Routing Engine	OK	32 degrees C / 89 degrees F
	Heater off		
Pic	PIC 0/0 Channel 0	OK	28 degrees C / 82 degrees F
	PIC 0/0 Channel 1	OK	29 degrees C / 84 degrees F
	PIC 0/0 Channel 2	OK	0 degrees C / 32 degrees F
	PIC 0/0 Channel 3	OK	0 degrees C / 32 degrees F
	PIC 0/0 Channel 4	OK	0 degrees C / 32 degrees F
	PIC 0/0 Channel 5	OK	0 degrees C / 32 degrees F
	PIC 0/0 Channel 6	OK	0 degrees C / 32 degrees F
	PIC 0/0 Channel 7	OK	0 degrees C / 32 degrees F
	PIC 0/0 Channel 8	OK	0 degrees C / 32 degrees F
	PIC 0/0 Channel 9	OK	0 degrees C / 32 degrees F
	PIC 1/0 Channel 0	OK	33 degrees C / 91 degrees F
	PIC 1/0 Channel 1	OK	31 degrees C / 87 degrees F
	PIC 1/0 Channel 2	OK	30 degrees C / 86 degrees F
	PIC 1/0 Channel 3	OK	0 degrees C / 32 degrees F
	PIC 1/0 Channel 4	OK	0 degrees C / 32 degrees F
	PIC 1/0 Channel 5	OK	0 degrees C / 32 degrees F

	PIC 1/0 Channel 6	OK	0 degrees C / 32 degrees F
	PIC 1/0 Channel 7	OK	0 degrees C / 32 degrees F
	PIC 1/0 Channel 8	OK	0 degrees C / 32 degrees F
	PIC 1/1 Channel 0	OK	31 degrees C / 87 degrees F
	PIC 1/1 Channel 1	OK	29 degrees C / 84 degrees F
	PIC 1/1 Channel 2	OK	28 degrees C / 82 degrees F
	PIC 1/1 Channel 3	OK	0 degrees C / 32 degrees F
	PIC 1/1 Channel 4	OK	0 degrees C / 32 degrees F
	PIC 1/1 Channel 5	OK	0 degrees C / 32 degrees F
	PIC 1/1 Channel 6	OK	0 degrees C / 32 degrees F
	PIC 1/1 Channel 7	OK	0 degrees C / 32 degrees F
	PIC 1/1 Channel 8	OK	0 degrees C / 32 degrees F
Fans	Fan 1	OK	Spinning at normal speed
	Fan 2	OK	Spinning at normal speed

## show chassis environment cb

<b>Syntax</b>	show chassis environment cb <slot>
<b>Syntax (TX Matrix Routers)</b>	show chassis environment cb <lcc number   scc> <slot>
<b>Syntax (TX Matrix Plus Routers)</b>	show chassis environment cb <lcc number   sfc number > <slot>
<b>Syntax (MX Series Routers)</b>	show chassis environment cb <slot> <all-members> <local> <member member-id>
<b>Syntax (MX104 3D Universal Edge Routers)</b>	show chassis environment cb
<b>Syntax (MX2010 and MX2020 3D Universal Edge Routers)</b>	show chassis environment cb <slot>
<b>Syntax (QFabric System)</b>	show chassis environment cb <slot interconnect-device interconnect-device-name> < interconnect-device interconnect-device-name slot>
<b>Release Information</b>	<p>Command introduced before Junos Release 7.4.</p> <p>Command introduced in Junos OS Release 9.4 for EX Series switches.</p> <p>Command introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers.</p> <p>Command introduced in Junos OS Release 12.1 for T4000 Core Routers.</p> <p><b>sfc</b> option introduced for the TX Matrix Plus router in Junos Release 9.6.</p> <p>Command introduced in Junos OS Release 11.3 for the QFX Series.</p> <p>Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 13.2 for MX104 3D Universal Edge Routers.</p>
<b>Description</b>	(M120, M320, MX Series, and T Series routers, EX8200 switches, and PTX Series Packet Transport Routers only) Display environmental information about the Control Boards (CBs). For information about the meaning of “CBs” on the switches, see <i>EX Series Switches Hardware and CLI Terminology Mapping</i> .
<b>Options</b>	<b>none</b> —Display environmental information about all CBs. For a TX Matrix router, display environmental information about all CBs on the TX Matrix router and its attached T640 routers. For a TX Matrix Plus router, display environmental information about all CBs on the TX Matrix Plus router and its attached T1600 or T4000 routers.

**all-members**—(MX Series routers only) (Optional) Display environmental information about the CBs on all the members of the Virtual Chassis configuration.

**interconnect-device**—(QFabric systems only) Display environmental information about CBs on the Interconnect device.

**lcc number**—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(MX Series routers only) (Optional) Display environmental information about the CBs on the local Virtual Chassis member.

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

**scc**—(TX Matrix router only) (Optional) Display environmental information about the CBs in the TX Matrix router (switch-card chassis).

**sfc number**—(TX Matrix Plus router only) (Optional) Display environmental information about the CBs in the TX Matrix Plus router (or switch-fabric chassis).

**slot**—(Optional) Display environmental information about the specified CB. On routers and PTX Series Packet Transport Routers, replace *slot* with 0 or 1. On EX Series switches replace *slot* with 0, 1, or 2. On QFX Series switches, replace *slot* with 0 or 1.

**Required Privilege Level**

view

**Related Documentation**

- [request chassis cb on page 197](#)
- *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 318](#)  
[show chassis environment cb \(M320 Router\) on page 318](#)  
[show chassis environment cb \(MX80 Router\) on page 319](#)  
[show chassis environment cb \(MX104 Router\) on page 319](#)  
[show chassis environment cb \(MX240 Router\) on page 319](#)



[show chassis environment cb \(MX240 Router with Enhanced MX SCB\) on page 320](#)  
[show chassis environment cb \(MX480 Router\) on page 320](#)  
[show chassis environment cb \(MX480 Router with Enhanced MX SCB\) on page 321](#)  
[show chassis environment cb \(MX960 Router\) on page 321](#)  
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[show chassis environment cb \(MX2020 Router\) on page 322](#)  
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[show chassis environment cb \(T4000 Core Router\) on page 324](#)  
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[show chassis environment cb \(EX8200 Switch\) on page 328](#)  
[show chassis environment cb \(EX8208 Switch\) on page 330](#)  
[show chassis environment cb \(PTX5000 Packet Transport Router\) on page 331](#)  
[show chassis environment cb \(QFabric System\) on page 332](#)

**Output Fields** Table 13 on page 317 lists the output fields for the **show chassis environment cb** command. Output fields are listed in the approximate order in which they appear.

**Table 13: show chassis environment cb Output Fields**

Field Name	Field Description
<b>State</b>	<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"> <li>• <b>Online</b>—CB is online and running.</li> <li>• <b>Offline</b>—CB is powered down.</li> </ul> <p><b>NOTE:</b> On the EX8208 switch, the installation can include three CBs. See <i>EX Series Switches Hardware and CLI Terminology Mapping</i>.</p>
<b>Temperature</b>	<p>Temperature in Celsius (C) and Fahrenheit (F) of the air flowing past the CB.</p> <ul style="list-style-type: none"> <li>• <b>Temperature Intake</b>—Measures the temperature of the air intake to cool the power supplies.</li> <li>• <b>Temperature Exhaust</b>—Measures the temperature of the hot air exhaust.</li> </ul> <p><b>NOTE:</b> On the MX2010 and MX2020 routers, the intake temperature measures the temperature of the air intake to cool the Control Board (CB). The MX2010 and MX2020 routers include intake and exhaust temperatures for multiple zones (<b>Intake A</b>, <b>Intake B</b>, <b>Intake C</b>, <b>Exhaust A</b>, <b>Exhaust B</b>, and <b>TCBC</b>).</p>
<b>Power</b>	<p>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.</p>
<b>BUS Revision</b>	<p>Revision level of the generic bus device. (Not on switches.)</p>
<b>FPGA Revision</b>	<p>Revision level of the field-programmable gate array (FPGA). (Not on switches.)</p>

Table 13: show chassis environment cb Output Fields (*continued*)

Field Name	Field Description
<b>PMBus device</b> (on MX240, MX480, and MX960 routers with Enhanced MX SCB)	Enhanced SCB on MX 240, MX480, and MX960 routers allows the system to save power by supplying only the amount of voltage that is required. Configurable PMBus devices are used to provide the voltage for each individual device. There is one PMBus device for each XF ASIC so that the output can be customized to each device. The following PMBus device information is displayed for routers with Enhanced MX SCB: <ul style="list-style-type: none"> <li>• Expected voltage</li> <li>• Measured voltage</li> <li>• Measured current</li> <li>• Calculated power</li> </ul>

## Sample Output

### show chassis environment cb (M120 Router)

```

user@host> show chassis environment cb
CB 0 status:
  State                Online Master
  Temperature          33 degrees C / 91 degrees F
  Power
    1.2 V              1214 mV
    1.5 V              1495 mV
    2.5 V              2494 mV
    3.3 V              3319 mV
    5.0 V              5085 mV
    3.3 V bias         3296 mV
  Bus Revision         12
  FPGA Revision        17
CB 1 status:
  State                Online Standby
  Temperature          34 degrees C / 93 degrees F
  Power
    1.2 V              1195 mV
    1.5 V              1495 mV
    2.5 V              2504 mV
    3.3 V              3312 mV
    5.0 V              5111 mV
    3.3 V bias         3296 mV
  Bus Revision         12
  FPGA Revision        17

```

### show chassis environment cb (M320 Router)

```

user@host> show chassis environment cb
CB 0 status:
  State                Online Master
  Temperature          29 degrees C / 84 degrees F
  Power:
    1.8 V              1805 mV
    2.5 V              2501 mV
    3.3 V              3293 mV
    4.6 V              4725 mV
    5.0 V              5032 mV
    12.0 V             11975 mV
    3.3 V bias         3286 mV

```

```

      8.0 V bias          7589 mV
    BUS Revision          40
    FPGA Revision         7
  CB 1 status:
    State                  Online Standby
    Temperature            32 degrees C / 89 degrees F
    Power:
      1.8 V                1802 mV
      2.5 V                2482 mV
      3.3 V                3289 mV
      4.6 V                4720 mV
      5.0 V                5001 mV
      12.0 V              11946 mV
      3.3 V bias          3274 mV
      8.0 V bias          7562 mV
    BUS Revision          40
    FPGA Revision         7

```

#### show chassis environment cb (MX80 Router)

```

user@host> show chassis environment cb
CB 0 status:
  State                  Online Master
  Temperature            36 degrees C / 96 degrees F
  Power 1
    1.0 V                1034 mV
    1.0 V MQ             1037 mV
    1.0 V LU             1005 mV
    1.2 V                1218 mV
    1.5 V                1524 mV
    1.8 V                1814 mV
    2.5 V                2558 mV
    3.3 V                3296 mV
    5.0 V                5233 mV
    5.0 V bias           5207 mV
    12.0 V              12162 mV

```

#### show chassis environment cb (MX104 Router)

```

user@host > show chassis environment cb
CB 0 status:
  State                  Online Master
  Temperature            33 degrees C / 91 degrees F
  Power 1
    0.75 V               751 mV
    1.0 V                1005 mV
    1.1 V                1113 mV
    1.5 V                1494 mV
    2.5 V                2518 mV
    3.3 V                3338 mV
    5.0 V                4960 mV
    12.0 V              12006 mV
  FPGA Revision          25
CB 1 status:
  State                  Empty

```

#### show chassis environment cb (MX240 Router)

```

user@host> show chassis environment cb
CB 0 status:
  State                  Online Standby
  Temperature            37 degrees C / 98 degrees F

```

```

Power 1
 1.2 V          1208 mV
 1.5 V          1521 mV
 1.8 V          1811 mV
 2.5 V          2513 mV
 3.3 V          3332 mV
 5.0 V          5059 mV
12.0 V          12162 mV
 1.25 V         1260 mV
 3.3 V SM3      3306 mV
 5.0 V RE       5085 mV
12.0 V RE      11872 mV
Power 2
11.3 V bias PEM 11272 mV
 4.6 V bias MidPlane 4827 mV
11.3 V bias FPD 11272 mV
11.3 V bias POE 0 11292 mV
11.3 V bias POE 1 11253 mV
Bus Revision    42
FPGA Revision   1

```

#### show chassis environment cb (MX240 Router with Enhanced MX SCB)

```

user@host> show chassis environment cb
CB 0 status:
State                Online Standby
Temperature           37 degrees C / 98 degrees F
Power 1
 1.2 V          1208 mV
 1.5 V          1521 mV
 1.8 V          1811 mV
 2.5 V          2513 mV
 3.3 V          3332 mV
 5.0 V          5059 mV
12.0 V          12162 mV
 1.25 V         1260 mV
 3.3 V SM3      3306 mV
 5.0 V RE       5085 mV
12.0 V RE      11872 mV
Power 2
11.3 V bias PEM 11272 mV
 4.6 V bias MidPlane 4827 mV
11.3 V bias FPD 11272 mV
11.3 V bias POE 0 11292 mV
11.3 V bias POE 1 11253 mV
Bus Revision    42
FPGA Revision   1
PMBus           Expected Measured Measured Calculated
device          voltage  voltage  current  power
XF ASIC A       1000 mV   997 mV   11031 mA 10997 mW
XF ASIC B       1000 mV   996 mV   12125 mA 12076 mW

```

#### show chassis environment cb (MX480 Router)

```

user@host> show chassis environment cb
CB 0 status:
State                Online Master
Temperature           41 degrees C / 105 degrees F
Power 1
 1.2 V          1202 mV
 1.5 V          1511 mV

```

```

1.8 V          1798 mV
2.5 V          2507 mV
3.3 V          3312 mV
5.0 V          5027 mV
12.0 V         12200 mV
1.25 V         1260 mV
3.3 V SM3      3293 mV
5 V RE         5040 mV
12 V RE        11910 mV
Power 2
11.3 V bias PEM 11156 mV
4.6 V bias MidPlane 4801 mV
11.3 V bias FPD 11214 mV
11.3 V bias POE 0 11098 mV
11.3 V bias POE 1 11330 mV
Bus Revision    42
FPGA Revision   1

```

### show chassis environment cb (MX480 Router with Enhanced MX SCB)

```

user@host> show chassis environment cb
CB 0 status:
State          Online Master
Temperature     41 degrees C / 105 degrees F
Power 1
1.2 V          1202 mV
1.5 V          1511 mV
1.8 V          1798 mV
2.5 V          2507 mV
3.3 V          3312 mV
5.0 V          5027 mV
12.0 V         12200 mV
1.25 V         1260 mV
3.3 V SM3      3293 mV
5 V RE         5040 mV
12 V RE        11910 mV
Power 2
11.3 V bias PEM 11156 mV
4.6 V bias MidPlane 4801 mV
11.3 V bias FPD 11214 mV
11.3 V bias POE 0 11098 mV
11.3 V bias POE 1 11330 mV
Bus Revision    42
FPGA Revision   1
PMBus           Expected Measured Measured Calculated
device          voltage  voltage  current  power
XF ASIC A       1000 mV   997 mV   11031 mA 10997 mW
XF ASIC B       1000 mV   996 mV   12125 mA 12076 mW

```

### show chassis environment cb (MX960 Router)

```

user@host> show chassis environment cb
CB 0 status:
State          Online Master
Temperature     24 degrees C / 75 degrees F
Power 1
1.2 V          1965 mV
1.5 V          2465 mV
1.8 V          2990 mV
2.5 V          3296 mV
3.3 V          3296 mV

```

```

5.0 V          6593 mV
12.0 V         13187 mV
3.3 V bias     3296 mV
1.25 V         1994 mV
3.3 V SM3      3296 mV
5 V RE         6593 mV
12 V RE        13174 mV
Power 2        Sensor failure
Bus Revision    4
FPGA Revision   3

```

#### show chassis environment cb (MX960 Router with Enhanced MX SCB)

```

user@host> show chassis environment cb
CB 0 status:
State          Online Master
Temperature     24 degrees C / 75 degrees F
Power 1
  1.2 V         1965 mV
  1.5 V         2465 mV
  1.8 V         2990 mV
  2.5 V         3296 mV
  3.3 V         3296 mV
  5.0 V         6593 mV
  12.0 V        13187 mV
  3.3 V bias    3296 mV
  1.25 V        1994 mV
  3.3 V SM3     3296 mV
  5 V RE        6593 mV
  12 V RE       13174 mV
Power 2        Sensor failure
Bus Revision    4
FPGA Revision   3
PMBus
device          Expected voltage  Measured voltage  Measured current  Calculated power
XF ASIC A       1000 mV          997 mV           11031 mA          10997 mW
XF ASIC B       1000 mV          996 mV           12125 mA          12076 mW

```

#### show chassis environment cb (MX2020 Router)

```

user@host> show chassis environment cb
CB 0 status:
State          Online Master
IntakeA-Zone0 Temperature  44 degrees C / 111 degrees F
IntakeB-Zone1 Temperature  34 degrees C / 93 degrees F
IntakeC-Zone0 Temperature  45 degrees C / 113 degrees F
ExhaustA-Zone0 Temperature 43 degrees C / 109 degrees F
ExhaustB-Zone1 Temperature 36 degrees C / 96 degrees F
TCBC-Zone0 Temperature   39 degrees C / 102 degrees F
Power 1
  1.0 V         1011 mV
  1.2 V         1208 mV
  1.8 V         1801 mV
  2.5 V         2552 mV
  3.3 V         3312 mV
  5.0 V         5040 mV
  5.0 V RE      4988 mV
  12.0 V        12065 mV
  12.0 V RE     12046 mV
Bus Revision    99
FPGA Revision   270

```

```

CB 1 status:
State                               Online Standby
IntakeA-Zone0 Temperature           45 degrees C / 113 degrees F
IntakeB-Zone1 Temperature           41 degrees C / 105 degrees F
IntakeC-Zone0 Temperature           46 degrees C / 114 degrees F
ExhaustA-Zone0 Temperature          44 degrees C / 111 degrees F
ExhaustB-Zone1 Temperature          41 degrees C / 105 degrees F
TCBC-Zone0 Temperature              45 degrees C / 113 degrees F
Power 1
  1.0 V                             1008 mV
  1.2 V                             1208 mV
  1.8 V                             1798 mV
  2.5 V                             2539 mV
  3.3 V                             3325 mV
  5.0 V                             5033 mV
  5.0 V RE                           4950 mV
  12.0 V                             12046 mV
  12.0 V RE                           11968 mV
Bus Revision                         99
FPGA Revision                        0

```

#### show chassis environment cb (MX2010 Router)

```

user@host> show chassis environment cb
CB 0 status:
State                               Online Master
IntakeA-Zone0 Temperature           36 degrees C / 96 degrees F
IntakeB-Zone1 Temperature           30 degrees C / 86 degrees F
IntakeC-Zone0 Temperature           38 degrees C / 100 degrees F
ExhaustA-Zone0 Temperature          36 degrees C / 96 degrees F
ExhaustB-Zone1 Temperature          32 degrees C / 89 degrees F
TCBC-Zone0 Temperature              34 degrees C / 93 degrees F
Power 1
  1.0 V                             1015 mV
  1.2 V                             1205 mV
  1.8 V                             1804 mV
  2.5 V                             2552 mV
  3.3 V                             3325 mV
  5.0 V                             5020 mV
  5.0 V RE                           4988 mV
  12.0 V                             12104 mV
  12.0 V RE                           12026 mV
Bus Revision                         100
FPGA Revision                        270
CB 1 status:
State                               Online
IntakeA-Zone0 Temperature           35 degrees C / 95 degrees F
IntakeB-Zone1 Temperature           28 degrees C / 82 degrees F
IntakeC-Zone0 Temperature           37 degrees C / 98 degrees F
ExhaustA-Zone0 Temperature          34 degrees C / 93 degrees F
ExhaustB-Zone1 Temperature          29 degrees C / 84 degrees F
TCBC-Zone0 Temperature              32 degrees C / 89 degrees F
Power 1
  1.0 V                             1011 mV
  1.2 V                             1208 mV
  1.8 V                             1788 mV
  2.5 V                             2526 mV
  3.3 V                             3319 mV
  5.0 V                             5046 mV
  5.0 V RE                           4975 mV
  12.0 V                             12046 mV

```

12.0 V RE	12007 mV
Bus Revision	100
FPGA Revision	0

**show chassis environment cb (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

```
1cc1-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
```

```
1cc2-re0:
```

```
-----
CB 0 status:
State                Online Master
Temperature           41 degrees C / 105 degrees F
Power 1
  1.8 V              1805 mV
  2.5 V              2494 mV
  3.3 V              3333 mV
  3.3 V bias         3296 mV
  4.6 V              4673 mV
  5.0 V              4901 mV
  8.0 V bias         7343 mV
  12.0 V             11916 mV
Power 2
  1.0 V              993 mV
  1.2 V              1213 mV
  3.3 V RE           3328 mV
Bus Revision          51
FPGA Revision         3
CB 1 status:
```

```

State                               Online Standby
Temperature                         41 degrees C / 105 degrees F
Power 1
  1.8 V                            1804 mV
  2.5 V                            2523 mV
  3.3 V                            3334 mV
  3.3 V bias                        3291 mV
  4.6 V                            4697 mV
  5.0 V                            4969 mV
  8.0 V bias                        7308 mV
  12.0 V                           11936 mV
Power 2
  1.0 V                            996 mV
  1.2 V                            1200 mV
  3.3 V RE                         3328 mV
Bus Revision                        51
FPGA Revision                       3

```

```
lcc3-re0:
```

```
-----
CB 0 status:
```

```

State                               Online Master
Temperature                         37 degrees C / 98 degrees F
Power 1
  1.8 V                            1809 mV
  2.5 V                            2510 mV
  3.3 V                            3296 mV
  3.3 V bias                        3291 mV
  4.6 V                            4670 mV
  5.0 V                            4905 mV
  8.0 V bias                        7211 mV
  12.0 V                           11882 mV
Power 2
  1.0 V                            996 mV
  1.2 V                            1188 mV
  3.3 V RE                         3326 mV
Bus Revision                        51
FPGA Revision                       5

```

```
CB 1 status:
```

```

State                               Online Standby
Temperature                         38 degrees C / 100 degrees F
Power 1
  1.8 V                            1813 mV
  2.5 V                            2510 mV
  3.3 V                            3322 mV
  3.3 V bias                        3289 mV
  4.6 V                            4692 mV
  5.0 V                            4967 mV
  8.0 V bias                        7194 mV
  12.0 V                           11916 mV
Power 2
  1.0 V                            996 mV
  1.2 V                            1205 mV
  3.3 V RE                         3273 mV
Bus Revision                        51
FPGA Revision                       5

```

### show chassis environment cb (EX8200 Switch)

```
user@host> show chassis environment cb
```

```

CB 0 status:
State                               Online Master
Temperature Intake                   20 degrees C / 68 degrees F
Temperature Exhaust                  24 degrees C / 75 degrees F
Power 1
  1.1 V                             1086 mV
  1.2 V                             1179 mV
  1.2 V *                           1182 mV
  1.2 V *                           1182 mV
  1.25 V                            1211 mV
  1.5 V                             1472 mV
  1.8 V                             1756 mV
  2.5 V                             2449 mV
  3.3 V                             3254 mV
  3.3 V bias                        3300 mV
  5.0 V                             4911 mV
  12.0 V                            11891 mV
Power 2
  3.3 V bias *                      3615 mV
  3.3 V bias *                      3615 mV
  3.3 V bias *                      3567 mV
  3.3 V bias *                      3664 mV
  4.3 V bias *                      4224 mV
  4.3 V bias *                      4215 mV
  4.3 V bias *                      4224 mV
  4.3 V bias *                      4205 mV
  4.3 V bias *                      4195 mV
  4.3 V bias *                      4215 mV
  5.0 V bias                        4920 mV

CB 1 status:
State                               Online Standby
Temperature Intake                   19 degrees C / 66 degrees F
Temperature Exhaust                  23 degrees C / 73 degrees F
Power 1
  1.1 V                             1082 mV
  1.2 V                             1169 mV
  1.2 V *                           1179 mV
  1.2 V *                           1179 mV
  1.25 V                            1214 mV
  1.5 V                             1482 mV
  1.8 V                             1759 mV
  2.5 V                             2481 mV
  3.3 V                             3248 mV
  3.3 V bias                        3306 mV
  5.0 V                             4911 mV
  12.0 V                            11910 mV
Power 2
  3.3 V bias *                      3644 mV
  3.3 V bias *                      3664 mV
  3.3 V bias *                      3586 mV
  3.3 V bias *                      3654 mV
  4.3 V bias *                      4224 mV
  4.3 V bias *                      4215 mV
  4.3 V bias *                      4224 mV
  4.3 V bias *                      4205 mV
  4.3 V bias *                      4244 mV
  4.3 V bias *                      4215 mV
  5.0 V bias                        4930 mV

CB 2 status:
State                               Online

```

Temperature Intake	19 degrees C / 66 degrees F
Temperature Exhaust	23 degrees C / 73 degrees F
Power 1	
1.2 V	1195 mV
1.5 V	1511 mV
1.8 V	1804 mV
2.5 V	2526 mV
3.3 V	3300 mV
3.3 V bias	3306 mV
12.0 V	12220 mV

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

```

user@host> show chassis environment cb
CB 0 status:
State Online Master
Temperature Intake 20 degrees C / 68 degrees F
Temperature Exhaust 24 degrees C / 75 degrees F
Power 1
1.1 V 1086 mV
1.2 V 1179 mV
1.2 V * 1182 mV
1.2 V * 1182 mV
1.25 V 1211 mV
1.5 V 1466 mV
1.8 V 1759 mV
2.5 V 2455 mV
3.3 V 3261 mV
3.3 V bias 3300 mV
5.0 V 4930 mV
12.0 V 11891 mV
Power 2
3.3 V bias * 3606 mV
3.3 V bias * 3615 mV
3.3 V bias * 3567 mV
3.3 V bias * 3673 mV
4.3 V bias * 4224 mV
4.3 V bias * 4215 mV
4.3 V bias * 4234 mV
4.3 V bias * 4205 mV
4.3 V bias * 4186 mV
4.3 V bias * 4215 mV
5.0 V bias 4940 mV
CB 1 status:
State Online Standby
Temperature Intake 19 degrees C / 66 degrees F
Temperature Exhaust 23 degrees C / 73 degrees F
Power 1
1.1 V 1086 mV
1.2 V 1169 mV
1.2 V * 1179 mV
1.2 V * 1179 mV
1.25 V 1211 mV
1.5 V 1479 mV
1.8 V 1759 mV
2.5 V 2475 mV
3.3 V 3235 mV
3.3 V bias 3306 mV
5.0 V 4930 mV
12.0 V 11891 mV
Power 2

```

```

3.3 V bias *      3644 mV
3.3 V bias *      3664 mV
3.3 V bias *      3586 mV
3.3 V bias *      3654 mV
4.3 V bias *      4215 mV
4.3 V bias *      4224 mV
4.3 V bias *      4215 mV
4.3 V bias *      4215 mV
4.3 V bias *      4234 mV
4.3 V bias *      4224 mV
5.0 V bias        4920 mV
CB 2 status:
State              Online
Temperature Intake 20 degrees C / 68 degrees F
Temperature Exhaust 24 degrees C / 75 degrees F
Power 1
1.2 V              1202 mV
1.5 V              1508 mV
1.8 V              1804 mV
2.5 V              2520 mV
3.3 V              3300 mV
3.3 V bias         3300 mV
12.0 V             12200 mV

```

#### show chassis environment cb (PTX5000 Packet Transport Router)

```

user@host> show chassis environment cb
CB 0 status:
State              Online Master
Intake Temperature 38 degrees C / 100 degrees F
Exhaust A Temperature 45 degrees C / 113 degrees F
Exhaust B Temperature 42 degrees C / 107 degrees F
Power 1
1.2 V              1200 mV
1.25 V             1250 mV
2.5 V              2500 mV
3.3 V              3300 mV
Power 2
1.0 V              1000 mV
3.3 V bias         3293 mV
3.9 V              3921 mV
Bus Revision       132
FPGA Revision      27
CB 1 status:
State              Online Standby
Intake Temperature 34 degrees C / 93 degrees F
Exhaust A Temperature 39 degrees C / 102 degrees F
Exhaust B Temperature 36 degrees C / 96 degrees F
Power 1
1.2 V              1199 mV
1.25 V             1250 mV
2.5 V              2499 mV
3.3 V              3299 mV
Power 2
1.0 V              1000 mV
3.3 V bias         3312 mV
3.9 V              3961 mV
Bus Revision       132
FPGA Revision      28

```

**show chassis environment cb (QFabric System)**

```
user@switch> show chassis environment cb interconnect-device IC-123 0
CB 0 status:
State                               Online Master
Left Intake Temperature             33 degrees C / 91 degrees F
Right Intake Temperature            33 degrees C / 91 degrees F
Left Exhaust Temperature            36 degrees C / 96 degrees F
Right Exhaust Temperature            35 degrees C / 95 degrees F
Power                               OK
VDD 3V3                             3294 mV
VDD 2V5                             2436 mV
VDD 1V8                             1746 mV
VDD 1V5                             1460 mV
VDD 1V25                            1210 mV
VDD 1V2                             1164 mV
CPU CORE 1V2                        1120 mV
VDD 1V0                              968 mV
VDD 5V0                             5088 mV
CPU MP BIAS 4V3                     4050 mV
BIAS 3V3                            3180 mV
VTT 0V9                             866 mV
```



## show chassis environment cip

<b>Syntax (TX Matrix Plus Router)</b>	<code>show chassis environment cip</code> <code>&lt;slot-number&gt;</code>
<b>Release Information</b>	Command introduced in Junos OS Release 9.6 for the TX Matrix Plus router.
<b>Description</b>	(TX Matrix Plus router only) Display environmental information about the Connector Interface Panel (CIP).
<b>Options</b>	<p><b>none</b>—Display environmental information about all the CIP.</p> <p><b>slot</b>—Display environmental information about a specific CIP. Replace <b>slot</b> with a value from 0 through 1.</p>
<b>Required Privilege Level</b>	view
<b>Output Fields</b>	Table 14 on page 333 lists the output fields for the <b>show chassis environment cip</b> command. Output fields are listed in the approximate order in which they appear.

Table 14: show chassis environment cip Output Fields

Field Name	Field Description
<b>State</b>	<p>State of the CIP:</p> <ul style="list-style-type: none"> <li>• <b>Online Active:</b> CIP is online and there is active control plane data transfer between the SFC and LCCs in the routing matrix.</li> <li>• <b>Online Inactive:</b> CIP is online, but inactive.</li> <li>• <b>Offline:</b> CIP is offline.</li> </ul>
<b>Temp</b>	Temperature of the CIP in Celsius (C) and Fahrenheit (F).
<b>Power</b>	Information about the voltage supplied to the CIP. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
<b>Bus Revision</b>	Bus revision number.

## show chassis environment cip (TX Matrix Plus Router)

```

user@host> show chassis environment cip
CIP 0 status:
State                Online Active
Temperature          23 degrees C / 73 degrees F
Power 1
  1.0 V              1015 mV
  1.8 V              1817 mV
  2.5 V              2497 mV
  3.3 V              3325 mV
  3.3 V bias         3300 mV
  5.0 V              5001 mV
  9.0 V              9049 mV

```

Bus Revision	74
CIP 1 status:	
State	Online Inactive
Temperature	24 degrees C / 75 degrees F
Power 1	
1.0 V	1008 mV
1.8 V	1820 mV
2.5 V	2504 mV
3.3 V	3325 mV
3.3 V bias	3306 mV
5.0 V	5091 mV
9.0 V	9049 mV
Bus Revision	74

## show chassis environment fpc

<b>Syntax</b>	show chassis environment fpc <slot>
<b>Syntax (TX Matrix and TX Matrix Plus Routers)</b>	show chassis environment fpc <lcc number> <slot>
<b>Syntax (MX Series Routers)</b>	show chassis environment fpc <slot> <all-members> <local> <member <i>member-id</i> >
<b>Syntax (MX2010 3D Universal Edge Routers)</b>	show chassis environment fpc <slot>
<b>Syntax (MX2020 3D Universal Edge Routers)</b>	show chassis environment fpc <slot>
<b>Syntax (QFX Series)</b>	show chassis environment fpc <fpc-slot> interconnect-device <i>name</i>
<b>Release Information</b>	<p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Command introduced in Junos OS Release 11.1 for QFX Series.</p> <p>Command introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers.</p> <p>Command introduced in Junos OS Release 12.1 for T4000 Core Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.</p>
<b>Description</b>	(M40e, M120, M160, M320, MX Series, T Series routers, EX Series, QFX Series, and PTX Series routers only) Display environmental information about Flexible PIC Concentrators (FPCs).
<b>Options</b>	<p><b>none</b>—Display environmental information about all FPCs. On a TX Matrix router, display environmental information about all FPCs on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about all FPCs on the TX Matrix Plus router and its attached routers.</p> <p><b>all-members</b>—(MX Series routers only) (Optional) Display environmental information for the FPCs in all the members of the Virtual Chassis configuration.</p> <p><b>interconnect-device <i>name</i></b>—(QFabric systems only) (Optional) Display chassis environmental information for the Interconnect device.</p>

**lcc number**—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(MX Series routers only) (Optional) Display environmental information for the FPCs in the local Virtual Chassis member.

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

**slot or fpc-slot**—(Optional) Display environmental information about an individual FPC:

- (TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, if you specify the number of the T640 router by using only the **lcc number** option (the recommended method), replace **slot** with a value from 0 through 7. Similarly, on a TX Matrix Plus router, if you specify the number of the router by using only the **lcc number** option (the recommended method), replace **slot** with a value from 0 through 7. Otherwise, replace **slot** with a value from 0 through 31. For example, the following commands have the same result:

```
user@host> show chassis environment fpc 1 lcc 1
user@host> show chassis environment fpc 9
```

- M120 router—Replace **slot** with a value from 0 through 5.
- MX240 router—Replace **slot** with a value from 0 through 2.
- MX480 router—Replace **slot** with a value from 0 through 5.
- MX960 router—Replace **slot** with a value from 0 through 11.
- MX2010 router—Replace **slot** with a value from 0 through 9.
- MX2020 router—Replace **slot** with a value from 0 through 19.
- Other routers—Replace **slot** with a value from 0 through 7.
- EX Series switches:
  - EX3200 switches and EX4200 standalone switches—Replace **slot** with 0.
  - EX4200 switches in a Virtual Chassis configuration—Replace **slot** with a value from 0 through 9 (switch's member ID).

- EX6210 switches—Replace **slot** with a value from 0 through 3 (line card only), 4 or 5 (line card or Switch Fabric and Rotuing Engine (SRE) module), or 6 through 9 (line card only).
- EX8208 switches—Replace **slot** with a value from 0 through 7 (line card).
- EX8216 switches—Replace **slot** with a value from 0 through 15 (line card).
- QFX3500 switches —Replace **fpc-slot** with 0 through 15.
- PTX5000 Packet Transport Router—Replace **fpc-slot** with 0 through 7.

**Required Privilege Level** view

**Related Documentation**

- [request chassis fpc on page 201](#)
- [show chassis fpc on page 600](#)
- *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 339](#)  
[show chassis environment fpc \(M160 Router\) on page 340](#)  
[show chassis environment fpc \(M320 Router\) on page 340](#)  
[show chassis environment fpc \(MX2020 Router\) on page 341](#)  
[show chassis environment fpc \(MX2010 Router\) on page 344](#)  
[show chassis environment fpc \(MX240 Router\) on page 346](#)  
[show chassis environment fpc \(MX480 Router\) on page 347](#)  
[show chassis environment fpc \(MX960 Router\) on page 348](#)  
[show chassis environment fpc \(MX480 Router with 100-Gigabit Ethernet CFP\) on page 349](#)  
[show chassis environment fpc \(MX240, MX480, MX960 with Application Services Modular Line Card on page 350](#)  
[show chassis environment fpc \(T320, T640, and T1600 Routers\) on page 350](#)  
[show chassis environment fpc \(T4000 Router\) on page 351](#)  
[show chassis environment fpc lcc \(TX Matrix Router\) on page 356](#)  
[show chassis environment fpc lcc \(TX Matrix Plus Router\) on page 357](#)  
[show chassis environment fpc \(QFX Series\) on page 358](#)  
[show chassis environment fpc interconnect-device \(QFabric Systems\) on page 358](#)  
[show chassis environment fpc 0 \(PTX5000 Packet Transport Router\) on page 358](#)  
[show chassis environment FPC 1 \(MX Routers with Media Services Blade \[MSB\]\) on page 359](#)

**Output Fields** [Table 15 on page 338](#) lists the output fields for the **show chassis environment fpc** command. Output fields are listed in the approximate order in which they appear.

Table 15: show chassis environment fpc Output Fields

Field Name	Field Description
<b>State</b>	<p>Status of the FPC:</p> <ul style="list-style-type: none"> <li>• <b>Unknown</b>—FPC is not detected by the router.</li> <li>• <b>Empty</b>—No FPC is present.</li> <li>• <b>Present</b>—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.</li> <li>• <b>Ready</b>—FPC is in intermediate or transition state.</li> <li>• <b>Announce online</b>—Intermediate state during which the FPC is coming up but not yet online, and the chassis manager acknowledges the chassisd FPC online initiative.</li> <li>• <b>Online</b>—FPC is online and running.</li> <li>• <b>Offline</b>—FPC is powered down.</li> <li>• <b>Diagnostics</b>—FPC is set to operate in diagnostics mode.</li> </ul>
<b>Temperature</b>	(M40e and M160 routers and QFX Series only) Temperature of the air flowing past the FPC.
<b>PMB Temperature</b>	(PTX Series only) Temperature of the air flowing past the PMB (bottom of the FPC).
<b>Temperature Intake</b>	(M320 routers, MX2010 routers, MX2020 routers, and PTX Series only) Temperature of the air flowing into the chassis.
<b>Temperature Top</b>	(T Series routers only) Temperature of the air flowing past the top of the FPC.
<b>Temperature Exhaust</b>	<p>(M120 and M320 routers, MX2010 routers, MX2020 routers, and PTX Series only) Temperature of the air flowing out of the chassis.</p> <p>The PTX Series Packet Transport Routers, and the MX2010 and MX2020 routers include exhaust temperatures for multiple zones (<b>Exhaust A</b> and <b>Exhaust B</b>).</p>
<b>Temperature Bottom</b>	(T Series routers only) Temperature of the air flowing past the bottom of the FPC.
<b>TL <i>n</i> Temperature</b>	(PTX Series only) Temperature of the air flowing past the specified TL area of the packet forwarding engine (PFE) on the FPC.
<b>TQ <i>n</i> Temperature</b>	(PTX Series only) Temperature of the air flowing past the specified TQ area of the packet forwarding engine (PFE) on the FPC.
<b>Temperature MMBO</b>	(T640 router only) Temperature of the air flowing past the type 3 FPC.
<b>Temperature MMB1</b>	(M320 and T Series routers only) Temperature of the air flowing past the type 1, type 2, and type 3 FPC.
<b>Power</b>	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.
<b>CMB Revision or BUS revision</b>	Revision level of the chassis management bus device (M Series router) or bus (T Series routers).

## Sample Output

### show chassis environment fpc (M120 Router)

```

user@host> show chassis environment fpc
FPC 2 status:
  State                               Online
  Temperature Exhaust A               32 degrees C / 89 degrees F
  Temperature Exhaust B               31 degrees C / 87 degrees F
  Power A-Board
    1.2 V                             1202 mV
    1.5 V                             1508 mV
    1.8 V                             1798 mV
    2.5 V                             2507 mV
    3.3 V                             3351 mV
    5.0 V                             4995 mV
    3.3 V bias                         3296 mV
    1.2 V Rocket IO                   1205 mV
    1.5 V Rocket IO                   1501 mV
  I2C Slave Revision                 12
FPC 3 status:
  State                               Online
  Temperature Exhaust A               31 degrees C / 87 degrees F
  Temperature Exhaust B               33 degrees C / 91 degrees F
  Power A-Board
    1.2 V                             1211 mV
    1.5 V                             1501 mV
    1.8 V                             1798 mV
    2.5 V                             2471 mV
    3.3 V                             3293 mV
    5.0 V                             4930 mV
    3.3 V bias                         3296 mV
    1.2 V Rocket IO                   1205 mV
    1.5 V Rocket IO                   1501 mV
  Power B-Board
    1.2 V                             1214 mV
    1.5 V                             1501 mV
    2.5 V                             2471 mV
    3.3 V                             3300 mV
    5.0 V                             4943 mV
    3.3 V bias                         3296 mV
    1.2 V Rocket IO                   1205 mV
    1.5 V Rocket IO                   1501 mV
  I2C Slave Revision                 12
FPC 4 status:
  State                               Online
  Temperature Exhaust A               32 degrees C / 89 degrees F
  Temperature Exhaust B               30 degrees C / 86 degrees F
  Power A-Board
    1.2 V                             1195 mV
    1.5 V                             1504 mV
    1.8 V                             1801 mV
    2.5 V                             2504 mV
    3.3 V                             3293 mV
    5.0 V                             4917 mV
    3.3 V bias                         3296 mV
    1.2 V Rocket IO                   1202 mV
    1.5 V Rocket IO                   1492 mV
  I2C Slave Revision                 12

```

### show chassis environment fpc (M160 Router)

```
user@host> show chassis environment fpc
FPC 0 status:
  State                               Online
  Temperature                         42 degrees C / 107 degrees F
  Power:
    1.5 V                             1500 mV
    2.5 V                             2509 mV
    3.3 V                             3308 mV
    5.0 V                             4991 mV
    5.0 V bias                         4952 mV
    8.0 V bias                         8307 mV
  CMB Revision                         12
FPC 1 status:
  State                               Online
  Temperature                         45 degrees C / 113 degrees F
  Power:
    1.5 V                             1498 mV
    2.5 V                             2501 mV
    3.3 V                             3319 mV
    5.0 V                             5020 mV
    5.0 V bias                         5025 mV
    8.0 V bias                         8307 mV
  CMB Revision                         12
```

### show chassis environment fpc (M320 Router)

```
user@host> show chassis environment fpc
FPC 0 status:
  State                               Online
  Temperature Intake                  27 degrees C / 80 degrees F
  Temperature Exhaust                 38 degrees C / 100 degrees F
  Temperature MMB1                    31 degrees C / 87 degrees F
  Power:
    1.5 V                             1487 mV
    1.5 V *                           1494 mV
    1.8 V                             1821 mV
    2.5 V                             2533 mV
    3.3 V                             3323 mV
    5.0 V                             5028 mV
    3.3 V bias                        3296 mV
    5.0 V bias                        4984 mV
  CMB Revision                        16
FPC 1 status:
  State                               Online
  Temperature Intake                  27 degrees C / 80 degrees F
  Temperature Exhaust                 37 degrees C / 98 degrees F
  Temperature MMB1                    32 degrees C / 89 degrees F
  Power:
    1.5 V                             1504 mV
    1.5 V *                           1499 mV
    1.8 V                             1820 mV
    2.5 V                             2529 mV
    3.3 V                             3328 mV
    5.0 V                             5013 mV
    3.3 V bias                        3294 mV
    5.0 V bias                        4984 mV
  CMB Revision                        16
FPC 2 status:
  State                               Online
```



```

Temperature Intake          28 degrees C / 82 degrees F
Temperature Exhaust         38 degrees C / 100 degrees F
Temperature MMB1            32 degrees C / 89 degrees F
Power:
  1.5 V                     1498 mV
  1.5 V *                   1487 mV
  1.8 V                     1816 mV
  2.5 V                     2531 mV
  3.3 V                     3324 mV
  5.0 V                     5025 mV
  3.3 V bias                3277 mV
  5.0 V bias                5013 mV
CMB Revision                17
FPC 3 status:
...
```

### show chassis environment fpc (MX2020 Router)

```

user@host> show chassis environment fpc
FPC 0 status:
State                               Online
Temperature Intake                  41 degrees C / 105 degrees F
Temperature Exhaust A                48 degrees C / 118 degrees F
Temperature Exhaust B                60 degrees C / 140 degrees F
Temperature LU 0 TSen                56 degrees C / 132 degrees F
Temperature LU 0 Chip                59 degrees C / 138 degrees F
Temperature LU 1 TSen                56 degrees C / 132 degrees F
Temperature LU 1 Chip                61 degrees C / 141 degrees F
Temperature LU 2 TSen                56 degrees C / 132 degrees F
Temperature LU 2 Chip                52 degrees C / 125 degrees F
Temperature LU 3 TSen                56 degrees C / 132 degrees F
Temperature LU 3 Chip                52 degrees C / 125 degrees F
Temperature MQ 0 TSen                49 degrees C / 120 degrees F
Temperature MQ 0 Chip                49 degrees C / 120 degrees F
Temperature MQ 1 TSen                49 degrees C / 120 degrees F
Temperature MQ 1 Chip                52 degrees C / 125 degrees F
Temperature MQ 2 TSen                49 degrees C / 120 degrees F
Temperature MQ 2 Chip                45 degrees C / 113 degrees F
Temperature MQ 3 TSen                49 degrees C / 120 degrees F
Temperature MQ 3 Chip                46 degrees C / 114 degrees F
Power
  AS-BIAS3V3-z12105                3299 mV
  AS-VDD1V8-z12006                 1807 mV
  AS-VDD2V5-z12006                 2512 mV
  AS-AVDD1V0-z12004                 997 mV
  AS-PCIE_1V0-z12004                 996 mV
  AS-VDD3V3-z12004                 3294 mV
  AS-VDD_1V5A-z12004                1501 mV
  AS-VDD_1V5B-z12004                1498 mV
  AS-LU0_1V0-z12004                 998 mV
  AS-LU1_1V0-z12004                1002 mV
  AS-MQ0_1V0-z12004                 999 mV
  AS-MQ1_1V0-z12004                 994 mV
  AS-LU2_1V0-z12004                1000 mV
  AS-LU3_1V0-z12004                 998 mV
  AS-MQ2_1V0-z12004                1002 mV
  AS-MQ3_1V0-z12004                 999 mV
  AS-PMB_1V1-z12006                1096 mV
I2C Slave Revision                68
FPC 1 status:
State                               Online
```

Temperature Intake	39 degrees C / 102 degrees F
Temperature Exhaust A	48 degrees C / 118 degrees F
Temperature Exhaust B	55 degrees C / 131 degrees F
Temperature LU 0 TSen	52 degrees C / 125 degrees F
Temperature LU 0 Chip	54 degrees C / 129 degrees F
Temperature LU 1 TSen	52 degrees C / 125 degrees F
Temperature LU 1 Chip	56 degrees C / 132 degrees F
Temperature LU 2 TSen	52 degrees C / 125 degrees F
Temperature LU 2 Chip	49 degrees C / 120 degrees F
Temperature LU 3 TSen	52 degrees C / 125 degrees F
Temperature LU 3 Chip	50 degrees C / 122 degrees F
Temperature MQ 0 TSen	48 degrees C / 118 degrees F
Temperature MQ 0 Chip	48 degrees C / 118 degrees F
Temperature MQ 1 TSen	48 degrees C / 118 degrees F
Temperature MQ 1 Chip	51 degrees C / 123 degrees F
Temperature MQ 2 TSen	48 degrees C / 118 degrees F
Temperature MQ 2 Chip	45 degrees C / 113 degrees F
Temperature MQ 3 TSen	48 degrees C / 118 degrees F
Temperature MQ 3 Chip	45 degrees C / 113 degrees F
Power	
AS-BIAS3V3-z12105	3291 mV
AS-VDD1V8-z12006	1786 mV
AS-VDD2V5-z12006	2496 mV
AS-AVDD1V0-z12004	1000 mV
AS-PCIE_1V0-z12004	1000 mV
AS-VDD3V3-z12004	3294 mV
AS-VDD_1V5A-z12004	1500 mV
AS-VDD_1V5B-z12004	1498 mV
AS-LU0_1V0-z12004	1003 mV
AS-LU1_1V0-z12004	1000 mV
AS-MQ0_1V0-z12004	1000 mV
AS-MQ1_1V0-z12004	995 mV
AS-LU2_1V0-z12004	1002 mV
AS-LU3_1V0-z12004	997 mV
AS-MQ2_1V0-z12004	1000 mV
AS-MQ3_1V0-z12004	998 mV
AS-PMB_1V1-z12006	1096 mV
I2C Slave Revision	68
FPC 2 status:	
State	Online
Temperature Intake	39 degrees C / 102 degrees F
Temperature Exhaust A	48 degrees C / 118 degrees F
Temperature Exhaust B	58 degrees C / 136 degrees F
Temperature LU 0 TSen	55 degrees C / 131 degrees F
Temperature LU 0 Chip	57 degrees C / 134 degrees F
Temperature LU 1 TSen	55 degrees C / 131 degrees F
Temperature LU 1 Chip	63 degrees C / 145 degrees F
Temperature LU 2 TSen	55 degrees C / 131 degrees F
Temperature LU 2 Chip	51 degrees C / 123 degrees F
Temperature LU 3 TSen	55 degrees C / 131 degrees F
Temperature LU 3 Chip	52 degrees C / 125 degrees F
Temperature MQ 0 TSen	48 degrees C / 118 degrees F
Temperature MQ 0 Chip	50 degrees C / 122 degrees F
Temperature MQ 1 TSen	48 degrees C / 118 degrees F
Temperature MQ 1 Chip	52 degrees C / 125 degrees F
Temperature MQ 2 TSen	48 degrees C / 118 degrees F
Temperature MQ 2 Chip	47 degrees C / 116 degrees F
Temperature MQ 3 TSen	48 degrees C / 118 degrees F
Temperature MQ 3 Chip	47 degrees C / 116 degrees F
Power	
AS-BIAS3V3-z12105	3299 mV

```

AS-VDD1V8-z12006      1805 mV
AS-VDD2V5-z12006      2510 mV
AS-AVDD1V0-z12004      999 mV
AS-PCIE_1V0-z12004      998 mV
AS-VDD3V3-z12004      3296 mV
AS-VDD_1V5A-z12004     1492 mV
AS-VDD_1V5B-z12004     1497 mV
AS-LU0_1V0-z12004      997 mV
AS-LU1_1V0-z12004     1000 mV
AS-MQ0_1V0-z12004      998 mV
AS-MQ1_1V0-z12004     1001 mV
AS-LU2_1V0-z12004      996 mV
AS-LU3_1V0-z12004      995 mV
AS-MQ2_1V0-z12004      998 mV
AS-MQ3_1V0-z12004      997 mV
AS-PMB_1V1-z12006      1100 mV
I2C Slave Revision      68
FPC 3 status:
State                    Online
Temperature Intake        41 degrees C / 105 degrees F
Temperature Exhaust A     48 degrees C / 118 degrees F
Temperature Exhaust B     58 degrees C / 136 degrees F
Temperature LU 0 TSen     56 degrees C / 132 degrees F
Temperature LU 0 Chip     59 degrees C / 138 degrees F
Temperature LU 1 TSen     56 degrees C / 132 degrees F
Temperature LU 1 Chip     61 degrees C / 141 degrees F
Temperature LU 2 TSen     56 degrees C / 132 degrees F
Temperature LU 2 Chip     51 degrees C / 123 degrees F
Temperature LU 3 TSen     56 degrees C / 132 degrees F
Temperature LU 3 Chip     53 degrees C / 127 degrees F
Temperature MQ 0 TSen     50 degrees C / 122 degrees F
Temperature MQ 0 Chip     51 degrees C / 123 degrees F
Temperature MQ 1 TSen     50 degrees C / 122 degrees F
Temperature MQ 1 Chip     55 degrees C / 131 degrees F
Temperature MQ 2 TSen     50 degrees C / 122 degrees F
Temperature MQ 2 Chip     47 degrees C / 116 degrees F
Temperature MQ 3 TSen     50 degrees C / 122 degrees F
Temperature MQ 3 Chip     50 degrees C / 122 degrees F
Power
AS-BIAS3V3-z12105       3305 mV
AS-VDD1V8-z12006       1810 mV
AS-VDD2V5-z12006       2508 mV
AS-AVDD1V0-z12004       999 mV
AS-PCIE_1V0-z12004      1001 mV
AS-VDD3V3-z12004       3294 mV
AS-VDD_1V5A-z12004      1500 mV
AS-VDD_1V5B-z12004      1498 mV
AS-LU0_1V0-z12004       998 mV
AS-LU1_1V0-z12004       998 mV
AS-MQ0_1V0-z12004       999 mV
AS-MQ1_1V0-z12004       998 mV
AS-LU2_1V0-z12004      1000 mV
AS-LU3_1V0-z12004      1001 mV
AS-MQ2_1V0-z12004       996 mV
AS-MQ3_1V0-z12004       998 mV
AS-PMB_1V1-z12006       1098 mV
I2C Slave Revision      68
FPC 4 status:
...
```

**show chassis environment fpc (MX2010 Router)**

```

user@host> show chassis environment fpc
FPC 0 status:
State                               Online
Temperature Intake                  36 degrees C / 96 degrees F
Temperature Exhaust A               42 degrees C / 107 degrees F
Temperature Exhaust B               51 degrees C / 123 degrees F
Temperature LU 0 TSen                49 degrees C / 120 degrees F
Temperature LU 0 Chip                50 degrees C / 122 degrees F
Temperature LU 1 TSen                49 degrees C / 120 degrees F
Temperature LU 1 Chip                54 degrees C / 129 degrees F
Temperature LU 2 TSen                49 degrees C / 120 degrees F
Temperature LU 2 Chip                45 degrees C / 113 degrees F
Temperature LU 3 TSen                49 degrees C / 120 degrees F
Temperature LU 3 Chip                46 degrees C / 114 degrees F
Temperature MQ 0 TSen                40 degrees C / 104 degrees F
Temperature MQ 0 Chip                41 degrees C / 105 degrees F
Temperature MQ 1 TSen                40 degrees C / 104 degrees F
Temperature MQ 1 Chip                44 degrees C / 111 degrees F
Temperature MQ 2 TSen                40 degrees C / 104 degrees F
Temperature MQ 2 Chip                38 degrees C / 100 degrees F
Temperature MQ 3 TSen                40 degrees C / 104 degrees F
Temperature MQ 3 Chip                41 degrees C / 105 degrees F
Power
AS-BIAS3V3-z12105                   3300 mV
AS-VDD1V8-z12006                     1805 mV
AS-VDD2V5-z12006                     2505 mV
AS-AVDD1V0-z12004                     998 mV
AS-PCIE_1V0-z12004                     999 mV
AS-VDD3V3-z12004                     3303 mV
AS-VDD_1V5A-z12004                     1497 mV
AS-VDD_1V5B-z12004                     1497 mV
AS-LU0_1V0-z12004                     998 mV
AS-LU1_1V0-z12004                     1003 mV
AS-MQ0_1V0-z12004                     998 mV
AS-MQ1_1V0-z12004                     998 mV
AS-LU2_1V0-z12004                     997 mV
AS-LU3_1V0-z12004                     1001 mV
AS-MQ2_1V0-z12004                     996 mV
AS-MQ3_1V0-z12004                     994 mV
AS-PMB_1V1-z12006                     1097 mV
I2C Slave Revision                  68
FPC 1 status:
State                               Online
Temperature Intake                  34 degrees C / 93 degrees F
Temperature Exhaust A               46 degrees C / 114 degrees F
Temperature Exhaust B               54 degrees C / 129 degrees F
Temperature LU 0 TSen                45 degrees C / 113 degrees F
Temperature LU 0 Chip                55 degrees C / 131 degrees F
Temperature LU 1 TSen                45 degrees C / 113 degrees F
Temperature LU 1 Chip                44 degrees C / 111 degrees F
Temperature LU 2 TSen                45 degrees C / 113 degrees F
Temperature LU 2 Chip                50 degrees C / 122 degrees F
Temperature LU 3 TSen                45 degrees C / 113 degrees F
Temperature LU 3 Chip                58 degrees C / 136 degrees F
Temperature XM 0 TSen                45 degrees C / 113 degrees F
Temperature XM 0 Chip                51 degrees C / 123 degrees F
Temperature XF 0 TSen                45 degrees C / 113 degrees F
Temperature XF 0 Chip                63 degrees C / 145 degrees F
Temperature PLX Switch TSen          45 degrees C / 113 degrees F

```

```

Temperature PLX Switch Chip47 degrees C / 116 degrees F
Power
MPC-BIAS3V3-z12105      3300 mV
MPC-VDD3V3-z16100      3294 mV
MPC-VDD2V5-z16100      2505 mV
MPC-VDD1V8-z12004      1796 mV
MPC-AVDD1V0-z12004      991 mV
MPC-VDD1V2-z16100      1196 mV
MPC-VDD1V5A-z12004      1491 mV
MPC-VDD1V5B-z12004      1492 mV
MPC-XF_0V9-z12004      996 mV
MPC-PCIE_1V0-z16100     1003 mV
MPC-LU0_1V0-z12004      996 mV
MPC-LU1_1V0-z12004      996 mV
MPC-LU2_1V0-z12004      998 mV
MPC-LU3_1V0-z12004      994 mV
MPC-12VA-BMR453         12031 mV
MPC-12VB-BMR453         12003 mV
MPC-PMB_1V1-z12006      1104 mV
MPC-PMB_1V2-z12106      1194 mV
MPC-XM_0V9-vt273m       911 mV
I2C Slave Revision      110
FPC 8 status:
State                    Online
Temperature Intake        32 degrees C / 89 degrees F
Temperature Exhaust A     44 degrees C / 111 degrees F
Temperature Exhaust B     37 degrees C / 98 degrees F
Temperature LU 0 TCAM TSen 41 degrees C / 105 degrees F
Temperature LU 0 TCAM Chip 49 degrees C / 120 degrees F
Temperature LU 0 TSen     41 degrees C / 105 degrees F
Temperature LU 0 Chip     52 degrees C / 125 degrees F
Temperature MQ 0 TSen     41 degrees C / 105 degrees F
Temperature MQ 0 Chip     47 degrees C / 116 degrees F
Temperature LU 1 TCAM TSen 39 degrees C / 102 degrees F
Temperature LU 1 TCAM Chip 42 degrees C / 107 degrees F
Temperature LU 1 TSen     39 degrees C / 102 degrees F
Temperature LU 1 Chip     46 degrees C / 114 degrees F
Temperature MQ 1 TSen     39 degrees C / 102 degrees F
Temperature MQ 1 Chip     45 degrees C / 113 degrees F
Power
MPC-BIAS3V3-z12105      3296 mV
MPC-VDD3V3-z12006      3298 mV
MPC-VDD2V5-z12006      2505 mV
MPC-TCAM_1V0-z12004      997 mV
MPC-AVDD1V0-z12006      1007 mV
MPC-VDD1V8-z12006      1803 mV
MPC-PCIE_1V0-z12006      1004 mV
MPC-LU0_1V0-z12004      1000 mV
MPC-MQ0_1V0-z12004      999 mV
MPC-VDD_1V5-z12004      1498 mV
MPC-PMB_1V1-z12006      1102 mV
MPC-9VA-BMR453          9009 mV
MPC-9VB-BMR453          8960 mV
MPC-PMB_1V2-z12105      1202 mV
MPC-LU1_1V0-z12004      1005 mV
MPC-MQ1_1V0-z12004      1000 mV
I2C Slave Revision      70
FPC 9 status:
State                    Online
Temperature Intake        34 degrees C / 93 degrees F
Temperature Exhaust A     41 degrees C / 105 degrees F

```

Temperature Exhaust B	54 degrees C / 129 degrees F
Temperature LU 0 TSen	51 degrees C / 123 degrees F
Temperature LU 0 Chip	52 degrees C / 125 degrees F
Temperature LU 1 TSen	51 degrees C / 123 degrees F
Temperature LU 1 Chip	55 degrees C / 131 degrees F
Temperature LU 2 TSen	51 degrees C / 123 degrees F
Temperature LU 2 Chip	47 degrees C / 116 degrees F
Temperature LU 3 TSen	51 degrees C / 123 degrees F
Temperature LU 3 Chip	47 degrees C / 116 degrees F
Temperature MQ 0 TSen	40 degrees C / 104 degrees F
Temperature MQ 0 Chip	42 degrees C / 107 degrees F
Temperature MQ 1 TSen	40 degrees C / 104 degrees F
Temperature MQ 1 Chip	44 degrees C / 111 degrees F
Temperature MQ 2 TSen	40 degrees C / 104 degrees F
Temperature MQ 2 Chip	38 degrees C / 100 degrees F
Temperature MQ 3 TSen	40 degrees C / 104 degrees F
Temperature MQ 3 Chip	40 degrees C / 104 degrees F
Power	
AS-BIAS3V3-z12105	3302 mV
AS-VDD1V8-z12006	1808 mV
AS-VDD2V5-z12006	2513 mV
AS-AVDD1V0-z12004	997 mV
AS-PCIE_1V0-z12004	999 mV
AS-VDD3V3-z12004	3294 mV
AS-VDD_1V5A-z12004	1503 mV
AS-VDD_1V5B-z12004	1502 mV
AS-LU0_1V0-z12004	996 mV
AS-LU1_1V0-z12004	999 mV
AS-MQ0_1V0-z12004	997 mV
AS-MQ1_1V0-z12004	999 mV
AS-LU2_1V0-z12004	997 mV
AS-LU3_1V0-z12004	998 mV
AS-MQ2_1V0-z12004	1000 mV
AS-MQ3_1V0-z12004	1000 mV
AS-PMB_1V1-z12006	1102 mV
I2C Slave Revision	68

### 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 0 status:
State                               Online
Temperature Intake                  32 degrees C / 89 degrees F
Temperature Exhaust A               39 degrees C / 102 degrees F
Temperature Exhaust B               37 degrees C / 98 degrees F
Temperature QX 0 TSen               44 degrees C / 111 degrees F
Temperature QX 0 Chip               48 degrees C / 118 degrees F
Temperature LU 0 TCAM TSen          44 degrees C / 111 degrees F
Temperature LU 0 TCAM Chip          47 degrees C / 116 degrees F
Temperature LU 0 TSen               44 degrees C / 111 degrees F
Temperature LU 0 Chip               48 degrees C / 118 degrees F
Temperature MQ 0 TSen               44 degrees C / 111 degrees F
Temperature MQ 0 Chip               47 degrees C / 116 degrees F
Power
MPC-BIAS3V3-z12105                 3297 mV
MPC-VDD3V3-z12105                 3306 mV
MPC-VDD2V5-z12105                 2498 mV
MPC-TCAM_1V0-z12004               999 mV
MPC-AVDD1V0-z12006                 999 mV
MPC-VDD1V8-z12006                 1796 mV
MPC-PCIE_1V0-z12006               1002 mV
MPC-LU0_1V0-z12004                 997 mV
MPC-MQ0_1V0-z12004                 995 mV
MPC-VDD_1V5-z12004                1496 mV
MPC-PMB_1V1-z12006                1094 mV
MPC-9VA-BMR453                    9054 mV
MPC-9VB-BMR453                    9037 mV
MPC-PMB_1V2-z12106                1191 mV
MPC-QXM0_1V0-z12006              1000 mV
I2C Slave Revision                 66
FPC 1 status:
State                               Online
Temperature Intake                  35 degrees C / 95 degrees F
Temperature Exhaust A               50 degrees C / 122 degrees F
Temperature Exhaust B               56 degrees C / 132 degrees F
Temperature LU 0 TSen               46 degrees C / 114 degrees F
Temperature LU 0 Chip               59 degrees C / 138 degrees F
Temperature LU 1 TSen               46 degrees C / 114 degrees F
Temperature LU 1 Chip               45 degrees C / 113 degrees F
Temperature LU 2 TSen               46 degrees C / 114 degrees F
Temperature LU 2 Chip               60 degrees C / 140 degrees F
Temperature LU 3 TSen               46 degrees C / 114 degrees F

```

Temperature LU 3 Chip	71 degrees C / 159 degrees F
Temperature XM 0 TSen	46 degrees C / 114 degrees F
Temperature XM 0 Chip	-18 degrees C / 0 degrees F
Temperature XF 0 TSen	46 degrees C / 114 degrees F
Temperature XF 0 Chip	76 degrees C / 168 degrees F
Power	
MPC-BIAS3V3-z12105	3292 mV
MPC-VDD3V3-z16100	3303 mV
MPC-VDD2V5-z16100	2501 mV
MPC-VDD1V8-z12004	1801 mV
MPC-AVDD1V0-z12006	996 mV
MPC-VDD1V2-z16100	1199 mV
MPC-VDD1V5A-z12004	1493 mV
MPC-VDD1V5B-z12004	1498 mV
MPC-XF_0V9-z12006	996 mV
MPC-PCIE_1V0-z16100	1000 mV
MPC-LU0_1V0-z12004	994 mV
MPC-LU1_1V0-z12004	994 mV
MPC-LU2_1V0-z12004	992 mV
MPC-LU3_1V0-z12004	993 mV
MPC-12VA-BMR453	12003 mV
MPC-12VB-BMR453	12043 mV
MPC-PMB_1V1-z12006	1091 mV
MPC-PMB_1V2-z12106	1196 mV
MPC-XM_0V9-vt273m	899 mV
I2C Slave Revision	106

#### show chassis environment fpc (MX240, MX480, MX960 with Application Services Modular Line Card)

```

user@host>show chassis environment fpc 1
FPC 1 status:
State                               Online
Temperature Intake                  36 degrees C / 96 degrees F
Temperature Exhaust A                39 degrees C / 102 degrees F
Temperature LU TSen                  52 degrees C / 125 degrees F
Temperature LU Chip                  54 degrees C / 129 degrees F
Temperature XM TSen                  52 degrees C / 125 degrees F
Temperature XM Chip                  60 degrees C / 140 degrees F
Temperature PCIE TSen                52 degrees C / 125 degrees F
Temperature PCIE Chip                69 degrees C / 156 degrees F
Power
  MPC-BIAS3V3-z12106                3302 mV
  MPC-VDD3V3-z16100                 3325 mV
  MPC-AVDD1V0-z16100                1007 mV
  MPC-PCIE_1V0-z16100               904 mV
  MPC-LU0_1V0-z12004                996 mV
  MPC-VDD_1V5-z12004               1498 mV
  MPC-12VA-BMR453                   11733 mV
  MPC-12VB-BMR453                   11728 mV
  MPC-XM_0V9-vt273m                 900 mV
I2C Slave Revision                  81

```

#### show chassis environment fpc (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 Systems)**

```
user@switch> show chassis environment fpc interconnect-device interconnect1 0
FC 0 FPC 0 status:
  State                Online
  Left Intake Temperature 24 degrees C / 75 degrees F
  Right Intake Temperature 24 degrees C / 75 degrees F
  Left Exhaust Temperature 27 degrees C / 80 degrees F
  Right Exhaust Temperature 27 degrees C / 80 degrees F
  Power
    BIAS 3V3            3330 mV
    VDD 3V3             3300 mV
    VDD 2V5             2502 mV
    VDD 1V5             1496 mV
    VDD 1V2             1194 mV
    VDD 1V0             1000 mV
    SW0 VDD 1V0         1020 mV
    SW0 CVDD 1V025      1032 mV
    SW1 VDD 1V0         1022 mV
    SW1 CVDD 1V025      1030 mV
    VDD 12V0 DIV3_33    3414 mV
```

**show chassis environment fpc 0 (PTX5000 Packet Transport Router)**

```
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 FPC 1 (MX Routers with Media Services Blade [MSB])

```
user@switch> show chassis environment fpc 1
```

```
FPC 1 status:
```

State	Online
Temperature Intake	36 degrees C / 96 degrees F
Temperature Exhaust A	39 degrees C / 102 degrees F
Temperature LU TSen	52 degrees C / 125 degrees F
Temperature LU Chip	54 degrees C / 129 degrees F
Temperature XM TSen	52 degrees C / 125 degrees F
Temperature XM Chip	60 degrees C / 140 degrees F
Temperature PCIe TSen	52 degrees C / 125 degrees F
Temperature PCIe Chip	69 degrees C / 156 degrees F
Power	
MPC-BIAS3V3-z12106	3302 mV
MPC-VDD3V3-z16100	3325 mV
MPC-AVDD1V0-z16100	1007 mV
MPC-PCIE_1V0-z16100	904 mV
MPC-LU0_1V0-z12004	996 mV
MPC-VDD_1V5-z12004	1498 mV
MPC-12VA-BMR453	11733 mV
MPC-12VB-BMR453	11728 mV
MPC-XM_0V9-vt273m	900 mV
I2C Slave Revision	81

## show chassis environment fpm

---

<b>Syntax</b>	show chassis environment fpm
<b>Syntax (TX Matrix Routers)</b>	show chassis environment fpm <lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Routers)</b>	show chassis environment fpm <lcc <i>number</i>   sfc <i>number</i> >
<b>Release Information</b>	<p>Command introduced before Junos OS Release 7.4.</p> <p><b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6.</p> <p>Command introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers.</p> <p>Command introduced in Junos OS Release 12.1 for T4000 Core Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.</p>
<b>Description</b>	(M40e, M120, M160, M320, MX Series, and T Series routers and the PTX Series Packet Transport Routers only) Display environmental information about the front panel module in the router.
<b>Options</b>	<p><b>none</b>—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, display environmental information about the front panel modules (craft interfaces) on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about the front panel modules (craft interfaces) on the TX Matrix Plus router and its attached routers.</p> <p><b>lcc <i>number</i></b>—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.</p> <p>Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"><li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li><li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li><li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li><li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li></ul> <p><b>scc</b>—(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><b>sfc <i>number</i></b>—(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**

- [request chassis fpm resync on page 205](#)

**List of Sample Output**

- [show chassis environment fpm \(M40e and M160 Routers\) on page 362](#)
- [show chassis environment fpm \(M320 Router\) on page 362](#)
- [show chassis environment fpm \(MX2010 Router\) on page 362](#)
- [show chassis environment fpm \(MX2020 Router\) on page 362](#)
- [show chassis environment fpm \(MX240 Router\) on page 363](#)
- [show chassis environment fpm \(MX480 Router\) on page 363](#)
- [show chassis environment fpm \(T Series Routers\) on page 363](#)
- [show chassis environment fpm lcc \(TX Matrix Router\) on page 363](#)
- [show chassis environment fpm scc \(TX Matrix Router\) on page 363](#)
- [show chassis environment fpm sfc \(TX Matrix Plus Router\) on page 364](#)
- [show chassis environment fpm \(T4000 Core Router\) on page 364](#)
- [show chassis environment fpm \(PTX5000 Packet Transport Router\) on page 365](#)

**Output Fields** Table 16 on page 361 lists the output fields for the **show chassis environment fpm** command. Output fields are listed in the approximate order in which they appear.

**Table 16: show chassis environment fpm Output Fields**

Field Name	Field Description
<b>State</b>	FPM status: <ul style="list-style-type: none"> <li>• <b>Online</b>—FPM is online and running.</li> <li>• <b>Offline</b>—FPM is powered down.</li> </ul>
<b>FPM CMB Voltage</b>	(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.
<b>FPM GBUS Voltage</b>	(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.
<b>FPM I2CS Voltage</b>	(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.
<b>FPM Display Voltage</b>	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.
<b>FPM CMB Temperature</b>	(M40e and M160 routers only) Temperature of the air flowing past the FPM CMB device
<b>FPM GBUS Temperature</b>	(M320 and T Series routers only) Temperature of the air flowing past the FPM GBUS device.
<b>FPM I2CS Temperature</b>	(PTX Series only) Temperature of the air flowing past the FPM I2CS device.

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

Field Name	Field Description
FPM Display Temperature	Temperature of the air flowing past the FPM display.
CMB Revision	(M40e and M160 routers only) Revision level of the CMB device.
GBUS Revision	(M320 and T Series routers only) Revision level of the GBUS device.
I2CS Revision	(MX2010 routers, MX2020 routers, and PTX Series only) Revision level of the I2CS device.

## Sample Output

### show chassis environment fpm (M40e and M160 Routers)

```

user@host> show chassis environment fpm
FPM status:
  State                               Online
  FPM CMB Voltage:
    5.0 V bias                        5030 mV
    8.0 V bias                        8083 mV
  FPM Display Voltage:
    5.0 V bias                        4998 mV
  FPM CMB temperature                 34 degrees C / 93 degrees F
  FPM Display temperature             35 degrees C / 95 degrees F
  CMB Revision                        12

```

### show chassis environment fpm (M320 Router)

```

user@host> show chassis environment fpm
FPM status:
  State                               Online
  FPM GBUS Voltage:
    5.0 V                             5006 mV
    1.8 V bias                        1799 mV
    3.3 V bias                        3294 mV
    5.0 V bias                        4998 mV
    8.0 V bias                        7682 mV
  FPM GBUS temperature                 30 degrees C / 86 degrees F
  GBUS Revision                        51

```

### show chassis environment fpm (MX2010 Router)

```

user@host > show chassis environment fpm
FPM status:
  State                               Online
  I2CS Revision                        4

```

### show chassis environment fpm (MX2020 Router)

```

user@host > show chassis environment fpm
FPM status:
  State                               Online
  I2CS Revision                        3

```

**show chassis environment fpm (MX240 Router)**

```

user@host> show chassis environment fpm
FPM status:
  State                Online
  I2CS Revision        41

```

**show chassis environment fpm (MX480 Router)**

```

user@host> show chassis environment fpm
FPM status:
  State                Online
  I2CS Revision        41

```

**show chassis environment fpm (T Series Routers)**

```

user@host> show chassis environment fpm
FPM status:
  State                Online
  FPM GBUS Voltage:
    1.8 V bias         1787 mV
    3.3 V bias         3286 mV
    5.0 V bias         4991 mV
    8.0 V bias         7162 mV
  FPM Display Voltage:
    5.0 V              4996 mV
  FPM GBUS temperature  29 degrees C / 84 degrees F
  FPM Display temperature 26 degrees C / 78 degrees F
  GBUS Revision        37

```

**show chassis environment fpm lcc (TX Matrix Router)**

```

user@host> show chassis environment fpm lcc 0
lcc0-re0:
-----
FPM status:
  State                Online
  FPM GBUS Voltage:
    1.8 V bias         1797 mV
    3.3 V bias         3294 mV
    5.0 V bias         5015 mV
    8.0 V bias         7470 mV
  FPM Display Voltage:
    5.0 V              5018 mV
  FPM GBUS temperature  25 degrees C / 77 degrees F
  FPM Display temperature 29 degrees C / 84 degrees F
  GBUS Revision        37

```

**show chassis environment fpm scc (TX Matrix Router)**

```

user@host> show chassis environment fpm scc
scc-re0:
-----
FPM status:
  State                Online
  FPM GBUS Voltage:
    1.8 V bias         1789 mV
    3.3 V bias         3296 mV
    5.0 V bias         5003 mV
    8.0 V bias         7592 mV
  FPM Display Voltage:

```

```

5.0 V          5010 mV
FPM GBUS temperature  22 degrees C / 71 degrees F
FPM Display temperature 27 degrees C / 80 degrees F
GBUS Revision        37

```

### show chassis environment fpm sfc (TX Matrix Plus Router)

```
user@host> show chassis environment fpm sfc
```

```
sfc0-re0:
```

```

-----
FPM status:
State          Online
FPM I2CS Voltage:
  3.3 V        3300 mV
  5.0 V        5001 mV
  9.0 V FPD    8672 mV
FPM I2CS temperature 33 degrees C / 91 degrees F
I2CS Revision      69

```

```
lcc0-re0:
```

```

-----
FPM status:
State          Online
FPM GBUS Voltage:
  1.8 V bias    1802 mV
  3.3 V bias    3301 mV
  5.0 V bias    4984 mV
  8.0 V bias    7377 mV
FPM Display Voltage:
  5.0 V        5015 mV
FPM GBUS temperature 30 degrees C / 86 degrees F
FPM Display temperature 32 degrees C / 89 degrees F
GBUS Revision      37

```

```
lcc1-re0:
```

```

-----
FPM status:
State          Online
FPM GBUS Voltage:
  1.8 V bias    1789 mV
  3.3 V bias    3311 mV
  5.0 V bias    5013 mV
  8.0 V bias    7467 mV
FPM Display Voltage:
  5.0 V        5015 mV
FPM GBUS temperature 29 degrees C / 84 degrees F
FPM Display temperature 31 degrees C / 87 degrees F
GBUS Revision      37

```

### show chassis environment fpm (T4000 Core Router)

```
user@host> show chassis environment fpm
```

```

CB 0 status:
State          Online Master
Temperature    34 degrees C / 93 degrees F
Power 1
  1.8 V        1804 mV
  2.5 V        2499 mV
  3.3 V        3317 mV
  3.3 V bias    3291 mV

```



```

4.6 V          4663 mV
5.0 V          4905 mV
8.0 V bias     7658 mV
12.0 V         11877 mV
Power 2
1.0 V          996 mV
1.2 V          1207 mV
3.3 V RE       3354 mV
Bus Revision   51
FPGA Revision  5
CB 1 status:
State          Online Standby
Temperature    36 degrees C / 96 degrees F
Power 1
1.8 V          1791 mV
2.5 V          2494 mV
3.3 V          3321 mV
3.3 V bias     3301 mV
4.6 V          4666 mV
5.0 V          4945 mV
8.0 V bias     7645 mV
12.0 V         11897 mV
Power 2
1.0 V          991 mV
1.2 V          1201 mV
3.3 V RE       3289 mV
Bus Revision   51
FPGA Revision  5

user@host> show chassis environment fpm
FPM status:
State          Online
FPM GBUS Voltage:
1.8 V bias     1802 mV
3.3 V bias     3294 mV
5.0 V bias     5003 mV
8.0 V bias     7306 mV
FPM Display Voltage:
5.0 V          5010 mV
FPM GBUS temperature 26 degrees C / 78 degrees F
FPM Display temperature 29 degrees C / 84 degrees F
GBUS Revision   37

```

#### show chassis environment fpm (PTX5000 Packet Transport Router)

```

user@host> show chassis environment fpm

FPM status:
State          Online
FPM I2CS Voltage:
3.3 V          3300 mV
5.0 V          4975 mV
FPM I2CS temperature 37 degrees C / 98 degrees F
I2CS Revision  109

```

## show chassis environment lcc

<b>Syntax</b>	<code>show chassis environment lcc</code> <code>&lt;lcc--number&gt;</code>
<b>Release Information</b>	Command introduced in Junos OS Release 13.1 for TX Matrix Plus router with 3D SIBs.
<b>Description</b>	Display chassis environmental information for a specified line-card chassis.
<b>Options</b>	<p><b>lcc <i>number</i></b>—(TX Matrix, TX Matrix Plus routers, and TX Matrix Plus router with 3D SIBs)  On a TX Matrix router, T640 LCC is connected to the TX Matrix router in a routing matrix. On a TX Matrix Plus router, the T1600 LCC is connected to the TX Matrix Plus router in a routing matrix. On a TX Matrix Plus router with 3D SIBs, T1600 LCC or T4000 LCC are connected to the TX Matrix Plus router in a routing matrix.  <i>lcc number</i> has the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"> <li>Replace the <i>number</i> variable with a value from <b>0</b> through <b>3</b>, when the T640 routers are connected to the TX Matrix router in a routing matrix.</li> <li>Replace the <i>number</i> variable with a value from <b>0</b> through <b>3</b>, when the T1600 routers are connected to the TX Matrix Plus router in a routing matrix.</li> <li>Replace the <i>number</i> variable with a value from <b>0</b> through <b>7</b>, when the T1600 routers are connected to the TX matrix Plus router and 3D SIBs in a routing matrix.</li> <li>Replace the <i>number</i> variable with values <b>0</b>, <b>2</b>, <b>4</b>, or <b>6</b>, when T4000 routers are connected to the TX Matrix Plus router and 3D SIBs in a routing matrix.</li> </ul>
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li><a href="#">show chassis environment on page 261</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">show chassis environment lcc (TX Matrix Plus router) on page 367</a> <a href="#">show chassis environment lcc (TX Matrix Plus router with 3D SIBs) on page 368</a>
<b>Output Fields</b>	<p><a href="#">Table 12 on page 267</a> lists the output fields for the <b>show chassis environment lcc</b> command. Output fields are listed in the approximate order in which they appear.</p>

Field Name	Field Description
<b>Class</b>	<ul style="list-style-type: none"> <li><b>Temp</b>: Temperature of air flowing through the chassis in degrees Celsius (C) and Fahrenheit (F).</li> <li><b>Fan</b>: Fan status: <b>OK</b>, <b>Testing</b> (during initial power-on), <b>Failed</b>, or <b>Absent</b>.</li> <li>On T Series routers, <b>Misc</b> includes <b>CIP</b> and <b>SPMB</b> (Switch Processor Mezzanine Board). <b>OK</b> indicates that the <b>CIP</b> or <b>SPMB</b> is present. <b>Absent</b> indicates that the <b>CIP</b> or <b>SPMB</b> is not present.</li> </ul>
<b>Item</b>	Information about the chassis component: Power Entry Module (PEM), SONET Clock Generator (SCG), Routing Engines, Controls Boards (CBs), Switch Interface Boards (SIBs), and Flexible PIC Concentrators (FPCs).

Field Name	Field Description
Status	<p>Status of the specified chassis component. For example, if the Class is Fan, the fan status can be:</p> <ul style="list-style-type: none"> <li>• <b>OK:</b> The fans are operational.</li> <li>• <b>Testing:</b> The fans are being tested during initial power-on.</li> <li>• <b>Failed:</b> The fans have failed or the fans are not spinning.</li> <li>• <b>Absent:</b> The fan tray is not installed.</li> </ul>
Measurement	<p>Dependant on the Class. For example, if the Class is Temp, indicates the temperature in degree Celsius and degrees Fahrenheit. If the Class is Fan, indicates actual fan RPM.</p>

## Sample Output

### show chassis environment lcc (TX Matrix Plus router)

```
user@host> show chassis environment lcc 0
lcc0-re0:
```

```
-----
Class Item                Status    Measurement
Temp PEM 0                OK        31 degrees C / 87 degrees F
      PEM 1                Check     29 degrees C / 84 degrees F
      SCG 0                OK        35 degrees C / 95 degrees F
      SCG 1                OK        35 degrees C / 95 degrees F
      Routing Engine 0      OK        34 degrees C / 93 degrees F
      Routing Engine 0 CPU  OK        52 degrees C / 125 degrees F
      Routing Engine 1      OK        34 degrees C / 93 degrees F
      Routing Engine 1 CPU  OK        48 degrees C / 118 degrees F
      CB 0                 OK        36 degrees C / 96 degrees F
      CB 1                 OK        37 degrees C / 98 degrees F
      SIB 0                OK        46 degrees C / 114 degrees F
      SIB 0 (B)            OK        36 degrees C / 96 degrees F
      SIB 1                OK        45 degrees C / 113 degrees F
      SIB 1 (B)            OK        35 degrees C / 95 degrees F
      SIB 2                OK        45 degrees C / 113 degrees F
      SIB 2 (B)            OK        35 degrees C / 95 degrees F
      SIB 3                OK        44 degrees C / 111 degrees F
      SIB 3 (B)            OK        35 degrees C / 95 degrees F
      SIB 4                OK        45 degrees C / 113 degrees F
      SIB 4 (B)            OK        36 degrees C / 96 degrees F
      SIB 0                OK        46 degrees C / 114 degrees F
      SIB 0 (B)            OK        36 degrees C / 96 degrees F
      SIB 1                OK        45 degrees C / 113 degrees F
      SIB 1 (B)            OK        35 degrees C / 95 degrees F
      SIB 2                OK        45 degrees C / 113 degrees F
      SIB 2 (B)            OK        35 degrees C / 95 degrees F
      SIB 3                OK        44 degrees C / 111 degrees F
      SIB 3 (B)            OK        35 degrees C / 95 degrees F
      SIB 4                OK        45 degrees C / 113 degrees F
      SIB 4 (B)            OK        36 degrees C / 96 degrees F
      FPC 1 Top            OK        46 degrees C / 114 degrees F
      FPC 1 Bottom         OK        48 degrees C / 118 degrees F
      FPC 3 Top            OK        49 degrees C / 120 degrees F
      FPC 3 Bottom         OK        48 degrees C / 118 degrees F
      FPC 4 Top            OK        47 degrees C / 116 degrees F
      FPC 4 Bottom         OK        50 degrees C / 122 degrees F
      FPC 7 Top            OK        48 degrees C / 118 degrees F
```

	FPC 7 Bottom	OK	48 degrees C / 118 degrees F
	FPM GBUS	OK	29 degrees C / 84 degrees F
	FPM Display	OK	33 degrees C / 91 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 lcc (TX Matrix Plus router with 3D SIBs)

```
user@host> show chassis environment lcc 0
lcc0-re0:
```

Class	Item	Status	Measurement
Temp	PEM 0	Check	30 degrees C / 86 degrees F
	PEM 1	OK	35 degrees C / 95 degrees F
	SCG 0	OK	32 degrees C / 89 degrees F
	SCG 1	OK	32 degrees C / 89 degrees F
	Routing Engine 0	OK	31 degrees C / 87 degrees F
	Routing Engine 0 CPU	OK	45 degrees C / 113 degrees F
	Routing Engine 1	OK	31 degrees C / 87 degrees F
	Routing Engine 1 CPU	OK	42 degrees C / 107 degrees F
	CB 0	OK	32 degrees C / 89 degrees F
	CB 1	OK	32 degrees C / 89 degrees F
	SIB 0	OK	38 degrees C / 100 degrees F
	SIB 0 (B)	Absent	
	SIB 1	OK	38 degrees C / 100 degrees F
	SIB 1 (B)	Absent	
	SIB 2	OK	38 degrees C / 100 degrees F
	SIB 2 (B)	Absent	
	SIB 3	OK	38 degrees C / 100 degrees F
	SIB 3 (B)	Absent	
	SIB 4	OK	39 degrees C / 102 degrees F
	SIB 4 (B)	Absent	
	SIB 0	OK	38 degrees C / 100 degrees F
	SIB 0 (B)	Absent	
	SIB 1	OK	38 degrees C / 100 degrees F
	SIB 1 (B)	Absent	
	SIB 2	OK	38 degrees C / 100 degrees F
	SIB 2 (B)	Absent	
	SIB 3	OK	38 degrees C / 100 degrees F
	SIB 3 (B)	Absent	

SIB 4	OK	39 degrees C / 102 degrees F
SIB 4 (B)	Absent	
FPC 0 Fan Intake	OK	34 degrees C / 93 degrees F
FPC 0 Fan Exhaust	OK	47 degrees C / 116 degrees F
FPC 0 PMB	OK	45 degrees C / 113 degrees F
FPC 0 LMB0	OK	52 degrees C / 125 degrees F
FPC 0 LMB1	OK	42 degrees C / 107 degrees F
FPC 0 LMB2	OK	37 degrees C / 98 degrees F
FPC 0 PFE1 LU2	OK	48 degrees C / 118 degrees F
FPC 0 PFE1 LU0	OK	42 degrees C / 107 degrees F
FPC 0 PFE0 LU0	OK	62 degrees C / 143 degrees F
FPC 0 XF1	OK	48 degrees C / 118 degrees F
FPC 0 XF0	OK	55 degrees C / 131 degrees F
FPC 0 XM1	OK	36 degrees C / 96 degrees F
FPC 0 XM0	OK	49 degrees C / 120 degrees F
FPC 0 PFE0 LU1	OK	59 degrees C / 138 degrees F
FPC 0 PFE0 LU2	OK	46 degrees C / 114 degrees F
FPC 0 PFE1 LU1	OK	40 degrees C / 104 degrees F
FPC 3 Fan Intake	OK	36 degrees C / 96 degrees F
FPC 3 Fan Exhaust	OK	50 degrees C / 122 degrees F
FPC 3 PMB	OK	49 degrees C / 120 degrees F
FPC 3 LMB0	OK	52 degrees C / 125 degrees F
FPC 3 LMB1	OK	44 degrees C / 111 degrees F
FPC 3 LMB2	OK	38 degrees C / 100 degrees F
FPC 3 PFE1 LU2	OK	52 degrees C / 125 degrees F
FPC 3 PFE1 LU0	OK	44 degrees C / 111 degrees F
FPC 3 PFE0 LU0	OK	61 degrees C / 141 degrees F
FPC 3 XF1	OK	48 degrees C / 118 degrees F
FPC 3 XF0	OK	54 degrees C / 129 degrees F
FPC 3 XM1	OK	39 degrees C / 102 degrees F
FPC 3 XM0	OK	53 degrees C / 127 degrees F
FPC 3 PFE0 LU1	OK	57 degrees C / 134 degrees F
FPC 3 PFE0 LU2	OK	50 degrees C / 122 degrees F
FPC 3 PFE1 LU1	OK	43 degrees C / 109 degrees F
FPC 4 Fan Intake	OK	36 degrees C / 96 degrees F
FPC 4 Fan Exhaust	OK	48 degrees C / 118 degrees F
FPC 4 PMB	OK	48 degrees C / 118 degrees F
FPC 4 LMB0	OK	50 degrees C / 122 degrees F
FPC 4 LMB1	OK	42 degrees C / 107 degrees F
FPC 4 LMB2	OK	37 degrees C / 98 degrees F
FPC 4 PFE1 LU2	OK	47 degrees C / 116 degrees F
FPC 4 PFE1 LU0	OK	43 degrees C / 109 degrees F
FPC 4 PFE0 LU0	OK	59 degrees C / 138 degrees F
FPC 4 XF1	OK	48 degrees C / 118 degrees F
FPC 4 XF0	OK	54 degrees C / 129 degrees F
FPC 4 XM1	OK	37 degrees C / 98 degrees F
FPC 4 XM0	OK	49 degrees C / 120 degrees F
FPC 4 PFE0 LU1	OK	53 degrees C / 127 degrees F
FPC 4 PFE0 LU2	OK	45 degrees C / 113 degrees F
FPC 4 PFE1 LU1	OK	41 degrees C / 105 degrees F
FPC 5 Fan Intake	OK	34 degrees C / 93 degrees F
FPC 5 Fan Exhaust	OK	44 degrees C / 111 degrees F
FPC 5 PMB	OK	43 degrees C / 109 degrees F
FPC 5 LMB0	OK	50 degrees C / 122 degrees F
FPC 5 LMB1	OK	41 degrees C / 105 degrees F
FPC 5 LMB2	OK	38 degrees C / 100 degrees F
FPC 5 PFE1 LU2	OK	46 degrees C / 114 degrees F
FPC 5 PFE1 LU0	OK	44 degrees C / 111 degrees F
FPC 5 PFE0 LU0	OK	57 degrees C / 134 degrees F
FPC 5 XF1	OK	47 degrees C / 116 degrees F
FPC 5 XF0	OK	55 degrees C / 131 degrees F

	FPC 5 XM1	OK	39 degrees C / 102 degrees F
	FPC 5 XM0	OK	49 degrees C / 120 degrees F
	FPC 5 PFE0 LU1	OK	56 degrees C / 132 degrees F
	FPC 5 PFE0 LU2	OK	48 degrees C / 118 degrees F
	FPC 5 PFE1 LU1	OK	42 degrees C / 107 degrees F
	FPC 6 Fan Intake	OK	33 degrees C / 91 degrees F
	FPC 6 Fan Exhaust	OK	48 degrees C / 118 degrees F
	FPC 6 PMB	OK	41 degrees C / 105 degrees F
	FPC 6 LMB0	OK	59 degrees C / 138 degrees F
	FPC 6 LMB1	OK	53 degrees C / 127 degrees F
	FPC 6 LMB2	OK	39 degrees C / 102 degrees F
	FPC 6 PFE1 LU2	OK	62 degrees C / 143 degrees F
	FPC 6 PFE1 LU0	OK	45 degrees C / 113 degrees F
	FPC 6 PFE0 LU0	OK	69 degrees C / 156 degrees F
	FPC 6 XF1	OK	53 degrees C / 127 degrees F
	FPC 6 XF0	OK	59 degrees C / 138 degrees F
	FPC 6 XM1	OK	37 degrees C / 98 degrees F
	FPC 6 XM0	OK	64 degrees C / 147 degrees F
	FPC 6 PFE0 LU1	OK	69 degrees C / 156 degrees F
	FPC 6 PFE0 LU2	OK	60 degrees C / 140 degrees F
	FPC 6 PFE1 LU1	OK	41 degrees C / 105 degrees F
	FPM GBUS	OK	25 degrees C / 77 degrees F
	FPM Display	OK	29 degrees C / 84 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 fan 1 (Top)	OK	Spinning at high speed
	Rear Tray fan 2	OK	Spinning at high speed
	Rear Tray fan 3	OK	Spinning at high speed
	Rear Tray fan 4	OK	Spinning at high speed
	Rear Tray fan 5	OK	Spinning at high speed
	Rear Tray fan 6	OK	Spinning at high speed
	Rear Tray fan 7	OK	Spinning at high speed
	Rear Tray fan 8	OK	Spinning at high speed
	Rear Tray fan 9	OK	Spinning at high speed
	Rear Tray fan 10	OK	Spinning at high speed
	Rear Tray fan 11	OK	Spinning at high speed
	Rear Tray fan 12	OK	Spinning at high speed
	Rear Tray fan 13	OK	Spinning at high speed
	Rear Tray fan 14	OK	Spinning at high speed
	Rear Tray fan 15	OK	Spinning at high speed
	Rear Tray fan 16 (Bottom)	OK	Spinning at high speed
Misc	CIP	OK	
	SPMB 0	OK	
	SPMB 1	OK	

## show chassis environment pem

<b>Syntax</b>	show chassis environment pem <slot>
<b>Syntax (ACX4000 Router)</b>	show chassis environment pem
<b>Syntax (TX Matrix Routers)</b>	show chassis environment pem <lcc number   scc> <slot>
<b>Syntax (TX Matrix Plus Routers)</b>	show chassis environment pem <lcc number   sfc number> <slot>
<b>Syntax (MX Series Router)</b>	show chassis environment pem <slot> <all-members> <local> <member member-id>
<b>Syntax (MX104 Router)</b>	show chassis environment pem <slot>
<b>Syntax (QFX Series)</b>	show chassis environment pem <slot (interconnect-device name slot )   (node-device name)>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS 11.3 for the QFX Series. Command introduced in Junos OS 12.3R2 for EX Series. Command introduced in Junos OS Release 13.2 for MX104 3D Universal Edge Routers.
<b>Description</b>	Display Power Entry Module (PEM) environmental status information.



**NOTE:** The new high-capacity (4100W) enhanced DC PEM on MX960 routers includes a new design that can condition the input voltage. This results in the output voltage differing from the input voltage. The earlier generation of DC PEMs coupled the input power directly to the output, thereby making it safe to assume that the output voltage was equal to the input voltage.

- Options**
- none**—Display environmental information about both PEMs. For the TX Matrix router, display environmental information about the PEMs, the TX Matrix router, and its attached T640 routers. For the TX Matrix Plus router, display environmental information about the PEMs, the TX Matrix Plus router, and its attached routers.
  - all-members**—(MX Series routers only) (Optional) Display environmental information about the PEMs in all the member routers of the Virtual Chassis configuration.

**interconnect-device *name***—(QFabric systems only) (Optional) Display chassis environmental information about the PEMs in the Interconnect device.

**lcc *number***—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(MX Series routers only) (Optional) Display environmental information about the PEM in the local Virtual Chassis member.

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

**node-device *name***—(QFabric systems only) (Optional) Display chassis environmental information about the PEMs in the Node device.

**scc**—(TX Matrix routers only) (Optional) Display environmental information about the PEM in the TX Matrix router (switch-card chassis).

**sfc**—(TX Matrix Plus routers only) (Optional) Display environmental information about the PEM in the TX Matrix Plus router (or switch-fabric chassis).

**slot**—(Optional) Display environmental information about an individual PEM. Replace *slot* with 0 or 1.

**Required Privilege Level**

view

**Related Documentation**

- [show chassis hardware on page 629](#)

**List of Sample Output**

[show chassis environment pem \(M40e Router\) on page 374](#)  
[show chassis environment pem \(M120 Router\) on page 374](#)  
[show chassis environment pem \(M160 Router\) on page 374](#)  
[show chassis environment pem \(M320 Router\) on page 374](#)  
[show chassis environment pem \(MX104 Router\) on page 375](#)  
[show chassis environment pem \(MX240 Router\) on page 375](#)  
[show chassis environment pem \(MX480 Router\) on page 375](#)  
[show chassis environment pem \(MX960 Router\) on page 375](#)



[show chassis environment pem \(T320 Router\) on page 376](#)  
[show chassis environment pem \(T640 Router\) on page 376](#)  
[show chassis environment pem \(T4000 Router\) on page 376](#)  
[show chassis environment pem \(T640/T1600/T4000 Routers With Six-Input DC Power Supply\) on page 376](#)  
[show chassis environment pem lcc \(TX Matrix Routing Matrix\) on page 377](#)  
[show chassis environment pem scc \(TX Matrix Routing Matrix\) on page 377](#)  
[show chassis environment pem sfc \(TX Matrix Plus Routing Matrix\) on page 377](#)  
[show chassis environment pem lcc \(TX Matrix Plus Routing Matrix\) on page 378](#)  
[show chassis environment pem node-device \(QFabric System on page 378](#)  
[show chassis environment pem \(QFX Series\) on page 379](#)  
[show chassis environment pem interconnect-device \(QFabric System\) on page 379](#)

**Output Fields** [Table 17 on page 373](#) lists the output fields for the **show chassis environment pem** command. Output fields are listed in the approximate order in which they appear.

**Table 17: show chassis environment pem Output Fields**

Field Name	Field Description
PEM <i>slot status</i>	Number of the PEM slot.
State	Status of the PEM.
Temperature	Temperature of the air flowing past the PEM.
AC Input	Status of the AC input for the specified component
AC Output	Status of the AC output for the specified component.
DC input	Status of the DC input for the specified component.
DC output	Status of the DC output for the specified component.
Load	(Not available on M40e or M160 routers) Information about the load on supply, in percentage of rated current being used.
Voltage	(M120, M160, M320, T640, T1600, TX Matrix, and TX Matrix Plus routers only) Information about voltage supplied to the PEM.  (MX104 routers only) Information about voltage supplied by the PEM to the system.
Current	(T640, T1600, TX Matrix, and TX Matrix Plus routers only) Information about the PEM current.
Power	(T640, T1600, TX Matrix, and TX Matrix Plus routers only) Information about the PEM power.
SCG/CB/SIB	(T640, T1600, TX Matrix, and TX Matrix Plus routers only) SONET Clock Generator/Control Board/Switch Interface Board.
FAN	(T640, T1600, and T4000 routers with six-input DC power supply only) Information about the DC output to the fan.

## Sample Output

### show chassis environment pem (M40e Router)

```
user@host> show chassis environment pem
PEM 0 status:
  State                Online
  Temperature           OK
  AC input              OK
  DC output             OK
```

### show chassis environment pem (M120 Router)

```
user@host> show chassis environment pem
PEM 0 status:
  State                Online
  Temperature           OK
  DC Input:            OK
  DC Output:           OK
  Load                Less than 20 percent
  Voltage:
    48.0 V input       52864 mV
    48.0 V fan supply  41655 mV
    3.3 V              3399 mV
PEM 1 status:
  State                Online
  Temperature           OK
  DC Input:            OK
  DC Output:           OK
  Load                Less than 20 percent
  Voltage:
    48.0 V input       54537 mV
    48.0 V fan supply  42910 mV
    3.3 V              3506 mV
```

### show chassis environment pem (M160 Router)

```
user@host> show chassis environment pem
PEM 0 status:
  State                Online
  Temperature           OK
  DC input              OK
  DC output             OK
  Load                Less than 20 percent
  Voltage:
    48.0 V input       54833 mV
    48.0 V fan supply  50549 mV
    8.0 V bias         8239 mV
    5.0 V bias         5006 mV
```

### show chassis environment pem (M320 Router)

```
user@host> show chassis environment pem
PEM 2 status:
  State                Online
  Temperature           OK
  DC input              OK
  Load                Less than 40 percent
    48.0 V input       51853 mV
    48.0 V fan supply  48877 mV
    8.0 V bias         8449 mV
```

```

    5.0 V bias          4998 mV
PEM 3 status:
  State                Online
  Temperature          OK
  DC input             OK
  Load               Less than 40 percent
    48.0 V input       51717 mV
    48.0 V fan supply  49076 mV
    8.0 V bias         8442 mV
    5.0 V bias         4998 mV

```

#### show chassis environment pem (MX104 Router)

```

user@host> show chassis environment pem
PEM 0 status:
  State                Online
  Temperature          OK
  DC Output:          OK
  Voltage:
    12.0 V output      12281 mV
    3.3 V output       3353 mV
PEM 1 status:
  State                Empty

```

#### show chassis environment pem (MX240 Router)

```

user@host> show chassis environment pem
PEM 0 status:
  State                Online
  Temperature          OK
  DC Output:          OK
PEM 1 status:
  State                Online
  Temperature          OK
  DC Output:          OK

```

#### show chassis environment pem (MX480 Router)

```

user@host> show chassis environment pem
PEM 0 status:
  State                Online
  Temperature          OK
  DC Input:           OK
  DC Output:          OK
  Voltage:
PEM 1 status:
  State                Online
  Temperature          OK
  DC Input:           OK
  DC Output:          OK
  Voltage:

```

#### show chassis environment pem (MX960 Router)

```

user@host> show chassis environment pem
PEM 2 status:
  State                Present
PEM 3 status:
  State                Online

```

```

Temperature          OK
DC Output:           OK

```

#### show chassis environment pem (T320 Router)

```

user@host> show chassis environment pem
PEM 0 status:
State              Online
Temperature         OK
DC input:           OK

```

#### show chassis environment pem (T640 Router)

```

user@host> show chassis environment pem
PEM 0 status:
State              Online
Temperature         22 degrees C / 71 degrees F
AC input: OK
DC output:
Voltage    Current    Power    Load
FPC 0      56875      606      34      4
FPC 1      57016      525      29      3
FPC 2        0         0         0      0
FPC 3        0         0         0      0
FPC 4        0         0         0      0
FPC 5        0         0         0      0
FPC 6      57158     1581      90     12
FPC 7        0         0         0      0
SCG/CB/SIB 56750     1125      63      5

```

#### show chassis environment pem (T4000 Router)

```

user@host> show chassis environment pem
PEM 0 status:
State              Online
Temperature         33 degrees C / 91 degrees F
DC Input:           OK
Voltage(V)    Current(A)    Power(W)    Load(%)
INPUT 0       54.625      9.812      535      22
INPUT 1       54.625     10.250     559      23
INPUT 2       55.125      0.125        6       0
INPUT 3       54.500     10.062     548      22
INPUT 4       54.750      9.375     513      21
INPUT 5       54.750     10.187     557      23
DC Output     Voltage(V)    Current(A)    Power(W)    Load(%)
FPC 0         55.750     10.125     564      37
FPC 1         51.625      0.000        0       0
FPC 2         52.000      0.000        0       0
FPC 3         55.062     10.437     574      38
FPC 4         52.125      0.000        0       0
FPC 5         55.000      9.375     515      34
FPC 6         55.187      9.687     534      35
FPC 7         51.437      0.000        0       0
SCG/CB/SIB    55.375     15.750     872      35
FAN           54.562     14.750     804      42

```

#### show chassis environment pem (T640/T1600/T4000 Routers With Six-Input DC Power Supply)

```

user@host> show chassis environment pem
PEM 1 status:
State              Online
Temperature         36 degrees C / 96 degrees F
DC Input:           OK

```

	Voltage(V)	Current(A)	Power(W)	Load(%)
INPUT 0	0.000	0.000	0	0
INPUT 1	54.875	3.812	209	27
INPUT 2	55.375	3.937	218	29
INPUT 3	54.625	3.750	204	27
INPUT 4	55.125	3.375	186	24
INPUT 5	55.125	3.375	186	24
DC Output	Voltage(V)	Current(A)	Power(W)	Load(%)
FPC 0	52.312	0.000	0	0
FPC 1	52.687	0.000	0	0
FPC 2	52.812	0.000	0	0
FPC 3	55.812	7.062	394	52
FPC 4	52.625	0.000	0	0
FPC 5	52.625	0.000	0	0
FPC 6	52.750	0.000	0	0
FPC 7	52.750	0.000	0	0
SCG/CB/SIB	55.937	11.937	667	55
FAN	55.812	4.937	275	36

#### show chassis environment pem lcc (TX Matrix Routing Matrix)

```
user@host> show chassis environment pem 0 lcc 0
lcc0-re0:
```

-----

PEM 0 status:

State	Present			
Temperature	27 degrees C / 80 degrees F			
DC input:	Check			
DC output:	Voltage	Current	Power	Load
FPC 0	0	0	0	0
FPC 1	0	0	0	0
FPC 2	0	0	0	0
FPC 3	0	0	0	0
FPC 4	0	0	0	0
FPC 5	0	0	0	0
FPC 6	0	0	0	0
FPC 7	0	0	0	0
SCG/CB/SIB	0	0	0	0

#### show chassis environment pem scc (TX Matrix Routing Matrix)

```
user@host> show chassis environment pem scc
scc-re0:
```

-----

PEM 1 status:

State	Online			
Temperature	24 degrees C / 75 degrees F			
DC input:	OK			
DC output:	Voltage	Current	Power	Load
SIB 0	0	0	0	0
SIB 1	0	0	0	0
SIB 2	0	0	0	0
SIB 3	56550	0	0	0
SIB 4	55958	6912	386	51

#### show chassis environment pem sfc (TX Matrix Plus Routing Matrix)

```
user@host> show chassis environment pem sfc 0
sfc0-re0:
```

-----

PEM 0 status:

State	Online
-------	--------

```

Temperature                35 degrees C / 95 degrees F
DC Input:                  OK
DC Output                  Voltage    Current    Power    Load
Channel 0                  53820    14140    761      59
Channel 1                  53550    12720    681      53
Channel 2                  53840    12930    696      54
Channel 3                  53690    14990    804      63
Channel 4                  53620    15070    808      63
Channel 5                  53900    14820    798      62
Channel 6                  54120    5020     271      21

```

### show chassis environment pem lcc (TX Matrix Plus Routing Matrix)

```
user@host> show chassis environment lcc 0
```

```
lcc0-re1:
```

```
-----
PEM 0 status:
```

```

State                Online
Temperature           38 degrees C / 100 degrees F
DC Input:            OK
DC Output             Voltage    Current    Power    Load
FPC 0                0          0          0         0
FPC 1                0          0          0         0
FPC 2                0          0          0         0
FPC 3                0          0          0         0
FPC 4                56408    7575      427       56
FPC 5                0          0          0         0
FPC 6                56266    7956      447       59
FPC 7                56283    6100      343       45
SCG/CB/SIB           55916    8950      500       41

```

```
PEM 1 status:
```

```

State                Present
Temperature           35 degrees C / 95 degrees F
DC Input:            Check
DC Output             Voltage    Current    Power    Load
FPC 0                0          0          0         0
FPC 1                0          0          0         0
FPC 2                0          0          0         0
FPC 3                0          0          0         0
FPC 4                0          0          0         0
FPC 5                0          0          0         0
FPC 6                0          0          0         0
FPC 7                0          0          0         0
SCG/CB/SIB           0          0          0         0

```

### show chassis environment pem node-device (QFabric System)

```
user@switch> show chassis environment pem node-device node1
```

```
FPC 0 PEM 0 status:
```

```

State                Check
Airflow              Front to Back
Temperature           OK
AC Input:            OK
DC Output             Voltage(V) Current(A) Power(W) Load(%)
                    12          10      120      18

```

```
FPC 0 PEM 1 status:
```

```

State                Online
Airflow              Back to Front
Temperature           OK
AC Input:            OK

```

DC Output	Voltage(V)	Current(A)	Power(W)	Load(%)
	11	10	110	17

#### show chassis environment pem (QFX Series)

```
user@switch> show chassis environment pem
FPC 0 PEM 1 status:
  State                Online
  Airflow              Front to Back
  Temperature          OK
  AC Input:            OK
  DC Output            Voltage(V) Current(A) Power(W) Load(%)
                      12          17       204    31
```

#### show chassis environment pem interconnect-device (QFabric System)

```
user@switch> show chassis environment pem interconnect-device IC11
IC1 PEM 1 status:
  State                Online
  Airflow              Front to Back
  Temperature          OK
  AC Input:            OK
  DC Output            Voltage(V) Current(A) Power(W) Load(%)
                      12          18       216    33
```

## show chassis environment routing-engine

---

<b>Syntax</b>	show chassis environment routing-engine <slot>
<b>Syntax (TX Matrix Routers)</b>	show chassis environment routing-engine <lcc <i>number</i>   scc> <slot>
<b>Syntax (TX Matrix Plus Routers)</b>	show chassis environment routing-engine <lcc <i>number</i>   sfc <i>number</i> > <slot>
<b>Syntax (MX104, MX2010, and MX2020 3D Universal Edge Routers)</b>	show chassis environment routing-engine <slot>
<b>Syntax (MX Series Routers)</b>	show chassis environment routing-engine <slot> <all-members> <local> <member <i>member-id</i> >
<b>Syntax (QFX Series)</b>	show chassis environment routing-engine interconnect-device <i>name</i>
<b>Release Information</b>	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 Routers. Command introduced in Junos OS Release 12.1 for the T4000 Core Routers. Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers. Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers. Command introduced in Junos OS Release 13.2 for MX104 3D Universal Edge Routers.
<b>Description</b>	Display Routing Engine environmental status information.
<b>Options</b>	<b>none</b> —Display environmental information about all Routing Engines. For a TX Matrix router, display environmental information about all Routing Engines on the TX Matrix router and its attached T640 routers. For a TX Matrix Plus router, display environmental information about all Routing Engines on the TX Matrix Plus router and its attached routers.  <b>all-members</b> —(MX Series routers only) (Optional) Display environmental information about the Routing Engines in all member routers in the Virtual Chassis configuration.  <b>interconnect-device <i>name</i></b> —(QFabric systems only) (Optional) Display environmental information about the Routing Engines for the Interconnect device.



**lcc *number***—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(MX Series routers only) (Optional) Display environmental information about the Routing Engines in the local Virtual Chassis member.

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

**scc**—(TX Matrix router only) (Optional) Display environmental information about the Routing Engine in the TX Matrix router (switch-card chassis).

**sfc**—(TX Matrix Plus router only) (Optional) Display environmental information about the Routing Engine in the TX Matrix Plus router (or switch-fabric chassis).

**slot**—(Optional) Display environmental information about an individual Routing Engine. On M10i, M20, M40e, M120, M160, M320, MX Series, MX104 routers, MX2010 routers, MX2020 routers, 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 Routers, replace *slot* with **0** or **1**.

**Required Privilege Level** view

**Related Documentation**

- [request chassis routing-engine master on page 213](#)
- [show chassis routing-engine on page 782](#)

**List of Sample Output**

- [show chassis environment routing-engine \(Nonredundant\) on page 382](#)
- [show chassis environment routing-engine \(Redundant\) on page 382](#)
- [show chassis environment routing-engine \(MX104 Router\) on page 382](#)
- [show chassis environment routing-engine \(MX2010 Router\) on page 383](#)
- [show chassis environment routing-engine \(MX2020 Router\) on page 383](#)
- [show chassis environment routing-engine \(TX Matrix Plus Router\) on page 383](#)
- [show chassis environment routing-engine \(T4000 Core Router\) on page 383](#)

[show chassis environment routing-engine \(QFX Series\) on page 384](#)  
[show chassis environment routing-engine interconnect-device \(QFabric System\) on page 384](#)  
[show chassis environment routing-engine \(PTX5000 Packet Transport Router\) on page 384](#)

**Output Fields** Table 18 on page 382 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 18: 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"> <li>• <b>Online Master</b>—Routing Engine is online, operating as Master.</li> <li>• <b>Online Standby</b>—Routing Engine is online, operating as Standby.</li> <li>• <b>Offline</b>—Routing Engine is offline.</li> </ul>
Temperature	Temperature of the air flowing past the Routing Engine.
CPU Temperature	(PTX Series and T4000 Core Routers only) Temperature of the air flowing past the Routing Engine CPU.

## Sample Output

### show chassis environment routing-engine (Nonredundant)

```

user@host> show chassis environment routing-engine
Routing Engine 0 status:
  State                Online Master
  Temperature           27 degrees C / 80 degrees

```

### show chassis environment routing-engine (Redundant)

```

user@host> show chassis environment routing-engine
Route Engine 0 status:
  State:                Online Master
  Temperature:          26 degrees C / 78 degrees F
Route Engine 1 status:
  State:                Online Standby
  Temperature:          26 degrees C / 78 degrees F

```

### show chassis environment routing-engine (MX104 Router)

```

user@ host > show chassis environment routing-engine
Routing Engine 0 status:
  State                Online Master
  Temperature           34 degrees C / 93 degrees F
  CPU Temperature       43 degrees C / 109 degrees F
Routing Engine 1 status:
  State                Online Standby

```

```

Temperature          33 degrees C / 91 degrees F
CPU Temperature       39 degrees C / 102 degrees F

```

#### show chassis environment routing-engine (MX2010 Router)

```

user@host> show chassis environment routing-engine
Routing Engine 0 status:
  State          Online Master
  Temperature     37 degrees C / 98 degrees F
  CPU Temperature 37 degrees C / 98 degrees F
Routing Engine 1 status:
  State          Online Standby
  Temperature     35 degrees C / 95 degrees F
  CPU Temperature 34 degrees C / 93 degrees F

```

#### show chassis environment routing-engine (MX2020 Router)

```

user@host> show chassis environment routing-engine
Routing Engine 0 status:
  State          Online Master
  Temperature     35 degrees C / 95 degrees F
  CPU Temperature 34 degrees C / 93 degrees F
Routing Engine 1 status:
  State          Online Standby
  Temperature     44 degrees C / 111 degrees F
  CPU Temperature 43 degrees C / 109 degrees F

```

#### show chassis environment routing-engine (TX Matrix Plus Router)

```

user@host> show chassis environment routing-engine
sfc0-re0:
-----
Routing Engine 0 status:
  State          Online Master
  Temperature     26 degrees C / 78 degrees F
Routing Engine 1 status:
  State          Online Standby
  Temperature     28 degrees C / 82 degrees F

lcc0-re0:
-----
Routing Engine 0 status:
  State          Online Master
  Temperature     30 degrees C / 86 degrees F
Routing Engine 1 status:
  State          Online Standby
  Temperature     29 degrees C / 84 degrees F

```

#### show chassis environment routing-engine (T4000 Core Router)

```

user@host> show chassis environment routing-engine
Routing Engine 0 status:
  State          Online Master
  Temperature     33 degrees C / 91 degrees F
  CPU Temperature 50 degrees C / 122 degrees F
Routing Engine 1 status:
  State          Online Standby
  Temperature     33 degrees C / 91 degrees F
  CPU Temperature 46 degrees C / 114 degrees F

```

**show chassis environment routing-engine (QFX Series)**

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

**show chassis environment routing-engine interconnect-device (QFabric System)**

```
user@switch> show chassis environment routing-engine interconnect-device interconnect1
routing-engine interconnect-device interconnect1
Routing Engine 0 status:
  State           Online Standby
  Temperature      52 degrees C / 125 degrees F
Routing Engine 1 status:
  State           Online Master
  Temperature      57 degrees C / 134 degrees F
```

**show chassis environment routing-engine (PTX5000 Packet Transport Router)**

```
user@switch> show chassis environment routing-engine
Routing Engine 0 status:
  State           Online Master
  Temperature      55 degrees C / 131 degrees F
  CPU Temperature  66 degrees C / 150 degrees F
Routing Engine 1 status:
  State           Online Standby
  Temperature      52 degrees C / 125 degrees F
  CPU Temperature  64 degrees C / 147 degrees F
```

## show chassis environment scg

<b>Syntax</b>	show chassis environment scg <slot>
<b>Syntax (TX Matrix and TX Matrix Plus Router)</b>	show chassis environment scg <lcc number> <slot>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 12.1 for the T4000 Core Routers.
<b>Description</b>	Display SONET Clock Generator (SCG) environmental information.
<b>Options</b>	<p><b>none</b>—(TX Matrix and TX Matrix Plus routers only) Display environmental information about all SCGs. On a TX Matrix router, display environmental information about all SCGs on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about all SCGs on the TX Matrix Plus router and its attached routers.</p> <p><b>lcc number</b>—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number. Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"> <li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li> <li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li> <li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> <li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> </ul> <p><b>slot</b>—(Optional) Display environmental information about the SCG. Replace <b>slot</b> with 0 or 1.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">request chassis scg on page 218</a></li> <li>• <i>Configuring the Clock Source</i></li> <li>• <i>T320 SONET Clock Generator (SCG) Description</i></li> </ul>
<b>List of Sample Output</b>	<a href="#">show chassis environment scg (T Series Routers) on page 386</a> <a href="#">show chassis environment scg (T4000 Core Routers) on page 387</a> <a href="#">show chassis environment scg lcc (TX Matrix Router) on page 387</a>

[show chassis environment scg lcc \(TX Matrix Plus Router\) on page 387](#)

[show chassis environment scg \(TX Matrix Plus Router\) on page 388](#)

**Output Fields** Table 19 on page 386 lists the output fields for the **show chassis environment scg** command. Output fields are listed in the approximate order in which they appear.

**Table 19: show chassis environment scg Output Fields**

Field Name	Field Description
<b>SCG slot status</b>	Number of the SCG slot: 0 or 1.
<b>State</b>	Status of the SCG: <ul style="list-style-type: none"> <li>• <b>Online</b>—SCG is online and running.</li> <li>• <b>Offline</b>—SCG is powered down.</li> </ul> If two SCGs are installed and online, one is functioning as the master, and the other is the standby.
<b>Temperature</b>	Temperature of the air flowing past the SCG.
<b>Power</b>	Power on the SCG. The left column displays required power, in volts. The right column displays measured power, in millivolts.
<b>BUS Revision</b>	Revision level of the generic bus device.

## Sample Output

### show chassis environment scg (T Series Routers)

```

user@host> show chassis environment scg
SCG 0 status:
State                Online - Master clock
Temperature          29 degrees C / 84 degrees F
Power:
  GROUND              0 mV
  3.3 V               3297 mV
  5.0 V               5050 mV
  5.6 V               5682 mV
  1.8 V bias          1787 mV
  3.3 V bias          3277 mV
  5.0 V bias          4984 mV
  8.0 V bias          8400 mV
BUS Revision         40
SCG 1 status:
State                Online - Standby
Temperature          28 degrees C / 82 degrees F
Power:
  GROUND              0 mV
  3.3 V               3317 mV
  5.0 V               5057 mV
  5.6 V               5689 mV
  1.8 V bias          1794 mV
  3.3 V bias          3296 mV
  5.0 V bias          4991 mV

```

8.0 V bias	8410 mV
BUS Revision	40

### show chassis environment scg (T4000 Core Routers)

```
user@host> show chassis environment scg
SCG 0 status:
State                Online - Master clock
Temperature           33 degrees C / 91 degrees F
Power
  GROUND              0 mV
  1.8 V bias          1794 mV
  3.3 V               3310 mV
  3.3 V bias          3299 mV
  5.0 V               5040 mV
  5.0 V bias          5003 mV
  5.6 V               5780 mV
  8.0 V bias          7416 mV
  Bus Revision        40
SCG 1 status:
State                Online - Standby
Temperature           33 degrees C / 91 degrees F
Power
  GROUND              0 mV
  1.8 V bias          1794 mV
  3.3 V               3319 mV
  3.3 V bias          3286 mV
  5.0 V               5047 mV
  5.0 V bias          5013 mV
  5.6 V               5758 mV
  8.0 V bias          7347 mV
  Bus Revision        40
```

### show chassis environment scg lcc (TX Matrix Router)

```
user@host> show chassis environment scg lcc 0 0
lcc0-re0:
-----
SCG 0 status:
State                Online - Master clock
Temperature           30 degrees C / 86 degrees F
Power:
  GROUND              0 mV
  3.3 V               3321 mV
  5.0 V               5062 mV
  5.6 V               5682 mV
  1.8 V bias          1789 mV
  3.3 V bias          3289 mV
  5.0 V bias          4993 mV
  8.0 V bias          7807 mV
  BUS Revision        40
```

### show chassis environment scg lcc (TX Matrix Plus Router)

```
user@host> show chassis environment scg lcc 0
lcc0-re0:
-----
SCG 0 status:
State                Online - Master clock
Temperature           42 degrees C / 107 degrees F
Power
  GROUND              0 mV
```

1.8 V bias	1800 mV
3.3 V	3290 mV
3.3 V bias	3304 mV
5.0 V	5042 mV
5.0 V bias	4979 mV
5.6 V	5765 mV
8.0 V bias	7682 mV
Bus Revision	40

### show chassis environment scg (TX Matrix Plus Router)

```
user@host> show chassis environment scg
lcc0-re0:
```

```
-----
SCG 0 status:
```

State	Online - Master clock
Temperature	40 degrees C / 104 degrees F
Power	
GROUND	0 mV
1.8 V bias	1800 mV
3.3 V	3291 mV
3.3 V bias	3304 mV
5.0 V	5042 mV
5.0 V bias	4979 mV
5.6 V	5765 mV
8.0 V bias	7643 mV
Bus Revision	40

```
lcc1-re0:
```

```
-----
SCG 0 status:
```

State	Online - Master clock
Temperature	37 degrees C / 98 degrees F
Power	
GROUND	0 mV
1.8 V bias	1788 mV
3.3 V	3305 mV
3.3 V bias	3284 mV
5.0 V	5042 mV
5.0 V bias	5010 mV
5.6 V	5748 mV
8.0 V bias	7692 mV
Bus Revision	40

```
lcc2-re0:
```

```
-----
SCG 0 status:
```

State	Online - Master clock
Temperature	39 degrees C / 102 degrees F
Power	
GROUND	0 mV
1.8 V bias	1785 mV
3.3 V	3306 mV
3.3 V bias	3301 mV
5.0 V	5045 mV
5.0 V bias	4993 mV
5.6 V	5765 mV
8.0 V bias	7838 mV
Bus Revision	40

```
lcc3-re0:
```



-----  
SCG 0 status:

State	Online - Master clock
Temperature	39 degrees C / 102 degrees F
Power	
GROUND	0 mV
1.8 V bias	1800 mV
3.3 V	3290 mV
3.3 V bias	3294 mV
5.0 V	5050 mV
5.0 V bias	4984 mV
5.6 V	5780 mV
8.0 V bias	7716 mV
Bus Revision	40

## show chassis environment sfc

<b>Syntax</b>	<code>show chassis environment sfc</code> <code>&lt;-number&gt;</code>
<b>Release Information</b>	Command introduced for the TX Matrix Plus router in Junos OS Release 9.6. Command introduced for the TX Matrix Plus router with 3D SIBs in Junos OS Release 13.1.
<b>Description</b>	Display chassis environmental information about the respective TX Matrix Plus router or TX matrix Plus router with 3D SIBs ( switch-fabric chassis).
<b>Options</b>	<b>sfc number</b> —(TX Matrix Plus routers and TX Matrix Plus routers with 3D SIBs only) (Optional) Display chassis environmental information about the respective TX Matrix Plus router or TX matrix Plus router with 3D SIBs ( switch-fabric chassis). Replace <i>number</i> variable with 0.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li><a href="#">show chassis environment on page 261</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">show chassis environment sfc (TX Matrix Plus router) on page 391</a> <a href="#">show chassis environment sfc (TX Matrix Plus router with 3D SIBs) on page 391</a>
<b>Output Fields</b>	<a href="#">Table 12 on page 267</a> lists the output fields for the <b>show chassis environment lcc</b> command. Output fields are listed in the approximate order in which they appear.

Field Name	Field Description
<b>Class</b>	<ul style="list-style-type: none"> <li><b>Temp</b>: Temperature of air flowing through the chassis in degrees Celsius (C) and Fahrenheit (F).</li> <li><b>Fan</b>: Fan status: <b>OK</b>, <b>Testing</b> (during initial power-on), <b>Failed</b>, or <b>Absent</b>.</li> <li><b>Misc</b> includes <b>SPMB</b> (Switch Processor Mezzanine Board). <b>OK</b> indicates that the <b>SPMB</b> is present. <b>Absent</b> indicates that the <b>SPMB</b> is not present.</li> </ul>
<b>Item</b>	Information about the chassis component: Power Entry Module (PEM), Routing Engines, Controls Boards (CBs), Switch Interface Boards (SIBs), and Connector Interface Panel (CIP).
<b>Status</b>	<p>Status of the specified chassis component. For example, if the <b>Class</b> is <b>Fan</b>, the fan status can be:</p> <ul style="list-style-type: none"> <li><b>OK</b>: The fans are operational.</li> <li><b>Testing</b>: The fans are being tested during initial power-on.</li> <li><b>Failed</b>: The fans have failed or the fans are not spinning.</li> <li><b>Absent</b>: The fan tray is not installed.</li> </ul>
<b>Measurement</b>	Dependant on the <b>Class</b> . For example, if the <b>Class</b> is <b>Temp</b> , indicates the temperature in degree Celsius and degrees Fahrenheit. If the <b>Class</b> is <b>Fan</b> , indicates actual fan RPM.

## Sample Output

### show chassis environment sfc (TX Matrix Plus router)

```

user@host> show chassis environment sfc 0
sfc0-re0:
-----
Class Item                               Status      Measurement
Temp  PEM 0                               OK          31 degrees C / 87 degrees F
      PEM 1                               Check       32 degrees C / 89 degrees F
      Routing Engine 0                     OK          32 degrees C / 89 degrees F
      Routing Engine 0 CPU                   OK          46 degrees C / 114 degrees F
      Routing Engine 1                     OK          32 degrees C / 89 degrees F
      Routing Engine 1 CPU                   OK          47 degrees C / 116 degrees F
      CB 0 Intake                           OK          35 degrees C / 95 degrees F
      CB 0 Exhaust A                       OK          31 degrees C / 87 degrees F
      CB 0 Exhaust B                       OK          33 degrees C / 91 degrees F
      CB 1 Intake                           OK          34 degrees C / 93 degrees F
      CB 1 Exhaust A                       OK          31 degrees C / 87 degrees F
      CB 1 Exhaust B                       OK          34 degrees C / 93 degrees F
      SIB F13 0                             OK          50 degrees C / 122 degrees F
      SIB F13 0 (B)                         OK          58 degrees C / 136 degrees F
      SIB F13 3                             OK          48 degrees C / 118 degrees F
      SIB F13 3 (B)                         OK          47 degrees C / 116 degrees F
      SIB F13 6                             OK          49 degrees C / 120 degrees F
      SIB F13 6 (B)                         OK          46 degrees C / 114 degrees F
      [Output Truncated]
      SIB F2S 4/0                           OK          28 degrees C / 82 degrees F
      SIB F2S 4/2                           OK          28 degrees C / 82 degrees F
      SIB F2S 4/4                           OK          28 degrees C / 82 degrees F
      SIB F2S 4/6                           OK          28 degrees C / 82 degrees F
      CIP 0 Intake                           OK          28 degrees C / 82 degrees F
      CIP 0 Exhaust A                       OK          29 degrees C / 84 degrees F
      CIP 0 Exhaust B                       OK          29 degrees C / 84 degrees F
      CIP 1 Intake                           OK          28 degrees C / 82 degrees F
      CIP 1 Exhaust A                       OK          29 degrees C / 84 degrees F
      CIP 1 Exhaust B                       OK          29 degrees C / 84 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
      [Output Truncated]
      Fan Tray 5 Fan 4                     OK          Spinning at normal speed
      Fan Tray 5 Fan 5                     OK          Spinning at normal speed
      Fan Tray 5 Fan 6                     OK          Spinning at normal speed
      Fan Tray 5 Fan 7                     OK          Spinning at normal speed
      Fan Tray 5 Fan 8                     OK          Spinning at normal speed
      Fan Tray 5 Fan 9                     Check
Misc   SPMB 0                               OK
      SPMB 1                               OK

```

### show chassis environment sfc (TX Matrix Plus router with 3D SIBs)

```

user@host> show chassis environment sfc 0
sfc0-re0:
-----
Class Item                               Status      Measurement
Temp  PEM 0                               OK          34 degrees C / 93 degrees F
      PEM 1                               Absent

```

	Routing Engine 0	OK	28 degrees C / 82 degrees F
	Routing Engine 0 CPU	OK	41 degrees C / 105 degrees F
	Routing Engine 1	OK	28 degrees C / 82 degrees F
	Routing Engine 1 CPU	OK	42 degrees C / 107 degrees F
	CB 0 Intake	OK	30 degrees C / 86 degrees F
	CB 0 Exhaust A	OK	27 degrees C / 80 degrees F
	CB 0 Exhaust B	OK	30 degrees C / 86 degrees F
	CB 1 Intake	OK	30 degrees C / 86 degrees F
	CB 1 Exhaust A	OK	27 degrees C / 80 degrees F
	CB 1 Exhaust B	OK	32 degrees C / 89 degrees F
	SIB F13 0 Board	OK	49 degrees C / 120 degrees F
	SIB F13 0 XF Junction	OK	68 degrees C / 154 degrees F
	SIB F13 1 Board	OK	47 degrees C / 116 degrees F
	SIB F13 1 XF Junction	OK	62 degrees C / 143 degrees F
	SIB F13 3 Board	OK	52 degrees C / 125 degrees F
	SIB F13 3 XF Junction	OK	71 degrees C / 159 degrees F
	[Output Truncated]		
	SIB F2S 3/0 Board	OK	31 degrees C / 87 degrees F
	SIB F2S 3/0 XF Junction	OK	45 degrees C / 113 degrees F
	SIB F2S 3/2 Board	OK	30 degrees C / 86 degrees F
	SIB F2S 3/2 XF Junction	OK	49 degrees C / 120 degrees F
	SIB F2S 3/4 Board	OK	30 degrees C / 86 degrees F
	SIB F2S 3/4 XF Junction	OK	50 degrees C / 122 degrees F
	SIB F2S 3/6 Board	OK	30 degrees C / 86 degrees F
	SIB F2S 3/6 XF Junction	OK	49 degrees C / 120 degrees F
	SIB F2S 4/0 Board	OK	29 degrees C / 84 degrees F
	SIB F2S 4/0 XF Junction	OK	43 degrees C / 109 degrees F
	SIB F2S 4/2 Board	OK	28 degrees C / 82 degrees F
	SIB F2S 4/2 XF Junction	OK	47 degrees C / 116 degrees F
	SIB F2S 4/4 Board	OK	28 degrees C / 82 degrees F
	SIB F2S 4/4 XF Junction	OK	49 degrees C / 120 degrees F
	SIB F2S 4/6 Board	OK	28 degrees C / 82 degrees F
	SIB F2S 4/6 XF Junction	OK	49 degrees C / 120 degrees F
	CIP 0 Intake	OK	25 degrees C / 77 degrees F
	CIP 0 Exhaust A	OK	26 degrees C / 78 degrees F
	CIP 0 Exhaust B	OK	26 degrees C / 78 degrees F
	CIP 1 Intake	OK	26 degrees C / 78 degrees F
	CIP 1 Exhaust A	OK	27 degrees C / 80 degrees F
	CIP 1 Exhaust B	OK	27 degrees C / 80 degrees F
Fans	Fan Tray 0 Fan 1	OK	Spinning at high speed
	Fan Tray 0 Fan 2	OK	Spinning at high speed
	Fan Tray 0 Fan 3	OK	Spinning at high speed
	Fan Tray 0 Fan 4	OK	Spinning at high speed
	Fan Tray 0 Fan 5	OK	Spinning at high speed
	Fan Tray 0 Fan 6	OK	Spinning at high speed
	[Output Truncated]		
	Fan Tray 5 Fan 1	OK	Spinning at high speed
	Fan Tray 5 Fan 2	OK	Spinning at high speed
	Fan Tray 5 Fan 3	OK	Spinning at high speed
	Fan Tray 5 Fan 4	OK	Spinning at high speed
	Fan Tray 5 Fan 5	OK	Spinning at high speed
	Fan Tray 5 Fan 6	OK	Spinning at high speed
	Fan Tray 5 Fan 7	OK	Spinning at high speed
	Fan Tray 5 Fan 8	OK	Spinning at high speed
	Fan Tray 5 Fan 9	OK	Spinning at high speed
Misc	SPMB 0	OK	
	SPMB 1	OK	

## show chassis environment sib

<b>Syntax</b>	show chassis environment sib <slot>
<b>Syntax (TX Matrix router)</b>	show chassis environment sib <lcc number  scc> <slot>
<b>Syntax (TX Matrix Plus Router)</b>	show chassis environment sib <sib-slot> <lcc number  sfc number> <f13 sib-slot> <f2s sib-slot/sib-f2s-slot-number>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. sfc option introduced in Junos OS Release 9.6. for the TX Matrix Plus router. Command introduced in Junos OS 12.1X48 for PTX Series Packet Transport Routers. Command introduced in Junos OS 12.1 for T4000 Core Routers.
<b>Description</b>	Display Switch Interface Board (SIB) environmental information.
<b>Options</b>	<p><b>none</b>—Display environmental information about all SIBs. On a TX Matrix router, display environmental information about all SIBs on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about all SIBs on the TX Matrix Plus router and its attached routers .</p> <p><b>f13 sib-slot</b>—(TX Matrix Plus routers only) (Optional) Display SIB F13 environmental information only. Replace <b>sib-slot</b> with one of the following values: <b>0, 1, 3, 4, 6, 7, 8, 9, 11, or 12</b>. (Slots 2, 5, 10, 13, 14, and 15 are unused).</p> <p><b>f2s sib-slot/sib-f2s-slot-number</b>—(TX Matrix Plus routers only) (Optional) Display SIB F2s environmental information only. Replace <b>sib-slot</b> with a value from <b>0</b> through <b>4</b>, followed by a <b>sib-f2s-slot-number</b> value of <b>0, 2, 4 or 6</b>.</p> <p><b>lcc number</b>—(TX Matrix router, and TX Matrix Plus router only) (Optional) Line-card chassis number. Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"> <li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li> <li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li> <li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> <li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> </ul>

**scc**—(TX Matrix routers only) (Optional) Display environmental information about the SIB in the TX Matrix router (switch-card chassis).

**sfc**—(TX Matrix Plus routers only) (Optional) On a TX Matrix Plus router, display environmental information about the SIB in the TX Matrix Plus router (switch-fabric chassis).

**sib-slot**—(Optional) Display environmental information about the specified SIB. For the M320 router, replace **sib-slot** with a value from 0 through 3. For the T640, T1600, T4000, and TX Matrix routers, replace **sib-slot** with a value from 0 through 4. For the TX Matrix Plus router, see f13 **sib-slot** and f2s **sib-slot/sib-f2s-slot-number**. For the T320 router, replace **sib-slot** with a value from 0 through 2. For the PTX5000 Packet Transport Router, replace **sib-slot** with a value from 0 through 8.

**Required Privilege Level** view

- Related Documentation**
- [request chassis sib on page 220](#)
  - [show chassis sibs on page 803](#)
  - *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 395](#)  
[show chassis environment sib 1 \(T640 Router\) on page 396](#)  
[show chassis environment sib 1 \(T4000 Router\) on page 396](#)  
[show chassis environment sib scc \(TX Matrix Router\) on page 397](#)  
[show chassis environment sib \(TX Matrix Plus Router\) on page 398](#)  
[show chassis environment sib sfc \(TX Matrix Plus Router\) on page 407](#)  
[show chassis environment sib f13 \(TX Matrix Plus Router\) on page 413](#)  
[show chassis environment sib f2s \(TX Matrix Plus Router\) on page 413](#)  
[show chassis environment sib \(TX Matrix Plus router with 3D SIBs\) on page 414](#)  
[show chassis environment sib \(PTX5000 Packet Transport Router\) on page 416](#)

**Output Fields** [Table 20 on page 395](#) lists the output fields for the **show chassis environment sib** command. Output fields are listed in the approximate order in which they appear.

Table 20: show chassis environment sib Output Fields

Field Name	Field Description
<b>SIB slot status</b>	<p>SIB slot number:</p> <ul style="list-style-type: none"> <li>• <b>0</b> through <b>3</b> on an M320 router.</li> <li>• <b>0</b> or <b>2</b> on a T320 router.</li> <li>• <b>0</b> through <b>4</b> on a T640, T1600, T4000, or TX Matrix router.</li> <li>• <b>0, 1, 3, 4, 6, 7, 8, 9, 11, or 12</b> for F13 SIBs on a TX Matrix Plus router. (Slots 2, 5, 10, 13, 14, and 15 are unused).</li> <li>• <b>0</b> through <b>4</b>, followed by <b>0, 2, 4, or 6</b> for F2S SIBs on a TX Matrix Plus router. For example, <b>SIB F2S 0/4</b>.</li> <li>• <b>0</b> through <b>8</b> on a PTX5000 Packet Transport Router.</li> </ul>
<b>State</b>	<p>Status of the SIB:</p> <ul style="list-style-type: none"> <li>• <b>Online</b>—SIB is online and running.</li> <li>• <b>Offline</b>—SIB is powered down.</li> <li>• <b>Spare</b> (T640, T1600, T4000, and TX Matrix routers only)—SIB is redundant and will move to active state if one of the working SIBs fails.</li> </ul> <p>Only four of the SIBs are active at any time. The fifth one is marked <b>Spare</b>. It is activated if there is a fault on one of the active SIBs.</p> <p>Online standby (TX Matrix Plus router only).</p>
<b>Temperature</b>	<p>Temperature of the air flowing past the SIB.</p> <p>On PTX Series Packet Transport Routers, separate temperatures are displayed for <b>Intake</b>, <b>Exhaust</b>, and <b>Junction</b>.</p>
<b>Power</b>	<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
9.0 V                8784 mV
Power (B)
1.2 V                1202 mV
2.5 V                2504 mV
3.3 V                3308 mV
9.0 V                8820 mV
lcc1-re0:
-----
SIB 0 status:
State                Online - Standby
Temperature           49 degrees C / 120 degrees F
Temperature (B)       43 degrees C / 109 degrees F
Power
1.2 V                1206 mV
1.5 V                1506 mV
2.5 V                2496 mV
3.3 V                3308 mV
3.3 V bias           3296 mV
5.0 V bias           4974 mV
8.0 V bias           7884 mV
9.0 V                8820 mV
Power (B)
1.2 V                1200 mV
2.5 V                2508 mV
3.3 V                3292 mV
9.0 V                8892 mV
...

```

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

```

user@host> show chassis environment sib sfc
sfc0-re0:
-----
SIB F13 0 status:
State                Online - Standby
Temperature           54 degrees C / 129 degrees F
Temperature (B)       50 degrees C / 122 degrees F
Power

```

1.2 V_0	1205 mV
1.2 V_1	1205 mV
1.2 V_2	1208 mV
1.2 V_3	1208 mV
1.5 V_0	1501 mV
1.5 V_1	1508 mV
1.8 V	1804 mV
2.5 V	2504 mV
3.3 V	3312 mV
9.0 V	8991 mV
9.0 V bias	0 mV
Power (B)	
2.5 V	2516 mV
3.3 V	3318 mV
9.0 V	9048 mV
SIB F13 1 status:	
State	Online - Standby
Temperature	45 degrees C / 113 degrees F
Temperature (B)	42 degrees C / 107 degrees F
Power	
1.2 V_0	1202 mV
1.2 V_1	1205 mV
1.2 V_2	1198 mV
1.2 V_3	1205 mV
1.5 V_0	1498 mV
1.5 V_1	1495 mV
1.8 V	1801 mV
2.5 V	2507 mV
3.3 V	3306 mV
9.0 V	8970 mV
9.0 V bias	0 mV
Power (B)	
2.5 V	2507 mV
3.3 V	3306 mV
9.0 V	8970 mV
SIB F13 3 status:	
State	Online
Temperature	48 degrees C / 118 degrees F
Temperature (B)	43 degrees C / 109 degrees F
Power	
1.2 V_0	1208 mV
1.2 V_1	1195 mV
1.2 V_2	1202 mV
1.2 V_3	1198 mV
1.5 V_0	1504 mV
1.5 V_1	1504 mV
1.8 V	1801 mV
2.5 V	2510 mV
3.3 V	3312 mV
9.0 V	8970 mV
9.0 V bias	0 mV
Power (B)	
2.5 V	2500 mV
3.3 V	3332 mV
9.0 V	8970 mV
SIB F13 4 status:	
State	Online
Temperature	44 degrees C / 111 degrees F
Temperature (B)	40 degrees C / 104 degrees F
Power	
1.2 V_0	1205 mV

```

1.2 V_1                1202 mV
1.2 V_2                1205 mV
1.2 V_3                1202 mV
1.5 V_0                1508 mV
1.5 V_1                1511 mV
1.8 V                  1811 mV
2.5 V                  2510 mV
3.3 V                  3312 mV
9.0 V                  8952 mV
9.0 V bias              0 mV
Power (B)
  2.5 V                2510 mV
  3.3 V                3306 mV
  9.0 V                9024 mV
SIB F13 6 status:
State                  Online
Temperature            49 degrees C / 120 degrees F
Temperature (B)        46 degrees C / 114 degrees F
Power
  1.2 V_0              1195 mV
  1.2 V_1              1198 mV
  1.2 V_2              1202 mV
  1.2 V_3              1202 mV
  1.5 V_0              1501 mV
  1.5 V_1              1495 mV
  1.8 V                1801 mV
  2.5 V                2507 mV
  3.3 V                3306 mV
  9.0 V                8979 mV
  9.0 V bias           0 mV
Power (B)
  2.5 V                2497 mV
  3.3 V                3318 mV
  9.0 V                9006 mV
SIB F13 7 status:
State                  Online
Temperature            52 degrees C / 125 degrees F
Temperature (B)        48 degrees C / 118 degrees F
Power
  1.2 V_0              1198 mV
  1.2 V_1              1198 mV
  1.2 V_2              1202 mV
  1.2 V_3              1189 mV
  1.5 V_0              1498 mV
  1.5 V_1              1498 mV
  1.8 V                1804 mV
  2.5 V                2491 mV
  3.3 V                3292 mV
  9.0 V                8904 mV
  9.0 V bias           0 mV
Power (B)
  2.5 V                2500 mV
  3.3 V                3306 mV
  9.0 V                8952 mV
SIB F13 8 status:
State                  Online
Temperature            54 degrees C / 129 degrees F
Temperature (B)        49 degrees C / 120 degrees F
Power
  1.2 V_0              1211 mV
  1.2 V_1              1208 mV

```

1.2 V_2	1208 mV
1.2 V_3	1211 mV
1.5 V_0	1508 mV
1.5 V_1	1511 mV
1.8 V	1801 mV
2.5 V	2513 mV
3.3 V	3324 mV
9.0 V	9048 mV
9.0 V bias	0 mV
Power (B)	
2.5 V	2516 mV
3.3 V	3318 mV
9.0 V	9102 mV
SIB F13 9 status:	
State	Online
Temperature	46 degrees C / 114 degrees F
Temperature (B)	41 degrees C / 105 degrees F
Power	
1.2 V_0	1205 mV
1.2 V_1	1202 mV
1.2 V_2	1205 mV
1.2 V_3	1198 mV
1.5 V_0	1504 mV
1.5 V_1	1504 mV
1.8 V	1817 mV
2.5 V	2507 mV
3.3 V	3306 mV
9.0 V	8991 mV
9.0 V bias	0 mV
Power (B)	
2.5 V	2510 mV
3.3 V	3332 mV
9.0 V	9006 mV
SIB F13 11 status:	
State	Online
Temperature	47 degrees C / 116 degrees F
Temperature (B)	42 degrees C / 107 degrees F
Power	
1.2 V_0	1202 mV
1.2 V_1	1205 mV
1.2 V_2	1202 mV
1.2 V_3	1198 mV
1.5 V_0	1501 mV
1.5 V_1	1504 mV
1.8 V	1807 mV
2.5 V	2510 mV
3.3 V	3306 mV
9.0 V	8991 mV
9.0 V bias	0 mV
Power (B)	
2.5 V	2249 mV
3.3 V	4994 mV
9.0 V	9936 mV
SIB F13 12 status:	
State	Online
Temperature	44 degrees C / 111 degrees F
Temperature (B)	40 degrees C / 104 degrees F
Power	
1.2 V_0	1208 mV
1.2 V_1	1202 mV
1.2 V_2	1208 mV

1.2 V_3	1205 mV
1.5 V_0	1511 mV
1.5 V_1	1508 mV
1.8 V	1814 mV
2.5 V	2507 mV
3.3 V	3318 mV
9.0 V	9039 mV
9.0 V bias	0 mV
Power (B)	
2.5 V	2516 mV
3.3 V	3344 mV
9.0 V	9006 mV
SIB F2S 0/0 status:	
State	Online - Standby
Temperature	40 degrees C / 104 degrees F
Power	
1.2 V_1	0 mV
1.2 V_ASF	1198 mV
1.2 V_ASF_B	1198 mV
1.2 V_ASF_D	1202 mV
1.5 V	1498 mV
1.8 V	1814 mV
3.3 V	3300 mV
3.3 V bias	3300 mV
3.3 V ASF	3286 mV
9.0 V	8250 mV
SIB F2S 0/2 status:	
State	Online - Standby
Temperature	40 degrees C / 104 degrees F
Power	
1.2 V_1	0 mV
1.2 V_ASF	1198 mV
1.2 V_ASF_B	1195 mV
1.2 V_ASF_D	1202 mV
1.5 V	1498 mV
1.8 V	1807 mV
3.3 V	3300 mV
3.3 V bias	3300 mV
3.3 V ASF	3292 mV
9.0 V	8250 mV
SIB F2S 0/4 status:	
State	Online - Standby
Temperature	40 degrees C / 104 degrees F
Power	
1.2 V_1	0 mV
1.2 V_ASF	1198 mV
1.2 V_ASF_B	1195 mV
1.2 V_ASF_D	1202 mV
1.5 V	1501 mV
1.8 V	1817 mV
3.3 V	3300 mV
3.3 V bias	3300 mV
3.3 V ASF	3306 mV
9.0 V	8250 mV
SIB F2S 0/6 status:	
State	Online - Standby
Temperature	39 degrees C / 102 degrees F
Power	
1.2 V_1	0 mV
1.2 V_ASF	1202 mV
1.2 V_ASF_B	1198 mV

1.2 V_ASF_D	1198 mV
1.5 V	1495 mV
1.8 V	1814 mV
3.3 V	3300 mV
3.3 V bias	3300 mV
3.3 V ASF	3280 mV
9.0 V	8250 mV
SIB F2S 1/0 status:	
State	Online
Temperature	39 degrees C / 102 degrees F
Power	
1.2 V_1	0 mV
1.2 V_ASF	1195 mV
1.2 V_ASF_B	1192 mV
1.2 V_ASF_D	1195 mV
1.5 V	1492 mV
1.8 V	1798 mV
3.3 V	3300 mV
3.3 V bias	3300 mV
3.3 V ASF	3280 mV
9.0 V	8250 mV
SIB F2S 1/2 status:	
State	Online
Temperature	39 degrees C / 102 degrees F
Power	
1.2 V_1	0 mV
1.2 V_ASF	1205 mV
1.2 V_ASF_B	1202 mV
1.2 V_ASF_D	1205 mV
1.5 V	1504 mV
1.8 V	1820 mV
3.3 V	3300 mV
3.3 V bias	3300 mV
3.3 V ASF	3306 mV
9.0 V	8250 mV
SIB F2S 1/4 status:	
State	Online
Temperature	39 degrees C / 102 degrees F
Power	
1.2 V_1	0 mV
1.2 V_ASF	1202 mV
1.2 V_ASF_B	1195 mV
1.2 V_ASF_D	1198 mV
1.5 V	1498 mV
1.8 V	1811 mV
3.3 V	3300 mV
3.3 V bias	3300 mV
3.3 V ASF	3300 mV
9.0 V	8250 mV
SIB F2S 1/6 status:	
State	Online
Temperature	39 degrees C / 102 degrees F
Power	
1.2 V_1	0 mV
1.2 V_ASF	1195 mV
1.2 V_ASF_B	1192 mV
1.2 V_ASF_D	1198 mV
1.5 V	1498 mV
1.8 V	1807 mV
3.3 V	3306 mV
3.3 V bias	3300 mV



```

3.3 V ASF          3292 mV
9.0 V              8250 mV
SIB F2S 2/0 status:
State              Online
Temperature        38 degrees C / 100 degrees F
Power
  1.2 V_1          0 mV
  1.2 V_ASF        1195 mV
  1.2 V_ASF_B      1195 mV
  1.2 V_ASF_D      1198 mV
  1.5 V            1498 mV
  1.8 V            1804 mV
  3.3 V            3300 mV
  3.3 V bias       3300 mV
  3.3 V ASF        3292 mV
  9.0 V            8250 mV
...

```

#### show chassis environment sib f13 (TX Matrix Plus Router)

```

user@host> show chassis environment sib f13 0
SIB F13 0 status:
State              Online - Standby
Temperature        54 degrees C / 129 degrees F
Temperature (B)    50 degrees C / 122 degrees F
Power
  1.2 V_0          1202 mV
  1.2 V_1          1202 mV
  1.2 V_2          1208 mV
  1.2 V_3          1208 mV
  1.5 V_0          1501 mV
  1.5 V_1          1504 mV
  1.8 V            1801 mV
  2.5 V            2504 mV
  3.3 V            3318 mV
  9.0 V            8991 mV
  9.0 V bias       0 mV
Power (B)
  2.5 V            2510 mV
  3.3 V            3318 mV
  9.0 V            9024 mV

```

#### show chassis environment sib f2s (TX Matrix Plus Router)

```

user@host> show chassis environment sib f2s 0/2
SIB F2S 0/2 status:
State              Online - Standby
Temperature        40 degrees C / 104 degrees F
Power
  1.2 V_1          0 mV
  1.2 V_ASF        1198 mV
  1.2 V_ASF_B      1195 mV
  1.2 V_ASF_D      1202 mV
  1.5 V            1501 mV
  1.8 V            1807 mV
  3.3 V            3300 mV
  3.3 V bias       3300 mV
  3.3 V ASF        3286 mV
  9.0 V            8250 mV

```

## show chassis environment sib (TX Matrix Plus router with 3D SIBs)

```
user@host> show chassis environment sib
sfc0-re0:
```

```
-----
SIB F13 0 status:
```

State	Online
Board Temperature	44 degrees C / 111 degrees F
XF Junction Temperature	62 degrees C / 143 degrees F
Power	
XF F1 LCC0 1.0 V	999 mV
PCIe Switch 1.0 V	1000 mV
XF F3 LCC0 1.0 V	1000 mV
XF F1/F3 LCC0 1.2 V	1199 mV
XF F1 LCC1 1.0 V	1000 mV
XF F1/F3 LCC1 1.2 V	1199 mV
XF F3 LCC1 1.0 V	1000 mV
XF F1/F3 1.5 V	1499 mV
XF RC LCC0 Base 1.0	1000 mV
XF RC Base 1.2 V	1200 mV
XF RC LCC1 Base 1.0	1000 mV
XF RC Base 1.5 V	1499 mV
3.3 V Base	3300 mV
VSC8248 Base 1.8V	1796 mV
FPGA Core 0.9 V	899 mV
2.5 V Base	2500 mV
1tc3880-3.3v-bias	3343 mV
CXP Base 4.0 V	3999 mV
XF RC LCC0 Mezz 1.0	1000 mV
XF RC Mezz 1.2 V	1199 mV
XF RC LCC1 Mezz 1.0	999 mV
XF RC Mezz 1.5 V	1499 mV
3.3 V Mezz	3299 mV
VSC8248 Mezz 1.8V	1800 mV
CXP Mezz 4.0 V	3999 mV

```
[...Output Truncated...]
```

```
SIB F2S 0/0 status:
```

State	Online
Board Temperature	32 degrees C / 89 degrees F
XF Junction Temperature	41 degrees C / 105 degrees F
Power	
XF F2S 1.8 V LD0	1775 mV
XF F2S 1.0 V AN	992 mV
XF F2S 1.0 V	1002 mV
XF F2S 1.5 V	1488 mV
1.5 V Base	2500 mV
3.3 V bias	3306 mV
3.3 V Base	3280 mV
12.0 V Base	11928 mV

```
[...Output Truncated...]
```

```
SIB F2S 2/6 status:
```

State	Online
Board Temperature	28 degrees C / 82 degrees F
XF Junction Temperature	40 degrees C / 104 degrees F
Power	
XF F2S 1.8 V LD0	1782 mV
XF F2S 1.0 V AN	999 mV
XF F2S 1.0 V	1005 mV
XF F2S 1.5 V	1498 mV
1.5 V Base	2510 mV
3.3 V bias	3292 mV

3.3 V Base	3292 mV
12.0 V Base	12024 mV

lcc0-re0:

-----

SIB 0 status:

State	Online
Temperature	41 degrees C / 105 degrees F
Temperature (B)	Absent
Max Jn Temperature	48 degrees C / 118 degrees F
Power	
8.0 V bias	8156 mV
3.3 V bias	3284 mV
FPGA 0.9 V bias	908 mV
FPGA 1.1 V bias	1086 mV
FPGA 1.5 V bias	1487 mV
FPGA 2.5 V bias	2525 mV
3.3 V	3282 mV
1.5 V	1487 mV
XF HSS 1.5 V	1501 mV
XF1 1.0 V	1001 mV
XF2 1.0 V	1003 mV
XF3 1.0 V	998 mV
XF1 1.8 V LDO	1782 mV
XF2 1.8 V LDO	1792 mV
XF3 1.8 V LDO	1782 mV
CLK BUF 2.5 V LDO	2493 mV
XF1 1.0 V LDO	991 mV
XF2 1.0 V LDO	991 mV
XF3 1.0 V LDO	991 mV
PCIe SW 3.3 V	3274 mV
PCIe 1.0 V	996 mV
RETIMER 1.2 V	1174 mV
RETIMER IO 1.8 V	1770 mV
	0 mV
Power (B)	
1.2 V	0 mV
2.5 V	0 mV
3.3 V	0 mV
9.0 V	0 mV

[...Output Truncated...]

lcc2-re0:

-----

SIB 0 status:

State	Online
Temperature	42 degrees C / 107 degrees F
Temperature (B)	Absent
Max Jn Temperature	51 degrees C / 123 degrees F
Power	
8.0 V bias	8146 mV
3.3 V bias	3277 mV
FPGA 0.9 V bias	903 mV
FPGA 1.1 V bias	1089 mV
FPGA 1.5 V bias	1479 mV
FPGA 2.5 V bias	2515 mV
3.3 V	3277 mV
1.5 V	1482 mV
XF HSS 1.5 V	1501 mV
XF1 1.0 V	1001 mV
XF2 1.0 V	1003 mV
XF3 1.0 V	998 mV

XF1 1.8 V LDO	1787 mV
XF2 1.8 V LDO	1792 mV
XF3 1.8 V LDO	1792 mV
CLK BUF 2.5 V LDO	2481 mV
XF1 1.0 V LDO	986 mV
XF2 1.0 V LDO	993 mV
XF3 1.0 V LDO	991 mV
PCIe SW 3.3 V	3279 mV
PCIe 1.0 V	991 mV
RETIMER 1.2 V	1179 mV
RETIMER IO 1.8 V	1772 mV
	0 mV
Power (B)	
1.2 V	0 mV
2.5 V	0 mV
3.3 V	0 mV
9.0 V	0 mV
[...Output Truncated...]	

### show chassis environment sib (PTX5000 Packet Transport Router)

```

user@host> show chassis environment sib
SIB 0 status:
  State Online
  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
  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
  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
  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
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
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
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
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
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

<b>Syntax</b>	show chassis ethernet-switch <errors <port>>
<b>Syntax (EX8200 Switch)</b>	show chassis ethernet-switch <statistics <port>   switch <number>
<b>Syntax (T4000 Router)</b>	show chassis ethernet-switch <errors <port>   statistics <port>>
<b>Syntax (TX Matrix Router)</b>	show chassis ethernet-switch <errors <port>   statistics <port>> <lcc <number>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show chassis ethernet-switch <errors <port>   switch <number> <lcc number   sfc number> <statistics <port>   switch <number>
<b>Syntax (MX Series Router)</b>	show chassis ethernet-switch <all-members> <errors <port>> <local> <member member-id>
<b>Syntax (MX2010 and MX2020 3D Universal Edge Routers)</b>	show chassis ethernet-switch <errors <port>   statistics <port>>
<b>Syntax (PTX Series Packet Transport Routers)</b>	show chassis ethernet-switch <errors <port>> <statistics <port>> <port-state <port>>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.4 for EX Series switches. sfc option introduced in Junos OS Release 9.6 for the TX Matrix Plus router. Command introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers. Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers. Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.
<b>Description</b>	(M10i, M40e, M120, M160, M320, MX Series, and T Series routers and EX8200 and PTX Series routers only) Display information about the ports on the Control Board (CB) Ethernet switch.
<b>Options</b>	<b>none</b> —Display information about each connected port on the Ethernet switch. On a TX Matrix router, display information about each connected port on the Ethernet switch on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router,

display information about each connected port on the Ethernet switch on the TX Matrix Plus router and its attached routers.

**all-members**—(MX Series routers only) (Optional) Display information about the ports on the CB Ethernet switch on all the members of the Virtual Chassis configuration.

**errors**—(Optional) Display the numbers and types of errors accumulated on all ports of the Ethernet switch.

**errors *port***—(Optional) Display the numbers and types of errors accumulated on the specified port (0 through 15) of the Ethernet switch. On the TX Matrix router, replace ***port*** with a value from 0 through 15. On the TX Matrix Plus router and EX8200 switch, replace ***port*** with a value from 0 through 27. On the PTX Series Packet Transport Routers, replace ***port*** with a value from 0 through 25. On the T4000 routers, MX2020 routers, and MX2010 routers, replace ***port*** with a value from 0 through 27.

**errors switch *number***—(TX Matrix Plus router only) (Optional) Display the numbers and types of errors accumulated on the specified switch. Replace ***number*** with a value from 0 through 2.

**lcc *number***—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.

Replace ***number*** with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(MX Series routers only) (Optional) Display information about the ports on the CB Ethernet switch on the local Virtual Chassis member.

**member *member-id***—(MX Series routers only) (Optional) Display information about the ports on the CB Ethernet switch on the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value of 0 or 1.

**port-state**—(PTX Series only) (Optional) Display information about current port operation (**Blocking**, **Listening**, or **Disabled**).

**scc**—(TX Matrix router only) (Optional) Display information about the ports on the CB's Ethernet switch on the TX Matrix router (switch-card chassis).

**sfc *number***—(TX Matrix Plus router only) (Optional) Display information about the ports on the CB's Ethernet switch on the TX Matrix Plus router (or switch-fabric chassis). Replace ***number*** with 0.



**statistics**—(Optional) Display traffic statistics for each connected port on the Ethernet switch.

**statistics *port***—(Optional) Display traffic statistics for the specified port on the Ethernet switch. On the TX Matrix router, replace ***port*** with a value from 0 through 25. On the TX Matrix Plus router or EX8200 switch, replace ***port*** with a value from 0 through 27. On the PTX Series Packet Transport Routers, replace ***port*** with a value from 0 through 25. On the T4000 routers, MX2020 routers, and MX2010 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 425](#)
- [show chassis ethernet-switch \(MX480 Router with MPC4E\) on page 426](#)
- [show chassis ethernet-switch \(MX2010 Router\) on page 427](#)
- [show chassis ethernet-switch statistics \(MX2010 Router\) on page 429](#)
- [show chassis ethernet-switch \(MX2020 Router\) on page 435](#)
- [show chassis ethernet-switch statistics \(MX2020 Router\) on page 438](#)
- [show chassis ethernet-switch \(MX2020 Router with MPC4E\) on page 446](#)
- [show chassis ethernet-switch \(TX Matrix Router\) on page 447](#)
- [show chassis ethernet-switch errors on page 448](#)
- [show chassis ethernet-switch statistics on page 449](#)
- [show chassis ethernet-switch errors \(TX Matrix Plus Router\) on page 450](#)
- [show chassis ethernet-switch sfc errors \(TX Matrix Plus Router\) on page 451](#)
- [show chassis ethernet-switch statistics \(TX Matrix Plus Router\) on page 452](#)
- [show chassis ethernet-switch \(T4000 Router\) on page 456](#)
- [show chassis ethernet-switch errors \(T4000 Router\) on page 457](#)
- [show chassis ethernet-switch \(PTX5000 Packet Transport Router\) on page 458](#)
- [show chassis ethernet-switch statistics \(PTX5000 Packet Transport Router\) on page 459](#)
- [show chassis ethernet-switch port-state \(PTX5000 Packet Transport Router\) on page 462](#)

**Output Fields** Table 21 on page 422 lists the output fields for the **show chassis ethernet-switch** command. Output fields are listed in the approximate order in which they appear.

Table 21: show chassis ethernet-switch Output Fields

Field Name	Field Description
Link is good on port <i>n</i> connected to device  or  Link is good on Fast Ethernet port <i>n</i> connected to device  or  Link is good on Gigabit Ethernet port <i>n</i> connected to device  or  Link is down on Gigabit Ethernet port connected to device	Information about the link between each port on the CB's Ethernet switch and one of the following devices: <ul style="list-style-type: none"> <li>• FPC0 (Flexible PIC Concentrator 0) through FPC7</li> <li>• Local controller</li> <li>• Routing Engine</li> <li>• Other Routing Engine (on a system with two Routing Engines)</li> <li>• SPMB (Switch Processor Mezzanine Board)</li> <li>• (TX Matrix router only) LCC0 (line-card chassis 0) through LCC3</li> </ul>
Speed is	Speed at which the Ethernet link is running: <b>10 Mb</b> or <b>100 Mb</b> . When the device is <b>RE</b> or <b>Other RE</b> on the TX Matrix router, the speed is <b>1000 Mb</b> .  <b>NOTE:</b> Irrespective of the device, the speed is <b>1000 Mb</b> on the MX2010 and MX2020 routers.
Duplex is	Duplex type of the Ethernet link: <b>full</b> or <b>half</b> .
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 <b>no-concatenate</b> statement at the <b>[edit chassis]</b> hierarchy level, as described in the <i>Junos OS System Basics Configuration Guide</i> ).
Flow Control TX is Enabled (or Disabled)	(MX2010 routers, MX2020 routers, and PTX Series) Flow control in the transmit direction is enabled (or disabled). Flow control regulates the flow of packets from the switch to the remote side of the connection.
Flow Control RX is Enabled (or Disabled)	(MX2010 routers, MX2020 routers, and PTX Series) Flow control in the receive direction is enabled (or disabled). Flow control regulates the flow of packets from the remote side of the connection to the switch.
MLT3	Number of multilevel threshold-3 (MLT-3) Fast Ethernet errors detected.
Accumulated error counts for port <i>n</i> connected to device FPC <i>n</i> : (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.

Table 21: show chassis ethernet-switch Output Fields (*continued*)

Field Name	Field Description
<b>Disconnects</b>	Number of disconnect errors detected.
<b>FX mode</b>	Number of errors detected on an Ethernet link over optical fiber.
Statistics for port <i>n</i> connected to device <i>FPCn</i> (statistics output only)	
<b>TX Packets 64 Octets</b>	(MX2010 and MX2020 routers) Number of packets of size 64 octets transmitted.
<b>TX Packets 65 - 127 Octets</b>	(MX2010 and MX2020 routers) Number of packets of size 65 through 127 octets transmitted.
<b>TX Packets 128 - 255 Octets</b>	(MX2010 and MX2020 routers) Number of packets of size 128 through 255 octets transmitted.
<b>TX Packets 256 - 511 Octets</b>	(MX2010 and MX2020 routers) Number of packets of size 256 through 511 octets transmitted.
<b>TX Packets 512 - 1023 Octets</b>	(MX2010 and MX2020 routers) Number of packets of size 512 through 1023 octets transmitted.
<b>TX Packets 1024 - 1518 Octets</b>	(MX2010 and MX2020 routers) Number of packets of size 1024 through 1518 octets transmitted.
<b>TX Packets 1519 - 2047 Octets</b>	(MX2010 and MX2020 routers) Number of packets of size 1519 through 2047 octets transmitted.
<b>TX Packets 2048 - 4095 Octets</b>	(MX2010 and MX2020 routers) Number of packets of size 2048 through 4095 octets transmitted.
<b>TX Packets 4096 - 9216 Octets</b>	(MX2010 and MX2020 routers) Number of packets of size 4096 through 9216 octets transmitted.
<b>TX 1519 - 1522 Good Vlan frms</b>	(MX2010 and MX2020 routers) Number of transmitted frames of size 1519 through 1522 octets that are good VLAN frames.
<b>TX Octets</b>	Number of octets sent.
<b>TX Unicast packets</b>	Number of unicast packets sent.
<b>TX Multicast packets</b>	Number of multicast packets sent.
<b>TX Broadcast packets</b>	Number of broadcast packets sent.
<b>TX Single Collision frames</b>	(MX2010 and MX2020 routers) Number of packets sent after one collision.
<b>TX Mult. Collision frames</b>	(MX2010 and MX2020 routers) Number of packets sent after multiple collisions.

Table 21: show chassis ethernet-switch Output Fields (*continued*)

Field Name	Field Description
<b>TX Late collisions</b>	Number of packets aborted during sending because of collisions after 64 bytes.
<b>TX Excessive collisions</b>	Number of packets not sent because of too many collisions.
<b>TX Dropped packets</b>	Number of transmitted packets that were dropped.
<b>TX PAUSEMAC Ctrl Frames</b>	Number of Media Access Control (MAC) frames containing PAUSE commands that were sent.
<b>TX Oversize Packets</b>	Number of oversize packets that were sent.
<b>TX FCS Error Counter</b>	Number of packets discarded because of frame check sequence errors.
<b>TX Fragment Counter</b>	Number of fragmented packets sent.
<b>TX Byte Counter</b>	Number of bytes sent.
<b>TX Packet OK Counter</b>	Number of viable packets sent.
<b>TX Pause Packet Counter</b>	Number of PAUSE packets sent.
<b>RX Packets 64 Octets</b>	(MX2010 and MX2020 routers) Number of packets of size 64 octets received.
<b>RX Packets 65 - 127 Octets</b>	(MX2010 and MX2020 routers) Number of packets of size 65 through 127 octets received.
<b>RX Packets 128 - 255 Octets</b>	(MX2010 and MX2020 routers) Number of packets of size 128 through 255 octets received.
<b>RX Packets 256 - 511 Octets</b>	(MX2010 and MX2020 routers) Number of packets of size 256 through 511 octets received.
<b>RX Packets 512 - 1023 Octets</b>	(MX2010 and MX2020 routers) Number of packets of size 512 through 1023 octets received.
<b>RX Packets 1024 - 1518 Octets</b>	(MX2010 and MX2020 routers) Number of packets of size 1024 through 1518 octets received.
<b>RX Packets 1519 - 2047 Octets</b>	(MX2010 and MX2020 routers) Number of packets of size 1519 through 2047 octets received.
<b>RX Packets 2048 - 4095 Octets</b>	(MX2010 and MX2020 routers) Number of packets of size 2048 through 4095 octets received.
<b>RX Packets 4096 - 9216 Octets</b>	(MX2010 and MX2020 routers) Number of packets of size 4096 through 9216 octets received.

Table 21: show chassis ethernet-switch Output Fields (*continued*)

Field Name	Field Description
RX Octets	Number of octets received.
RX Unicast packets	Number of unicast packets received.
RX Multicast packets	Number of multicast packets received.
RX Broadcast packets	Number of broadcast packets received.
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 (MX480 Router with MPC4E)

```

user@host > show chassis ethernet-switch
Displaying summary for switch 0
Link is down on GE port 0 connected to device: FPC0

Link is down on GE port 1 connected to device: FPC1

Link is good on GE port 2 connected to device: FPC2
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 3 connected to device: FPC3
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 4 connected to device: FPC4
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is down on GE port 5 connected to device: FPC5

Link is down on GE port 6 connected to device: FPC6

Link is down on GE port 7 connected to device: FPC7

```

Link is down on GE port 8 connected to device: FPC8

Link is down on GE port 9 connected to device: FPC9

Link is down on GE port 10 connected to device: FPC10

Link is down on GE port 11 connected to device: FPC11

Link is good on GE port 12 connected to device: Other RE  
Speed is 1000Mb  
Duplex is full  
Autonegotiate is Enabled  
Flow Control TX is Disabled  
Flow Control RX is Disabled

Link is good on GE port 13 connected to device: RE-GigE  
Speed is 1000Mb  
Duplex is full  
Autonegotiate is Enabled  
Flow Control TX is Disabled  
Flow Control RX is Disabled

Link is down on GE port 14 connected to device: Debug-GigE

#### show chassis ethernet-switch (MX2010 Router)

```
user@host > show chassis ethernet-switch
Displaying summary for switch 0
Link is good on GE port 0 connected to device: FPC0
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 1 connected to device: FPC1
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 2 connected to device: FPC3
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 3 connected to device: FPC2
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 4 connected to device: FPC5
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
```

Flow Control RX is Disabled

Link is good on GE port 5 connected to device: FPC4

Speed is 1000Mb

Duplex is full

Autonegotiate is Enabled

Flow Control TX is Disabled

Flow Control RX is Disabled

Link is good on GE port 6 connected to device: FPC6

Speed is 1000Mb

Duplex is full

Autonegotiate is Enabled

Flow Control TX is Disabled

Flow Control RX is Disabled

Link is good on GE port 7 connected to device: FPC7

Speed is 1000Mb

Duplex is full

Autonegotiate is Enabled

Flow Control TX is Disabled

Flow Control RX is Disabled

Link is good on GE port 8 connected to device: FPC8

Speed is 1000Mb

Duplex is full

Autonegotiate is Enabled

Flow Control TX is Disabled

Flow Control RX is Disabled

Link is good on GE port 9 connected to device: FPC9

Speed is 1000Mb

Duplex is full

Autonegotiate is Enabled

Flow Control TX is Disabled

Flow Control RX is Disabled

Link is good on GE port 20 connected to device: Other RE-GigE

Speed is 1000Mb

Duplex is full

Autonegotiate is Enabled

Flow Control TX is Disabled

Flow Control RX is Disabled

Link is good on GE port 21 connected to device: RE-GigE

Speed is 1000Mb

Duplex is full

Autonegotiate is Enabled

Flow Control TX is Disabled

Flow Control RX is Disabled

Link is down on GE port 22 connected to device: Debug-GigE

Link is good on GE port 23 connected to device: SPMB

Speed is 1000Mb

Duplex is full

Autonegotiate is Enabled

Flow Control TX is Disabled

Flow Control RX is Disabled

Link is down on XE port 24 connected to device: SFP+ 0



Link is down on XE port 25 connected to device: SFP+ 1

Link is down on XE port 26 connected to device: RE-10GigE

Link is down on XE port 27 connected to device: Other RE-10GigE

### show chassis ethernet-switch statistics (MX2010 Router)

```

user@host > show chassis ethernet-switch statistics
Displaying port statistics for switch 0
Statistics for port 0 connected to device FPC0:
TX Packets 64 Octets          5088623
TX Packets 65-127 Octets     2637257
TX Packets 128-255 Octets    84829
TX Packets 256-511 Octets    120193
TX Packets 512-1023 Octets   252371
TX Packets 1024-1518 Octets  7189736
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                    15373009
TX Multicast Packets         14
TX Broadcast Packets         1679654
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              3041239292
RX Packets 64 Octets         874260
RX Packets 65-127 Octets     26066124
RX Packets 128-255 Octets    1386532
RX Packets 256-511 Octets    150539
RX Packets 512-1023 Octets   4636799
RX Packets 1024-1518 Octets  92601
RX Packets 1519-2047 Octets  0
RX Packets 2048-4095 Octets  0
RX Packets 4096-9216 Octets  0
RX Octets                    33206855
RX Multicast Packets         0
RX Broadcast Packets         279416
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            958929187
Statistics for port 1 connected to device FPC1:
TX Packets 64 Octets       5109146
TX Packets 65-127 Octets   2779473
TX Packets 128-255 Octets  2441286
TX Packets 256-511 Octets  173102
TX Packets 512-1023 Octets 1547504
TX Packets 1024-1518 Octets 7190581
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                  19241092
TX Multicast Packets       14
TX Broadcast Packets       1673369
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 Xtns     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            4213380187
RX Packets 64 Octets       865914
RX Packets 65-127 Octets   26612151
RX Packets 128-255 Octets  1090153
RX Packets 256-511 Octets  25126
RX Packets 512-1023 Octets 101158
RX Packets 1024-1518 Octets 78092
RX Packets 1519-2047 Octets 0
RX Packets 2048-4095 Octets 0
RX Packets 4096-9216 Octets 0
RX Octets                  28772594
RX Multicast Packets       0
RX Broadcast Packets       285669
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            2327283837
```

Link is down on GE port 2 connected to device: FPC3

Link is down on GE port 3 connected to device: FPC2

Link is down on GE port 4 connected to device: FPC5

Link is down on GE port 5 connected to device: FPC4

Link is down on GE port 6 connected to device: FPC6

Link is down on GE port 7 connected to device: FPC7

Statistics for port 8 connected to device FPC8:

TX Packets 64 Octets	5341094
TX Packets 65-127 Octets	2625310
TX Packets 128-255 Octets	3315158
TX Packets 256-511 Octets	174805
TX Packets 512-1023 Octets	976908
TX Packets 1024-1518 Octets	7181498
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	19614773
TX Multicast Packets	14
TX Broadcast Packets	1673831
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 Xtns	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	3946762991
RX Packets 64 Octets	955509
RX Packets 65-127 Octets	27568588
RX Packets 128-255 Octets	1460936
RX Packets 256-511 Octets	153248
RX Packets 512-1023 Octets	2856206
RX Packets 1024-1518 Octets	76419
RX Packets 1519-2047 Octets	0
RX Packets 2048-4095 Octets	0
RX Packets 4096-9216 Octets	0
RX Octets	33070906
RX Multicast Packets	0
RX Broadcast Packets	285183
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	4256093824

## Statistics for port 9 connected to device FPC9:

TX Packets 64 Octets	5237213
TX Packets 65-127 Octets	3268775
TX Packets 128-255 Octets	2320476
TX Packets 256-511 Octets	1789844
TX Packets 512-1023 Octets	501022
TX Packets 1024-1518 Octets	7800455
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	20917785
TX Multicast Packets	14
TX Broadcast Packets	1673368
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 Xms	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	747012161
RX Packets 64 Octets	1036527
RX Packets 65-127 Octets	27590367
RX Packets 128-255 Octets	1590059
RX Packets 256-511 Octets	328257
RX Packets 512-1023 Octets	75975
RX Packets 1024-1518 Octets	73556
RX Packets 1519-2047 Octets	0
RX Packets 2048-4095 Octets	0
RX Packets 4096-9216 Octets	0
RX Octets	30694741
RX Multicast Packets	0
RX Broadcast Packets	285586
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 2727836941

Statistics for port 20 connected to device Other RE-GigE:

TX Packets 64 Octets	1682540
TX Packets 65-127 Octets	3454
TX Packets 128-255 Octets	659
TX Packets 256-511 Octets	0
TX Packets 512-1023 Octets	1
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 1519-1522 Good Vlan frms	0
TX Octets	1686654
TX Multicast Packets	6
TX Broadcast Packets	1673798
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 Xms	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	108042476
RX Packets 64 Octets	710214
RX Packets 65-127 Octets	35785510
RX Packets 128-255 Octets	4616
RX Packets 256-511 Octets	232
RX Packets 512-1023 Octets	565
RX Packets 1024-1518 Octets	28798
RX Packets 1519-2047 Octets	0
RX Packets 2048-4095 Octets	0
RX Packets 4096-9216 Octets	0
RX Octets	36529935
RX Multicast Packets	8
RX Broadcast Packets	285546
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	2676440958

Statistics for port 21 connected to device RE-GigE:

TX Packets 64 Octets	4805310
TX Packets 65-127 Octets	143798628

TX Packets 128-255 Octets	5532385
TX Packets 256-511 Octets	671059
TX Packets 512-1023 Octets	7684123
TX Packets 1024-1518 Octets	344021
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	162835526
TX Multicast Packets	8
TX Broadcast Packets	1673409
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 Xms	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	105857355
RX Packets 64 Octets	14537137
RX Packets 65-127 Octets	11445505
RX Packets 128-255 Octets	8161767
RX Packets 256-511 Octets	2257944
RX Packets 512-1023 Octets	3277807
RX Packets 1024-1518 Octets	29373209
RX Packets 1519-2047 Octets	0
RX Packets 2048-4095 Octets	0
RX Packets 4096-9216 Octets	0
RX Octets	69053369
RX Multicast Packets	6
RX Broadcast Packets	285935
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	2980410755

Link is down on GE port 22 connected to device: Debug-GigE

Statistics for port 23 connected to device SPMB:

TX Packets 64 Octets	1885878
TX Packets 65-127 Octets	138845
TX Packets 128-255 Octets	18
TX Packets 256-511 Octets	1
TX Packets 512-1023 Octets	2
TX Packets 1024-1518 Octets	16391

```

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 2041135
TX Multicast Packets 14
TX Broadcast Packets 1707267
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 Xtns 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 148066476
RX Packets 64 Octets 374994
RX Packets 65-127 Octets 183398
RX Packets 128-255 Octets 749
RX Packets 256-511 Octets 13658
RX Packets 512-1023 Octets 13421
RX Packets 1024-1518 Octets 9
RX Packets 1519-2047 Octets 0
RX Packets 2048-4095 Octets 0
RX Packets 4096-9216 Octets 0
RX Octets 586229
RX Multicast Packets 0
RX Broadcast Packets 252034
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 51431942

```

Link is down on XE port 24 connected to device: SFP+ 0

Link is down on XE port 25 connected to device: SFP+ 1

Link is down on XE port 26 connected to device: RE-10GigE

Link is down on XE port 27 connected to device: Other RE-10GigE

### show chassis ethernet-switch (MX2020 Router)

```
user@host > show chassis ethernet-switch
```

```

Displaying summary for switch 0
Link is good on GE port 0 connected to device: FPC0
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 1 connected to device: FPC1
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 2 connected to device: FPC3
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 3 connected to device: FPC2
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 4 connected to device: FPC5
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 5 connected to device: FPC4
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 6 connected to device: FPC6
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 7 connected to device: FPC7
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 8 connected to device: FPC8
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled

```



```
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 9 connected to device: FPC9
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 10 connected to device: FPC10
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 11 connected to device: FPC11
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 12 connected to device: FPC13
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 13 connected to device: FPC12
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 14 connected to device: FPC14
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 15 connected to device: FPC15
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 16 connected to device: FPC17
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 17 connected to device: FPC16
Speed is 1000Mb
```

```
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 18 connected to device: FPC18
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 19 connected to device: FPC19
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 20 connected to device: Other RE-GigE
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 21 connected to device: RE-GigE
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is down on GE port 22 connected to device: Debug-GigE

Link is good on GE port 23 connected to device: SPMB
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is down on XE port 24 connected to device: SFP+ 0

Link is down on XE port 25 connected to device: SFP+ 1

Link is down on XE port 26 connected to device: RE-10GigE

Link is down on XE port 27 connected to device: Other RE-10GigE
```

#### show chassis ethernet-switch statistics (MX2020 Router)

```
user@host > show chassis ethernet-switch statistics
Displaying port statistics for switch 0
Statistics for port 0 connected to device FPC0:
TX Packets 64 Octets      1468564
TX Packets 65-127 Octets  153896
TX Packets 128-255 Octets 237
TX Packets 256-511 Octets 286
TX Packets 512-1023 Octets 599
TX Packets 1024-1518 Octets 22803
```

```

TX Packets 1519-2047 Octets 0
TX Packets 2048-4095 Octets 0
TX Packets 4096-9216 Octets 0
TX 1519-1522 Good Vlan frms 0
TX Octets 1646385
TX Multicast Packets 6
TX Broadcast Packets 970939
TX Single Collision frames 0
TX Mult. Collision frames 0
TX Late Collisions 0
TX Excessive Collisions 0
TX Collision frames 0
TX PAUSEMAC Ctrl Frames 0
TX MAC ctrl frames 0
TX Frame deferred Xtns 0
TX Frame excessive deferl 0
TX Oversize Packets 0
TX Jabbers 0
TX FCS Error Counter 0
TX Fragment Counter 0
TX Byte Counter 130470290
RX Packets 64 Octets 180266
RX Packets 65-127 Octets 519030
RX Packets 128-255 Octets 1390
RX Packets 256-511 Octets 42857
RX Packets 512-1023 Octets 3482
RX Packets 1024-1518 Octets 8147
RX Packets 1519-2047 Octets 0
RX Packets 2048-4095 Octets 0
RX Packets 4096-9216 Octets 0
RX Octets 755172
RX Multicast Packets 0
RX Broadcast Packets 42822
RX FCS Errors 0
RX Align Errors 0
RX Fragments 0
RX Symbol errors 0
RX Unsupported opcodes 0
RX Out of Range Length 0
RX False Carrier Errors 0
RX Undersize Packets 0
RX Oversize Packets 0
RX Jabbers 0
RX 1519-1522 Good Vlan frms 0
RX MTU Exceed Counter 0
RX Control Frame Counter 0
RX Pause Frame Counter 0
RX Byte Counter 75374021
Statistics for port 1 connected to device FPC1:
TX Packets 64 Octets 1493739
TX Packets 65-127 Octets 126996
TX Packets 128-255 Octets 241
TX Packets 256-511 Octets 283
TX Packets 512-1023 Octets 604
TX Packets 1024-1518 Octets 33687
TX Packets 1519-2047 Octets 0
TX Packets 2048-4095 Octets 0
TX Packets 4096-9216 Octets 0
TX 1519-1522 Good Vlan frms 0
TX Octets 1655550
TX Multicast Packets 6

```

TX Broadcast Packets	969032
TX Single Collision frames	0
TX Mult. Collision frames	0
TX Late Collisions	0
TX Excessive Collisions	0
TX Collision frames	0
TX PAUSEMAC Ctrl Frames	0
TX MAC ctrl frames	0
TX Frame deferred Xms	0
TX Frame excessive deferl	0
TX Oversize Packets	0
TX Jabbers	0
TX FCS Error Counter	0
TX Fragment Counter	0
TX Byte Counter	141832690
RX Packets 64 Octets	155655
RX Packets 65-127 Octets	545561
RX Packets 128-255 Octets	1394
RX Packets 256-511 Octets	42811
RX Packets 512-1023 Octets	3514
RX Packets 1024-1518 Octets	8171
RX Packets 1519-2047 Octets	0
RX Packets 2048-4095 Octets	0
RX Packets 4096-9216 Octets	0
RX Octets	757106
RX Multicast Packets	0
RX Broadcast Packets	44509
RX FCS Errors	0
RX Align Errors	0
RX Fragments	0
RX Symbol errors	0
RX Unsupported opcodes	0
RX Out of Range Length	0
RX False Carrier Errors	0
RX Undersize Packets	0
RX Oversize Packets	0
RX Jabbers	0
RX 1519-1522 Good Vlan frms	0
RX MTU Exceed Counter	0
RX Control Frame Counter	0
RX Pause Frame Counter	0
RX Byte Counter	75691392
Statistics for port 2 connected to device FPC3:	
TX Packets 64 Octets	1465749
TX Packets 65-127 Octets	152849
TX Packets 128-255 Octets	238
TX Packets 256-511 Octets	289
TX Packets 512-1023 Octets	602
TX Packets 1024-1518 Octets	38903
TX Packets 1519-2047 Octets	0
TX Packets 2048-4095 Octets	0
TX Packets 4096-9216 Octets	0
TX 1519-1522 Good Vlan frms	0
TX Octets	1658630
TX Multicast Packets	6
TX Broadcast Packets	968873
TX Single Collision frames	0
TX Mult. Collision frames	0
TX Late Collisions	0
TX Excessive Collisions	0
TX Collision frames	0

```

TX PAUSEMAC Ctrl Frames      0
TX MAC ctrl frames          0
TX Frame deferred Xtns      0
TX Frame excessive deferl    0
TX Oversize Packets         0
TX Jabbers                  0
TX FCS Error Counter        0
TX Fragment Counter         0
TX Byte Counter             147427010
RX Packets 64 Octets        181636
RX Packets 65-127 Octets    517526
RX Packets 128-255 Octets   1405
RX Packets 256-511 Octets   42806
RX Packets 512-1023 Octets  3515
RX Packets 1024-1518 Octets 8168
RX Packets 1519-2047 Octets 0
RX Packets 2048-4095 Octets 0
RX Packets 4096-9216 Octets 0
RX Octets                   755056
RX Multicast Packets        0
RX Broadcast Packets        44490
RX FCS Errors               0
RX Align Errors             0
RX Fragments                0
RX Symbol errors            0
RX Unsupported opcodes      0
RX Out of Range Length      0
RX False Carrier Errors     0
RX Undersize Packets        0
RX Oversize Packets         0
RX Jabbers                  0
RX 1519-1522 Good Vlan frms 0
RX MTU Exceed Counter       0
RX Control Frame Counter    0
RX Pause Frame Counter      0
RX Byte Counter             75381869
Statistics for port 3 connected to device FPC2:
TX Packets 64 Octets        1473828
TX Packets 65-127 Octets    145643
TX Packets 128-255 Octets   253
TX Packets 256-511 Octets   285
TX Packets 512-1023 Octets  612
TX Packets 1024-1518 Octets 26603
TX Packets 1519-2047 Octets 0
TX Packets 2048-4095 Octets 0
TX Packets 4096-9216 Octets 0
TX 1519-1522 Good Vlan frms 0
TX Octets                   1647224
TX Multicast Packets        6
TX Broadcast Packets        968925
TX Single Collision frames  0
TX Mult. Collision frames   0
TX Late Collisions          0
TX Excessive Collisions     0
TX Collision frames         0
TX PAUSEMAC Ctrl Frames      0
TX MAC ctrl frames          0
TX Frame deferred Xtns      0
TX Frame excessive deferl    0
TX Oversize Packets         0
TX Jabbers                  0

```

TX FCS Error Counter	0
TX Fragment Counter	0
TX Byte Counter	134293832
RX Packets 64 Octets	174230
RX Packets 65-127 Octets	525756
RX Packets 128-255 Octets	1404
RX Packets 256-511 Octets	42815
RX Packets 512-1023 Octets	3530
RX Packets 1024-1518 Octets	8176
RX Packets 1519-2047 Octets	0
RX Packets 2048-4095 Octets	0
RX Packets 4096-9216 Octets	0
RX Octets	755911
RX Multicast Packets	0
RX Broadcast Packets	44499
RX FCS Errors	0
RX Align Errors	0
RX Fragments	0
RX Symbol errors	0
RX Unsupported opcodes	0
RX Out of Range Length	0
RX False Carrier Errors	0
RX Undersize Packets	0
RX Oversize Packets	0
RX Jabbers	0
RX 1519-1522 Good Vlan frms	0
RX MTU Exceed Counter	0
RX Control Frame Counter	0
RX Pause Frame Counter	0
RX Byte Counter	75517355

Statistics for port 4 connected to device FPC5:

TX Packets 64 Octets	1466664
TX Packets 65-127 Octets	151155
TX Packets 128-255 Octets	238
TX Packets 256-511 Octets	277
TX Packets 512-1023 Octets	615
TX Packets 1024-1518 Octets	54674
TX Packets 1519-2047 Octets	0
TX Packets 2048-4095 Octets	0
TX Packets 4096-9216 Octets	0
TX 1519-1522 Good Vlan frms	0
TX Octets	1673623
TX Multicast Packets	6
TX Broadcast Packets	968610
TX Single Collision frames	0
TX Mult. Collision frames	0
TX Late Collisions	0
TX Excessive Collisions	0
TX Collision frames	0
TX PAUSEMAC Ctrl Frames	0
TX MAC ctrl frames	0
TX Frame deferred Xms	0
TX Frame excessive deferl	0
TX Oversize Packets	0
TX Jabbers	0
TX FCS Error Counter	0
TX Fragment Counter	0
TX Byte Counter	164247790
RX Packets 64 Octets	180006
RX Packets 65-127 Octets	518217
RX Packets 128-255 Octets	1406

```

RX Packets 256-511 Octets    42787
RX Packets 512-1023 Octets   3515
RX Packets 1024-1518 Octets  8164
RX Packets 1519-2047 Octets  0
RX Packets 2048-4095 Octets  0
RX Packets 4096-9216 Octets  0
RX Octets                    754095
RX Multicast Packets         0
RX Broadcast Packets         44457
RX FCS Errors                0
RX Align Errors              0
RX Fragments                 0
RX Symbol errors             0
RX Unsupported opcodes       0
RX Out of Range Length       0
RX False Carrier Errors      0
RX Undersize Packets         0
RX Oversize Packets          0
RX Jabbers                   0
RX 1519-1522 Good Vlan frms 0
RX MTU Exceed Counter        0
RX Control Frame Counter     0
RX Pause Frame Counter       0
RX Byte Counter              75311970
Statistics for port 5 connected to device FPC4:
TX Packets 64 Octets         1464770
TX Packets 65-127 Octets     154498
TX Packets 128-255 Octets    225
TX Packets 256-511 Octets    280
TX Packets 512-1023 Octets   637
TX Packets 1024-1518 Octets  26355
TX Packets 1519-2047 Octets  0
TX Packets 2048-4095 Octets  0
TX Packets 4096-9216 Octets  0
TX 1519-1522 Good Vlan frms 0
TX Octets                    1646765
TX Multicast Packets         6
TX Broadcast Packets         968730
TX Single Collision frames   0
TX Mult. Collision frames    0
TX Late Collisions           0
TX Excessive Collisions      0
TX Collision frames          0
TX PAUSEMAC Ctrl Frames     0
TX MAC ctrl frames           0
TX Frame deferred Xtns       0
TX Frame excessive deferl    0
TX Oversize Packets          0
TX Jabbers                   0
TX FCS Error Counter         0
TX Fragment Counter          0
TX Byte Counter              134058606
RX Packets 64 Octets         169269
RX Packets 65-127 Octets     515285
RX Packets 128-255 Octets    1527
RX Packets 256-511 Octets    42804
RX Packets 512-1023 Octets   3521
RX Packets 1024-1518 Octets  9142
RX Packets 1519-2047 Octets  0
RX Packets 2048-4095 Octets  0
RX Packets 4096-9216 Octets  0

```

RX Octets	741548
RX Multicast Packets	0
RX Broadcast Packets	44470
RX FCS Errors	0
RX Align Errors	0
RX Fragments	0
RX Symbol errors	0
RX Unsupported opcodes	0
RX Out of Range Length	0
RX False Carrier Errors	0
RX Undersize Packets	0
RX Oversize Packets	0
RX Jabbers	0
RX 1519-1522 Good Vlan frms	0
RX MTU Exceed Counter	0
RX Control Frame Counter	0
RX Pause Frame Counter	0
RX Byte Counter	75498393

Statistics for port 6 connected to device FPC6:

TX Packets 64 Octets	1475260
TX Packets 65-127 Octets	143324
TX Packets 128-255 Octets	260
TX Packets 256-511 Octets	274
TX Packets 512-1023 Octets	603
TX Packets 1024-1518 Octets	40631
TX Packets 1519-2047 Octets	0
TX Packets 2048-4095 Octets	0
TX Packets 4096-9216 Octets	0
TX 1519-1522 Good Vlan frms	0
TX Octets	1660352
TX Multicast Packets	6
TX Broadcast Packets	968466
TX Single Collision frames	0
TX Mult. Collision frames	0
TX Late Collisions	0
TX Excessive Collisions	0
TX Collision frames	0
TX PAUSEMAC Ctrl Frames	0
TX MAC ctrl frames	0
TX Frame deferred Xms	0
TX Frame excessive deferl	0
TX Oversize Packets	0
TX Jabbers	0
TX FCS Error Counter	0
TX Fragment Counter	0
TX Byte Counter	149212764
RX Packets 64 Octets	172275
RX Packets 65-127 Octets	526519
RX Packets 128-255 Octets	1394
RX Packets 256-511 Octets	42777
RX Packets 512-1023 Octets	3514
RX Packets 1024-1518 Octets	8161
RX Packets 1519-2047 Octets	0
RX Packets 2048-4095 Octets	0
RX Packets 4096-9216 Octets	0
RX Octets	754640
RX Multicast Packets	0
RX Broadcast Packets	44443
RX FCS Errors	0
RX Align Errors	0
RX Fragments	0



```

RX Symbol errors          0
RX Unsupported opcodes    0
RX Out of Range Length    0
RX False Carrier Errors   0
RX Undersize Packets      0
RX Oversize Packets       0
RX Jabbers                0
RX 1519-1522 Good Vlan frms 0
RX MTU Exceed Counter     0
RX Control Frame Counter  0
RX Pause Frame Counter    0
RX Byte Counter           75386517
Statistics for port 7 connected to device FPC7:
TX Packets 64 Octets      1472361
TX Packets 65-127 Octets  145646
TX Packets 128-255 Octets 251
TX Packets 256-511 Octets 250
TX Packets 512-1023 Octets 580
TX Packets 1024-1518 Octets 49530
TX Packets 1519-2047 Octets 0
TX Packets 2048-4095 Octets 0
TX Packets 4096-9216 Octets 0
TX 1519-1522 Good Vlan frms 0
TX Octets                 1668618
TX Multicast Packets      6
TX Broadcast Packets      968317
TX Single Collision frames 0
TX Mult. Collision frames 0
TX Late Collisions        0
TX Excessive Collisions   0
TX Collision frames       0
TX PAUSEMAC Ctrl Frames   0
TX MAC ctrl frames        0
TX Frame deferred Xtns    0
TX Frame excessive deferl 0
TX Oversize Packets       0
TX Jabbers                0
TX FCS Error Counter      0
TX Fragment Counter       0
TX Byte Counter           158689814
RX Packets 64 Octets      174618
RX Packets 65-127 Octets  523421
RX Packets 128-255 Octets 1393
RX Packets 256-511 Octets 42764
RX Packets 512-1023 Octets 3514
RX Packets 1024-1518 Octets 8158
RX Packets 1519-2047 Octets 0
RX Packets 2048-4095 Octets 0
RX Packets 4096-9216 Octets 0
RX Octets                 753868
RX Multicast Packets      0
RX Broadcast Packets      44429
RX FCS Errors             0
RX Align Errors           0
RX Fragments              0
RX Symbol errors          0
RX Unsupported opcodes    0
RX Out of Range Length    0
RX False Carrier Errors   0
RX Undersize Packets      0
RX Oversize Packets       0

```

```
RX Jabbers                0
RX 1519-1522 Good Vlan frms 0
RX MTU Exceed Counter      0
RX Control Frame Counter   0
RX Pause Frame Counter     0
RX Byte Counter            75309863
Statistics for port 8 connected to device FPC8:
...
```

#### show chassis ethernet-switch (MX2020 Router with MPC4E)

```
user@ host > show chassis ethernet-switch
Displaying summary for switch 0
Link is good on GE port 0 connected to device: FPC0
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is down on GE port 1 connected to device: FPC1

Link is down on GE port 2 connected to device: FPC3

Link is down on GE port 3 connected to device: FPC2

Link is down on GE port 4 connected to device: FPC5

Link is down on GE port 5 connected to device: FPC4

Link is down on GE port 6 connected to device: FPC6

Link is down on GE port 7 connected to device: FPC7

Link is down on GE port 8 connected to device: FPC8

Link is good on GE port 9 connected to device: FPC9
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 10 connected to device: FPC10
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is down on GE port 11 connected to device: FPC11

Link is down on GE port 12 connected to device: FPC13

Link is down on GE port 13 connected to device: FPC12

Link is good on GE port 14 connected to device: FPC14
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
```

```

Flow Control RX is Disabled

Link is down on GE port 15 connected to device: FPC15

Link is down on GE port 16 connected to device: FPC17

Link is down on GE port 17 connected to device: FPC16

Link is down on GE port 18 connected to device: FPC18

Link is good on GE port 19 connected to device: FPC19
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 20 connected to device: Other RE-GigE
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 21 connected to device: RE-GigE
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is down on GE port 22 connected to device: Debug-GigE

Link is good on GE port 23 connected to device: SPMB
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is down on XE port 24 connected to device: SFP+ 0

Link is down on XE port 25 connected to device: SFP+ 1

Link is down on XE port 26 connected to device: RE-10GigE

Link is down on XE port 27 connected to device: Other RE-10GigE

```

#### show chassis ethernet-switch (TX Matrix Router)

```

user@host> show chassis ethernet-switch
scc-re0:
-----
Link is good on FE port 4 connected to device: LCC0
Speed is 100 MB
Duplex is full
Autonegotiate is Enabled

Link is good on FE port 6 connected to device: LCC2
Speed is 100 MB
Duplex is full

```

```
Autonegotiate is Enabled

Link is good on FE port 8 connected to device: SPMB
Speed is 100 MB
Duplex is full
Autonegotiate is Enabled

lcc0-re0:
-----
Link is good on FE port 1 connected to device: FPC1
Speed is 100 MB
Duplex is full
Autonegotiate is Enabled

Link is good on FE port 2 connected to device: FPC2
Speed is 100 MB
Duplex is full
Autonegotiate is Enabled

Link is good on FE port 8 connected to device: SPMB
Speed is 100 MB
Duplex is full
Autonegotiate is Enabled

Link is good on FE port 10 connected to device: SCC
Speed is 100 MB
Duplex is full
Autonegotiate is Enabled
```

```
lcc2-re0:
-----
Link is good on FE port 0 connected to device: FPC0
Speed is 100 MB
Duplex is full
Autonegotiate is Enabled

Link is good on FE port 1 connected to device: FPC1
Speed is 100 MB
Duplex is full
Autonegotiate is Enabled

Link is good on FE port 2 connected to device: FPC2
Speed is 100 MB
Duplex is full
Autonegotiate is Enabled

Link is good on FE port 8 connected to device: SPMB
Speed is 100 MB
Duplex is full
Autonegotiate is Enabled

Link is good on FE port 10 connected to device: SCC
Speed is 100 MB
Duplex is full
Autonegotiate is Enabled
```

#### show chassis ethernet-switch errors

```
user@host> show chassis ethernet-switch errors
Accumulated error counts for port 0 connected to device FPC0:
MLT3                2
```

```

Lock          0
Xmit          0
ESD           0
False carrier 2
Disconnects   0
FX mode       0
Accumulated error counts for port 1 connected to device FPC1:
MLT3          2
Lock          0
Xmit          0
ESD           0
False carrier 2
Disconnects   0
FX mode       0
Accumulated error counts for port 2 connected to device FPC2:
MLT3          2
Lock          0
Xmit          0
ESD           0
False carrier 3
Disconnects   0
FX mode       0
Accumulated error counts for port 3 connected to device FPC3:
MLT3          0
Lock          0
Xmit          0
ESD           0
False carrier 0
Disconnects   0
Accumulated error counts for port 4 connected to device Nothing:
MLT3          0
Lock          0
Xmit          0
ESD           0
False carrier 0
Disconnects   0
FX mode       0
...

```

#### show chassis ethernet-switch 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 Xms 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 Xms   0
TX Frame excessive deferl 0
TX Oversize Packets     0
TX Jabbers              0
TX FCS Error Counter    0
TX Fragment Counter     0
TX Byte Counter         203712524
RX Packets 64 Octets    873454
RX Packets 65-127 Octets 8886
RX Packets 128-255 Octets 44
RX Packets 256-511 Octets 21862
RX Packets 512-1023 Octets 2
RX Packets 1024-1518 Octets 49912
RX Packets 1519-2047 Octets 0
RX Packets 2048-4095 Octets 0
RX Packets 4096-9216 Octets 0
RX Octets               954160
RX Multicast Packets    0
RX Broadcast Packets    402369
RX FCS Errors           0
RX Align Errors         0
RX Fragments            0
RX Symbol errors        0
RX Unsupported opcodes  0
RX Out of Range Length  0
RX False Carrier Errors 0
RX Undersize Packets    0
RX Oversize Packets     0
RX Jabbers              0
RX 1519-1522 Good Vlan frms 0
RX MTU Exceed Counter   0
RX Control Frame Counter 0
RX Pause Frame Counter  0
RX Byte Counter         137941752
...
```

#### show chassis ethernet-switch (T4000 Router)

```
user@host> show chassis ethernet-switch
Displaying summary for switch 0
Link is good on GE port 6 connected to device: FPC0
  Speed is 100Mb
  Duplex is full
  Autonegotiate is Enabled
  False carrier sense count = 04

Link is good on GE port 9 connected to device: FPC3
  Speed is 100Mb
  Duplex is full
  Autonegotiate is Enabled
  False carrier sense count = 03

Link is good on GE port 11 connected to device: FPC5
  Speed is 100Mb
  Duplex is full
  Autonegotiate is Enabled
  False carrier sense count = 03

Link is good on GE port 12 connected to device: FPC6
  Speed is 100Mb
```

```

Duplex is full
Autonegotiate is Enabled
False carrier sense count = 03

Link is good on GE port 14 connected to device: SPMB
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled

Link is good on GE port 18 connected to device: RE
Speed is 1000Mb
Duplex is full
Autonegotiate is Disabled

Link is good on GE port 19 connected to device: Other RE
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled

```

#### show chassis ethernet-switch errors (T4000 Router)

```

user@host> show chassis ethernet-switch errors

Displaying error for switch 0
Accumulated error counts for port 6 connected to device FPC0:
MLT3          0
Lock          0
Xmit          0
ESD           0
False carrier  4
Disconnects    0
FX mode       0
Accumulated error counts for port 9 connected to device FPC3:
MLT3          0
Lock          0
Xmit          0
ESD           0
False carrier  3
Disconnects    0
FX mode       0
Accumulated error counts for port 11 connected to device FPC5:
MLT3          0
Lock          0
Xmit          0
ESD           0
False carrier  3
Disconnects    0
FX mode       0
Accumulated error counts for port 12 connected to device FPC6:
MLT3          0
Lock          0
Xmit          0
ESD           0
False carrier  3
Disconnects    0
FX mode       0
Accumulated error counts for port 19 connected to device Other RE:
MLT3          0
Lock          0
Xmit          0
ESD           0

```

```
False carrier 0
Disconnects    0
FX mode        0
```

### show chassis ethernet-switch (PTX5000 Packet Transport Router)

```
user@host> show chassis ethernet-switch
Displaying summary for switch 0
Link is good on XE port 2 connected to device: SPMB
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Disabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on XE port 11 connected to device: FPC7
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Disabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on XE port 12 connected to device: FPC6
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Disabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on XE port 13 connected to device: FPC5
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Disabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on XE port 15 connected to device: FPC3
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Disabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on XE port 16 connected to device: FPC2
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Disabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on XE port 18 connected to device: FPC0
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Disabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on XE port 19 connected to device: OTHER RE
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Disabled
```

```
Flow Control TX is Disabled
Flow Control RX is Disabled
```

```
Link is good on XE port 20 connected to device: RE
Speed is 1000Mb
Duplex is full
Autonegotiate is Disabled
Flow Control TX is Disabled
Flow Control RX is Disabled
```

### show chassis ethernet-switch statistics (PTX5000 Packet Transport Router)

```
user@host> show chassis ethernet-switch statistics
Displaying port statistics for switch 0
Statistics for port 2 connected to device SPMB:
TX Packets 64 Octets      10942
TX Packets 65-127 Octets  843
TX Packets 128-255 Octets 2
TX Packets 256-511 Octets 2
TX Packets 512-1023 Octets 0
TX Packets 1024-1518 Octets 6862
TX Packets 1519-2047 Octets 0
TX Packets 2048-4095 Octets 0
TX Packets 4096-9216 Octets 0
TX Packets 9217-16383 Octets 0
TX Octets      18651
TX Multicast Packets 6
TX Broadcast Packets 10331
TX PAUSEMAC Ctrl Frames 0
TX Oversize Packets 0
TX FCS Error Counter 0
TX Fragment Counter 0
TX Byte Counter 8105166
TX Packet OK Counter 0
TX Pause Packet Counter 0
TX Unicast Counter 0
RX Packets 64 Octets      8679
RX Packets 65-127 Octets  2364
RX Packets 128-255 Octets 531
RX Packets 256-511 Octets 112
RX Packets 512-1023 Octets 26
RX Packets 1024-1518 Octets 8
RX Packets 1519-2047 Octets 0
RX Packets 2048-4095 Octets 0
RX Packets 4096-9216 Octets 0
RX Packets 9217-16383 Octets 0
RX Octets      11720
RX Multicast Packets 0
RX Broadcast Packets 10331
RX FCS Errors 0
RX Fragments 0
RX MAC Control Packets 0
RX Out of Range Length 0
RX Undersize Packets 0
RX Oversize Packets 0
RX Jabbers 0
RX Control Frame Counter 0
RX Pause Frame Counter 0
RX Byte Counter 938105
RX Unicast Frame Count 0
RX Packet OK Count 0
```

## Statistics for port 11 connected to device FPC7:

TX Packets 64 Octets	14492
TX Packets 65-127 Octets	3542
TX Packets 128-255 Octets	6
TX Packets 256-511 Octets	45
TX Packets 512-1023 Octets	60

Continued...

## Statistics for port 18 connected to device FPC0:

TX Packets 64 Octets	15212
TX Packets 65-127 Octets	3810
TX Packets 128-255 Octets	6
TX Packets 256-511 Octets	43
TX Packets 512-1023 Octets	66
TX Packets 1024-1518 Octets	169
TX Packets 1519-2047 Octets	0
TX Packets 2048-4095 Octets	0
TX Packets 4096-9216 Octets	0
TX Packets 9217-16383 Octets	0
TX Octets	19306
TX Multicast Packets	0
TX Broadcast Packets	10886
TX PAUSEMAC Ctrl Frames	0
TX Oversize Packets	0
TX FCS Error Counter	0
TX Fragment Counter	0
TX Byte Counter	1569412
TX Packet OK Counter	0
TX Pause Packet Counter	0
TX Unicast Counter	0
RX Packets 64 Octets	17994
RX Packets 65-127 Octets	8006
RX Packets 128-255 Octets	230
RX Packets 256-511 Octets	19
RX Packets 512-1023 Octets	53
RX Packets 1024-1518 Octets	11
RX Packets 1519-2047 Octets	0
RX Packets 2048-4095 Octets	0
RX Packets 4096-9216 Octets	0
RX Packets 9217-16383 Octets	0
RX Octets	26313
RX Multicast Packets	0
RX Broadcast Packets	10886
RX FCS Errors	0
RX Fragments	0
RX MAC Control Packets	0
RX Out of Range Length	0
RX Undersize Packets	0
RX Oversize Packets	0
RX Jabbers	0
RX Control Frame Counter	2
RX Pause Frame Counter	2
RX Byte Counter	1836287
RX Unicast Frame Count	0
RX Packet OK Count	0

## Statistics for port 19 connected to device OTHER RE:

TX Packets 64 Octets	10234
TX Packets 65-127 Octets	162
TX Packets 128-255 Octets	0
TX Packets 256-511 Octets	0



```

TX Packets 512-1023 Octets 0
TX Packets 1024-1518 Octets 0
TX Packets 1519-2047 Octets 0
TX Packets 2048-4095 Octets 0
TX Packets 4096-9216 Octets 0
TX Packets 9217-16383 Octets 0
TX Octets 10396
TX Multicast Packets 8
TX Broadcast Packets 10317
TX PAUSEMAC Ctrl Frames 0
TX Oversize Packets 0
TX FCS Error Counter 0
TX Fragment Counter 0
TX Byte Counter 666260
TX Packet OK Counter 0
TX Pause Packet Counter 0
TX Unicast Counter 0
RX Packets 64 Octets 4073
RX Packets 65-127 Octets 325
RX Packets 128-255 Octets 1
RX Packets 256-511 Octets 0
RX Packets 512-1023 Octets 0
RX Packets 1024-1518 Octets 72
RX Packets 1519-2047 Octets 0
RX Packets 2048-4095 Octets 0
RX Packets 4096-9216 Octets 0
RX Packets 9217-16383 Octets 0
RX Octets 4471
RX Multicast Packets 0
RX Broadcast Packets 10317
RX FCS Errors 0
RX Fragments 0
RX MAC Control Packets 0
RX Out of Range Length 0
RX Undersize Packets 0
RX Oversize Packets 0
RX Jabbers 0
RX Control Frame Counter 0
RX Pause Frame Counter 0
RX Byte Counter 387333
RX Unicast Frame Count 0
RX Packet OK Count 0
Statistics for port 20 connected to device RE:
TX Packets 64 Octets 658856
TX Packets 65-127 Octets 45535
TX Packets 128-255 Octets 1900
TX Packets 256-511 Octets 532
TX Packets 512-1023 Octets 372
TX Packets 1024-1518 Octets 191
TX Packets 1519-2047 Octets 0
TX Packets 2048-4095 Octets 0
TX Packets 4096-9216 Octets 0
TX Packets 9217-16383 Octets 0
TX Octets 707386
TX Multicast Packets 0
TX Broadcast Packets 10421
TX PAUSEMAC Ctrl Frames 0
TX Oversize Packets 0
TX FCS Error Counter 0
TX Fragment Counter 0
TX Byte Counter 46608676

```

TX Packet OK Counter	0
TX Pause Packet Counter	0
TX Unicast Counter	0
RX Packets 64 Octets	27394
RX Packets 65-127 Octets	20271
RX Packets 128-255 Octets	78
RX Packets 256-511 Octets	215
RX Packets 512-1023 Octets	269
RX Packets 1024-1518 Octets	253370
RX Packets 1519-2047 Octets	0
RX Packets 2048-4095 Octets	0
RX Packets 4096-9216 Octets	0
RX Packets 9217-16383 Octets	0
RX Octets	301597
RX Multicast Packets	8
RX Broadcast Packets	10421
RX FCS Errors	0
RX Fragments	0
RX MAC Control Packets	0
RX Out of Range Length	0
RX Undersize Packets	0
RX Oversize Packets	0
RX Jabbers	0
RX Control Frame Counter	0
RX Pause Frame Counter	0
RX Byte Counter	275043436
RX Unicast Frame Count	0
RX Packet OK Count	0

Continued ...

#### **show chassis ethernet-switch port-state (PTX5000 Packet Transport Router)**

```
user@host> show chassis ethernet-switch port-state
Displaying port state for switch 0
Port      : 02
Target    : SPMB

Error reading port 2 connected to device: SPMB
```

## show chassis fabric errors

<b>Syntax</b>	show chassis fabric errors <autoheal> <fpc slot-number lcc number> <sib (slot   f13 sib-slot   f2s sib-slot/sib-f2s-slot-number   lcc number)>
<b>Syntax (PTX Series Packet Transport Routers)</b>	show chassis fabric errors (autoheal   fpc slot-number   sib sib-slot)
<b>Release Information</b>	Command introduced in Junos OS Release 10.0. Command introduced in Junos OS Release 12.1X48 for the PTX Series Packet Transport Routers.
<b>Description</b>	Display the first ten and last ten fabric errors for the FPC or Switch Interface Boards (SIBs).



**NOTE:** This command can only be issued on a master Routing Engine.

- Options**
- autoheal**—(TX Matrix Plus routers and PTX Series Packet Transport Routers only) Show an error log of the first 100 autoheal actions taken on the system.
  - fpc slot-number**—Show error log of the first ten and last ten errors for the specified FPC. (PTX5000 Packet Transport Routers only)—Replace **slot-number** with a value from 0 through 7.  
  
(TX Matrix Plus routers only)—Replace **fpc slot-number** with the following values depending on the LCC configuration:
    - On a TX Matrix Plus router with the TXP-T1600 configuration, if you specify the number of a T1600 LCC by using the **lcc number** option (the recommended method), replace **fpc slot-number** with a value from 0 through 7. Otherwise, use a value from 0 through 31.
    - On a TX Matrix Plus router with the TXP-T1600-3D, TXP-T4000-3D, or TXP-Mixed-LCC-3D configuration, if you specify the number of a T1600 or T4000 LCC by using the **lcc number** option (the recommended method), replace **fpc slot-number** with a value from 0 through 7. Otherwise, use a value from 0 through 63.
    - **lcc number**—Show error log of the first ten and last ten errors for the specified FPC on a specific network device (line-card chassis) that is part of the routing matrix.

Replace **lcc number** with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

If you specify the number of the network device by using only the **lcc number** option (the recommended method), replace **slot-number** with a value from 0 through 7. Otherwise, replace **slot-number** with a value from 0 through 31. For example, the following commands have the same result:

```
user@host> show chassis fabric errors fpc 1 lcc 1
user@host> show chassis fabric errors fpc 9
```

**sib**—Show error log of the first ten and last ten errors for the specified SIB. This option has the following suboptions:

- (TX Matrix Plus routers only) **sib-slot**—Specify a value ranging from 0 through 4.
- (PTX Series Packet Transport Routers) **sib-slot**—Specify a value ranging from 0 through 8.
- **f13 sib-slot**—(Optional) Show SIB F13 errors. Specify a valid SIB value number: 0, 1, 3, 4, 6, 7, 8, 9, 11, or 12.
- **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 (line-card chassis).

Replace **number** with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.



**NOTE:** The `lcc number` suboption is mandatory when using the following format for the command: `show chassis fabric errors sib lcc number sib slot-number`. For instance, issuing `show chassis fabric errors sib lcc 2 3` displays errors detected on LCC 2, SIB 3.

This suboption is not required when the `f13` or `f2s` suboptions are used with the `sib slot-number` option.

**Required Privilege Level** view

**List of Sample Output**

- [show chassis fabric errors \(F13 SIB Errors on a TX Matrix Plus Router\) on page 466](#)
- [show chassis fabric errors \(F2S SIB Errors on a TX Matrix Plus Router\) on page 466](#)
- [show chassis fabric errors \(SIB Errors Specific to an LCC Connected to a TX Matrix Plus Router\) on page 466](#)
- [show chassis fabric errors \(FPC Errors Specific to an LCC Connected to a TX Matrix Plus Router\) on page 467](#)
- [show chassis fabric errors \(SIB Errors Specific to an LCC Connected to a TX Matrix Plus Router with 3D SIBs\) on page 467](#)
- [show chassis fabric errors fpc or sib \(PTX Series Packet Transport Routers\) on page 467](#)
- [show chassis fabric errors autoheal \(PTX Series Packet Transport Routers\) on page 467](#)
- [show chassis fabric errors autoheal \(TX Matrix Plus Router with 3D SIBs\) on page 467](#)

**Output Fields** Table 22 on page 465 lists the output fields for the `show chassis fabric errors` command. Output fields are listed in the approximate order in which they appear.

**Table 22: show chassis fabric errors Output Fields**

Field Name	Field Description
<b>Time</b>	Time the error was logged.  (TX Matrix Plus routers and PTX Series Packet Transport Routers only) For the <code>autoheal</code> option, shows the timestamp when autoheal was attempted on a SIB that was in fault state.
<b>Error log of first 10 errors</b>	List of the first ten errors.
<b>Error log of last 10 errors</b>	List of the last ten errors.

Table 22: show chassis fabric errors Output Fields (*continued*)

Field Name	Field Description
<b>Error log of first 100 errors</b>	Indicates the autoheal action taken on the SIB. The following actions can occur: <ul style="list-style-type: none"> <li>• Req—A SIB autoheal request was made on a faulty SIB.</li> <li>• Action—Autohealing (taking the SIB offline and then online) is initiated.</li> <li>• Denied—Autohealing (taking the SIB offline and then online) is denied because the SIB went to a fault state before the autoheal configuration period completed.</li> <li>• Set info—Setting information to force skipping autoheal on the SIB so that no further attempts to autoheal the faulty SIB are made.</li> <li>• Clear info—If a user takes a SIB offline and then online, then the autoheal information of the SIB is cleared. If the SIB goes to a fault state, autoheal is attempted on the SIB.</li> </ul>
<b>fpc slot number</b>	(PTX5000 Packet Transport Router only)—Range is 0 through 7.
<b>sib slot number</b>	(PTX Series Packet Transport Routers only)—Range is 0 through 8.
<b>lcc number</b>	Not supported on PTX Series Packet Transport Routers.

## Sample Output

### show chassis fabric errors (F13 SIB Errors on a TX Matrix Plus Router)

```
user@host> show chassis fabric errors sib f13 11
```

```
Time                Error log of first 10 errors
2009-10-06 02:21:17 PDT    LOS on Cable-D(1,0)
```

### show chassis fabric errors (F2S SIB Errors on a TX Matrix Plus Router)

```
user@host> show chassis fabric errors sib f2s 0/0
```

```
Time                Error log of first 10 errors
2009-10-06 13:51:42 PDT    Cell drop errors on CLOS F2 SF 0 Port 0 link
```

### show chassis fabric errors (SIB Errors Specific to an LCC Connected to a TX Matrix Plus Router)

```
user@host> show chassis fabric errors sib 1 lcc 0
lcc0-re0:
```

```
-----
Time                Error log of first 10 errors
2009-10-06 02:23:16 PDT    Cell drop errors on FPC7_T link
2009-10-06 02:23:16 PDT    Cell drop errors on FPC7_B link
```

**show chassis fabric errors (FPC Errors Specific to an LCC Connected to a TX Matrix Plus Router)**

```
user@host> show chassis fabric errors fpc 5 lcc 0
lcc0-re0:
```

```
-----
Time                               Error log of first 10 errors
2009-10-06 13:56:59 PDT            PFE_T has link error on plane 1
```

**show chassis fabric errors (SIB Errors Specific to an LCC Connected to a TX Matrix Plus Router with 3D SIBs)**

```
user@host> show chassis fabric errors sib 1 lcc 0
lcc0-re0:
```

```
-----
Time                               Error log of first 10 errors
2013-02-11 04:46:42 PST            CRC errors on XC link SIB01_XF3#11,0
```

**show chassis fabric errors fpc or sib (PTX Series Packet Transport Routers)**

```
user@host> show chassis fabric errors fpc 1
```

```
Time                               Error log of first 10 errors
2012-01-06 16:27:03 PST            Link errs on PFE 2, SIB 0, Plane 0
```

```
user@host> show chassis fabric errors sib 1
```

```
Time                               Error log of first 10 errors
2012-01-06 15:34:33 PST            Link errs on PFE 0, FPC 0, Plane 2
```

**show chassis fabric errors autoheal (PTX Series Packet Transport Routers)**

```
user@host> show chassis fabric errors autoheal
```

**show chassis fabric errors autoheal (TX Matrix Plus Router with 3D SIBs)**

```
user@host> show chassis fabric errors autoheal
```

```
Time                               Error log of first 100 errors
2013-03-25 00:16:10 PDT            Req: Plane 3 F13 8 Cbl 4 (tx) LCC0-SIB3 Cbl 4 (rx)
2013-03-25 00:16:12 PDT            Action: Plane 3 F13 8 Cbl 4 (autohealing)
2013-03-25 00:17:24 PDT            Req: Plane 3 F13 8 Cbl 4 (tx) LCC0-SIB3 Cbl 4 (rx)
2013-03-25 00:17:24 PDT            Denied: Plane 3 F13 8 Cbl 4 (time < configured)
2013-03-25 00:17:24 PDT            Set info: Plane 3 F13 8 Cbl 4 (skip autoheal)
2013-03-25 01:20:17 PDT            Clear info: Plane 3
```

## show chassis fabric fpcs

---

<b>Syntax</b>	show chassis fabric fpcs <lcc <i>number</i> >
<b>Syntax (MX Series Routers)</b>	show chassis fabric fpcs <all-members> <local> <member <i>member-id</i> >
<b>Syntax (MX2010 and MX2020 3D Universal Edge Routers)</b>	show chassis fabric fpcs
<b>Syntax (T4000 Core Router)</b>	show chassis fabric fpcs
<b>Syntax (PTX Series Packet Transport Routers)</b>	show chassis fabric fpcs <slot <i>fpc-slot</i> >
<b>Syntax (TX Matrix Plus Router)</b>	show chassis fabric fpcs <lcc <i>number</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.4 for EX Series switches. Command introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers. Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers. Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.
<b>Description</b>	(M320, MX Series, and T Series routers, EX8200 switches, and PTX Series Packet Transport Routers only) Display the state of the electrical switch fabric links between the Flexible PIC Concentrators (FPCs) and the Switch Interface Boards (SIBs).
<b>Options</b>	<p><b>none</b>—Display the switch fabric link state. On a TX Matrix router, display the switching fabric link states for the FPCs in all T640 routers connected to the TX Matrix router. On a TX Matrix Plus router, display the switching fabric link states for the FPCs in all routers connected to the TX Matrix Plus router.</p> <p><b>all-members</b>—(MX Series routers only) (Optional) Display the switching fabric link states for the FPCs in all members of the Virtual Chassis configuration.</p> <p><b>lcc <i>number</i></b>—(TX Matrix router and TX Matrix Plus router only) (Optional) On a TX Matrix router, display the switch fabric link state for the FPCs in the specified T640 router (line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display the switch fabric link state for the FPCs in the specified router (line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a following value depending on the LCC configurations:</p>



- From **0** through **3** on a T640 router on the routing matrix with TX Matirx routers.
- From **0** through **3** on a T1600 router on the routing matrix with TX Matirx Plus routers.
- From **0** through **7** on a T1600 router in a routing matrix with TX Matrix Plus router with 3D SIBs.
- **0, 2, 4, 6** on a T4000 router in a routing matrix with TX Matrix Plus router with 3D SIBs.

**local**—(MX Series routers only) (Optional) Display the switching fabric link states for the FPCs in the local Virtual Chassis member.

**member *member-id***—(MX Series routers only) (Optional) Display the switching fabric link states for the FPCs in the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value of 0 or 1.

**slot *fpc-slot***—(PTX Series Packet Transport Routers only) (Optional) Display the fabric state of the specified FPC slot. If no value is provided, display the status of all FPCs.

**Required Privilege Level** view

**List of Sample Output**

[show chassis fabric fpcs \(M320 Router\) on page 470](#)  
[show chassis fabric fpcs \(MX240 Router\) on page 471](#)  
[show chassis fabric fpcs \(MX480 Router\) on page 471](#)  
[show chassis fabric fpcs \(MX960 Router\) on page 472](#)  
[show chassis fabric fpcs \(MX240 with AS MLC Modular Carrier Card\) on page 474](#)  
[show chassis fabric fpcs \(MX480 with AS MLC Modular Carrier Card\) on page 474](#)  
[show chassis fabric fpcs \(MX480 Router with MPC4E\) on page 475](#)  
[show chassis fabric fpcs \(MX960 with AS MLC Modular Carrier Card on page 476](#)  
[show chassis fabric fpcs \(MX2010 Router\) on page 478](#)  
[show chassis fabric fpcs \(MX2020 Router\) on page 481](#)  
[show chassis fabric fpcs \(MX2020 Router with MPC4E\) on page 484](#)  
[show chassis fabric fpcs \(T320 Router\) on page 485](#)  
[show chassis fabric fpcs \(T640 Router\) on page 486](#)  
[show chassis fabric fpcs \(TX Matrix Router\) on page 486](#)  
[show chassis fabric fpcs \(TX Matrix Router with 3D SIBs\) on page 488](#)  
[show chassis fabric fpcs lcc \(TX Matrix Router with 3D SIBs\) on page 491](#)  
[show chassis fabric fpcs \(T1600 Router\) on page 491](#)  
[show chassis fabric fpcs \(T4000 Core Router\) on page 493](#)  
[show chassis fabric fpcs \(TX Matrix Plus Router\) on page 494](#)  
[show chassis fabric fpcs lcc \(TX Matrix Plus Router\) on page 502](#)  
[show chassis fabric fpcs \(EX8200 Switch\) on page 502](#)  
[show chassis fabric fpcs \(PTX Series Packet Transport Routers\) on page 503](#)

**Output Fields** [Table 23 on page 470](#) lists the output fields for the **show chassis fabric fpcs** command. Output fields are listed in the approximate order in which they appear.

Table 23: show chassis fabric fpcs Output Fields

Field Name	Field Description
<b>Fabric management FPC state</b>	<p>Switching fabric link (link from SIB to FPC) state for each FPC:</p> <ul style="list-style-type: none"> <li>• <b>Unused</b>—FPC is not present. (On MX240 and MX480 routers with AS- MLC modular carrier card or MPC4E only) the fabric plane from the pair that share physical links (1 and 5, and 3 and 7) is inactive.</li> <li>• <b>Destination error on PFEs <i>list of PFE numbers</i></b>—Destination errors to the listed Packet Forwarding Engines. Indicates that the link is not carrying traffic to the listed Packet Forwarding Engines.</li> </ul> <p><b>NOTE:</b> 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"> <li>• <b>Links ok</b>—Link between the spare SIB and FPC is eligible to carry traffic.</li> <li>• <b>Link error</b>—Link between the SIB and FPC has CRC errors. However, the link is still eligible to carry traffic.</li> <li>• <b>Plane disabled</b>—Fabric plane has been disabled for the following reasons: <ul style="list-style-type: none"> <li>• Destination errors have exceeded the thresholds.</li> <li>• Run-time link errors have exceeded the thresholds.</li> <li>• Initialization time link errors detected, and link training was unsuccessful.</li> <li>• <b>Plane Disabled, Links Error</b> (PTX Series Packet Transport Routers only)—The plane is disabled because of link errors detected at the FPC RX.</li> </ul> </li> <li>• <b>Plane Disabled, Links Down</b> (PTX Series Packet Transport Routers only)—The plane is disabled because of link errors detected at the SIB RX.</li> <li>• <b>Plane enabled</b>—Link between the active SIB and FPC is eligible to carry traffic.</li> </ul> <p><b>NOTE:</b> 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"> <li>• <b>Plane Enabled, Links OK</b> (PTX Series Packet Transport Routers only)—The FPC CCL RX link is eligible to carry traffic.</li> <li>• <b>Plane Enabled, Links OK</b> (TX Matrix and TX Matrix Plus routers only)—The FPC HSL RX link is eligible to carry traffic.</li> </ul>

## 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 (MX240 with AS MLC Modular Carrier Card)**

In the following output, FPC 1 is the AS MLC modular carrier card (AS MCC).

```
user@host>show chassis fabric fpcs
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: Unused
    Plane 6: Plane enabled
    Plane 7: Unused
FPC 2
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
```

**show chassis fabric fpcs (MX480 with AS MLC Modular Carrier Card)**

In the following output, FPC 5 is the AS MLC modular carrier card (AS MCC).

```
user@host>show chassis fabric fpcs
FPC 2
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
FPC 4
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Links ok
    Plane 5: Links ok
    Plane 6: Links ok
    Plane 7: Links ok
  PFE #2
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Links ok
    Plane 5: Links ok
    Plane 6: Links ok
    Plane 7: Links ok
FPC 5
```

```

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

```

### show chassis fabric fpcs (MX480 Router with MPC4E)

In the following output, **FPC4** is the MPC4E (MPC4E-3D-32XGE-SFPP) card.

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

```
Fabric management FPC state:
```

```

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

```

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

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

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

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

### show chassis fabric fpcs (MX960 with AS MLC Modular Carrier Card)

In the following output, FPC 5 is the AS MLC modular carrier card (AS MCC).

```
user@host>show chassis fabric fpcs
Fabric management FPC state:
FPC 0
PFE #0
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Plane enabled
Plane 3: Plane enabled
Plane 4: Links ok
Plane 5: Links ok
PFE #1
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Plane enabled
Plane 3: Plane enabled
Plane 4: Links ok
```



```
Plane 5: Links ok
FPC 1
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Links ok
    Plane 5: Links ok
FPC 4
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Links ok
    Plane 5: Links ok
  PFE #1
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Links ok
    Plane 5: Links ok
  PFE #2
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Links ok
    Plane 5: Links ok
  PFE #3
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Links ok
    Plane 5: Links ok
FPC 5
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Links ok
    Plane 5: Links ok
FPC 8
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Links ok
    Plane 5: Links ok
  PFE #1
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Links ok
    Plane 5: Links ok
```

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

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

### show chassis fabric fpcs (MX2010 Router)

```
user@host> show chassis fabric fpcs
Fabric management FPC state:
FPC 0
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane disabled
    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 disabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
FPC 1
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane disabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
FPC 2
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane disabled
    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 disabled
Plane 4: Plane enabled
Plane 5: Plane enabled
Plane 6: Plane enabled
Plane 7: Plane enabled
FPC 3
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane disabled
    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 disabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
  PFE #2
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane disabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
  PFE #3
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane disabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
FPC 4
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane disabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
FPC 5
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane disabled
    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 disabled
        Plane 4: Plane enabled
    Plane 5: Plane enabled
        Plane 6: Plane enabled
        Plane 7: Plane enabled
FPC 6
    PFE #0
        Plane 0: Plane enabled
        Plane 1: Plane enabled
        Plane 2: Plane enabled
        Plane 3: Plane disabled
        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 disabled
        Plane 4: Plane enabled
        Plane 5: Plane enabled
        Plane 6: Plane enabled
        Plane 7: Plane enabled
    PFE #2
        Plane 0: Plane enabled
        Plane 1: Plane enabled
        Plane 2: Plane enabled
        Plane 3: Plane disabled
        Plane 4: Plane enabled
        Plane 5: Plane enabled
        Plane 6: Plane enabled
        Plane 7: Plane enabled
    PFE #3
        Plane 0: Plane enabled
        Plane 1: Plane enabled
        Plane 2: Plane enabled
        Plane 3: Plane disabled
        Plane 4: Plane enabled
        Plane 5: Plane enabled
        Plane 6: Plane enabled
        Plane 7: Plane enabled
FPC 7
    PFE #0
        Plane 0: Plane enabled
        Plane 1: Plane enabled
        Plane 2: Plane enabled
        Plane 3: Plane disabled
        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 disabled
        Plane 4: Plane enabled
    Plane 5: Plane enabled
        Plane 6: Plane enabled
        Plane 7: Plane enabled
FPC 8
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane disabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
FPC 9
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane disabled
    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 disabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled

```

#### show chassis fabric fpcs (MX2020 Router)

```

user@host> show chassis fabric fpcs
Fabric management FPC state:
FPC 0
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
  PFE #1
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
  PFE #2
    Plane 0: Plane enabled

```

```

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

```

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

```
Plane 3: Plane enabled
Plane 4: Plane enabled
Plane 5: Plane enabled
Plane 6: Plane enabled
Plane 7: Plane enabled
FPC 4
...
```

#### show chassis fabric fpcs (MX2020 Router with MPC4E)

```
user@host > show chassis fabric fpcs
Fabric management FPC state:
FPC 0
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
  PFE #1
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
FPC 9
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
  PFE #1
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
FPC 10
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
FPC 14
```



```

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

```

#### 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
1cc0-re0:
-----
Fabric management FPC state:
FPC #0
    PFE #1

```

```

SIB #0
    Links ok
SIB #2
    Links ok
SIB #3
    Links ok
SIB #4
    Links ok
FPC #2
    PFE #1
        SIB #0
            Links ok
        SIB #2
            Links ok
        SIB #3
            Links ok
        SIB #4
            Links ok
FPC #3
    PFE #1
        SIB #2
            Plane enabled
        SIB #3
            Link error
            Destination error on PFES
            0  1  2  3  4  5  6  7
            8  9 10 11 12 13 14 15 16 17 18 19 20 21
        SIB #4
            Destination error on PFES
            0  1  2  3  4  5  6  7
            8  9 10 11 12 13 14 15 16 17 18 19 20 21
...
FPC #4
    PFE #0
        SIB #4 Links ok
    PFE #1
        SIB #4 Links ok
FPC #5
    PFE #1
        SIB #4 Links ok
FPC #6
    PFE #1
        SIB #4 Links ok

lcc2-re0:
-----
Fabric management FPC state:
FPC #0
    PFE #1
        SIB #4 Links ok
FPC #1
    PFE #1
        SIB #4 Links ok
FPC #2
    PFE #0
        SIB #4 Links ok
    PFE #1
        SIB #4 Links ok
FPC #4
    PFE #0
        SIB #4 Links ok
    PFE #1
        SIB #4 Links ok
FPC #5

```

```
PFE #1
SIB #4 Links ok
```

### show chassis fabric fpcs (TX Matrix Router with 3D SIBs)

```
user@host> show chassis fabric fpcs
1cc0-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 #3
PFE #0
SIB #0
Links ok
SIB #1
Links ok
SIB #2
Links ok
SIB #3
Links ok
SIB #4
Links ok
```

```
PFE #1
SIB #0
Links ok
SIB #1
Links ok
SIB #2
Links ok
SIB #3
Links ok
SIB #4
Links ok
```

```
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

1cc2-re0:
-----

1cc4-re0:
-----
Fabric management FPC state:
FPC #2
    PFE #0
        SIB #0
            Links ok
        SIB #1
            Links ok
        SIB #2
            Links ok
        SIB #3
            Links ok
        SIB #4
            Links ok
    PFE #1
        SIB #0
            Links ok
        SIB #1
            Links ok
        SIB #2
            Links ok
        SIB #3
            Links ok
        SIB #4
            Links ok
FPC #3
    PFE #0
        SIB #0
            Links ok
        SIB #1
            Links ok
        SIB #2
            Links ok
        SIB #3
            Links ok
        SIB #4
            Links ok
    PFE #1
        SIB #0
            Links ok
        SIB #1
            Links ok
        SIB #2
            Links ok
        SIB #3
            Links ok
        SIB #4
            Links ok

1cc6-re0:
-----

```

**show chassis fabric fpcs lcc (TX Matrix Router with 3D SIBs)**

```
user@host> show chassis fabric fpcs lcc 4
lcc4-re0:
```

```
-----
Fabric management FPC state:
```

```
FPC #2
```

```
  PFE #0
```

```
    SIB #0
```

```
      Links ok
```

```
    SIB #1
```

```
      Links ok
```

```
    SIB #2
```

```
      Links ok
```

```
    SIB #3
```

```
      Links ok
```

```
    SIB #4
```

```
      Links ok
```

```
  PFE #1
```

```
    SIB #0
```

```
      Links ok
```

```
    SIB #1
```

```
      Links ok
```

```
    SIB #2
```

```
      Links ok
```

```
    SIB #3
```

```
      Links ok
```

```
    SIB #4
```

```
      Links ok
```

```
FPC #3
```

```
  PFE #0
```

```
    SIB #0
```

```
      Links ok
```

```
    SIB #1
```

```
      Links ok
```

```
    SIB #2
```

```
      Links ok
```

```
    SIB #3
```

```
      Links ok
```

```
    SIB #4
```

```
      Links ok
```

```
  PFE #1
```

```
    SIB #0
```

```
      Links ok
```

```
    SIB #1
```

```
      Links ok
```

```
    SIB #2
```

```
      Links ok
```

```
    SIB #3
```

```
      Links ok
```

```
    SIB #4
```

```
      Links ok
```

**show chassis fabric fpcs (T1600 Router)**

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

```
Fabric management FPC state:
```

```
FPC #0
```

```
  PFE #0
```

```
    SIB #0
```

```
      Links ok
```

```

SIB #1
    Plane enabled
SIB #2
    Plane enabled
SIB #3
    Plane enabled
SIB #4
    Plane enabled
PFE #1
    SIB #0
        Links ok
    SIB #1
        Plane enabled
    SIB #2
        Plane enabled
    SIB #3
        Plane enabled
    SIB #4
        Plane enabled
FPC #1
    PFE #0
        SIB #0
            Links ok
        SIB #1
            Plane enabled
        SIB #2
            Plane enabled
        SIB #3
            Plane enabled
        SIB #4
            Plane enabled
    PFE #1
        SIB #0
            Links ok
        SIB #1
            Plane enabled
        SIB #2
            Plane enabled
        SIB #3
            Plane enabled
        SIB #4
            Plane enabled
FPC #2
    PFE #0
        SIB #0
            Links ok
        SIB #1
            Plane enabled
        SIB #2
            Plane enabled
        SIB #3
            Plane enabled
        SIB #4
            Plane enabled
FPC #4
    PFE #0
        SIB #0
            Links ok
        SIB #1
            Plane enabled
        SIB #2

```



```

        Plane enabled
    SIB #3
        Plane enabled
    SIB #4
        Plane enabled
PFE #1
    SIB #0
        Links ok
    SIB #1
        Plane enabled
    SIB #2
        Plane enabled
    SIB #3
        Plane enabled
    SIB #4
        Plane enabled
FPC #3
    PFE #1
        SIB #2
            Plane enabled
        SIB #3
            Link error
            Destination error on PFEs
            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 (T4000 Core Router)

```

Fabric management FPC state:
FPC #2
    PFE #0
        SIB #0
            Links ok
        SIB #1
            Plane enabled
        SIB #2
            Plane enabled
        SIB #3
            Plane enabled
        SIB #4
            Plane enabled
FPC #3
    PFE #0
        SIB #0
            Links ok
        SIB #1
            Plane enabled
        SIB #2
            Plane enabled
        SIB #3
            Plane enabled
        SIB #4
            Plane enabled
FPC #5
    PFE #0
        SIB #0
            Links ok
        SIB #1
            Plane enabled

```

```
SIB #2
    Plane enabled
SIB #3
    Plane enabled
SIB #4
    Plane enabled
PFE #1
  SIB #0
    Links ok
  SIB #1
    Plane enabled
  SIB #2
    Plane enabled
  SIB #3
    Plane enabled
  SIB #4
    Plane enabled
FPC #6
  PFE #0
    SIB #0
      Links ok
    SIB #1
      Plane enabled
    SIB #2
      Plane enabled
    SIB #3
      Plane enabled
    SIB #4
      Plane enabled
  PFE #1
    SIB #0
      Links ok
    SIB #1
      Plane enabled
    SIB #2
      Plane enabled
    SIB #3
      Plane enabled
    SIB #4
      Plane enabled
```

#### show chassis fabric fpcs (TX Matrix Plus Router)

```
user@host> show chassis fabric fpcs
lcc0-re0:
```

```
-----
Fabric management FPC state:
```

```
FPC #0
  PFE #1
    SIB #0
      Unused
    SIB #1
      Links ok
    SIB #2
      Links ok
    SIB #3
      Links ok
    SIB #4
      Links ok
FPC #2
  PFE #0
```

```

SIB #0
    Unused
SIB #1
    Links ok
SIB #2
    Links ok
SIB #3
    Links ok
SIB #4
    Links ok
PFE #1
    SIB #0
        Unused
    SIB #1
        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok
FPC #3
    PFE #1
        SIB #2
            Plane enabled
        SIB #3
            Link error
            Destination error on PFes
            0  1  2  3  4  5  6  7
            8  9 10 11 12 13 14 15 16 17 18 19 20 21
        SIB #4
            Destination error on PFes
            0  1  2  3  4  5  6  7
            8  9 10 11 12 13 14 15 16 17 18 19 20 21
FPC #4
    PFE #0
        SIB #0
            Unused
        SIB #1
            Links ok
        SIB #2
            Links ok
        SIB #3
            Links ok
        SIB #4
            Links ok
    PFE #1
        SIB #0
            Unused
        SIB #1
            Links ok
        SIB #2
            Links ok
        SIB #3
            Links ok
        SIB #4
            Links ok
FPC #6
    PFE #0
        SIB #0
            Unused
        SIB #1
            Links ok

```

```

SIB #2
SIB #3
SIB #4
PFE #1
SIB #0
SIB #1
SIB #2
SIB #3
SIB #4
FPC #7
PFE #0
SIB #0
SIB #1
SIB #2
SIB #3
SIB #4

```

lcc1-re0:

-----  
Fabric management FPC state:

```

FPC #2
PFE #0
SIB #0
SIB #1
SIB #2
SIB #3
SIB #4
PFE #1
SIB #0
SIB #1
SIB #2
SIB #3
SIB #4
FPC #4
PFE #0
SIB #0
SIB #1

```

```

        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok
PFE #1
    SIB #0
        Links ok
    SIB #1
        Links ok
    SIB #2
        Links ok
    SIB #3
        Destination error on PFES      1      8      9      29      40      65      72      73
                                         93  104
    SIB #4
        Links ok
FPC #6
PFE #0
    SIB #0
        Links ok
    SIB #1
        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok
PFE #1
    SIB #0
        Links ok
    SIB #1
        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok
FPC #7
PFE #0
    SIB #0
        Links ok
    SIB #1
        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok

lcc2-re0:
-----
Fabric management FPC state:
FPC #0
    PFE #0

```

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```

        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok
PFE #1
    SIB #0
        Links ok
    SIB #1
        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok
FPC #6
    PFE #0
        SIB #0
            Links ok
        SIB #1
            Links ok
        SIB #2
            Links ok
        SIB #3
            Links ok
        SIB #4
            Links ok
    PFE #1
        SIB #0
            Links ok
        SIB #1
            Links ok
        SIB #2
            Links ok
        SIB #3
            Links ok
        SIB #4
            Links ok
FPC #7
    PFE #0
        SIB #0
            Links ok
        SIB #1
            Links ok
        SIB #2
            Links ok
        SIB #3
            Links ok
        SIB #4
            Links ok
```

lcc3-re0:

-----  
Fabric management FPC state:

```
FPC #0
    PFE #0
        SIB #0
            Links ok
```

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```
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
      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 #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 Routers)

```

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 optics

<b>Syntax (TX Matrix Plus Router with 3D SIBs)</b>	<pre>show chassis fabric optics &lt;sib-slot&gt; &lt;lcc number   sfc number&gt; &lt;brief   detail&gt;</pre>
<b>Release Information</b>	Command introduced in Junos OS Release 13.1 for the TX Matrix Plus router with 3D SIBs.
<b>Description</b>	(TX Matrix Plus routers with 3D SIBs only) Display information about the optical ports on the TX Matrix Plus router (or the switch-fabric chassis (SFC)) and on the T1600 or T4000 line-card chassis (LCCs) connected to it in a routing matrix.
<b>Options</b>	<p><b>none</b>—Display brief information about the optical ports on the SFC and LCCs in the routing matrix.</p> <p><b>sib-number</b>—(Optional) Display information about the optical ports for the specified SIB number.</p> <p><b>lcc number</b>—(Optional) Display information about the optical ports for the specified T1600 or T4000 LCC that is connected to a TX Matrix Plus router with 3D SIBs. Replace <b>number</b> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"> <li>From <b>0</b> through <b>7</b> on a T1600 router connected to a TX Matrix Plus router with 3D SIBs.</li> <li><b>0, 2, 4, or 6</b> on a T4000 router connected to a TX Matrix Plus router with 3D SIBs.</li> </ul> <p><b>sfc number</b>—(Optional) Display information about the optical ports for the specified SFC number. Replace <b>number</b> with <b>0</b>.</p> <p><b>brief</b>—(Optional) Display brief information about the optical ports.</p> <p><b>detail</b>—(Optional) Display detailed information about the optical ports.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li><a href="#">Overview of a Routing Matrix with a TX Matrix Plus Router on page 3</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">show chassis fabric optics (TX Matrix Plus Router with 3D SIBs) on page 506</a> <a href="#">show chassis fabric optics (TX Matrix Plus Router with 3D SIBs) on page 511</a> <a href="#">show chassis fabric optics sfc (TX Matrix Plus Router with 3D SIBs) on page 512</a> <a href="#">show chassis fabric optics lcc (TX Matrix Plus Router with 3D SIBs) on page 514</a>
<b>Output Fields</b>	<p><a href="#">Table 24 on page 506</a> lists the output fields for the <b>show chassis fabric optics</b> command. Output fields are listed in the approximate order in which they appear.</p>

Table 24: show chassis fabric optics Output Fields

Field Name	Field Description
<b>Port</b>	Indicates port number.
<b>Cable state</b>	<p>Indicates the cable state:</p> <ul style="list-style-type: none"> <li><b>CABLE_CONNECTED</b>—Cable is connected properly and is in an operable state.</li> <li><b>CABLE_LOOPBACK</b>—A loopback cable is connected to the port.</li> <li><b>CABLE_NOT_CONNECTED</b>—The optical port is not connected with any cable or all the channels are powered off on the remote side.</li> <li><b>CABLE_MIS_CONNECTED</b>—Cable is connected to an incorrect optical port.</li> <li><b>CABLE_CONNECTED_WITH_ERROR</b>—Cable is connected to the optical port, but indicates a cable issue. Refer to the optical cable fault alarms to identify the cable issue.</li> <li><b>CABLE_NOT_SUPPORTED</b>—The connected optics module is not supported.</li> <li><b>CABLE_MODULE_ABSENT</b>—No optics module is connected.</li> <li><b>CABLE_MODULE_FAULT</b>—The connected optics module has an irrecoverable fault. To recover from this error, you need to replace the optics module.</li> <li><b>CABLE_ELEC_LOOPBACK</b>—An electrical loopback module is connected to the optics port.</li> </ul> <p><b>NOTE:</b> Only electrical loopback modules from ELPEUS are supported.</p> <ul style="list-style-type: none"> <li><b>CABLE_ERROR</b>—Cable cannot be detected, probably because the SIB is not online yet.</li> </ul>
<b>Module Type</b>	Indicates module type.

## Sample Output

### show chassis fabric optics (TX Matrix Plus Router with 3D SIBs)

```
user@host> show chassis fabric optics
sfc0-re0:
```

```
-----
Port      Cable state      Module Type
sfc0-f13sib0:
0         MODULE_ABSENT    No Module
1         MODULE_ABSENT    No Module
2         CABLE_CONNECTED  CXP Module
3         CABLE_CONNECTED  CXP Module
4         MODULE_ABSENT    No Module
5         MODULE_ABSENT    No Module
6         MODULE_ABSENT    No Module
7         MODULE_ABSENT    No Module
8         CABLE_CONNECTED  CXP Module
9         MODULE_ABSENT    No Module
10        MODULE_ABSENT    No Module
11        MODULE_ABSENT    No Module
12        MODULE_ABSENT    No Module
13        MODULE_ABSENT    No Module
14        MODULE_ABSENT    No Module
15        MODULE_ABSENT    No Module
sfc0-f13sib1:
0         MODULE_ABSENT    No Module
```

```

1      MODULE_ABSENT      No Module
2      MODULE_ABSENT      No Module
3      MODULE_ABSENT      No Module
4      CABLE_CONNECTED    CXP Module
5      CABLE_CONNECTED    CXP Module
6      MODULE_ABSENT      No Module
7      MODULE_ABSENT      No Module
8      MODULE_ABSENT      No Module
9      CABLE_CONNECTED    CXP Module
10     MODULE_ABSENT      No Module
11     MODULE_ABSENT      No Module
12     MODULE_ABSENT      No Module
13     MODULE_ABSENT      No Module
14     MODULE_ABSENT      No Module
15     CABLE_CONNECTED    CXP Module
sfc0-f13sib2: SIB slot invalid
sfc0-f13sib3:
0      MODULE_ABSENT      No Module
1      MODULE_ABSENT      No Module
2      CABLE_CONNECTED    CXP Module
3      CABLE_CONNECTED    CXP Module
4      MODULE_ABSENT      No Module
5      MODULE_ABSENT      No Module
6      MODULE_ABSENT      No Module
7      MODULE_ABSENT      No Module
8      CABLE_CONNECTED    CXP Module
9      MODULE_ABSENT      No Module
10     MODULE_ABSENT      No Module
11     MODULE_ABSENT      No Module
12     MODULE_ABSENT      No Module
13     MODULE_ABSENT      No Module
14     MODULE_ABSENT      No Module
15     MODULE_ABSENT      No Module
sfc0-f13sib4:
0      MODULE_ABSENT      No Module
1      MODULE_ABSENT      No Module
2      MODULE_ABSENT      No Module
3      MODULE_ABSENT      No Module
4      CABLE_CONNECTED    CXP Module
5      CABLE_CONNECTED    CXP Module
6      MODULE_ABSENT      No Module
7      MODULE_ABSENT      No Module
8      MODULE_ABSENT      No Module
9      CABLE_CONNECTED    CXP Module
10     MODULE_ABSENT      No Module
11     MODULE_ABSENT      No Module
12     MODULE_ABSENT      No Module
13     MODULE_ABSENT      No Module
14     MODULE_ABSENT      No Module
15     CABLE_CONNECTED    CXP Module
sfc0-f13sib5: SIB slot invalid
sfc0-f13sib6:
0      MODULE_ABSENT      No Module
1      MODULE_ABSENT      No Module
2      CABLE_CONNECTED    CXP Module
3      CABLE_CONNECTED    CXP Module
4      MODULE_ABSENT      No Module
5      MODULE_ABSENT      No Module
6      MODULE_ABSENT      No Module
7      MODULE_ABSENT      No Module
8      CABLE_CONNECTED    CXP Module

```

9	MODULE_ABSENT	No Module
10	MODULE_ABSENT	No Module
11	MODULE_ABSENT	No Module
12	MODULE_ABSENT	No Module
13	MODULE_ABSENT	No Module
14	MODULE_ABSENT	No Module
15	MODULE_ABSENT	No Module
sfc0-f13sib7:		
0	MODULE_ABSENT	No Module
1	MODULE_ABSENT	No Module
2	MODULE_ABSENT	No Module
3	MODULE_ABSENT	No Module
4	CABLE_CONNECTED	CXP Module
5	CABLE_CONNECTED	CXP Module
6	MODULE_ABSENT	No Module
7	MODULE_ABSENT	No Module
8	MODULE_ABSENT	No Module
9	CABLE_CONNECTED	CXP Module
10	MODULE_ABSENT	No Module
11	MODULE_ABSENT	No Module
12	MODULE_ABSENT	No Module
13	MODULE_ABSENT	No Module
14	MODULE_ABSENT	No Module
15	CABLE_CONNECTED	CXP Module
sfc0-f13sib8:		
0	MODULE_ABSENT	No Module
1	MODULE_ABSENT	No Module
2	CABLE_CONNECTED	CXP Module
3	CABLE_CONNECTED	CXP Module
4	MODULE_ABSENT	No Module
5	MODULE_ABSENT	No Module
6	MODULE_ABSENT	No Module
7	MODULE_ABSENT	No Module
8	CABLE_CONNECTED	CXP Module
9	MODULE_ABSENT	No Module
10	MODULE_ABSENT	No Module
11	MODULE_ABSENT	No Module
12	MODULE_ABSENT	No Module
13	MODULE_ABSENT	No Module
14	MODULE_ABSENT	No Module
15	MODULE_ABSENT	No Module
sfc0-f13sib9:		
0	MODULE_ABSENT	No Module
1	MODULE_ABSENT	No Module
2	MODULE_ABSENT	No Module
3	MODULE_ABSENT	No Module
4	CABLE_CONNECTED	CXP Module
5	CABLE_CONNECTED	CXP Module
6	MODULE_ABSENT	No Module
7	MODULE_ABSENT	No Module
8	MODULE_ABSENT	No Module
9	CABLE_CONNECTED	CXP Module
10	MODULE_ABSENT	No Module
11	MODULE_ABSENT	No Module
12	MODULE_ABSENT	No Module
13	MODULE_ABSENT	No Module
14	MODULE_ABSENT	No Module
15	CABLE_CONNECTED	CXP Module
sfc0-f13sib10: SIB slot invalid		
sfc0-f13sib11: SIB slot empty		
sfc0-f13sib12: SIB slot empty		



```
sfc0-f13sib13: SIB slot invalid
sfc0-f13sib14: SIB slot invalid
sfc0-f13sib15: SIB slot invalid
```

```
1cc0-re0:
```

```
-----
Port      Cable state      Module Type
```

```
1cc0-sib0:
```

```
0      MODULE_ABSENT      No Module
1      MODULE_ABSENT      No Module
2      CABLE_CONNECTED    CXP Module
3      CABLE_CONNECTED    CXP Module
4      MODULE_ABSENT      No Module
5      MODULE_ABSENT      No Module
6      MODULE_ABSENT      No Module
7      MODULE_ABSENT      No Module
```

```
1cc0-sib1:
```

```
0      MODULE_ABSENT      No Module
1      MODULE_ABSENT      No Module
2      CABLE_CONNECTED    CXP Module
3      CABLE_CONNECTED    CXP Module
4      MODULE_ABSENT      No Module
5      MODULE_ABSENT      No Module
6      MODULE_ABSENT      No Module
7      MODULE_ABSENT      No Module
```

```
1cc0-sib2:
```

```
0      MODULE_ABSENT      No Module
1      MODULE_ABSENT      No Module
2      CABLE_CONNECTED    CXP Module
3      CABLE_CONNECTED    CXP Module
4      MODULE_ABSENT      No Module
5      MODULE_ABSENT      No Module
6      MODULE_ABSENT      No Module
7      MODULE_ABSENT      No Module
```

```
1cc0-sib3:
```

```
0      MODULE_ABSENT      No Module
1      MODULE_ABSENT      No Module
2      CABLE_CONNECTED    CXP Module
3      CABLE_CONNECTED    CXP Module
4      MODULE_ABSENT      No Module
5      MODULE_ABSENT      No Module
6      MODULE_ABSENT      No Module
7      MODULE_ABSENT      No Module
```

```
1cc0-sib4: SIB slot empty
```

```
1cc4-re0:
```

```
-----
Port      Cable state      Module Type
```

```
1cc4-sib0:
```

```
0      MODULE_ABSENT      No Module
1      MODULE_ABSENT      No Module
2      MODULE_ABSENT      No Module
3      MODULE_ABSENT      No Module
4      CABLE_CONNECTED    CXP Module
5      CABLE_CONNECTED    CXP Module
6      MODULE_ABSENT      No Module
7      MODULE_ABSENT      No Module
```

```
1cc4-sib1:
```

```
0      MODULE_ABSENT      No Module
1      MODULE_ABSENT      No Module
2      MODULE_ABSENT      No Module
```

3	MODULE_ABSENT	No Module
4	CABLE_CONNECTED	CXP Module
5	CABLE_CONNECTED	CXP Module
6	MODULE_ABSENT	No Module
7	MODULE_ABSENT	No Module
lcc4-sib2:		
0	MODULE_ABSENT	No Module
1	MODULE_ABSENT	No Module
2	MODULE_ABSENT	No Module
3	MODULE_ABSENT	No Module
4	CABLE_CONNECTED	CXP Module
5	CABLE_CONNECTED	CXP Module
6	MODULE_ABSENT	No Module
7	MODULE_ABSENT	No Module
lcc4-sib3:		
0	MODULE_ABSENT	No Module
1	MODULE_ABSENT	No Module
2	MODULE_ABSENT	No Module
3	MODULE_ABSENT	No Module
4	CABLE_CONNECTED	CXP Module
5	CABLE_CONNECTED	CXP Module
6	MODULE_ABSENT	No Module
7	MODULE_ABSENT	No Module
lcc4-sib4: SIB slot empty		

lcc7-re0:

Port	Cable state	Module Type
lcc7-sib0:		
0	CABLE_CONNECTED	CXP Module
1	MODULE_ABSENT	No Module
2	MODULE_ABSENT	No Module
3	MODULE_ABSENT	No Module
4	MODULE_ABSENT	No Module
5	MODULE_ABSENT	No Module
6	CABLE_CONNECTED	CXP Module
7	MODULE_ABSENT	No Module
lcc7-sib1:		
0	CABLE_CONNECTED	CXP Module
1	MODULE_ABSENT	No Module
2	MODULE_ABSENT	No Module
3	MODULE_ABSENT	No Module
4	MODULE_ABSENT	No Module
5	MODULE_ABSENT	No Module
6	CABLE_CONNECTED	CXP Module
7	MODULE_ABSENT	No Module
lcc7-sib2:		
0	CABLE_CONNECTED	CXP Module
1	MODULE_ABSENT	No Module
2	MODULE_ABSENT	No Module
3	MODULE_ABSENT	No Module
4	MODULE_ABSENT	No Module
5	MODULE_ABSENT	No Module
6	CABLE_CONNECTED	CXP Module
7	MODULE_ABSENT	No Module
lcc7-sib3:		
0	CABLE_CONNECTED	CXP Module
1	MODULE_ABSENT	No Module
2	MODULE_ABSENT	No Module
3	MODULE_ABSENT	No Module
4	MODULE_ABSENT	No Module

```

5          MODULE_ABSENT          No Module
6          CABLE_CONNECTED        CXP Module
7          MODULE_ABSENT          No Module
lcc7-sib4: SIB slot empty

```

### show chassis fabric optics (TX Matrix Plus Router with 3D SIBs)

```

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

```

```

-----
Port      Cable state      Module Type
sfc0-f13sib0:
0          MODULE_ABSENT      No Module
1          MODULE_ABSENT      No Module
2          CABLE_CONNECTED    CXP Module
3          CABLE_CONNECTED    CXP Module
4          MODULE_ABSENT      No Module
5          MODULE_ABSENT      No Module
6          MODULE_ABSENT      No Module
7          MODULE_ABSENT      No Module
8          CABLE_CONNECTED    CXP Module
9          MODULE_ABSENT      No Module
10         MODULE_ABSENT      No Module
11         MODULE_ABSENT      No Module
12         MODULE_ABSENT      No Module
13         MODULE_ABSENT      No Module
14         MODULE_ABSENT      No Module
15         MODULE_ABSENT      No Module

```

```
lcc0-re0:
```

```

-----
Port      Cable state      Module Type
lcc0-sib0:
0          MODULE_ABSENT      No Module
1          MODULE_ABSENT      No Module
2          CABLE_CONNECTED    CXP Module
3          CABLE_CONNECTED    CXP Module
4          MODULE_ABSENT      No Module
5          MODULE_ABSENT      No Module
6          MODULE_ABSENT      No Module
7          MODULE_ABSENT      No Module

```

```
lcc4-re0:
```

```

-----
Port      Cable state      Module Type
lcc4-sib0:
0          MODULE_ABSENT      No Module
1          MODULE_ABSENT      No Module
2          MODULE_ABSENT      No Module
3          MODULE_ABSENT      No Module
4          CABLE_CONNECTED    CXP Module
5          CABLE_CONNECTED    CXP Module
6          MODULE_ABSENT      No Module
7          MODULE_ABSENT      No Module

```

```
lcc7-re0:
```

```

-----
Port      Cable state      Module Type
lcc7-sib0:
0          CABLE_CONNECTED    CXP Module
1          MODULE_ABSENT      No Module

```

2	MODULE_ABSENT	No Module
3	MODULE_ABSENT	No Module
4	MODULE_ABSENT	No Module
5	MODULE_ABSENT	No Module
6	CABLE_CONNECTED	CXP Module
7	MODULE_ABSENT	No Module

### show chassis fabric optics sfc (TX Matrix Plus Router with 3D SIBs)

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

```
-----
Port      Cable state      Module Type
sfc0-f13sib0:
0         MODULE_ABSENT    No Module
1         MODULE_ABSENT    No Module
2         CABLE_CONNECTED  CXP Module
3         CABLE_CONNECTED  CXP Module
4         MODULE_ABSENT    No Module
5         MODULE_ABSENT    No Module
6         MODULE_ABSENT    No Module
7         MODULE_ABSENT    No Module
8         CABLE_CONNECTED  CXP Module
9         MODULE_ABSENT    No Module
10        MODULE_ABSENT    No Module
11        MODULE_ABSENT    No Module
12        MODULE_ABSENT    No Module
13        MODULE_ABSENT    No Module
14        MODULE_ABSENT    No Module
15        MODULE_ABSENT    No Module
sfc0-f13sib1:
0         MODULE_ABSENT    No Module
1         MODULE_ABSENT    No Module
2         MODULE_ABSENT    No Module
3         MODULE_ABSENT    No Module
4         CABLE_CONNECTED  CXP Module
5         CABLE_CONNECTED  CXP Module
6         MODULE_ABSENT    No Module
7         MODULE_ABSENT    No Module
8         MODULE_ABSENT    No Module
9         CABLE_CONNECTED  CXP Module
10        MODULE_ABSENT    No Module
11        MODULE_ABSENT    No Module
12        MODULE_ABSENT    No Module
13        MODULE_ABSENT    No Module
14        MODULE_ABSENT    No Module
15        CABLE_CONNECTED  CXP Module
sfc0-f13sib2: SIB slot invalid
sfc0-f13sib3:
0         MODULE_ABSENT    No Module
1         MODULE_ABSENT    No Module
2         CABLE_CONNECTED  CXP Module
3         CABLE_CONNECTED  CXP Module
4         MODULE_ABSENT    No Module
5         MODULE_ABSENT    No Module
6         MODULE_ABSENT    No Module
7         MODULE_ABSENT    No Module
8         CABLE_CONNECTED  CXP Module
9         MODULE_ABSENT    No Module
10        MODULE_ABSENT    No Module
11        MODULE_ABSENT    No Module
```

```

12      MODULE_ABSENT      No Module
13      MODULE_ABSENT      No Module
14      MODULE_ABSENT      No Module
15      MODULE_ABSENT      No Module
sfc0-f13sib4:
sfc0-f13sib4:
0      MODULE_ABSENT      No Module
1      MODULE_ABSENT      No Module
2      MODULE_ABSENT      No Module
3      MODULE_ABSENT      No Module
4      CABLE_CONNECTED     CXP Module
5      CABLE_CONNECTED     CXP Module
6      MODULE_ABSENT      No Module
7      MODULE_ABSENT      No Module
8      MODULE_ABSENT      No Module
9      CABLE_CONNECTED     CXP Module
10     MODULE_ABSENT      No Module
11     MODULE_ABSENT      No Module
12     MODULE_ABSENT      No Module
13     MODULE_ABSENT      No Module
14     MODULE_ABSENT      No Module
15     CABLE_CONNECTED     CXP Module
sfc0-f13sib5: SIB slot invalid
sfc0-f13sib6:
0      MODULE_ABSENT      No Module
1      MODULE_ABSENT      No Module
2      CABLE_CONNECTED     CXP Module
3      CABLE_CONNECTED     CXP Module
4      MODULE_ABSENT      No Module
5      MODULE_ABSENT      No Module
6      MODULE_ABSENT      No Module
7      MODULE_ABSENT      No Module
8      CABLE_CONNECTED     CXP Module
9      MODULE_ABSENT      No Module
10     MODULE_ABSENT      No Module
11     MODULE_ABSENT      No Module
12     MODULE_ABSENT      No Module
13     MODULE_ABSENT      No Module
14     MODULE_ABSENT      No Module
15     MODULE_ABSENT      No Module
sfc0-f13sib7:
0      MODULE_ABSENT      No Module
1      MODULE_ABSENT      No Module
2      MODULE_ABSENT      No Module
3      MODULE_ABSENT      No Module
4      CABLE_CONNECTED     CXP Module
5      CABLE_CONNECTED     CXP Module
6      MODULE_ABSENT      No Module
7      MODULE_ABSENT      No Module
8      MODULE_ABSENT      No Module
9      CABLE_CONNECTED     CXP Module
10     MODULE_ABSENT      No Module
11     MODULE_ABSENT      No Module
12     MODULE_ABSENT      No Module
13     MODULE_ABSENT      No Module
14     MODULE_ABSENT      No Module
15     CABLE_CONNECTED     CXP Module
sfc0-f13sib8:
0      MODULE_ABSENT      No Module
1      MODULE_ABSENT      No Module
2      CABLE_CONNECTED     CXP Module

```

```

3      CABLE_CONNECTED      CXP Module
4      MODULE_ABSENT        No Module
5      MODULE_ABSENT        No Module
6      MODULE_ABSENT        No Module
7      MODULE_ABSENT        No Module
8      CABLE_CONNECTED      CXP Module
9      MODULE_ABSENT        No Module
10     MODULE_ABSENT        No Module
11     MODULE_ABSENT        No Module
12     MODULE_ABSENT        No Module
13     MODULE_ABSENT        No Module
14     MODULE_ABSENT        No Module
15     MODULE_ABSENT        No Module
sfc0-f13sib9:
0      MODULE_ABSENT        No Module
1      MODULE_ABSENT        No Module
2      MODULE_ABSENT        No Module
3      MODULE_ABSENT        No Module
4      CABLE_CONNECTED      CXP Module
5      CABLE_CONNECTED      CXP Module
6      MODULE_ABSENT        No Module
7      MODULE_ABSENT        No Module
8      MODULE_ABSENT        No Module
9      CABLE_CONNECTED      CXP Module
10     MODULE_ABSENT        No Module
11     MODULE_ABSENT        No Module
12     MODULE_ABSENT        No Module
13     MODULE_ABSENT        No Module
14     MODULE_ABSENT        No Module
15     CABLE_CONNECTED      CXP Module
sfc0-f13sib10: SIB slot invalid
sfc0-f13sib11: SIB slot empty
sfc0-f13sib12: SIB slot empty
sfc0-f13sib13: SIB slot invalid
sfc0-f13sib14: SIB slot invalid
sfc0-f13sib15: SIB slot invalid

```

#### show chassis fabric optics lcc (TX Matrix Plus Router with 3D SIBs)

```

user@host> show chassis fabric topology lcc 7
lcc7-re0:
-----
Port      Cable state      Module Type
lcc7-sib0:
0      CABLE_CONNECTED      CXP Module
1      MODULE_ABSENT        No Module
2      MODULE_ABSENT        No Module
3      MODULE_ABSENT        No Module
4      MODULE_ABSENT        No Module
5      MODULE_ABSENT        No Module
6      CABLE_CONNECTED      CXP Module
7      MODULE_ABSENT        No Module
lcc7-sib1:
0      CABLE_CONNECTED      CXP Module
1      MODULE_ABSENT        No Module
2      MODULE_ABSENT        No Module
3      MODULE_ABSENT        No Module
4      MODULE_ABSENT        No Module
5      MODULE_ABSENT        No Module
6      CABLE_CONNECTED      CXP Module
7      MODULE_ABSENT        No Module

```

```
1cc7-sib2:
0      CABLE_CONNECTED      CXP Module
1      MODULE_ABSENT        No Module
2      MODULE_ABSENT        No Module
3      MODULE_ABSENT        No Module
4      MODULE_ABSENT        No Module
5      MODULE_ABSENT        No Module
6      CABLE_CONNECTED      CXP Module
7      MODULE_ABSENT        No Module
1cc7-sib3:
0      CABLE_CONNECTED      CXP Module
1      MODULE_ABSENT        No Module
2      MODULE_ABSENT        No Module
3      MODULE_ABSENT        No Module
4      MODULE_ABSENT        No Module
5      MODULE_ABSENT        No Module
6      CABLE_CONNECTED      CXP Module
7      MODULE_ABSENT        No Module
1cc7-sib4: SIB slot empty
```

## show chassis fabric optical-links

**Syntax (TX Matrix Plus Router with 3D SIBs)** show chassis fabric optical-links  
<detail>  
<lcc *number*>

**Release Information** Command introduced in Junos OS Release 13.1.

**Description** Display optical link connectivity and its current status. Display the status of all the optical links on online SIBs along with the state of optical-link, high-speed link status and mapped FPCs. Show the cable connectivity based on mode of operation of line-card chassis (LCC) and flag the problems with cable connectivity, if any.

**Options** **detail**—(TX Matrix Plus routers with 3D SIBs only) (Optional) Display detailed output for optical link connectivity and current status of all the optical links. Also, highlight the FPC slots that are impacted in case of an error on a particular optical link.

**lcc *number***—(Optional) Display information for the LCC that is connected to the TX Matrix Plus router. Replace *number* with the following values depending on the LCC configuration:

- From 0 through 7 on T1600 routers connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6 on T4000 routers connected to TX Matrix Plus router with 3D SIBs in a routing matrix.

**Required Privilege Level** view

**Related Documentation**

- [show chassis fabric optics on page 505](#)
- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output** [show chassis fabric optical-links on page 517](#)  
[show chassis fabric optical-links detail on page 519](#)  
[show chassis fabric optical-links lcc on page 520](#)

**Output Fields** [Table 25 on page 516](#) lists the output fields for the **show chassis fabric optical-links** command. Output fields are listed in the approximate order in which they appear.

**Table 25: show chassis fabric optical-links Output Fields**

Field Name	Field Description
Lcc optical link	Line Card chassis links are shown as <b>LCCxx_SIByy_CXPzz</b> , where xx is LCC number, yy is the LCC SIB slot ID, and zz is the optics number within that LCC SIB.



Table 25: show chassis fabric optical-links Output Fields (*continued*)

Field Name	Field Description
<b>Link</b>	<p>The status of the optical link.</p> <ul style="list-style-type: none"> <li>• <b>-----&lt;?&gt;-----</b> Transceiver is not inserted in the SIB or not recognized.</li> <li>• <b>-----&lt;(U)&gt;-----</b> The connected transceiver is not supported.</li> <li>• <b>-----&lt;(F)&gt;-----</b> The connected transceiver is faulty or it has exceeded the operating limits.</li> <li>• <b>-----&lt; &gt;-----</b> The transceiver is inserted, but the cable is not connected. Loss of Light (LOL) is observed in the optics.</li> <li>• <b>-----&lt;///&gt;-----</b> The transceiver is not connected to the correct port. The link status indicates where it is wrongly connected.</li> <li>• <b>-----&lt;(O)&gt;-----</b> Indicates a bad or dirty cable or an issue with transceiver. Some channels show error.</li> <li>• <b>-----&lt;(E)&gt;-----</b> The cable is connected properly but high-speed link errors are present on this link.</li> <li>• <b>-----&lt;(L)&gt;-----</b> A loopback transceiver is inserted.</li> <li>• <b>-----&lt;X&gt;-----</b> Error due to high-speed links links being down.</li> <li>• <b>-----&lt; &gt;-----</b> The cable is connected but optical link is disabled.</li> <li>• <b>-----&lt; &gt;-----</b> The cable is connected properly with the requisite power settings. High-speed links on the port are up and running.</li> </ul>
<b>Sc optical link</b>	<p>Switch-fabric chassis links are shown as <b>SFCa_F13bb_LCCcc_CXPdd</b>, where <i>a</i> is the SFC chassis 0, <i>bb</i> is F13 SIB slot, <i>cc</i> is the LCC this cable is connected to, and <i>dd</i> is the optics number within that F13 SIB.</p>
<b>State</b>	<p>Link status:</p> <ul style="list-style-type: none"> <li>• <b>Up</b>—Link is online and fully functional.</li> <li>• <b>Connected</b>—The cable is connected but optical link is disabled.</li> <li>• <b>Link Down</b>—High speed links are down in the system.</li> <li>• <b>Loopback</b>—A loopback transceiver is inserted in the system.</li> <li>• <b>Link Error</b>—The cable is properly connected but high speed link error exists in the system.</li> <li>• <b>Optical Error</b>—Indicates a bad cable.</li> <li>• <b>Mis connected</b>—The transceiver is not connected to correct port.</li> <li>• <b>Module Absent</b>—The transceiver is not inserted in the SIB or the transceiver is not recognized.</li> <li>• <b>Not Connected</b>—The transceiver is inserted but cable is not connected to the system.</li> <li>• <b>Faulty Module</b>—The connected transceiver is faulty or it has exceeded the operating limits.</li> </ul>

## Sample Output

### show chassis fabric optical-links

```
user@host> show chassis fabric optical-links
```

Lcc optical link State	Link	Sc optical link
LCC02_SIB00_CXP00 Module Absent	-----<?>-----	SFC0_F1300_CXP08
LCC02_SIB00_CXP01 Up	----->	SFC0_F1300_CXP09
LCC02_SIB00_CXP01 Up	<-----	SFC0_F1300_CXP09
LCC02_SIB00_CXP02 Up	----->	SFC0_F1300_CXP10
LCC02_SIB00_CXP02 Up	<-----	SFC0_F1300_CXP10
LCC02_SIB00_CXP03 Module Absent	-----<?>-----	SFC0_F1300_CXP11
LCC02_SIB00_CXP04 Module Absent	-----<?>-----	SFC0_F1300_CXP12
LCC02_SIB00_CXP05 Module Absent	-----<?>-----	SFC0_F1300_CXP13
LCC02_SIB00_CXP06 Module Absent	-----<?>-----	SFC0_F1300_CXP14
LCC02_SIB00_CXP06 Module Absent	-----<?>-----	SFC0_F1300_CXP15
LCC04_SIB00_CXP00 Up	----->	SFC0_F1301_CXP00
LCC04_SIB00_CXP00 Up	<-----	SFC0_F1301_CXP00
LCC05_SIB00_CXP00 Up	----->	SFC0_F1301_CXP01
LCC05_SIB00_CXP00 Up	<-----	SFC0_F1301_CXP01
LCC04_SIB00_CXP02 Up	----->	SFC0_F1301_CXP02
LCC04_SIB00_CXP02 Up	<-----	SFC0_F1301_CXP02
LCC05_SIB00_CXP02 Up	----->	SFC0_F1301_CXP03
LCC05_SIB00_CXP02 Up	<-----	SFC0_F1301_CXP03
LCC04_SIB00_CXP04 Up	----->	SFC0_F1301_CXP04
LCC04_SIB00_CXP04 Up	<-----	SFC0_F1301_CXP04
LCC05_SIB00_CXP04 Up	----->	SFC0_F1301_CXP05
LCC05_SIB00_CXP04 Up	<-----	SFC0_F1301_CXP05
LCC04_SIB00_CXP06 Up	----->	SFC0_F1301_CXP06
LCC04_SIB00_CXP06 Up	<-----	SFC0_F1301_CXP06
LCC05_SIB00_CXP06 Up	----->	SFC0_F1301_CXP07
LCC05_SIB00_CXP06 Up	<-----	SFC0_F1301_CXP07
LCC06_SIB00_CXP00 Up	----->	SFC0_F1301_CXP08
LCC06_SIB00_CXP00 Up	<-----	SFC0_F1301_CXP08
LCC07_SIB00_CXP00 Up	----->	SFC0_F1301_CXP09
LCC07_SIB00_CXP00	<-----	SFC0_F1301_CXP09

```

Up
LCC06_SIB00_CXP02 -----> SFC0_F1301_CXP10
Up
LCC06_SIB00_CXP02 <----- SFC0_F1301_CXP10
Up
LCC07_SIB00_CXP02 -----> SFC0_F1301_CXP11
Up
LCC07_SIB00_CXP02 <----- SFC0_F1301_CXP11
Up
LCC06_SIB00_CXP04 -----> SFC0_F1301_CXP12
Up
LCC06_SIB00_CXP04 <----- SFC0_F1301_CXP12
Up
LCC07_SIB00_CXP04 -----> SFC0_F1301_CXP13
Up
LCC07_SIB00_CXP04 <----- SFC0_F1301_CXP13
Up
LCC06_SIB00_CXP06 -----> SFC0_F1301_CXP14
Up
LCC06_SIB00_CXP06 <----- SFC0_F1301_CXP14
Up
LCC07_SIB00_CXP06 -----> SFC0_F1301_CXP15
Up
LCC07_SIB00_CXP06 <----- SFC0_F1301_CXP15
Up
LCC02_SIB01_CXP07 -----> SFC0_F1303_CXP15
Up
LCC02_SIB01_CXP07 <----- SFC0_F1303_CXP15
Up
LCC04_SIB01_CXP00 -----> SFC0_F1304_CXP00
Up
LCC04_SIB01_CXP00 <----- SFC0_F1304_CXP00
Up
LCC05_SIB01_CXP00 -----> SFC0_F1304_CXP01
Up
LCC05_SIB01_CXP00 <----- SFC0_F1304_CXP01
Up
LCC04_SIB01_CXP02 -----> SFC0_F1304_CXP02
Up
LCC04_SIB01_CXP02 <----- SFC0_F1304_CXP02
Up
..

```

## Sample Output

### show chassis fabric optical-links detail

```

user@host> show chassis fabric optical-links detail
Lcc optical link          Link          Sc optical link
State
LCC02_SIB00_CXP00 ----- SFC0_F1300_CXP08
Module Absent
Mapped FPC Slot 23 (Plane 0)
HSL2 Channel 0 status Reset
HSL2 Channel 1 status Reset

LCC02_SIB00_CXP01 -----> SFC0_F1300_CXP09
Up
Mapped FPC Slot 22 (Plane 0)
HSL2 Channel 0 status Up
HSL2 Channel 1 status Up

```

```
LCC02_SIB00_CXP01 <----- SFC0_F1300_CXP09
Up
Mapped FPC Slot 22 (Plane 0)
HSL2 Channel 0 status Up
HSL2 Channel 1 status Up

LCC02_SIB00_CXP02 -----> SFC0_F1300_CXP10
Up
Mapped FPC Slot 21 (Plane 0)
HSL2 Channel 0 status Up
HSL2 Channel 1 status Up
```

## Sample Output

show chassis fabric optical-links lcc

```
user@host> show chassis fabric optical-links lcc 0
```

Lcc optical link State	Link	Sc optical link
LCC00_SIB00_CXP00	-----	SFC0_F1300_CXP08
Module Absent		
LCC00_SIB00_CXP01	----->	SFC0_F1300_CXP09
Up		
LCC00_SIB00_CXP01	<-----	SFC0_F1300_CXP09
Up		
LCC00_SIB00_CXP02	----->	SFC0_F1300_CXP10
Up		
LCC00_SIB00_CXP02	<-----	SFC0_F1300_CXP10
Up		
LCC00_SIB00_CXP03	-----	SFC0_F1300_CXP11
Module Absent		
LCC00_SIB00_CXP04	-----	SFC0_F1300_CXP12
Module Absent		
LCC00_SIB00_CXP05	-----	SFC0_F1300_CXP13
Module Absent		

## show chassis fabric plane

<b>Syntax</b>	show chassis fabric plane
<b>Syntax (TX Matrix Plus Router)</b>	show chassis fabric plane <detail   extensive   terse> <lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (MX Series Routers)</b>	show chassis fabric plane <detail   extensive   terse> <all-members> <local> <member <i>member-id</i> >
<b>Syntax (MX2010 and MX2020 3D Universal Edge Routers)</b>	show chassis fabric plane
<b>Release Information</b>	<p>Command introduced in Junos OS Release 8.0.</p> <p>Command introduced in Junos OS Release 9.4 for EX Series switches.</p> <p><b>detail</b>, <b>extensive</b>, <b>lcc</b>, <b>sfc</b>, and <b>terse</b> options introduced for the TX Matrix Plus router in Junos OS Release 9.6.</p> <p>Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.</p>
<b>Description</b>	<p>(TX Matrix Plus router, T4000, T1600, M120, and MX Series routers and EX8200 switches only) On the M120 router, display the state of all fabric plane connections to the Forwarding Engine Boards (FEBs). On MX Series routers, display the state of all fabric plane connections to the Dense Port Concentrators (DPCs) and Packet Forwarding Engines (PFEs) on the Flexible PIC Concentrators (FPCs). On the TX Matrix Plus router, and on T1600 or T4000 routers in a routing matrix, display the state of the fabric management plane and the logical planes on the switch-fabric chassis (SFC) and line-card chassis (LCC). On EX8200 switches, display the state of all fabric planes. This command can be used on the master Routing Engine only.</p>
<b>Options</b>	<p><b>none</b>—(MX2010 and MX2020 Routers only) (Optional) Display the state of the fabric management plane.</p> <p><b>detail</b>—(TX Matrix Plus routers, T1600 or T4000 routers in a routing matrix, and MX Series routers only) (Optional) Display detailed output for the fabric management plane. Show Switch Interface Board (SIB) states for the TXP-F13 SIB and the TXP-F2S SIB.</p> <p><b>extensive</b>—(TX Matrix Plus routers, T1600 or T4000 routers in a routing matrix, and MX Series routers only) (Optional) Display extensive output for the fabric management plane.</p> <p><b>terse</b>—(TX Matrix Plus routers and MX Series routers only) (Optional) Display terse output for the fabric management plane.</p> <p><b>all-members</b>—(MX Series routers only) (Optional) Display the state of all fabric plane connections on all members of the Virtual Chassis configuration.</p>

**lcc *number***—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(MX Series routers only) (Optional) Display the state of all fabric plane connections on the local Virtual Chassis member.

**member *member-id***—(MX Series routers only) (Optional) Display the state of all fabric plane connections on the specified member of the Virtual Chassis configuration. Replace *member-id* with a value of 0 or 1.

**sfc *number***—(TX Matrix Plus router only) (Optional) Show information about the TX Matrix Plus router (SFC). Replace *number* with 0.

**Required Privilege Level**

view

**Related Documentation**

- [request chassis fabric plane](#)
- [show chassis fabric plane-location on page 563](#)
- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output**

[show chassis fabric plane \(M120 Router\) on page 529](#)  
[show chassis fabric plane \(MX240 Router\) on page 530](#)  
[show chassis fabric plane \(MX480 Router\) on page 531](#)  
[show chassis fabric plane \(MX960 Router\) on page 532](#)  
[show chassis fabric plane \(MX240 with AS MLC Modular Carrier Card\) on page 533](#)  
[show chassis fabric plane \(MX480 with AS MLC Modular Carrier Card\) on page 534](#)  
[show chassis fabric plane \(MX480 Router with MPC4E\) on page 535](#)  
[show chassis fabric plane \(MX960 with AS-MLC Modular Carrier Card\) on page 537](#)  
[show chassis fabric plane \(MX2010 Router\) on page 539](#)  
[show chassis fabric plane \(MX2020 Router\) on page 543](#)  
[show chassis fabric plane \(MX2020 Router with MPC4E\) on page 548](#)  
[show chassis fabric plane \(TX Matrix Plus Router\) on page 551](#)  
[show chassis fabric plane \(TX Matrix Plus Router with 3D SIBs\) on page 551](#)  
[show chassis fabric plane detail \(TX Matrix Plus Router\) on page 552](#)  
[show chassis fabric plane extensive \(TX Matrix Plus Router \) on page 553](#)  
[show chassis fabric plane extensive \(TX Matrix Plus Router with 3D SIBs\) on page 555](#)  
[show chassis fabric plane terse \(TX Matrix Plus Router\) on page 557](#)

[show chassis fabric plane terse \(TX Matrix Plus Router with 3D SIBs\) on page 557](#)  
[show chassis fabric plane lcc \(TX Matrix Plus Router\) on page 558](#)  
[show chassis fabric plane lcc \(TX Matrix Plus Router with 3D SIBs\) on page 558](#)  
[show chassis fabric plane sfc \(TX Matrix Plus Router\) on page 559](#)  
[show chassis fabric plane sfc \(TX Matrix Plus Router with 3D SIBs\) on page 559](#)  
[show chassis fabric plane \(T1600 Router\) on page 559](#)  
[show chassis fabric plane extensive \(T1600 Router\) on page 559](#)  
[show chassis fabric plane detail \(T1600 Router\) on page 562](#)  
[show chassis fabric plane \(EX8200 Switch\) on page 562](#)

**Output Fields** Table 26 on page 523 lists the output fields for the **show chassis fabric plane** command. Output fields are listed in the approximate order in which they appear.

**Table 26: show chassis fabric plane Output Fields**

Field Name	Field Description	Level of output
<b>Plane</b>	(TX Matrix Plus, MX Series routers, M120 routers, and EX8200 switches only) Number of the plane.	none
<b>Plane state</b>	<p>(MX Series and M120 routers and EX8200 switches only) State of each plane:</p> <ul style="list-style-type: none"> <li>• <b>ACTIVE</b>—SIB is operational and running.</li> </ul> <p><b>NOTE:</b> On the Enhanced MX SCB with MPCs, a maximum of 4 planes are operational and running. On all the other SCBs with MPCs, all the planes are operational and running.</p> <ul style="list-style-type: none"> <li>• <b>FAULTY</b>— SIB is in alarmed state where the SIB's plane is not operational for the following reasons: <ul style="list-style-type: none"> <li>• On-board fabric ASIC is not operational.</li> <li>• Fiber optic connector faults.</li> <li>• FPC connector faults.</li> <li>• SIB midplane connector faults.</li> </ul> </li> </ul> <p>(MX2010 and MX2020 Routers only) State of each plane:</p> <ul style="list-style-type: none"> <li>• <b>ACTIVE</b>—SFB is operational and running.</li> <li>• <b>OFFLINE</b>— SFB is in offline.</li> </ul>	none
<b>FEB</b>	<p>(M120 routers only) FEB number and state of links to each FEB:</p> <ul style="list-style-type: none"> <li>• <b>Link error</b>—Link between SIB and FPC is not operational.</li> <li>• <b>Links ok</b>—Link between SIB and FPC is active.</li> <li>• <b>Unused</b>—No FPC is present.</li> </ul>	none
<b>FPC</b>	(MX Series routers only) Slot number of each Dense Port Concentrator (DPC) or Flexible PIC Concentrator (FPC). An FPC occupies two DPC slots on an MX Series router. The interface corresponds to the lowest numbered DPC slot for which the FPC is installed.	none

Table 26: show chassis fabric plane Output Fields (*continued*)

Field Name	Field Description	Level of output
PFE	<p>(MX Series and M120 routers only) Slot number of each Packet Forwarding Engine and the state of the links to the DCP: <b>Links ok</b>, <b>Link error</b>, or <b>Unused</b>. Each DPC includes four Packet Forwarding Engines.</p> <ul style="list-style-type: none"> <li>• <b>Links ok</b>: Link between SIB and FPC is active.</li> <li>• <b>Link error</b>: Link between SIB and FPC is not operational.</li> <li>• <b>Unused</b>: No FPC is present.</li> </ul> <p>(On MX240 and MX480 routers with AS MLC modular carrier card and MPC4E only) Indicates that the link between the fabric plane and the hardware link on the modular carrier card or MPC4E is not operational.</p> <p>(MX2010 and MX2020 routers only) Slot number of each Packet Forwarding Engine and the state of the links to the DPC: <b>Links ok</b>, <b>Link error</b>, or <b>Unused</b>. Each DPC includes four Packet Forwarding Engines.</p> <ul style="list-style-type: none"> <li>• <b>Links ok</b>: Link between SFB and FPC is active.</li> <li>• <b>Link error</b>: Link between SFB and FPC is not operational.</li> <li>• <b>Unused</b>: No FPC is present.</li> </ul>	none
State	<p>(TX Matrix Plus, and T1600 or T4000 routers in a routing matrix only)—State of the fabric plane:</p> <ul style="list-style-type: none"> <li>• <b>Online</b>: Fabric plane is operational and running and links on the SIB are operational.</li> <li>• <b>Offline</b>: Fabric plane state is <b>Offline</b> because the plane does not have four or more F2S and one F13 online.</li> <li>• <b>Empty</b>: Fabric plane state is <b>Empty</b> if all SIBs in the plane are absent.</li> <li>• <b>Spare</b>: Fabric plane is redundant and can be operational if the operational fabric plane encounters an error.</li> <li>• <b>Check</b>: Fabric plane is in alarmed state due to the following reason and the cause of the error must be resolved: <ul style="list-style-type: none"> <li>• One or more SIBs (belonging to the fabric plane) in the <b>Online</b> or <b>Spare</b> states has transitioned to the <b>Check</b> state. <b>Check</b> state of the SIB can be caused by link errors or destination errors.</li> </ul> </li> <li>• <b>Fault</b>: Fabric plane is in alarmed state if one or more SIBs belonging to the plane are in the <b>Fault</b> state. A SIB can be in the <b>Fault</b> state because of the following reasons: <ul style="list-style-type: none"> <li>• On-board fabric ASIC is not operational.</li> <li>• Fiber optic connector faults.</li> <li>• FPC connector faults.</li> <li>• SIB midplane connector faults.</li> <li>• Link errors have exceeded the threshold.</li> </ul> </li> </ul>	none
Link Errors	<p>(TX Matrix Plus routers with 3D SIBs only) indicate the number of links which are marked faulty because the errors on them have crossed threshold.</p>	none



Table 26: show chassis fabric plane Output Fields (*continued*)

Field Name	Field Description	Level of output
<b>Cable Errors</b>	(TX Matrix Plus routers with 3D SIBs only) Indicate the number of mandatory cables that are not connected, or in up state for that plane	none
<b>Destination Errors</b>	(TX Matrix Plus routers with 3D SIBs only) Indicates the number of destinations that are not reachable on this plane.	none
<b>Uptime</b>	(TX Matrix Plus, and T1600 or T4000 routers in a routing matrix only)—Time the fabric plane has been up and running.	none

#### Fabric Management Plane State Output Fields for the show chassis fabric plane extensive Command on a TX Matrix Plus Router

<b>PLANE <i>number</i></b>	<p>State of the fabric plane:</p> <ul style="list-style-type: none"> <li>• <b>Online:</b> Fabric plane is operational and running and links on the SIB are operational.</li> <li>• <b>Offline:</b> Fabric plane state is <b>Offline</b> because the plane does not have 4 or more F2S and 1 F13 online.</li> <li>• <b>Empty:</b> Fabric plane state is <b>Empty</b> if all SIBs in the plane are absent.</li> <li>• <b>Spare:</b> Fabric plane is redundant and can be operational if the operational fabric plane encounters an error.</li> <li>• <b>Check:</b> Fabric plane is in alarmed state due to the following reasons and the cause of the error must be resolved: <ul style="list-style-type: none"> <li>• One or more SIBs (belonging to the fabric plane) in the <b>Online</b> or <b>Spare</b> states has transitioned to the <b>Check</b> state. <b>Check</b> state of the SIB can be caused because of link errors or destination errors.</li> </ul> </li> <li>• <b>Fault:</b> Fabric plane is in alarmed state if one or more SIBs belonging to the plane are in the <b>Fault</b> state. A SIB can be in the <b>Fault</b> state because of the following reasons: <ul style="list-style-type: none"> <li>• On-board fabric ASIC is not operational.</li> <li>• Fiber optic connector faults.</li> <li>• FPC connector faults.</li> <li>• SIB midplane connector faults.</li> <li>• Link errors have exceeded the threshold.</li> </ul> </li> </ul>	<b>extensive</b>
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Table 26: show chassis fabric plane Output Fields (*continued*)

Field Name	Field Description	Level of output
<b>SIB F13/F2S slot-number</b>	<p>State of the TXP-F13 SIB or TXP-F2S SIB:</p> <ul style="list-style-type: none"> <li>• <b>Activating</b>—Transitional state when the SIB is transitioning to the <b>Online</b> or <b>Spare</b> state.</li> <li>• <b>Deactivating</b>—Transitional state when the SIB is going offline.</li> <li>• <b>Online</b>—SIB is operational and running.</li> <li>• <b>Offline</b>—SIB is powered down.</li> <li>• <b>Spare</b>—SIB is redundant and will move to active state if one of the working SIBs fails to pass traffic.</li> <li>• <b>Empty</b>—No SIB is present.</li> <li>• <b>Fault</b>—SIB is in alarmed state because of the following reasons and the cause of the error must be resolved: <ul style="list-style-type: none"> <li>• On-board fabric ASIC is not operational.</li> <li>• Fiber optic connector faults.</li> <li>• FPC connector faults.</li> <li>• SIB midplane connector faults.</li> <li>• Link errors have exceeded the threshold</li> </ul> </li> <li>• <b>Check</b>—SIB is in alarmed state where the SIB is partially operational because of link or destination errors. Only a SIB that is <b>Online</b> or <b>Spare</b> can transition to the <b>Check</b> state.</li> </ul> <p><b>NOTE:</b> If a SIB is not inserted properly, the SIB cannot transition to the <b>Online</b> or <b>Spare</b> state, and therefore cannot transition to the <b>Check</b> state.</p>	<b>extensive</b>
<b>SIB F13 slot-number Odd/Even</b>	<p>State of the TXP-F13 SIB even and odd port connection optical links from the TX Matrix Plus router (SFC) to the router (LCC) in the routing matrix. The left four ports on the SFC are labeled <b>Even</b> and provide connections to one even-numbered LCC—LCC0 or LCC2. The right four ports on the SFC are labeled <b>Odd</b> and provide connections to one odd-numbered LCC—LCC1 or LCC3.</p>	<b>extensive</b>
<b>LCC number, SIB slot-number</b>	<p>State of the SIB on the LCC that is connected to the <b>Even</b> or <b>Odd</b> port on the TXP-F13 SIB faceplate:</p> <ul style="list-style-type: none"> <li>• <b>Links ok</b>—Links between the TXP-F13 SIB on the SFC and the LCC are active.</li> <li>• <b>Links error</b>—One or more links between the TXP-F13 SIB on the SFC and the LCC, have experienced an error, but the affected links remain operational.</li> <li>• <b>Unused</b>—No SIB is present.</li> </ul>	<b>extensive</b>

Table 26: show chassis fabric plane Output Fields (*continued*)

Field Name	Field Description	Level of output
<b>SG number Port number</b>	<p>State of the SG chip ports on the LCC:</p> <ul style="list-style-type: none"> <li>• <b>Links ok</b>—Link is active.</li> <li>• <b>Link error</b>—Link is operational with errors.</li> <li>• <b>Link error crc saturated</b>—CRC has exceeded the rate threshold and reached saturation without optical issues—that is, a cable has not been cut, removed, or otherwise experienced an error.</li> <li>• <b>Link error crc saturated with optical errors</b>—CRC has exceeded the rate threshold and reached saturation with optical issues—that is, a cable has been cut, removed, or otherwise experienced an error.</li> <li>• <b>Unused</b>—Port is not in use.</li> </ul>	<b>extensive</b>
<b>SIB F2S slot-number</b>	State of the intra-chassis links between the TXP-F2S and TXP-F13 SIBs.	<b>extensive</b>

Fabric Management SIB State Output Fields for the show chassis fabric plane extensive Command on a TX Matrix Plus Router

Table 26: show chassis fabric plane Output Fields (*continued*)

Field Name	Field Description	Level of output
<b>SIB slot-number</b>	<p>State of the SIBs on the T1600/T4000 router (LCC) in the routing matrix:</p> <ul style="list-style-type: none"> <li>• <b>Activating</b>—Transitional state when the SIB is coming online.</li> <li>• <b>Deactivating</b>—Transitional state when the SIB is going offline.</li> <li>• <b>Connected</b>—SIBs on an LCC are connected and trained, but are either not online or are spare, because the plane on the the TX Matrix Plus router (SFC) is still offline. The LCC SIB transitions to the <b>Connected</b> state when the F13 SIB to which it connects is online but the SFC plane (to which the LCC SIB connects) is offline for some reason; for instance, when there are insufficient number of F2 SIBs in the plane.</li> <li>• <b>Disconnected</b>—If an F13 SIB on the TX Matrix Plus router (SFC) goes offline, then the SIBs on the LCCs connected to the F13 SIB get disconnected. On the TX Matrix Plus router with 3D SIBs, the LCC SIB is also disconnected if the F13 SIB is online, but none of the cables are connected or trained. The <b>Disconnected</b> state is valid only for SIBs on an LCC. An LCC SIB transitions to the <b>Disconnected</b> state when the F13 SIB to which it connects goes <b>Offline</b>, irrespective of the state of the SFC plane. <b>SFC Error</b>—If an F13 SIB on the TX Matrix Plus router (SFC) transitions to the <b>Fault</b> state (because of link errors, for instance), and if an LCC SIB connected to the F13 SIB comes online, the LCC SIB transitions to the <b>SFC Error</b> state. This state indicates that the F13 SIB to which the LCC SIB is connected has errors.</li> </ul> <p><b>NOTE:</b> The <b>Connected</b>, <b>Disconnected</b>, and <b>SFC Error</b> states are applicable only to the SIBs on an LCC.</p> <ul style="list-style-type: none"> <li>• <b>Online</b>—SIB is operational and running.</li> <li>• <b>Offline</b>—SIB is powered down.</li> <li>• <b>Spare</b>—SIB is redundant and will move to active state if one of the working SIBs fails to pass traffic.</li> <li>• <b>Empty</b>—No SIB is present.</li> <li>• <b>Fault</b>—SIB is in alarmed state where the SIB's plane is not operational for the following reasons: <ul style="list-style-type: none"> <li>• On-board fabric ASIC is not operational.</li> <li>• Fiber optic connector faults.</li> <li>• FPC connector faults.</li> <li>• SIB midplane connector faults.</li> <li>• Link errors have exceeded the threshold</li> </ul> </li> <li>• <b>Check</b>—SIB is in alarmed state where the SIB is partially operational because of link or destination errors. Only a SIB that is <b>Online</b> or <b>Spare</b> can transition to the <b>Check</b> state.</li> </ul> <p><b>NOTE:</b> If a SIB is not inserted properly, the SIB cannot transition to the <b>Online</b> or <b>Spare</b> state, and therefore cannot transition to the <b>Check</b> state.</p>	<b>extensive</b>

Table 26: show chassis fabric plane Output Fields (*continued*)

Field Name	Field Description	Level of output
<b>LCC SIB Link State</b>	State of the LCC SIB link: <ul style="list-style-type: none"> <li>• <b>Links ok</b>—Link is active.</li> <li>• <b>Links error</b>—A link error has occurred, but the link remains operational.</li> <li>• <b>Unused</b>—SIB is not in use.</li> </ul>	<b>extensive</b>
<b>SG number Port number</b>	State of the SG chip ports on the LCC: <ul style="list-style-type: none"> <li>• <b>Links ok</b>—Link is active.</li> <li>• <b>Link error</b>—Link is operational with errors.</li> <li>• <b>Link error crc saturated</b>—CRC has exceeded the rate threshold and reached saturation without optical issues—that is, a cable has not been cut, removed, or otherwise experienced an error.</li> <li>• <b>Link error crc saturated with optical errors</b>—CRC has exceeded the rate threshold and reached saturation with optical issues—that is, a cable has been cut, removed, or otherwise experienced an error.</li> <li>• <b>Unused</b>—Port is not in use.</li> </ul>	<b>extensive</b>

## Sample Output

### show chassis fabric plane (M120 Router)

```

user@host> show chassis fabric plane
Fabric management PLANE state
Plane 0
Plane state: ACTIVE
FEB 0: Links ok
FEB 1: Links ok
FEB 2: Links ok
FEB 3: Links ok
FEB 4: Links ok
FEB 5: Links ok
Plane 1
Plane state: ACTIVE
FEB 0: Links ok
FEB 1: Links ok
FEB 2: Links ok
FEB 3: Links ok
FEB 4: Links ok
FEB 5: Links ok
Plane 2
Plane state: ACTIVE
FEB 0: Links ok
FEB 1: Links ok
FEB 2: Links ok
FEB 3: Links ok
FEB 4: Links ok
FEB 5: Links ok
Plane 3
Plane state: ACTIVE
FEB 0: Links ok
FEB 1: Links ok

```

```
FEB 2: Links ok
FEB 3: Links ok
FEB 4: Links ok
FEB 5: Links ok
```

### show chassis fabric plane (MX240 Router)

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

```
Plane 0
  Plane state: ACTIVE
    FPC 1
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
    FPC 2
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
Plane 1
  Plane state: ACTIVE
    FPC 1
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
    FPC 2
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
Plane 2
  Plane state: ACTIVE
    FPC 1
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
    FPC 2
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
Plane 3
  Plane state: ACTIVE
    FPC 1
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
    FPC 2
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
Plane 4
  Plane state: SPARE
    FPC 1
      PFE 0 :Links ok
      PFE 1 :Links ok
```

```

        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 2
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
Plane 5
Plane state: SPARE
    FPC 1
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 2
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
Plane 6
Plane state: SPARE
    FPC 1
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 2
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
Plane 7
Plane state: SPARE
    FPC 1
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 2
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok

```

#### show chassis fabric plane (MX480 Router)

```

user@host> show chassis fabric plane
Fabric management PLANE state
Plane 0
Plane state: ACTIVE
    FPC 1
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
Plane 1
Plane state: ACTIVE
    FPC 1
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok

```

```

        PFE 3 :Links ok
Plane 2
  Plane state: ACTIVE
    FPC 1
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
Plane 3
  Plane state: ACTIVE
    FPC 1
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
Plane 4
  Plane state: SPARE
    FPC 1
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
Plane 5
  Plane state: SPARE
    FPC 1
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
Plane 6
  Plane state: SPARE
    FPC 1
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
Plane 7
  Plane state: SPARE
    FPC 1
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
```

#### show chassis fabric plane (MX960 Router)

```
user@host> show chassis fabric plane
Plane 0
  Plane state: ACTIVE
    FPC 0
      PFE 0 :Links ok
    FPC 2
      PFE 0 :Links ok
      PFE 1 :Links ok
Plane 1
  Plane state: ACTIVE
    FPC 0
      PFE 0 :Links ok
    FPC 2
      PFE 0 :Links ok
      PFE 1 :Links ok
```



```

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

```

### show chassis fabric plane (MX240 with AS MLC Modular Carrier Card)

In the following output, FPC 1 is the AS MLC modular carrier card (AS MCC).

```

user@host>show chassis fabric plane
Fabric management PLANE state
Plane 0
  Plane state: ACTIVE
    FPC 1
      PFE 0 :Links ok
    FPC 2
      PFE 0 :Links ok
Plane 1
  Plane state: ACTIVE
    Plane state: ACTIVE
    FPC 1
      PFE 0 :Links ok
    FPC 2
      PFE 0 :Links ok
Plane 2
  Plane state: ACTIVE
    FPC 2
      PFE 0 :Links ok
    FPC 4
      PFE 0 :Links ok
      PFE 2 :Links ok
    FPC 5
      PFE 0 :Links ok
Plane 3
  Plane state: ACTIVE
    Plane state: ACTIVE
    FPC 1
      PFE 0 :Links ok
    FPC 2
      PFE 0 :Links ok
Plane 4
  Plane state: ACTIVE
    Plane state: ACTIVE
    FPC 1
      PFE 0 :Links ok
    FPC 2
      PFE 0 :Links ok
Plane 5
  Plane state: ACTIVE
    FPC 1
      PFE 0 :Unused

```

```
        FPC 2
          PFE 0 :Links ok
Plane 6
  Plane state: ACTIVE
    FPC 1
      PFE 0 :Links ok
    FPC 2
      PFE 0 :Links ok
Plane 7
  Plane state: ACTIVE
    FPC 1
      PFE 0 :Unused
    FPC 2
      PFE 0 :Links ok
```

### show chassis fabric plane (MX480 with AS MLC Modular Carrier Card)

In the following output, FPC 5 is the AS MLC modular carrier card (AS MCC).

```
user@host>show chassis fabric plane
Fabric management PLANE state
Plane 0
  Plane state: ACTIVE
    FPC 2
      PFE 0 :Links ok
    FPC 4
      PFE 0 :Links ok
      PFE 2 :Links ok
    FPC 5
      PFE 0 :Links ok
Plane 1
  Plane state: ACTIVE
    FPC 2
      PFE 0 :Links ok
    FPC 4
      PFE 0 :Links ok
      PFE 2 :Links ok
    FPC 5
      PFE 0 :Links ok
Plane 2
  Plane state: ACTIVE
    FPC 2
      PFE 0 :Links ok
    FPC 4
      PFE 0 :Links ok
      PFE 2 :Links ok
    FPC 5
      PFE 0 :Links ok
Plane 3
  Plane state: ACTIVE
    FPC 2
      PFE 0 :Links ok
    FPC 4
      PFE 0 :Links ok
      PFE 2 :Links ok
    FPC 5
      PFE 0 :Links ok
Plane 4
  Plane state: ACTIVE
    FPC 2
```

```

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

```

#### show chassis fabric plane (MX480 Router with MPC4E)

```

user@host > show chassis fabric plane
Fabric management PLANE state
Plane 0
    Plane state: ACTIVE
    FPC 0
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 1
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 3
        PFE 0 :Links ok
    FPC 4
        PFE 0 :Links ok
        PFE 1 :Links ok
Plane 1
    Plane state: ACTIVE
    FPC 0
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 1
        PFE 0 :Links ok
        PFE 1 :Links ok

```

```

        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 3
        PFE 0 :Links ok
    FPC 4
        PFE 0 :Links ok
        PFE 1 :Links ok
Plane 2
    Plane state: ACTIVE
    FPC 0
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 1
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 3
        PFE 0 :Links ok
    FPC 4
        PFE 0 :Links ok
        PFE 1 :Links ok
Plane 3
    Plane state: ACTIVE
    FPC 0
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 1
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 3
        PFE 0 :Links ok
    FPC 4
        PFE 0 :Links ok
        PFE 1 :Links ok
Plane 4
    Plane state: SPARE
    FPC 0
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 1
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 3
        PFE 0 :Links ok
    FPC 4
        PFE 0 :Links ok
        PFE 1 :Links ok
Plane 5
    Plane state: SPARE
    FPC 0
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 1
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok

```

```

        PFE 3 :Links ok
    FPC 3
        PFE 0 :Links ok
    FPC 4
        PFE 0 :Links ok
        PFE 1 :Links ok
Plane 6
    Plane state: SPARE
    FPC 0
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 1
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 3
        PFE 0 :Links ok
    FPC 4
        PFE 0 :Links ok
        PFE 1 :Links ok
Plane 7
    Plane state: SPARE
    FPC 0
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 1
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 3
        PFE 0 :Links ok
    FPC 4
        PFE 0 :Links ok
        PFE 1 :Links ok

```

#### show chassis fabric plane (MX960 with AS-MLC Modular Carrier Card)

In the following output, FPC 1 is a modular carrier card.

```

user@host>show chassis fabric plane
Fabric management PLANE state
Plane 0
    Plane state: ACTIVE
    FPC 0
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 1
        PFE 0 :Links ok
    FPC 4
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 5
        PFE 0 :Links ok
    FPC 8
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok

```

```

        PFE 3 :Links ok
Plane 1
  Plane state: ACTIVE
    FPC 0
      PFE 0 :Links ok
      PFE 1 :Links ok
    FPC 1
      PFE 0 :Links ok
    FPC 4
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
    FPC 5
      PFE 0 :Links ok
    FPC 8
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
Plane 2
  Plane state: ACTIVE
    FPC 0
      PFE 0 :Links ok
      PFE 1 :Links ok
    FPC 1
      PFE 0 :Links ok
    FPC 4
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
    FPC 5
      PFE 0 :Links ok
    FPC 8
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
Plane 3
  Plane state: ACTIVE
    FPC 0
      PFE 0 :Links ok
      PFE 1 :Links ok
    FPC 1
      PFE 0 :Links ok
    FPC 4
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
    FPC 5
      PFE 0 :Links ok
    FPC 8
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
Plane 4
  Plane state: SPARE
    FPC 0

```

```

        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 1
        PFE 0 :Links ok
    FPC 4
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 5
        PFE 0 :Links ok
    FPC 8
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
Plane 5
Plane state: SPARE
    FPC 0
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 1
        PFE 0 :Links ok
    FPC 4
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 5
        PFE 0 :Links ok
    FPC 8
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok

```

### show chassis fabric plane (MX2010 Router)

```

user@host>show chassis fabric plane
Fabric management PLANE state
Plane 0
Plane state: ACTIVE
    FPC 0
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 1
        PFE 0 :Links ok
    FPC 2
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 3
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 4
        PFE 0 :Links ok
    FPC 5
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 6

```

```

        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 7
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 8
        PFE 0 :Links ok
    FPC 9
        PFE 0 :Links ok
        PFE 1 :Links ok
Plane 1
  Plane state: ACTIVE
    FPC 0
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 1
        PFE 0 :Links ok
    FPC 2
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 3
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 4
        PFE 0 :Links ok
    FPC 5
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 6
    PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 7
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 8
        PFE 0 :Links ok
    FPC 9
        PFE 0 :Links ok
        PFE 1 :Links ok
Plane 2
  Plane state: ACTIVE
    FPC 0
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 1
        PFE 0 :Links ok
    FPC 2
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 3
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 4

```



```
    PFE 0 :Links ok
FPC 5
    PFE 0 :Links ok
    PFE 1 :Links ok
FPC 6
    PFE 0 :Links ok
    PFE 1 :Links ok
    PFE 2 :Links ok
    PFE 3 :Links ok
FPC 7
    PFE 0 :Links ok
    PFE 1 :Links ok
FPC 8
    PFE 0 :Links ok
FPC 9
    PFE 0 :Links ok
    PFE 1 :Links ok
Plane 3
    Plane state: OFFLINE
Plane 4
    Plane state: ACTIVE
    FPC 0
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 1
        PFE 0 :Links ok
    FPC 2
        PFE 0 :Links ok
PFE 1 :Links ok
    FPC 3
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 4
        PFE 0 :Links ok
    FPC 5
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 6
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 7
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 8
        PFE 0 :Links ok
    FPC 9
        PFE 0 :Links ok
        PFE 1 :Links ok
Plane 5
    Plane state: ACTIVE
    FPC 0
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 1
        PFE 0 :Links ok
    FPC 2
        PFE 0 :Links ok
```

```

    PFE 1 :Links ok
FPC 3
    PFE 0 :Links ok
    PFE 1 :Links ok
    PFE 2 :Links ok
    PFE 3 :Links ok
FPC 4
    PFE 0 :Links ok
FPC 5
    PFE 0 :Links ok
    PFE 1 :Links ok
FPC 6
    PFE 0 :Links ok
    PFE 1 :Links ok
    PFE 2 :Links ok
    PFE 3 :Links ok
FPC 7
    PFE 0 :Links ok
    PFE 1 :Links ok
FPC 8
    PFE 0 :Links ok
FPC 9
    PFE 0 :Links ok
    PFE 1 :Links ok
Plane 6
    Plane state: ACTIVE
    FPC 0
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 1
        PFE 0 :Links ok
    FPC 2
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 3
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 4
        PFE 0 :Links ok
    FPC 5
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 6
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 7
        PFE 0 :Links ok
        PFE 1 :Links ok
    FPC 8
        PFE 0 :Links ok
    FPC 9
        PFE 0 :Links ok
        PFE 1 :Links ok
Plane 7
    Plane state: ACTIVE
    FPC 0
        PFE 0 :Links ok

```

```

        PFE 1 :Links ok
FPC 1
        PFE 0 :Links ok
FPC 2
        PFE 0 :Links ok
        PFE 1 :Links ok
FPC 3
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
FPC 4
        PFE 0 :Links ok
FPC 5
        PFE 0 :Links ok
        PFE 1 :Links ok
FPC 6
        PFE 0 :Links ok
PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
FPC 7
        PFE 0 :Links ok
        PFE 1 :Links ok
FPC 8
        PFE 0 :Links ok
FPC 9
        PFE 0 :Links ok
        PFE 1 :Links ok

```

#### show chassis fabric plane (MX2020 Router)

```

user@host>show chassis fabric plane
Fabric management PLANE state
Plane 0
  Plane state: ACTIVE
    FPC 0
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
    FPC 1
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
    FPC 2
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
    FPC 3
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
    FPC 4
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok

```

```

FPC 5
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
FPC 6
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
FPC 7
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
FPC 8
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
FPC 9
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
FPC 10
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
FPC 11
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
FPC 12
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
FPC 13
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
FPC 14
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
FPC 15
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
FPC 16
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
FPC 17

```

```

PFE 0 :Links ok
PFE 1 :Links ok
PFE 2 :Links ok
PFE 3 :Links ok
FPC 18
PFE 0 :Links ok
PFE 1 :Links ok
PFE 2 :Links ok
PFE 3 :Links ok
FPC 19
PFE 0 :Links ok
PFE 1 :Links ok
PFE 2 :Links ok
PFE 3 :Links ok
Plane 1
Plane state: ACTIVE
FPC 0
PFE 0 :Links ok
PFE 1 :Links ok
PFE 2 :Links ok
PFE 3 :Links ok
FPC 1
PFE 0 :Links ok
PFE 1 :Links ok
PFE 2 :Links ok
PFE 3 :Links ok
FPC 2
PFE 0 :Links ok
PFE 1 :Links ok
PFE 2 :Links ok
PFE 3 :Links ok
FPC 3
PFE 0 :Links ok
PFE 1 :Links ok
PFE 2 :Links ok
PFE 3 :Links ok
FPC 4
PFE 0 :Links ok
PFE 1 :Links ok
PFE 2 :Links ok
PFE 3 :Links ok
FPC 5
PFE 0 :Links ok
PFE 1 :Links ok
PFE 2 :Links ok
PFE 3 :Links ok
FPC 6
PFE 0 :Links ok
PFE 1 :Links ok
PFE 2 :Links ok
PFE 3 :Links ok
FPC 7
PFE 0 :Links ok
PFE 1 :Links ok
PFE 2 :Links ok
PFE 3 :Links ok
FPC 8
PFE 0 :Links ok
PFE 1 :Links ok
PFE 2 :Links ok
PFE 3 :Links ok
```

```

FPC 9
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
FPC 10
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
FPC 11
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
FPC 12
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
FPC 13
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
FPC 14
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
FPC 15
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
FPC 16
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
FPC 17
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
FPC 18
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
FPC 19
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
Plane 2
  Plane state: ACTIVE
  FPC 0
    PFE 0 :Links ok
    PFE 1 :Links ok
    PFE 2 :Links ok

```

```
    PFE 3 :Links ok
FPC 1
    PFE 0 :Links ok
    PFE 1 :Links ok
    PFE 2 :Links ok
    PFE 3 :Links ok
FPC 2
    PFE 0 :Links ok
    PFE 1 :Links ok
    PFE 2 :Links ok
    PFE 3 :Links ok
FPC 3
    PFE 0 :Links ok
    PFE 1 :Links ok
    PFE 2 :Links ok
    PFE 3 :Links ok
FPC 4
    PFE 0 :Links ok
    PFE 1 :Links ok
    PFE 2 :Links ok
    PFE 3 :Links ok
FPC 5
    PFE 0 :Links ok
    PFE 1 :Links ok
    PFE 2 :Links ok
    PFE 3 :Links ok
FPC 6
    PFE 0 :Links ok
    PFE 1 :Links ok
    PFE 2 :Links ok
    PFE 3 :Links ok
FPC 7
    PFE 0 :Links ok
    PFE 1 :Links ok
    PFE 2 :Links ok
    PFE 3 :Links ok
FPC 8
    PFE 0 :Links ok
    PFE 1 :Links ok
    PFE 2 :Links ok
    PFE 3 :Links ok
FPC 9
    PFE 0 :Links ok
    PFE 1 :Links ok
    PFE 2 :Links ok
    PFE 3 :Links ok
FPC 10
    PFE 0 :Links ok
    PFE 1 :Links ok
    PFE 2 :Links ok
    PFE 3 :Links ok
FPC 11
    PFE 0 :Links ok
    PFE 1 :Links ok
    PFE 2 :Links ok
    PFE 3 :Links ok
FPC 12
    PFE 0 :Links ok
    PFE 1 :Links ok
    PFE 2 :Links ok
    PFE 3 :Links ok
```

```
FPC 13
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
FPC 14
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
FPC 15
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
FPC 16
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
FPC 17
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
FPC 18
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
FPC 19
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
Plane 3
...
```

#### show chassis fabric plane (MX2020 Router with MPC4E)

```
user@host > show chassis fabric plane
Fabric management PLANE state
Plane 0
  Plane state: ACTIVE
  FPC 0
    PFE 0 :Links ok
    PFE 1 :Links ok
  FPC 9
    PFE 0 :Links ok
    PFE 1 :Links ok
  FPC 10
    PFE 0 :Links ok
  FPC 14
    PFE 0 :Links ok
    PFE 1 :Links ok
  FPC 19
    PFE 0 :Links ok
    PFE 1 :Links ok
    PFE 2 :Links ok
    PFE 3 :Links ok
Plane 1
```



```
Plane state: ACTIVE
  FPC 0
    PFE 0 :Links ok
    PFE 1 :Links ok
  FPC 9
    PFE 0 :Links ok
    PFE 1 :Links ok
  FPC 10
    PFE 0 :Links ok
  FPC 14
    PFE 0 :Links ok
    PFE 1 :Links ok
  FPC 19
    PFE 0 :Links ok
    PFE 1 :Links ok
    PFE 2 :Links ok
    PFE 3 :Links ok
Plane 2
  Plane state: ACTIVE
    FPC 0
      PFE 0 :Links ok
      PFE 1 :Links ok
    FPC 9
      PFE 0 :Links ok
      PFE 1 :Links ok
    FPC 10
      PFE 0 :Links ok
    FPC 14
      PFE 0 :Links ok
      PFE 1 :Links ok
    FPC 19
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
Plane 3
  Plane state: ACTIVE
    FPC 0
      PFE 0 :Links ok
      PFE 1 :Links ok
    FPC 9
      PFE 0 :Links ok
      PFE 1 :Links ok
    FPC 10
      PFE 0 :Links ok
    FPC 14
      PFE 0 :Links ok
      PFE 1 :Links ok
    FPC 19
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
Plane 4
  Plane state: ACTIVE
    FPC 0
      PFE 0 :Links ok
      PFE 1 :Links ok
    FPC 9
      PFE 0 :Links ok
      PFE 1 :Links ok
```

```

FPC 10
  PFE 0 :Links ok
FPC 14
  PFE 0 :Links ok
  PFE 1 :Links ok
FPC 19
  PFE 0 :Links ok
  PFE 1 :Links ok
  PFE 2 :Links ok
  PFE 3 :Links ok
Plane 5
  Plane state: ACTIVE
    FPC 0
      PFE 0 :Links ok
      PFE 1 :Links ok
    FPC 9
      PFE 0 :Links ok
      PFE 1 :Links ok
    FPC 10
      PFE 0 :Links ok
    FPC 14
      PFE 0 :Links ok
      PFE 1 :Links ok
    FPC 19
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
Plane 6
  Plane state: ACTIVE
    FPC 0
      PFE 0 :Links ok
      PFE 1 :Links ok
    FPC 9
      PFE 0 :Links ok
      PFE 1 :Links ok
    FPC 10
      PFE 0 :Links ok
    FPC 14
      PFE 0 :Links ok
      PFE 1 :Links ok
    FPC 19
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
Plane 7
  Plane state: ACTIVE
    FPC 0
      PFE 0 :Links ok
      PFE 1 :Links ok
    FPC 9
      PFE 0 :Links ok
      PFE 1 :Links ok
    FPC 10
      PFE 0 :Links ok
    FPC 14
      PFE 0 :Links ok
      PFE 1 :Links ok
    FPC 19
      PFE 0 :Links ok

```

```
PFE 1 :Links ok
PFE 2 :Links ok
PFE 3 :Links ok
```

### show chassis fabric plane (TX Matrix Plus Router)

```
user@host> show chassis fabric plane
sfc0-re0:
```

Plane	State	Link errors	Destination errors	Uptime
0	Spare	NONE	NONE	
1	Online	NONE	NONE	10 hours, 16 seconds
2	Online	NONE	NONE	10 hours, 13 seconds
3	Online	NONE	NONE	10 hours, 9 seconds
4	Online	NONE	NONE	10 hours, 7 seconds

```
lcc0-re0:
```

SIB	State	Link errors	Destination errors	Uptime
0	Spare	NONE	NONE	
1	Online	NONE	NONE	10 hours, 16 seconds
2	Online	NONE	NONE	10 hours, 13 seconds
3	Online	NONE	NONE	10 hours, 9 seconds
4	Online	NONE	NONE	10 hours, 7 seconds

```
lcc2-re0:
```

SIB	State	Link errors	Destination errors	Uptime
0	Spare	NONE	NONE	
1	Online	NONE	NONE	10 hours, 16 seconds
2	Online	NONE	NONE	10 hours, 12 seconds
3	Online	NONE	NONE	10 hours, 9 seconds
4	Online	NONE	NONE	10 hours, 7 seconds

### show chassis fabric plane (TX Matrix Plus Router with 3D SIBs)

```
user@host> show chassis fabric plane
sfc0-re0:
```

Plane	State	Cable errors	Link errors	Destination errors	Uptime
0	Spare	NONE	NONE	NONE	
1	Online	NONE	NONE	NONE	5 hours, 11 minutes, 3 seconds
2	Online	NONE	NONE	NONE	8 hours, 4 minutes, 24 seconds
3	Online	NONE	NONE	NONE	8 hours, 3 minutes, 16 seconds
4	Online	NONE	NONE	NONE	8 hours, 2 minutes, 12 seconds

```
lcc2-re0:
```

SIB	State	Cable errors	Link errors	Destination errors	Uptime
0	Spare	NONE	NONE	NONE	
1	Online	NONE	NONE	NONE	5 hours, 11 minutes, 3 seconds
2	Online	NONE	NONE	NONE	8 hours, 4 minutes, 57 seconds
3	Online	NONE	NONE	NONE	8 hours, 3 minutes, 53 seconds
4	Online	NONE	NONE	NONE	8 hours, 2 minutes, 45 seconds

lcc4-re0:

SIB	State	Cable errors	Link errors	Destination errors	Uptime
0	Spare	NONE	NONE	NONE	
1	Online	NONE	NONE	NONE	5 hours, 11 minutes, 12 seconds
2	Online	NONE	NONE	NONE	8 hours, 4 minutes, 24 seconds
3	Online	NONE	NONE	NONE	8 hours, 3 minutes, 16 seconds
4	Online	NONE	NONE	NONE	8 hours, 2 minutes, 12 seconds

lcc5-re0:

SIB	State	Cable errors	Link errors	Destination errors	Uptime
0	Spare	NONE	NONE	NONE	
1	Online	NONE	NONE	NONE	5 hours, 11 minutes, 12 seconds
2	Online	NONE	NONE	NONE	8 hours, 4 minutes, 24 seconds
3	Online	NONE	NONE	NONE	8 hours, 3 minutes, 15 seconds
4	Online	NONE	NONE	NONE	8 hours, 2 minutes, 11 seconds

**show chassis fabric plane detail (TX Matrix Plus Router)**

```
user@host> show chassis fabric plane detail
sfc0-re0:
```

Fabric Management PLANE State:

PLANE 0: Spare

```
SIB F13 0 : Spare
SIB F13 1 : Empty
SIB F2S 0/0 : Spare
SIB F2S 0/2 : Spare
SIB F2S 0/4 : Spare
SIB F2S 0/6 : Spare
```

PLANE 1: Online

```
SIB F13 3 : Online
SIB F13 4 : Empty
SIB F2S 1/0 : Online
SIB F2S 1/2 : Online
SIB F2S 1/4 : Online
SIB F2S 1/6 : Online
```

PLANE 2: Online

```
SIB F13 6 : Online
SIB F13 7 : Empty
SIB F2S 2/0 : Online
SIB F2S 2/2 : Online
SIB F2S 2/4 : Online
SIB F2S 2/6 : Online
```

PLANE 3: Online

```
SIB F13 8 : Online
SIB F13 9 : Online
SIB F2S 3/0 : Online
SIB F2S 3/2 : Online
SIB F2S 3/4 : Online
SIB F2S 3/6 : Online
```

```

PLANE 4:    Online
  SIB F13 11 :    Online
  SIB F13 12 :    Online
  SIB F2S 4/0 :    Online
  SIB F2S 4/2 :    Online
  SIB F2S 4/4 :    Online
  SIB F2S 4/6 :    Online

```

```
lcc0-re0:
```

```
-----
Fabric Management SIB State:
```

```

  SIB    0 :    Spare
  SIB    1 :    Online
  SIB    2 :    Online
  SIB    3 :    Online
  SIB    4 :    Online

```

```
lcc1-re0:
```

```
-----
Fabric Management SIB State:
```

```

  SIB    0 :    Spare
  SIB    1 :    Online
  SIB    2 :    Online
  SIB    3 :    Online
  SIB    4 :    Online

```

```
...
```

### show chassis fabric plane extensive (TX Matrix Plus Router )

```
user@host> show chassis fabric plane extensive
sfc0-re0:
```

```
-----
Fabric Management PLANE State:
```

```
PLANE 0:    Spare
```

```

  SIB F13 0 :    Spare
  SIB F13 1 :    Empty
  SIB F2S 0/0 :    Spare
  SIB F2S 0/2 :    Spare
  SIB F2S 0/4 :    Spare
  SIB F2S 0/6 :    Spare
  SIB F13 0 Even:

```

```
    LCC 0, SIB 0 : Links ok
```

```
    SG 0
```

```

      Port 0 : Links ok
      Port 1 : Links ok
      Port 2 : Links ok
      Port 3 : Links ok

```

```
    SG 1
```

```

      Port 0 : Links ok
      Port 1 : Links ok
      Port 2 : Links ok
      Port 3 : Links ok

```

```
    SG 2
```

```

      Port 0 : Links ok
      Port 1 : Links ok
      Port 2 : Links ok
      Port 3 : Links ok

```

```
    SG 3
```

```

      Port 0 : Links ok
      Port 1 : Links ok
      Port 2 : Links ok

```

```

Port 3      : Links ok
SIB F13 0 Odd:
  LCC 1, SIB 0 : Links ok
    SG 0
      Port 0    : Links ok
      Port 1    : Links ok
      Port 2    : Links ok
      Port 3    : Links ok
    SG 1
      Port 0    : Links ok
      Port 1    : Links ok
      Port 2    : Links ok
      Port 3    : Links ok
    SG 2
      Port 0    : Links ok
      Port 1    : Links ok
      Port 2    : Links ok
      Port 3    : Links ok
    SG 3
      Port 0    : Links ok
      Port 1    : Links ok
      Port 2    : Links ok
      Port 3    : Links ok
  SIB F2S 0/0: Links ok
  SIB F2S 0/2: Links ok
  SIB F2S 0/4: Links ok
  SIB F2S 0/6: Links ok
SIB F13 1 Even:
  LCC 2, SIB 0 : Unused
    SG 0
      Port 0    : Unused
      Port 1    : Unused
      Port 2    : Unused
      Port 3    : Unused
    SG 1
      Port 0    : Unused
      Port 1    : Unused
      Port 2    : Unused
      Port 3    : Unused
    SG 2
      Port 0    : Unused
      Port 1    : Unused
      Port 2    : Unused
      Port 3    : Unused
    SG 3
      Port 0    : Unused
      Port 1    : Unused
      Port 2    : Unused
      Port 3    : Unused
SIB F13 1 Odd:
  LCC 3, SIB 0 : Unused
    SG 0
      Port 0    : Unused
      Port 1    : Unused
      Port 2    : Unused
      Port 3    : Unused
    SG 1
      Port 0    : Unused
      Port 1    : Unused
      Port 2    : Unused
      Port 3    : Unused

```

```

SG 2
  Port 0 : Unused
  Port 1 : Unused
  Port 2 : Unused
  Port 3 : Unused
SG 3
  Port 0 : Unused
  Port 1 : Unused
  Port 2 : Unused
  Port 3 : Unused
SIB F2S 0/0: Unused
SIB F2S 0/2: Unused
SIB F2S 0/4: Unused
SIB F2S 0/6: Unused
PLANE 1: Online
  SIB F13 3 : Online
  SIB F13 4 : Empty
  SIB F2S 1/0 : Online
  SIB F2S 1/2 : Online
  SIB F2S 1/4 : Online
  SIB F2S 1/6 : Online
  SIB F13 3 Even:
...

```

#### show chassis fabric plane extensive (TX Matrix Plus Router with 3D SIBs)

```

user@host> show chassis fabric plane extensive
sfc0-re0:

```

```

-----
Fabric Management PLANE State:
PLANE 0: Online
  SIB F13 0 : Empty
  SIB F13 1 : Online
  SIB F2S 0/0 : Online
  SIB F2S 0/2 : Online
  SIB F2S 0/4 : Online
  SIB F2S 0/6 : Online
  SIB F13 0
    LCC 0, SIB 0 : Unused
      PFE 0 : Unused
      PFE 1 : Unused
      PFE 2 : Unused
      PFE 3 : Unused
      PFE 4 : Unused
      PFE 5 : Unused
      PFE 6 : Unused
      PFE 7 : Unused
      PFE 8 : Unused
      PFE 9 : Unused
      PFE 10 : Unused
      PFE 11 : Unused
      PFE 12 : Unused
      PFE 13 : Unused
      PFE 14 : Unused
      PFE 15 : Unused
    LCC 1, SIB 0 : Unused
      PFE 0 : Unused
      PFE 1 : Unused
      PFE 2 : Unused
      PFE 3 : Unused
      PFE 4 : Unused

```

```

PFE 5 : Unused
PFE 6 : Unused
PFE 7 : Unused
PFE 8 : Unused
PFE 9 : Unused
PFE 10 : Unused
PFE 11 : Unused
PFE 12 : Unused
PFE 13 : Unused
PFE 14 : Unused
PFE 15 : Unused
LCC 2, SIB 0 : Unused
PFE 0 : Unused
PFE 1 : Unused
PFE 2 : Unused
PFE 3 : Unused
PFE 4 : Unused
PFE 5 : Unused
PFE 6 : Unused
PFE 7 : Unused
PFE 8 : Unused
PFE 9 : Unused
PFE 10 : Unused

```

...

lcc5-re0:

-----  
Fabric Management SIB State:

```

SIB 0 : Online
LCC SIB Link State : Links ok
PFE 0 : Links ok
PFE 1 : Links ok
PFE 2 : Links ok
PFE 3 : Links ok
PFE 4 : Links ok
PFE 5 : Links ok
PFE 6 : Links ok
PFE 7 : Links ok
PFE 8 : Links ok
PFE 9 : Links ok
PFE 10 : Links ok
PFE 11 : Links ok
PFE 12 : Links ok
PFE 13 : Links ok
PFE 14 : Links ok
PFE 15 : Links ok
FPC 1
PFE 0 : Links ok
FPC 2
PFE 0 : Links ok
FPC 3
PFE 0 : Links ok
PFE 1 : Links ok
FPC 4
PFE 0 : Links ok
SIB 1 : Online
LCC SIB Link State : Links ok
PFE 0 : Links ok
PFE 1 : Links ok
PFE 2 : Links ok
PFE 3 : Links ok
PFE 4 : Links ok

```



```

PFE 5 : Links ok
PFE 6 : Links ok
PFE 7 : Links ok
PFE 8 : Links ok
PFE 9 : Links ok
PFE 10 : Links ok
PFE 11 : Links ok
PFE 12 : Links ok
PFE 13 : Links ok
PFE 14 : Links ok
PFE 15 : Links ok
FPC 1
  PFE 0 : Links ok
FPC 2
  PFE 0 : Links ok
FPC 3
  PFE 0 : Links ok
  PFE 1 : Links ok
FPC 4
  PFE 0 : Links ok

```

#### show chassis fabric plane terse (TX Matrix Plus Router)

```

user@host> show chassis fabric plane terse
sfc0-re0:

```

Plane	State	Link errors	Destination errors	Uptime
0	Spare	NONE	NONE	
1	Online	NONE	NONE	18 minutes, 37 seconds
2	Online	NONE	NONE	18 minutes, 36 seconds
3	Online	NONE	NONE	18 minutes, 33 seconds
4	Online	NONE	NONE	18 minutes, 31 seconds

```
lcc1-re0:
```

SIB	State	Link errors	Destination errors	Uptime
0	Spare	NONE	NONE	
1	Online	NONE	NONE	18 minutes, 37 seconds
2	Online	NONE	NONE	
3	Online	NONE	NONE	
4	Empty	NONE	NONE	

```
lcc2-re0:
```

SIB	State	Link errors	Destination errors	Uptime
0	Spare	NONE	NONE	
1	Online	NONE	NONE	18 minutes, 37 seconds
2	Online	NONE	NONE	18 minutes, 36 seconds
3	Online	NONE	NONE	18 minutes, 32 seconds
4	Online	NONE	NONE	18 minutes, 31 seconds

#### show chassis fabric plane terse (TX Matrix Plus Router with 3D SIBs)

```

user@host> show chassis fabric plane terse

```

sfc0-re0:

Plane	State	Cable errors	Link errors	Destination errors	Uptime
0	Offline	NONE	NONE	NONE	
1	Online	NONE	NONE	NONE	1 day, 18 hours, 14 minutes, 26 seconds
2	Offline	NONE	NONE	NONE	
3	Offline	NONE	NONE	NONE	
4	Offline	NONE	NONE	NONE	

lcc2-re0:

SIB	State	Cable errors	Link errors	Destination errors	Uptime
0	Offline	NONE	NONE	NONE	
1	Online	NONE	NONE	NONE	1 day, 18 hours, 17 minutes
2	Offline	NONE	NONE	NONE	
3	Offline	NONE	NONE	NONE	
4	Offline	NONE	NONE	NONE	

lcc4-re0:

SIB	State	Cable errors	Link errors	Destination errors	Uptime
0	Offline	NONE	NONE	NONE	
1	Online	NONE	NONE	NONE	1 day, 18 hours, 14 minutes, 38 seconds
2	Offline	NONE	NONE	NONE	
3	Offline	NONE	NONE	NONE	
4	Offline	NONE	NONE	NONE	

lcc5-re0:

SIB	State	Cable errors	Link errors	Destination errors	Uptime
0	Offline	NONE	NONE	NONE	
1	Online	NONE	NONE	NONE	1 day, 18 hours, 14 minutes, 34 seconds
2	Offline	NONE	NONE	NONE	
3	Offline	NONE	NONE	NONE	
4	Offline	NONE	NONE	NONE	

### show chassis fabric plane lcc (TX Matrix Plus Router)

user@host&gt; show chassis fabric plane lcc 7

lcc1-re0:

SIB	State	Link errors	Destination errors	Uptime
0	Spare	NONE	NONE	
1	Online	NONE	NONE	25 minutes, 17 seconds
2	Disconnected	NONE	NONE	
3	Disconnected	NONE	NONE	
4	Empty	NONE	NONE	

### show chassis fabric plane lcc (TX Matrix Plus Router with 3D SIBs)

user@host&gt; show chassis fabric plane lcc 2

lcc2-re0:

SIB	State	Cable errors	Link errors	Destination errors	Uptime
0	Offline	NONE	NONE	NONE	
1	Online	NONE	NONE	NONE	1 day, 18 hours, 14 minutes, 34 seconds

```

hours, 16 minutes, 44 seconds
2   Offline      NONE      NONE      NONE
3   Offline      NONE      NONE      NONE
4   Offline      NONE      NONE      NONE

```

#### show chassis fabric plane sfc (TX Matrix Plus Router)

```

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

```

```

-----
Plane  State                Link errors  Destination errors  Uptime
0       Spare                NONE         NONE                NONE
1       Online               NONE         NONE                27 minutes, 7 seconds
2       Online               NONE         NONE                27 minutes, 6 seconds
3       Online               NONE         NONE                27 minutes, 3 seconds
4       Online               NONE         NONE                27 minutes, 1 second

```

#### show chassis fabric plane sfc (TX Matrix Plus Router with 3D SIBs)

```

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

```

```

-----
Plane  State                Cable errors  Link errors  Destination errors  Uptime
0       Offline            NONE         NONE         NONE                NONE
1       Online              NONE         NONE         NONE                1 day, 18
hours, 14 minutes, 20 seconds
2       Offline            NONE         NONE         NONE                NONE
3       Offline            NONE         NONE         NONE                NONE
4       Offline            NONE         NONE         NONE                NONE

```

#### show chassis fabric plane (T1600 Router)

```

user@host> show chassis fabric plane
Plane  State                Uptime
0       Online            15 hours, 42 minutes, 9 seconds
1       Online            15 hours, 42 minutes, 9 seconds
2       Fault
3       Online            15 hours, 42 minutes, 9 seconds
4       Online            15 hours, 42 minutes, 9 seconds

```

#### show chassis fabric plane extensive (T1600 Router)

```

user@host> show chassis fabric plane extensive
Fabric Management PLANE State:
PLANE 0:   Online
  ST-SIB-L 0: Links ok
    SG 0
      Port 0   : Links ok
      Port 1   : Links ok
      Port 2   : Links ok
      Port 3   : Links ok
    SG 1
      Port 0   : Links ok
      Port 1   : Links ok
      Port 2   : Links ok
      Port 3   : Links ok
    SG 2
      Port 0   : Links ok
      Port 1   : Links ok

```

```

        Port 2      : Links ok
        Port 3      : Links ok
    SG 3
        Port 0      : Links ok
        Port 1      : Links ok
        Port 2      : Links ok
        Port 3      : Links ok
    ST-SIB-L 0
        FPC 4
            PFE 0: Links ok
            PFE 1: Links ok
        FPC 6
            PFE 0: Links ok
            PFE 1: Links ok
        FPC 7
            PFE 0: Links ok
    PLANE 1:   Online
    ST-SIB-L 1: Links ok
    SG 0
        Port 0      : Links ok
        Port 1      : Links ok
        Port 2      : Links ok
        Port 3      : Links ok
    SG 1
        Port 0      : Links ok
        Port 1      : Links ok
        Port 2      : Links ok
        Port 3      : Links ok
    SG 2
        Port 0      : Links ok
        Port 1      : Links ok
        Port 2      : Links ok
        Port 3      : Links ok
    SG 3
        Port 0      : Links ok
        Port 1      : Links ok
        Port 2      : Links ok
        Port 3      : Links ok
    ST-SIB-L 1
        FPC 4
            PFE 0: Links ok
            PFE 1: Links ok
        FPC 6
            PFE 0: Links ok
            PFE 1: Links ok
        FPC 7
            PFE 0: Links ok
    PLANE 2:   Online
    ST-SIB-L 2: Links ok
    SG 0
        Port 0      : Links ok
        Port 1      : Links ok
        Port 2      : Links ok
        Port 3      : Links ok
    SG 1
        Port 0      : Links ok
        Port 1      : Links ok
        Port 2      : Links ok
        Port 3      : Links ok
    SG 2
        Port 0      : Links ok

```

```

        Port 1      : Links ok
        Port 2      : Links ok
        Port 3      : Links ok
    SG 3
        Port 0      : Links ok
        Port 1      : Links ok
        Port 2      : Links ok
        Port 3      : Links ok
    ST-SIB-L 2
    FPC 4
        PFE 0: Links ok
        PFE 1: Links ok
    FPC 6
        PFE 0: Links ok
        PFE 1: Links ok
    FPC 7
        PFE 0: Links ok
    PLANE 3:      Spare
    ST-SIB-L 3: Links ok
    SG 0
        Port 0      : Links ok
        Port 1      : Links ok
        Port 2      : Links ok
        Port 3      : Links ok
    SG 1
        Port 0      : Links ok
        Port 1      : Links ok
        Port 2      : Links ok
        Port 3      : Links ok
    SG 2
        Port 0      : Links ok
        Port 1      : Links ok
        Port 2      : Links ok
        Port 3      : Links ok
    SG 3
        Port 0      : Links ok
        Port 1      : Links ok
        Port 2      : Links ok
        Port 3      : Links ok
    ST-SIB-L 3
    FPC 4
        PFE 0: Links ok
        PFE 1: Links ok
    FPC 6
        PFE 0: Links ok
        PFE 1: Links ok
    FPC 7
        PFE 0: Links ok
    PLANE 4:      Online
    ST-SIB-L 4: Links ok
    SG 0
        Port 0      : Links ok
        Port 1      : Links ok
        Port 2      : Links ok
        Port 3      : Links ok
    SG 1
        Port 0      : Links ok
        Port 1      : Links ok
        Port 2      : Links ok
        Port 3      : Links ok
    SG 2

```

```
Port 0    : Links ok
Port 1    : Links ok
Port 2    : Links ok
Port 3    : Links ok
SG 3
Port 0    : Links ok
Port 1    : Links ok
Port 2    : Links ok
Port 3    : Links ok
ST-SIB-L 4
FPC 4
PFE 0: Links ok
PFE 1: Links ok
FPC 6
PFE 0: Links ok
PFE 1: Links ok
FPC 7
PFE 0: Links ok
```

#### show chassis fabric plane detail (T1600 Router)

```
user@host> show chassis fabric plane detail
Fabric Management PLANE State:
PLANE 0:   Online
PLANE 1:   Online
PLANE 2:   Online
PLANE 3:   Spare
PLANE 4:   Online
```

#### show chassis fabric plane (EX8200 Switch)

```
user@host> show chassis fabric plane
Fabric management PLANE state
Plane 0
Plane state: ACTIVE
Plane 1
Plane state: ACTIVE
Plane 2
Plane state: ACTIVE
Plane 3
Plane state: ACTIVE
Plane 4
Plane state: SPARE
Plane 5
Plane state: SPARE
Plane 6
Plane state: SPARE
Plane 7
Plane state: SPARE
Plane 8
Plane state: ACTIVE
Plane 9
Plane state: ACTIVE
Plane 10
Plane state: ACTIVE
Plane 11
Plane state: ACTIVE
```

## show chassis fabric plane-location

<b>Syntax</b>	show chassis fabric plane-location
<b>Syntax (MX Series Routers)</b>	show chassis fabric plane-location <all-members> <local> <member <i>member-id</i> >
<b>Syntax (MX2010 3D Universal Edge Routers)</b>	show chassis fabric plane-location
<b>Syntax (MX2020 3D Universal Edge Routers)</b>	show chassis fabric plane-location
<b>Syntax (TX Matrix Plus Router)</b>	show chassis fabric plane-location
<b>Release Information</b>	<p>Command introduced in Junos OS Release 8.0.</p> <p>Command introduced in Junos OS Release 9.4 for EX Series switches.</p> <p>Command introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.</p>
<b>Description</b>	<p>(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 <i>EX Series Switches Hardware and CLI Terminology Mapping</i>.</p> <p>(TX Matrix Plus routers only) Display the SIB location of each fabric plane.</p> <p>(PTX Series Packet Transport Routers only) Display the fabric plane location of each SIB.</p> <p>(MX2010 and MX2020 Routers only) Display the fabric plane location of each Switch Fabric Board (SFB).</p>
<b>Options</b>	<p><b>all-members</b>—(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.</p> <p><b>local</b>—(MX Series routers only) (Optional) Display the CB location of each fabric plane on the Routing Engines in the local Virtual Chassis member.</p> <p><b>member <i>member-id</i></b>—(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.</p>

**Required Privilege Level** view

**List of Sample Output**

- [show chassis fabric plane-location \(M120 Router\) on page 565](#)
- [show chassis fabric plane-location \(MX240 and MX480 Routers\) on page 565](#)
- [show chassis fabric plane-location \(MX960 Router\) on page 565](#)
- [show chassis fabric plane-location \(MX2010 Router\) on page 565](#)
- [show chassis fabric plane-location \(MX2020 Router\) on page 565](#)
- [show chassis fabric plane-location \(TX Matrix Plus Router\) on page 566](#)
- [show chassis fabric plane-location \(TX Matrix Plus Router with 3D SIBs\) on page 566](#)
- [show chassis fabric plane-location \(EX8200 Switch\) on page 566](#)
- [show chassis fabric plane-location \(PTX Series Packet Transport Routers\) on page 566](#)

**Output Fields** [Table 27 on page 564](#) 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 Routers only) Plane numbers associated with the SIB.  (MX2010 and MX2020 Routers only) Plane numbers associated with the SFB.
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 SIB.
LCC ST-SIB-L	(TX Matrix Plus routers only) Line-card chassis (LCC) SIB slot number.
SFC SIB F13	(TX Matrix Plus routers with 3D SIBs only) Switch Interface Board (SIB) slot number on the F13 SIB.
SFC SIB F2S	(TX Matrix Plus routers with 3D SIBs only) SIB slot number on the F2S SIB.
LCC SIB	(TX Matrix Plus routers with 3D SIBs only) Line-card chassis (LCC) SIB slot number.
SIB	(PTX Series Packet Transport Routers only) SIB number.
Switch Fabric Board <i>n</i>	(MX2010 and MX2020 Routers only) SFB number.



## Sample Output

### show chassis fabric plane-location (M120 Router)

```
user@host> show chassis fabric plane-location
-----Fabric Plane Locations-----
Plane 0                      Control Board 0
Plane 1                      Control Board 0
Plane 2                      Control Board 1
Plane 3                      Control Board 1
```

### show chassis fabric plane-location (MX240 and MX480 Routers)

```
user@host> show chassis fabric plane-location
-----Fabric Plane Locations-----
Plane 0                      Control Board 0
Plane 1                      Control Board 0
Plane 2                      Control Board 0
Plane 3                      Control Board 0
Plane 4                      Control Board 1
Plane 5                      Control Board 1
Plane 6                      Control Board 1
Plane 7                      Control Board 1
```

### show chassis fabric plane-location (MX960 Router)

```
user@host> show chassis fabric plane-location
-----Fabric Plane Locations-----
Plane 0                      Control Board 0
Plane 1                      Control Board 0
Plane 2                      Control Board 1
Plane 3                      Control Board 1
Plane 4                      Control Board 2
Plane 5                      Control Board 2
```

### show chassis fabric plane-location (MX2010 Router)

```
user@host> show chassis fabric plane-location
-----Fabric Plane Locations-----
Plane 0                      Switch Fabric Board 0
Plane 1                      Switch Fabric Board 1
Plane 2                      Switch Fabric Board 2
Plane 3                      Switch Fabric Board 3
Plane 4                      Switch Fabric Board 4
Plane 5                      Switch Fabric Board 5
Plane 6                      Switch Fabric Board 6
Plane 7                      Switch Fabric Board 7
```

### show chassis fabric plane-location (MX2020 Router)

```
user@host> show chassis fabric plane-location
-----Fabric Plane Locations-----
Plane 0                      Switch Fabric Board 0
Plane 1                      Switch Fabric Board 1
Plane 2                      Switch Fabric Board 2
Plane 3                      Switch Fabric Board 3
Plane 4                      Switch Fabric Board 4
Plane 5                      Switch Fabric Board 5
Plane 6                      Switch Fabric Board 6
Plane 7                      Switch Fabric Board 7
```

**show chassis fabric plane-location (TX Matrix Plus Router)**

```

user@host> show chassis fabric plane-location
Fabric Plane Locations :
Plane      SFC ABS-SIB-F13      SFC ABS-SIB-F2      LCC ST-SIB-L
0          0, 1                0/0, 0/2, 0/4, 0/6      0
1          3, 4                1/0, 1/2, 1/4, 1/6      1
2          6, 7                2/0, 2/2, 2/4, 2/6      2
3          8, 9                3/0, 3/2, 3/4, 3/6      3
4          11, 12             4/0, 4/2, 4/4, 4/6      4

```

**show chassis fabric plane-location (TX Matrix Plus Router with 3D SIBs)**

```

user@host> show chassis fabric plane-location
sfc0-re0
-----
-----Fabric Plane Locations-----
Plane      SFC SIB F13      SFC SIB F2      LCC SIB
0          0, 1                0/0, 0/2, 0/4, 0/6      0
1          3, 4                1/0, 1/2, 1/4, 1/6      1
2          6, 7                2/0, 2/2, 2/4, 2/6      2
3          8, 9                3/0, 3/2, 3/4, 3/6      3
4          11, 12             4/0, 4/2, 4/4, 4/6      4

```

**show chassis fabric plane-location (EX8200 Switch)**

```

user@host> show chassis fabric plane-location
-----Fabric Plane Locations-----
Plane 0      Control Board 0
Plane 1      Control Board 0
Plane 2      Control Board 0
Plane 3      Control Board 0
Plane 4      Control Board 1
Plane 5      Control Board 1
Plane 6      Control Board 1
Plane 7      Control Board 1
Plane 8      Control Board 2
Plane 9      Control Board 2
Plane 10     Control Board 2
Plane 11     Control Board 2

```

**show chassis fabric plane-location (PTX Series Packet Transport Routers)**

```

user@host> show chassis fabric plane-location
-----Fabric Plane Locations-----
SIB      Planes
0        0 1
1        2 3
2        4 5
3        6 7
4        8 9
5       10 11
6       12 13
7       14 15
8       16 17

```

## show chassis fabric topology

<b>Syntax</b>	show chassis fabric topology <fcc <i>number</i>   scc> <sib-slot>
<b>Syntax (TX Matrix Router)</b>	show chassis fabric topology <fcc <i>number</i>   scc> <sib-slot>
<b>Syntax (TX Matrix Plus Router)</b>	show chassis fabric topology <fcc <i>number</i>   sfc <i>number</i> > <sib-slot>
<b>Syntax (T4000 Core Router)</b>	show chassis fabric topology <sib-slot>
<b>Syntax (PTX Series Packet Transport Routers)</b>	show chassis fabric topology
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. <b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6. Command introduced in Junos OS Release 12.1 for PTX Series Packet Transport Routers.
<b>Description</b>	(TX Matrix routers only) Display the state of the switching fabric topology for the Switch Interface Board (SIB) connection between the TX Matrix router and the T640 routers.  (TX Matrix Plus routers only) Display the state of the switching fabric topology for the SIB connection between the TX Matrix Plus router and the connected routers.  (T320, T640, T1600, and T4000 routers only) Display the state of the switching fabric topology for the connection between the Switch Interface Board (SIB) and the FPCs.  (PTX Series Packet Transport Routers only) Display the input-output link topology.
<b>Options</b>	<b>none</b> —(TX Matrix routers only) Display the state of the switching fabric topology for the Switch Interface Board (SIB) connection between the TX Matrix router and the T640 routers.  (TX Matrix Plus routers only) Display the state of the switching fabric topology for the SIB connection between the TX Matrix Plus router and the connected routers.  (T320, T640, T1600, and T4000 routers only) Display the state of the switching fabric topology for the connection between the Switch Interface Board (SIB) and the FPCs.  <b>fcc <i>number</i></b> —(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display the fabric topology state for a specified T640 router (line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display the fabric topology state for a specified router (line-card chassis) that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**scc**—(TX Matrix routers only) (Optional) Display the fabric topology state for the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Display the fabric topology for the switch-fabric chassis. Replace *number* with 0.

**sib-slot**—(Optional) Display the fabric topology state for a specified SIB slot. Replace *sib-slot* with a value from 0 through 4. On a TX Matrix Plus router, replace *sib-slot* with a value from 0 through 15.

**Required Privilege Level** view

**Related Documentation** • [Layer 2 Wholesale Network Topology Overview](#)

**List of Sample Output** [show chassis fabric topology scc \(TX Matrix Router\) on page 571](#)  
[show chassis fabric topology lcc on page 573](#)  
[show chassis fabric topology \(TX Matrix Plus Router\) on page 575](#)  
[show chassis fabric topology sfc \(TX Matrix Plus Router\) on page 576](#)  
[show chassis fabric topology lcc \(TX Matrix Plus Router\) on page 577](#)  
[show chassis fabric topology \(T4000 Core Router\) on page 578](#)  
[show chassis fabric topology lcc \(TX Matrix Plus Router with 3D SIBs\) on page 579](#)  
[show chassis fabric topology sfc \(TX Matrix Plus Router with 3D SIBs\) on page 581](#)  
[show chassis fabric topology \(PTX Series Packet Transport Routers\) on page 586](#)

**Output Fields** [Table 28 on page 568](#) lists the output fields for the **show chassis fabric topology** command. Output fields are listed in the approximate order in which they appear.

**Table 28: show chassis fabric topology Output Fields**

Field Name	Field Description
<b>in-links</b>	Fabric topology for receive side links.
<b>out-links</b>	Fabric topology for transmit side links.

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

Field Name	Field Description
<b>state</b>	<p>State of the fabric link:</p> <ul style="list-style-type: none"> <li>• <b>RESET</b>—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.</li> <li>• <b>UP</b>—Link between the SIB and the FPC/DCP is up and running.</li> <li>• <b>DOWN</b>—Link between the SIB and the FPC/DCP is powered down.</li> <li>• <b>FAULT</b>—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"> <li>• On-board F-chip is not operational.</li> <li>• Fiber-optic connector faults.</li> <li>• FPC connector faults.</li> <li>• SIB midplane connector faults.</li> </ul> </li> </ul> <p><b>NOTE:</b> The following state descriptions are applicable only to PTX Series Packet Transport Routers.</p> <ul style="list-style-type: none"> <li>• <b>OK</b>—The link between the SIB and the FPC is operational.</li> <li>• <b>Down</b>—The link between the SIB and the FPC is powered down.</li> <li>• <b>Error</b>—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"> <li>• FPC midplane connector failure.</li> <li>• SIB midplane connector failure.</li> <li>• CCL link CRC error.</li> </ul> </li> </ul>

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

<b>Out-Links:</b> and <b>In-Links</b> (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:
	<ul style="list-style-type: none"> <li>• <b>VCSEL Status</b>—Optical (VCSEL channel) link status for the corresponding electrical (HSL2) link. The states include: <ul style="list-style-type: none"> <li>• <b>OK</b>—Optical signal power is good.</li> <li>• <b>Error</b>—Internal error.</li> <li>• <b>LOS</b>—Loss of Signal detected.</li> <li>• <b>High Cur</b>—The Tx Bias-current is higher than threshold on this channel. This is applicable only to Tx Channels.</li> <li>• <b>Low Cur</b>—The Tx Bias-current is lower than threshold on this channel. This is applicable only to Tx Channels.</li> </ul> </li> <li>• <b>HSL2 Channel</b>—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.</li> </ul>

- **HSL2 Status** —The status of the HSL2 Channel. Includes the following states:
  - **Up**—Channel is up.
  - **Down**—Channel is down.
  - **Reset**—Channel has been reset.
  - **Fault**—Channel has faults.

The following is a sample output with description of the fields displayed in the output for Out-Links:

Out-Links:

=====

SF\_30\_13\_FB\_A(21,09) -> FPC7\_B\_SG(3,3,6)\_FB\_A(18,09)      OK      203      Up

- **SF\_30\_13**—Name of the ASIC, with Fabric F1 or F3 mode. In this case, 3 is the F3 direction and is used in the Tx path and 0 identifies the serial link on the SF chip (in this case, link goes to sf-3 chip number 0). You can also have F1 mode and Rx path instead.
- **FB\_A (21, 09)**—Fiber bundle A, with VCSEL unit number 21 within the SIB, and channel number 9 within the unit number.
- **FPC7\_B\_SG(3,3,6)**—FPC 7, with bottom Packet Forwarding Engine (T for top PFE and B for bottom PFE), SG ASIC, with number 3 and port number 3, with HSL2 link number with the SIB as 6.
- **FB\_A(18,09)**—Fiber Bundle, with VCSEL unit number 18 within the SIB, and VCSEL channel number 9 within the unit number.

The following is a sample output with description of the fields displayed in the output for In-Links:

In-Links:

=====

FPC0\_T\_SG(0,0,0)\_FB\_D(04,11) -> SF\_10\_00\_FB\_D(01,11)      OK      0      Up

- **FPC0**—FPC 0.
- **T**—Top Packet Forwarding Engine.
- **SG (0, 0, 0)**—SG ASIC with port number 0 and link 0.
- **FB\_D (04,11)**—Fiber Bundle D with VCSEL 4, channel 11.
- **SF\_10**—Indicates F1 mode chip number 0 and Rx path.
- **SF\_10\_00\_FB\_D(01,11)**—Indicates F1 mode chip number 0 and Rx path with port 0, fiber bundle D, with VCSEL 1, channel 11.

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

Out-links and In-links (TX Matrix Plus router with 3D SIBs only)	State of the links from the F13 SIB to the SFC/LCC or vice-versa. Out-Links indicate Tx links. In-Links indicate an Rx link. The following additional fields are displayed for each SIB:			
	<ul style="list-style-type: none"> <li>Description of the fields displayed in the output for In-links and Out-links for SFC:</li> </ul>			
	In-links	State	Out-links	State
	CXP0_Evn->F13_SIB0_XF2,04_0	Up	F13_SIB0_XF2,04_0->CXP0_Evn	Up

- CXP0\_Evn**—CXP optics with type of port bits such as even or odd. In this case, it indicates CXP optics with even port bit number 0.
- F13\_SIB0**—Name of the SFC data plane SIB with the SIB number. In this case, it indicates F13 SIB with number 0.
- XF2,04\_0**—Name of the ASIC with port and subchannel number. In this case, it Indicates XF2 chip with port number 4 and subchannel number 0.

- Description of the fields displayed in the output for In-links and Out-links for LCC:

	In-links	State	Out-links	
State				
CXP0_Evn->LCC_SIB0_XF3,10_0	Up	LCC_SIB0_XF3,10_0->CXP0_Evn	Up	

- CXP0\_Evn**—CXP optics with the type of port bits such as even or odd. In this case, it indicates CXP optics with even port bit number 0.
- LCC\_SIB0**—LCC SIB number. In this case, it indicates LCC SIB with number 0.
- XF3,10\_0**—Name of the ASIC with port and subchannel number. In this case, it Indicates XF3 with port number 10 and subchannel number 0.

## Sample Output

### show chassis fabric topology scc (TX Matrix Router)

```
user@host> show chassis fabric topology scc
scc-re1:
```

```
-----
fchip (mode)
in-links      state  out-links      state
-----
```

Sib #0 :

SIB0\_F0 (F2 ):

LCC0_SIB-L0_F0,03->SIB-S0_F0,00	UP	SIB-S0_F0,00->LCC0_SIB-L0_F1,00	UP
LCC1_SIB-L0_F0,03->SIB-S0_F0,01	UP	SIB-S0_F0,01->LCC1_SIB-L0_F1,08	UP
LCC2_SIB-L0_F0,03->SIB-S0_F0,02	RESET	SIB-S0_F0,02->LCC2_SIB-L0_F1,08	UP
LCC3_SIB-L0_F0,03->SIB-S0_F0,03	RESET	SIB-S0_F0,03->LCC3_SIB-L0_F1,00	UP
LCC0_SIB-L0_F0,02->SIB-S0_F0,04	UP	SIB-S0_F0,04->LCC0_SIB-L0_F1,01	UP
LCC1_SIB-L0_F0,02->SIB-S0_F0,05	UP	SIB-S0_F0,05->LCC1_SIB-L0_F1,09	UP
LCC2_SIB-L0_F0,02->SIB-S0_F0,06	RESET	SIB-S0_F0,06->LCC2_SIB-L0_F1,09	UP
LCC3_SIB-L0_F0,02->SIB-S0_F0,07	RESET	SIB-S0_F0,07->LCC3_SIB-L0_F1,01	UP

LCC0_SIB-L0_F0,07->SIB-S0_F0,08	UP	SIB-S0_F0,08->LCC0_SIB-L0_F1,04	UP
LCC1_SIB-L0_F0,07->SIB-S0_F0,09	UP	SIB-S0_F0,09->LCC1_SIB-L0_F1,12	UP
LCC2_SIB-L0_F0,07->SIB-S0_F0,10	RESET	SIB-S0_F0,10->LCC2_SIB-L0_F1,12	UP
LCC3_SIB-L0_F0,07->SIB-S0_F0,11	RESET	SIB-S0_F0,11->LCC3_SIB-L0_F1,04	UP
LCC0_SIB-L0_F0,06->SIB-S0_F0,12	UP	SIB-S0_F0,12->LCC0_SIB-L0_F1,05	UP
LCC1_SIB-L0_F0,06->SIB-S0_F0,13	UP	SIB-S0_F0,13->LCC1_SIB-L0_F1,13	UP
LCC2_SIB-L0_F0,06->SIB-S0_F0,14	RESET	SIB-S0_F0,14->LCC2_SIB-L0_F1,13	UP
LCC3_SIB-L0_F0,06->SIB-S0_F0,15	RESET	SIB-S0_F0,15->LCC3_SIB-L0_F1,05	UP
SIB0_F1 (F2 ):			
LCC0_SIB-L0_F0,11->SIB-S0_F1,00	UP	SIB-S0_F1,00->LCC0_SIB-L0_F1,08	UP
LCC1_SIB-L0_F0,11->SIB-S0_F1,01	UP	SIB-S0_F1,01->LCC1_SIB-L0_F1,00	UP
LCC2_SIB-L0_F0,11->SIB-S0_F1,02	RESET	SIB-S0_F1,02->LCC2_SIB-L0_F1,00	UP
LCC3_SIB-L0_F0,11->SIB-S0_F1,03	RESET	SIB-S0_F1,03->LCC3_SIB-L0_F1,08	UP
LCC0_SIB-L0_F0,10->SIB-S0_F1,04	UP	SIB-S0_F1,04->LCC0_SIB-L0_F1,09	UP
LCC1_SIB-L0_F0,10->SIB-S0_F1,05	UP	SIB-S0_F1,05->LCC1_SIB-L0_F1,01	UP
LCC2_SIB-L0_F0,10->SIB-S0_F1,06	RESET	SIB-S0_F1,06->LCC2_SIB-L0_F1,01	UP
LCC3_SIB-L0_F0,10->SIB-S0_F1,07	RESET	SIB-S0_F1,07->LCC3_SIB-L0_F1,09	UP
LCC0_SIB-L0_F0,15->SIB-S0_F1,08	UP	SIB-S0_F1,08->LCC0_SIB-L0_F1,12	UP
LCC1_SIB-L0_F0,15->SIB-S0_F1,09	UP	SIB-S0_F1,09->LCC1_SIB-L0_F1,04	UP
LCC2_SIB-L0_F0,15->SIB-S0_F1,10	RESET	SIB-S0_F1,10->LCC2_SIB-L0_F1,04	UP
LCC3_SIB-L0_F0,15->SIB-S0_F1,11	RESET	SIB-S0_F1,11->LCC3_SIB-L0_F1,12	UP
LCC0_SIB-L0_F0,14->SIB-S0_F1,12	UP	SIB-S0_F1,12->LCC0_SIB-L0_F1,13	UP
LCC1_SIB-L0_F0,14->SIB-S0_F1,13	UP	SIB-S0_F1,13->LCC1_SIB-L0_F1,05	UP
LCC2_SIB-L0_F0,14->SIB-S0_F1,14	RESET	SIB-S0_F1,14->LCC2_SIB-L0_F1,05	
UP			
LCC3_SIB-L0_F0,14->SIB-S0_F1,15	RESET	SIB-S0_F1,15->LCC3_SIB-L0_F1,13	
UP			
SIB0_F2 (F2 ):			
LCC3_SIB-L0_F0,13->SIB-S0_F2,00	RESET	SIB-S0_F2,00->LCC3_SIB-L0_F1,14	UP
LCC2_SIB-L0_F0,13->SIB-S0_F2,01	RESET	SIB-S0_F2,01->LCC2_SIB-L0_F1,06	
UP			
LCC1_SIB-L0_F0,13->SIB-S0_F2,02	UP	SIB-S0_F2,02->LCC1_SIB-L0_F1,06	UP
LCC0_SIB-L0_F0,13->SIB-S0_F2,03	UP	SIB-S0_F2,03->LCC0_SIB-L0_F1,14	UP
LCC3_SIB-L0_F0,12->SIB-S0_F2,04	RESET	SIB-S0_F2,04->LCC3_SIB-L0_F1,15	
UP			
LCC2_SIB-L0_F0,12->SIB-S0_F2,05	RESET	SIB-S0_F2,05->LCC2_SIB-L0_F1,07	UP
LCC1_SIB-L0_F0,12->SIB-S0_F2,06	UP	SIB-S0_F2,06->LCC1_SIB-L0_F1,07	UP
LCC0_SIB-L0_F0,12->SIB-S0_F2,07	UP	SIB-S0_F2,07->LCC0_SIB-L0_F1,15	UP
LCC3_SIB-L0_F0,09->SIB-S0_F2,08	RESET	SIB-S0_F2,08->LCC3_SIB-L0_F1,10	
UP			
LCC2_SIB-L0_F0,09->SIB-S0_F2,09	RESET	SIB-S0_F2,09->LCC2_SIB-L0_F1,02	
UP			
LCC1_SIB-L0_F0,09->SIB-S0_F2,10	UP	SIB-S0_F2,10->LCC1_SIB-L0_F1,02	UP
LCC0_SIB-L0_F0,09->SIB-S0_F2,11	UP	SIB-S0_F2,11->LCC0_SIB-L0_F1,10	UP
LCC3_SIB-L0_F0,08->SIB-S0_F2,12	RESET	SIB-S0_F2,12->LCC3_SIB-L0_F1,11	
UP			
LCC2_SIB-L0_F0,08->SIB-S0_F2,13	RESET	SIB-S0_F2,13->LCC2_SIB-L0_F1,03	
UP			
LCC1_SIB-L0_F0,08->SIB-S0_F2,14	UP	SIB-S0_F2,14->LCC1_SIB-L0_F1,03	UP
LCC0_SIB-L0_F0,08->SIB-S0_F2,15	UP	SIB-S0_F2,15->LCC0_SIB-L0_F1,11	UP
SIB0_F3 (F2 ):			
LCC3_SIB-L0_F0,05->SIB-S0_F3,00	RESET	SIB-S0_F3,00->LCC3_SIB-L0_F1,06	
UP			
LCC2_SIB-L0_F0,05->SIB-S0_F3,01	RESET	SIB-S0_F3,01->LCC2_SIB-L0_F1,14	
UP			
LCC1_SIB-L0_F0,05->SIB-S0_F3,02	UP	SIB-S0_F3,02->LCC1_SIB-L0_F1,14	UP
LCC0_SIB-L0_F0,05->SIB-S0_F3,03	UP	SIB-S0_F3,03->LCC0_SIB-L0_F1,06	UP
LCC3_SIB-L0_F0,04->SIB-S0_F3,04	RESET	SIB-S0_F3,04->LCC3_SIB-L0_F1,07	
UP			
LCC2_SIB-L0_F0,04->SIB-S0_F3,05	RESET	SIB-S0_F3,05->LCC2_SIB-L0_F1,15	
UP			



```

LCC1_SIB-L0_F0,04->SIB-S0_F3,06  UP
LCC0_SIB-L0_F0,04->SIB-S0_F3,07  UP
LCC3_SIB-L0_F0,01->SIB-S0_F3,08  RESET
UP
LCC2_SIB-L0_F0,01->SIB-S0_F3,09  RESET
UP
LCC1_SIB-L0_F0,01->SIB-S0_F3,10  UP
LCC0_SIB-L0_F0,01->SIB-S0_F3,11  UP
LCC3_SIB-L0_F0,00->SIB-S0_F3,12  RESET
UP
LCC2_SIB-L0_F0,00->SIB-S0_F3,13  RESET
UP
LCC1_SIB-L0_F0,00->SIB-S0_F3,14  UP
LCC0_SIB-L0_F0,00->SIB-S0_F3,15  UP
Sib #1 :
-----
SIB1_F0 (F2 ):
LCC0_SIB-L1_F0,03->SIB-S1_F0,00  RESET
LCC1_SIB-L1_F0,03->SIB-S1_F0,01  RESET
LCC2_SIB-L1_F0,03->SIB-S1_F0,02  RESET
LCC3_SIB-L1_F0,03->SIB-S1_F0,03  RESET
LCC0_SIB-L1_F0,02->SIB-S1_F0,04  RESET
LCC1_SIB-L1_F0,02->SIB-S1_F0,05  RESET
LCC2_SIB-L1_F0,02->SIB-S1_F0,06  RESET
LCC3_SIB-L1_F0,02->SIB-S1_F0,07  RESET
LCC0_SIB-L1_F0,07->SIB-S1_F0,08  RESET
LCC1_SIB-L1_F0,07->SIB-S1_F0,09  RESET
LCC2_SIB-L1_F0,07->SIB-S1_F0,10  RESET
LCC3_SIB-L1_F0,07->SIB-S1_F0,11  RESET
LCC0_SIB-L1_F0,06->SIB-S1_F0,12  RESET
LCC1_SIB-L1_F0,06->SIB-S1_F0,13  RESET
LCC2_SIB-L1_F0,06->SIB-S1_F0,14  RESET
LCC3_SIB-L1_F0,06->SIB-S1_F0,15  RESET
SIB1_F1 (F2 ):
LCC0_SIB-L1_F0,11->SIB-S1_F1,00  RESET
LCC1_SIB-L1_F0,11->SIB-S1_F1,01  RESET
LCC2_SIB-L1_F0,11->SIB-S1_F1,02  RESET
LCC3_SIB-L1_F0,11->SIB-S1_F1,03  RESET
LCC0_SIB-L1_F0,10->SIB-S1_F1,04  RESET
LCC1_SIB-L1_F0,10->SIB-S1_F1,05  RESET
LCC2_SIB-L1_F0,10->SIB-S1_F1,06  RESET
LCC3_SIB-L1_F0,10->SIB-S1_F1,07  RESET
LCC0_SIB-L1_F0,15->SIB-S1_F1,08  RESET
LCC1_SIB-L1_F0,15->SIB-S1_F1,09  RESET
LCC2_SIB-L1_F0,15->SIB-S1_F1,10  RESET
LCC3_SIB-L1_F0,15->SIB-S1_F1,11  RESET
LCC0_SIB-L1_F0,14->SIB-S1_F1,12  RESET
LCC1_SIB-L1_F0,14->SIB-S1_F1,13  RESET
LCC2_SIB-L1_F0,14->SIB-S1_F1,14  RESET
SIB-S0_F3,06->LCC1_SIB-L0_F1,15  UP
SIB-S0_F3,07->LCC0_SIB-L0_F1,07  UP
SIB-S0_F3,08->LCC3_SIB-L0_F1,02
SIB-S0_F3,09->LCC2_SIB-L0_F1,10
SIB-S0_F3,10->LCC1_SIB-L0_F1,10  UP
SIB-S0_F3,11->LCC0_SIB-L0_F1,02  UP
SIB-S0_F3,12->LCC3_SIB-L0_F1,03
SIB-S0_F3,13->LCC2_SIB-L0_F1,11
SIB-S0_F3,14->LCC1_SIB-L0_F1,11  UP
SIB-S0_F3,15->LCC0_SIB-L0_F1,03  UP
SIB-S1_F0,00->LCC0_SIB-L1_F1,00  UP
SIB-S1_F0,01->LCC1_SIB-L1_F1,08  UP
SIB-S1_F0,02->LCC2_SIB-L1_F1,08  UP
SIB-S1_F0,03->LCC3_SIB-L1_F1,00  UP
SIB-S1_F0,04->LCC0_SIB-L1_F1,01  UP
SIB-S1_F0,05->LCC1_SIB-L1_F1,09  UP
SIB-S1_F0,06->LCC2_SIB-L1_F1,09  UP
SIB-S1_F0,07->LCC3_SIB-L1_F1,01  UP
SIB-S1_F0,08->LCC0_SIB-L1_F1,04  UP
SIB-S1_F0,09->LCC1_SIB-L1_F1,12  UP
SIB-S1_F0,10->LCC2_SIB-L1_F1,12  UP
SIB-S1_F0,11->LCC3_SIB-L1_F1,04  UP
SIB-S1_F0,12->LCC0_SIB-L1_F1,05  UP
SIB-S1_F0,13->LCC1_SIB-L1_F1,13  UP
SIB-S1_F0,14->LCC2_SIB-L1_F1,13  UP
SIB-S1_F0,15->LCC3_SIB-L1_F1,05  UP
SIB-S1_F1,00->LCC0_SIB-L1_F1,08  UP
SIB-S1_F1,01->LCC1_SIB-L1_F1,00  UP
SIB-S1_F1,02->LCC2_SIB-L1_F1,00  UP
SIB-S1_F1,03->LCC3_SIB-L1_F1,08  UP
SIB-S1_F1,04->LCC0_SIB-L1_F1,09  UP
SIB-S1_F1,05->LCC1_SIB-L1_F1,01  UP
SIB-S1_F1,06->LCC2_SIB-L1_F1,01  UP
SIB-S1_F1,07->LCC3_SIB-L1_F1,09  UP
SIB-S1_F1,08->LCC0_SIB-L1_F1,12  UP
SIB-S1_F1,09->LCC1_SIB-L1_F1,04  UP
SIB-S1_F1,10->LCC2_SIB-L1_F1,04  UP
SIB-S1_F1,11->LCC3_SIB-L1_F1,12,05  UP
SIB-S1_F1,12->LCC0_SIB-L1_F1,13  UP
SIB-S1_F1,13->LCC1_SIB-L1_F1,05  UP
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 :			
-----			
SIB4_F0 (F1 ):			
FPC0_T->SIB-L4_F0,00	RESET	SIB-L4_F0,00->SIB-S4_F3,15	UP
FPC0_B->SIB-L4_F0,01	UP	SIB-L4_F0,01->SIB-S4_F3,11	UP
FPC1_T->SIB-L4_F0,02	RESET	SIB-L4_F0,02->SIB-S4_F0,04	UP
FPC1_B->SIB-L4_F0,03	RESET	SIB-L4_F0,03->SIB-S4_F0,00	UP
FPC2_T->SIB-L4_F0,04	RESET	SIB-L4_F0,04->SIB-S4_F3,07	UP
FPC2_B->SIB-L4_F0,05	RESET	SIB-L4_F0,05->SIB-S4_F3,03	UP
FPC3_T->SIB-L4_F0,06	RESET	SIB-L4_F0,06->SIB-S4_F0,12	UP
FPC3_B->SIB-L4_F0,07	RESET	SIB-L4_F0,07->SIB-S4_F0,08	UP
FPC4_T->SIB-L4_F0,08	RESET	SIB-L4_F0,08->SIB-S4_F2,15	UP
FPC4_B->SIB-L4_F0,09	RESET	SIB-L4_F0,09->SIB-S4_F2,11	UP
FPC5_T->SIB-L4_F0,10	RESET	SIB-L4_F0,10->SIB-S4_F1,04	UP
FPC5_B->SIB-L4_F0,11	RESET	SIB-L4_F0,11->SIB-S4_F1,00	UP
FPC6_T->SIB-L4_F0,12	RESET	SIB-L4_F0,12->SIB-S4_F2,07	UP
FPC6_B->SIB-L4_F0,13	UP	SIB-L4_F0,13->SIB-S4_F2,03	UP
FPC7_T->SIB-L4_F0,14	RESET	SIB-L4_F0,14->SIB-S4_F1,12	UP
FPC7_B->SIB-L4_F0,15	RESET	SIB-L4_F0,15->SIB-S4_F1,08	UP
SIB4_F1 (F3 ):			
SIB-S4_F0,00->SIB-L4_F1,00	UP	SIB-L4_F1,00->FPC7_B	UP
SIB-S4_F0,04->SIB-L4_F1,01	UP	SIB-L4_F1,01->FPC7_T	UP
SIB-S4_F3,11->SIB-L4_F1,02	UP	SIB-L4_F1,02->FPC6_B	UP
SIB-S4_F3,15->SIB-L4_F1,03	UP	SIB-L4_F1,03->FPC6_T	UP
SIB-S4_F0,08->SIB-L4_F1,04	UP	SIB-L4_F1,04->FPC5_B	UP
SIB-S4_F0,12->SIB-L4_F1,05	UP	SIB-L4_F1,05->FPC5_T	UP
SIB-S4_F3,03->SIB-L4_F1,06	UP	SIB-L4_F1,06->FPC4_B	UP
SIB-S4_F3,07->SIB-L4_F1,07	UP	SIB-L4_F1,07->FPC4_T	UP

```

SIB-S4_F1,00->SIB-L4_F1,08 UP      SIB-L4_F1,08->FPC3_B    UP
SIB-S4_F1,04->SIB-L4_F1,09 UP      SIB-L4_F1,09->FPC3_T    UP
SIB-S4_F2,11->SIB-L4_F1,10 UP      SIB-L4_F1,10->FPC2_B    UP
SIB-S4_F2,15->SIB-L4_F1,11 UP      SIB-L4_F1,11->FPC2_T    UP
SIB-S4_F1,08->SIB-L4_F1,12 UP      SIB-L4_F1,12->FPC1_B    UP
SIB-S4_F1,12->SIB-L4_F1,13 UP      SIB-L4_F1,13->FPC1_T    UP
SIB-S4_F2,03->SIB-L4_F1,14 UP      SIB-L4_F1,14->FPC0_B    UP
SIB-S4_F2,07->SIB-L4_F1,15 UP      SIB-L4_F1,15->FPC0_T    UP

```

### show chassis fabric topology (TX Matrix Plus Router)

```

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

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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
SF_30_00_FB_D(04,11)	-> FPC0_T_SG(0,0,0)_FB_D(01,11)	OK	112	Up
SF_30_00_FB_D(04,10)	-> FPC0_T_SG(0,0,1)_FB_D(01,10)	OK	112	Up
SF_30_00_FB_D(04,09)	-> FPC0_T_SG(0,0,2)_FB_D(01,09)	OK	112	Up
SF_30_00_FB_D(04,08)	-> FPC0_T_SG(0,0,3)_FB_D(01,08)	OK	112	Up
SF_30_00_FB_D(04,07)	-> FPC0_T_SG(0,0,4)_FB_D(01,07)	OK	112	Up
SF_30_00_FB_D(04,06)	-> FPC0_T_SG(0,0,5)_FB_D(01,06)	OK	112	Up
SF_30_00_FB_D(04,05)	-> FPC0_T_SG(0,0,6)_FB_D(01,05)	OK	112	Up
SF_30_00_FB_D(04,04)	-> FPC0_T_SG(0,0,7)_FB_D(01,04)	OK	112	Up
SF_30_01_FB_B(16,11)	-> FPC4_T_SG(2,0,0)_FB_B(13,11)	OK	119	Up
SF_30_01_FB_B(16,10)	-> FPC4_T_SG(2,0,1)_FB_B(13,10)	OK	119	Up
SF_30_01_FB_B(16,09)	-> FPC4_T_SG(2,0,2)_FB_B(13,09)	OK	119	Up
SF_30_01_FB_B(16,08)	-> FPC4_T_SG(2,0,3)_FB_B(13,08)	OK	119	Up
SF_30_01_FB_B(16,07)	-> FPC4_T_SG(2,0,4)_FB_B(13,07)	OK	119	Up
SF_30_01_FB_B(16,06)	-> FPC4_T_SG(2,0,5)_FB_B(13,06)	OK	119	Up
SF_30_01_FB_B(16,05)	-> FPC4_T_SG(2,0,6)_FB_B(13,05)	OK	119	Up
SF_30_01_FB_B(16,04)	-> FPC4_T_SG(2,0,7)_FB_B(13,04)	OK	119	Up
SF_30_02_FB_D(05,08)	-> FPC1_T_SG(0,2,0)_FB_D(02,08)	OK	126	Up
SF_30_02_FB_D(05,07)	-> FPC1_T_SG(0,2,1)_FB_D(02,07)	OK	126	Up
SF_30_02_FB_D(05,06)	-> FPC1_T_SG(0,2,2)_FB_D(02,06)	OK	126	Up
SF_30_02_FB_D(05,05)	-> FPC1_T_SG(0,2,3)_FB_D(02,05)	OK	126	Up
SF_30_02_FB_D(05,03)	-> FPC1_T_SG(0,2,4)_FB_D(02,03)	OK	126	Up
SF_30_02_FB_D(05,02)	-> FPC1_T_SG(0,2,5)_FB_D(02,02)	OK	126	Up
SF_30_02_FB_D(05,01)	-> FPC1_T_SG(0,2,6)_FB_D(02,01)	OK	126	Up
SF_30_02_FB_D(05,00)	-> FPC1_T_SG(0,2,7)_FB_D(02,00)	OK	126	Up
SF_30_03_FB_B(17,08)	-> FPC5_T_SG(2,2,0)_FB_B(14,08)	OK	133	Up
SF_30_03_FB_B(17,07)	-> FPC5_T_SG(2,2,1)_FB_B(14,07)	OK	133	Up
SF_30_03_FB_B(17,06)	-> FPC5_T_SG(2,2,2)_FB_B(14,06)	OK	133	Up
SF_30_03_FB_B(17,05)	-> FPC5_T_SG(2,2,3)_FB_B(14,05)	OK	133	Up
SF_30_03_FB_B(17,03)	-> FPC5_T_SG(2,2,4)_FB_B(14,03)	OK	133	Up
SF_30_03_FB_B(17,02)	-> FPC5_T_SG(2,2,5)_FB_B(14,02)	OK	133	Up
SF_30_03_FB_B(17,01)	-> FPC5_T_SG(2,2,6)_FB_B(14,01)	OK	133	Up
SF_30_03_FB_B(17,00)	-> FPC5_T_SG(2,2,7)_FB_B(14,00)	OK	133	Up
SF_30_04_FB_C(10,11)	-> FPC2_T_SG(1,0,0)_FB_C(07,11)	OK	140	Up
SF_30_04_FB_C(10,10)	-> FPC2_T_SG(1,0,1)_FB_C(07,10)	OK	140	Up
SF_30_04_FB_C(10,09)	-> FPC2_T_SG(1,0,2)_FB_C(07,09)	OK	140	Up
SF_30_04_FB_C(10,08)	-> FPC2_T_SG(1,0,3)_FB_C(07,08)	OK	140	Up
SF_30_04_FB_C(10,07)	-> FPC2_T_SG(1,0,4)_FB_C(07,07)	OK	140	Up
SF_30_04_FB_C(10,06)	-> FPC2_T_SG(1,0,5)_FB_C(07,06)	OK	140	Up

```

SF_30_04_FB_C(10,05) -> FPC2_T_SG(1,0,6)_FB_C(07,05)    OK      140    Up
SF_30_04_FB_C(10,04) -> FPC2_T_SG(1,0,7)_FB_C(07,04)    OK      140    Up
SF_30_05_FB_A(22,11) -> FPC6_T_SG(3,0,0)_FB_A(19,11)    OK      147    Up
SF_30_05_FB_A(22,10) -> FPC6_T_SG(3,0,1)_FB_A(19,10)    OK      147    Up
SF_30_05_FB_A(22,09) -> FPC6_T_SG(3,0,2)_FB_A(19,09)    OK      147    Up
SF_30_05_FB_A(22,08) -> FPC6_T_SG(3,0,3)_FB_A(19,08)    OK      147    Up
SF_30_05_FB_A(22,07) -> FPC6_T_SG(3,0,4)_FB_A(19,07)    OK      147    Up
SF_30_05_FB_A(22,06) -> FPC6_T_SG(3,0,5)_FB_A(19,06)    OK      147    Up
SF_30_05_FB_A(22,05) -> FPC6_T_SG(3,0,6)_FB_A(19,05)    OK      147    Up
SF_30_05_FB_A(22,04) -> FPC6_T_SG(3,0,7)_FB_A(19,04)    OK      147    Up
SF_30_06_FB_C(11,08) -> FPC3_T_SG(1,2,0)_FB_C(08,08)    OK      154    Up
SF_30_06_FB_C(11,07) -> FPC3_T_SG(1,2,1)_FB_C(08,07)    OK      154    Up
SF_30_06_FB_C(11,06) -> FPC3_T_SG(1,2,2)_FB_C(08,06)    OK      154    Up
SF_30_06_FB_C(11,05) -> FPC3_T_SG(1,2,3)_FB_C(08,05)    OK      154    Up
SF_30_06_FB_C(11,03) -> FPC3_T_SG(1,2,4)_FB_C(08,03)    OK      154    Up
SF_30_06_FB_C(11,02) -> FPC3_T_SG(1,2,5)_FB_C(08,02)    OK      154    Up
SF_30_06_FB_C(11,01) -> FPC3_T_SG(1,2,6)_FB_C(08,01)    OK      154    Up
SF_30_06_FB_C(11,00) -> FPC3_T_SG(1,2,7)_FB_C(08,00)    OK      154    Up
...

```

### show chassis fabric topology sfc (TX Matrix Plus Router)

```

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

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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
SF_30_00_FB_D(04,11)	-> FPC0_T_SG(0,0,0)_FB_D(01,11)	OK	112	Up
SF_30_00_FB_D(04,10)	-> FPC0_T_SG(0,0,1)_FB_D(01,10)	OK	112	Up
SF_30_00_FB_D(04,09)	-> FPC0_T_SG(0,0,2)_FB_D(01,09)	OK	112	Up
SF_30_00_FB_D(04,08)	-> FPC0_T_SG(0,0,3)_FB_D(01,08)	OK	112	Up
SF_30_00_FB_D(04,07)	-> FPC0_T_SG(0,0,4)_FB_D(01,07)	OK	112	Up
SF_30_00_FB_D(04,06)	-> FPC0_T_SG(0,0,5)_FB_D(01,06)	OK	112	Up
SF_30_00_FB_D(04,05)	-> FPC0_T_SG(0,0,6)_FB_D(01,05)	OK	112	Up
SF_30_00_FB_D(04,04)	-> FPC0_T_SG(0,0,7)_FB_D(01,04)	OK	112	Up
SF_30_01_FB_B(16,11)	-> FPC4_T_SG(2,0,0)_FB_B(13,11)	OK	119	Up
SF_30_01_FB_B(16,10)	-> FPC4_T_SG(2,0,1)_FB_B(13,10)	OK	119	Up
SF_30_01_FB_B(16,09)	-> FPC4_T_SG(2,0,2)_FB_B(13,09)	OK	119	Up
SF_30_01_FB_B(16,08)	-> FPC4_T_SG(2,0,3)_FB_B(13,08)	OK	119	Up
SF_30_01_FB_B(16,07)	-> FPC4_T_SG(2,0,4)_FB_B(13,07)	OK	119	Up
SF_30_01_FB_B(16,06)	-> FPC4_T_SG(2,0,5)_FB_B(13,06)	OK	119	Up
SF_30_01_FB_B(16,05)	-> FPC4_T_SG(2,0,6)_FB_B(13,05)	OK	119	Up
SF_30_01_FB_B(16,04)	-> FPC4_T_SG(2,0,7)_FB_B(13,04)	OK	119	Up
SF_30_02_FB_D(05,08)	-> FPC1_T_SG(0,2,0)_FB_D(02,08)	OK	126	Up
SF_30_02_FB_D(05,07)	-> FPC1_T_SG(0,2,1)_FB_D(02,07)	OK	126	Up
SF_30_02_FB_D(05,06)	-> FPC1_T_SG(0,2,2)_FB_D(02,06)	OK	126	Up
SF_30_02_FB_D(05,05)	-> FPC1_T_SG(0,2,3)_FB_D(02,05)	OK	126	Up
SF_30_02_FB_D(05,03)	-> FPC1_T_SG(0,2,4)_FB_D(02,03)	OK	126	Up
SF_30_02_FB_D(05,02)	-> FPC1_T_SG(0,2,5)_FB_D(02,02)	OK	126	Up
SF_30_02_FB_D(05,01)	-> FPC1_T_SG(0,2,6)_FB_D(02,01)	OK	126	Up
SF_30_02_FB_D(05,00)	-> FPC1_T_SG(0,2,7)_FB_D(02,00)	OK	126	Up
SF_30_03_FB_B(17,08)	-> FPC5_T_SG(2,2,0)_FB_B(14,08)	OK	133	Up
SF_30_03_FB_B(17,07)	-> FPC5_T_SG(2,2,1)_FB_B(14,07)	OK	133	Up
SF_30_03_FB_B(17,06)	-> FPC5_T_SG(2,2,2)_FB_B(14,06)	OK	133	Up

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SF_30_03_FB_B(17,05) -> FPC5_T_SG(2,2,3)_FB_B(14,05)    OK      133    Up
SF_30_03_FB_B(17,03) -> FPC5_T_SG(2,2,4)_FB_B(14,03)    OK      133    Up
SF_30_03_FB_B(17,02) -> FPC5_T_SG(2,2,5)_FB_B(14,02)    OK      133    Up
SF_30_03_FB_B(17,01) -> FPC5_T_SG(2,2,6)_FB_B(14,01)    OK      133    Up
SF_30_03_FB_B(17,00) -> FPC5_T_SG(2,2,7)_FB_B(14,00)    OK      133    Up
SF_30_04_FB_C(10,11) -> FPC2_T_SG(1,0,0)_FB_C(07,11)    OK      140    Up
SF_30_04_FB_C(10,10) -> FPC2_T_SG(1,0,1)_FB_C(07,10)    OK      140    Up
SF_30_04_FB_C(10,09) -> FPC2_T_SG(1,0,2)_FB_C(07,09)    OK      140    Up
SF_30_04_FB_C(10,08) -> FPC2_T_SG(1,0,3)_FB_C(07,08)    OK      140    Up
SF_30_04_FB_C(10,07) -> FPC2_T_SG(1,0,4)_FB_C(07,07)    OK      140    Up
SF_30_04_FB_C(10,06) -> FPC2_T_SG(1,0,5)_FB_C(07,06)    OK      140    Up
SF_30_04_FB_C(10,05) -> FPC2_T_SG(1,0,6)_FB_C(07,05)    OK      140    Up
SF_30_04_FB_C(10,04) -> FPC2_T_SG(1,0,7)_FB_C(07,04)    OK      140    Up
SF_30_05_FB_A(22,11) -> FPC6_T_SG(3,0,0)_FB_A(19,11)    OK      147    Up
SF_30_05_FB_A(22,10) -> FPC6_T_SG(3,0,1)_FB_A(19,10)    OK      147    Up
SF_30_05_FB_A(22,09) -> FPC6_T_SG(3,0,2)_FB_A(19,09)    OK      147    Up
SF_30_05_FB_A(22,08) -> FPC6_T_SG(3,0,3)_FB_A(19,08)    OK      147    Up
SF_30_05_FB_A(22,07) -> FPC6_T_SG(3,0,4)_FB_A(19,07)    OK      147    Up
SF_30_05_FB_A(22,06) -> FPC6_T_SG(3,0,5)_FB_A(19,06)    OK      147    Up
SF_30_05_FB_A(22,05) -> FPC6_T_SG(3,0,6)_FB_A(19,05)    OK      147    Up
SF_30_05_FB_A(22,04) -> FPC6_T_SG(3,0,7)_FB_A(19,04)    OK      147    Up
SF_30_06_FB_C(11,08) -> FPC3_T_SG(1,2,0)_FB_C(08,08)    OK      154    Up
SF_30_06_FB_C(11,07) -> FPC3_T_SG(1,2,1)_FB_C(08,07)    OK      154    Up
SF_30_06_FB_C(11,06) -> FPC3_T_SG(1,2,2)_FB_C(08,06)    OK      154    Up
SF_30_06_FB_C(11,05) -> FPC3_T_SG(1,2,3)_FB_C(08,05)    OK      154    Up
SF_30_06_FB_C(11,03) -> FPC3_T_SG(1,2,4)_FB_C(08,03)    OK      154    Up
SF_30_06_FB_C(11,02) -> FPC3_T_SG(1,2,5)_FB_C(08,02)    OK      154    Up
SF_30_06_FB_C(11,01) -> FPC3_T_SG(1,2,6)_FB_C(08,01)    OK      154    Up
SF_30_06_FB_C(11,00) -> FPC3_T_SG(1,2,7)_FB_C(08,00)    OK      154    Up
...

```

### show chassis fabric topology lcc (TX Matrix Plus Router)

```

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

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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_10_00_FB_D(01,11)	OK	12	Up
FPC0_T_SG(0,0,1)_FB_D(04,10)	-> SF_10_00_FB_D(01,10)	OK	12	Up
FPC0_T_SG(0,0,2)_FB_D(04,09)	-> SF_10_00_FB_D(01,09)	OK	12	Up
FPC0_T_SG(0,0,3)_FB_D(04,08)	-> SF_10_00_FB_D(01,08)	OK	12	Up
FPC0_T_SG(0,0,4)_FB_D(04,07)	-> SF_10_00_FB_D(01,07)	OK	12	Up
FPC0_T_SG(0,0,5)_FB_D(04,06)	-> SF_10_00_FB_D(01,06)	OK	12	Up
FPC0_T_SG(0,0,6)_FB_D(04,05)	-> SF_10_00_FB_D(01,05)	OK	12	Up
FPC0_T_SG(0,0,7)_FB_D(04,04)	-> SF_10_00_FB_D(01,04)	OK	12	Up
FPC0_B_SG(0,1,0)_FB_D(03,07)	-> SF_10_10_FB_D(00,07)	OK	15	Up
FPC0_B_SG(0,1,1)_FB_D(03,06)	-> SF_10_10_FB_D(00,06)	OK	15	Up
FPC0_B_SG(0,1,2)_FB_D(03,05)	-> SF_10_10_FB_D(00,05)	OK	15	Up
FPC0_B_SG(0,1,3)_FB_D(03,04)	-> SF_10_10_FB_D(00,04)	OK	15	Up
FPC0_B_SG(0,1,4)_FB_D(03,03)	-> SF_10_10_FB_D(00,03)	OK	15	Up
FPC0_B_SG(0,1,5)_FB_D(03,02)	-> SF_10_10_FB_D(00,02)	OK	15	Up
FPC0_B_SG(0,1,6)_FB_D(03,01)	-> SF_10_10_FB_D(00,01)	OK	15	Up
FPC0_B_SG(0,1,7)_FB_D(03,00)	-> SF_10_10_FB_D(00,00)	OK	15	Up

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FPC1_T_SG(0,2,0)_FB_D(05,08) -> SF_10_02_FB_D(02,08)    OK      18      Up
FPC1_T_SG(0,2,1)_FB_D(05,07) -> SF_10_02_FB_D(02,07)    OK      18      Up
FPC1_T_SG(0,2,2)_FB_D(05,06) -> SF_10_02_FB_D(02,06)    OK      18      Up
FPC1_T_SG(0,2,3)_FB_D(05,05) -> SF_10_02_FB_D(02,05)    OK      18      Up
FPC1_T_SG(0,2,4)_FB_D(05,03) -> SF_10_02_FB_D(02,03)    OK      18      Up
FPC1_T_SG(0,2,5)_FB_D(05,02) -> SF_10_02_FB_D(02,02)    OK      18      Up
FPC1_T_SG(0,2,6)_FB_D(05,01) -> SF_10_02_FB_D(02,01)    OK      18      Up
FPC1_T_SG(0,2,7)_FB_D(05,00) -> SF_10_02_FB_D(02,00)    OK      18      Up
FPC1_B_SG(0,3,0)_FB_D(04,03) -> SF_10_11_FB_D(01,03)    OK      21      Up
FPC1_B_SG(0,3,1)_FB_D(04,02) -> SF_10_11_FB_D(01,02)    OK      21      Up
FPC1_B_SG(0,3,2)_FB_D(04,01) -> SF_10_11_FB_D(01,01)    OK      21      Up
FPC1_B_SG(0,3,3)_FB_D(04,00) -> SF_10_11_FB_D(01,00)    OK      21      Up
FPC1_B_SG(0,3,4)_FB_D(03,11) -> SF_10_11_FB_D(00,11)    OK      21      Up
FPC1_B_SG(0,3,5)_FB_D(03,10) -> SF_10_11_FB_D(00,10)    OK      21      Up
FPC1_B_SG(0,3,6)_FB_D(03,09) -> SF_10_11_FB_D(00,09)    OK      21      Up
FPC1_B_SG(0,3,7)_FB_D(03,08) -> SF_10_11_FB_D(00,08)    OK      21      Up
FPC2_T_SG(1,0,0)_FB_C(10,11) -> SF_10_04_FB_C(07,11)    OK      12      Up
FPC2_T_SG(1,0,1)_FB_C(10,10) -> SF_10_04_FB_C(07,10)    OK      12      Up
FPC2_T_SG(1,0,2)_FB_C(10,09) -> SF_10_04_FB_C(07,09)    OK      12      Up
FPC2_T_SG(1,0,3)_FB_C(10,08) -> SF_10_04_FB_C(07,08)    OK      12      Up
FPC2_T_SG(1,0,4)_FB_C(10,07) -> SF_10_04_FB_C(07,07)    OK      12      Up
FPC2_T_SG(1,0,5)_FB_C(10,06) -> SF_10_04_FB_C(07,06)    OK      12      Up
FPC2_T_SG(1,0,6)_FB_C(10,05) -> SF_10_04_FB_C(07,05)    OK      12      Up
FPC2_T_SG(1,0,7)_FB_C(10,04) -> SF_10_04_FB_C(07,04)    OK      12      Up
FPC2_B_SG(1,1,0)_FB_C(09,07) -> SF_10_14_FB_C(06,07)    OK      15      Up
FPC2_B_SG(1,1,1)_FB_C(09,06) -> SF_10_14_FB_C(06,06)    OK      15      Up
FPC2_B_SG(1,1,2)_FB_C(09,05) -> SF_10_14_FB_C(06,05)    OK      15      Up
FPC2_B_SG(1,1,3)_FB_C(09,04) -> SF_10_14_FB_C(06,04)    OK      15      Up
FPC2_B_SG(1,1,4)_FB_C(09,03) -> SF_10_14_FB_C(06,03)    OK      15      Up
FPC2_B_SG(1,1,5)_FB_C(09,02) -> SF_10_14_FB_C(06,02)    OK      15      Up
FPC2_B_SG(1,1,6)_FB_C(09,01) -> SF_10_14_FB_C(06,01)    OK      15      Up
FPC2_B_SG(1,1,7)_FB_C(09,00) -> SF_10_14_FB_C(06,00)    OK      15      Up
FPC3_T_SG(1,2,0)_FB_C(11,08) -> SF_10_06_FB_C(08,08)    OK      18      Up
FPC3_T_SG(1,2,1)_FB_C(11,07) -> SF_10_06_FB_C(08,07)    OK      18      Up
FPC3_T_SG(1,2,2)_FB_C(11,06) -> SF_10_06_FB_C(08,06)    OK      18      Up
FPC3_T_SG(1,2,3)_FB_C(11,05) -> SF_10_06_FB_C(08,05)    OK      18      Up
FPC3_T_SG(1,2,4)_FB_C(11,03) -> SF_10_06_FB_C(08,03)    OK      18      Up
FPC3_T_SG(1,2,5)_FB_C(11,02) -> SF_10_06_FB_C(08,02)    OK      18      Up
FPC3_T_SG(1,2,6)_FB_C(11,01) -> SF_10_06_FB_C(08,01)    OK      18      Up
...

```

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

```

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

```

In-links	State	Out-links	State
----------	-------	-----------	-------

```

SIB0 :
-----

```

#### Onboard Links

SIB0_XF1,14_0->SIB0_XF,00_0	Up	SIB0_XF,00_0->SIB0_XF1,14_0	Up
SIB0_XF,00_0->SIB0_XF1,14_0	Up	SIB0_XF1,14_0->SIB0_XF,00_0	Up
SIB0_XF1,13_0->SIB0_XF,01_0	Up	SIB0_XF,01_0->SIB0_XF1,13_0	Up
SIB0_XF,01_0->SIB0_XF1,13_0	Up	SIB0_XF1,13_0->SIB0_XF,01_0	Up
SIB0_XF1,12_0->SIB0_XF,02_0	Up	SIB0_XF,02_0->SIB0_XF1,12_0	Up
SIB0_XF,02_0->SIB0_XF1,12_0	Up	SIB0_XF1,12_0->SIB0_XF,02_0	Up
SIB0_XF1,11_0->SIB0_XF,03_0	Up	SIB0_XF,03_0->SIB0_XF1,11_0	Up

SIB0_XF,03_0->SIB0_XF1,11_0	Up	SIB0_XF1,11_0->SIB0_XF,03_0	Up
SIB0_XF1,10_0->SIB0_XF,04_0	Up	SIB0_XF,04_0->SIB0_XF1,10_0	Up
SIB0_XF,04_0->SIB0_XF1,10_0	Up	SIB0_XF1,10_0->SIB0_XF,04_0	Up
SIB0_XF1,09_0->SIB0_XF,05_0	Up	SIB0_XF,05_0->SIB0_XF1,09_0	Up
SIB0_XF,05_0->SIB0_XF1,09_0	Up	SIB0_XF1,09_0->SIB0_XF,05_0	Up
SIB0_XF2,14_0->SIB0_XF,06_0	Up	SIB0_XF,06_0->SIB0_XF2,14_0	Up
SIB0_XF,06_0->SIB0_XF2,14_0	Up	SIB0_XF2,14_0->SIB0_XF,06_0	Up
SIB0_XF2,13_0->SIB0_XF,07_0	Up	SIB0_XF,07_0->SIB0_XF2,13_0	Up
SIB0_XF,07_0->SIB0_XF2,13_0	Up	SIB0_XF2,13_0->SIB0_XF,07_0	Up
SIB0_XF2,12_0->SIB0_XF,08_0	Up	SIB0_XF,08_0->SIB0_XF2,12_0	Up
SIB0_XF,08_0->SIB0_XF2,12_0	Up	SIB0_XF2,12_0->SIB0_XF,08_0	Up
SIB0_XF2,11_0->SIB0_XF,09_0	Up	SIB0_XF,09_0->SIB0_XF2,11_0	Up
SIB0_XF,09_0->SIB0_XF2,11_0	Up	SIB0_XF2,11_0->SIB0_XF,09_0	Up
SIB0_XF2,10_0->SIB0_XF,10_0	Up	SIB0_XF,10_0->SIB0_XF2,10_0	Up
SIB0_XF,10_0->SIB0_XF2,10_0	Up	SIB0_XF2,10_0->SIB0_XF,10_0	Up
SIB0_XF2,09_0->SIB0_XF,11_0	Up	SIB0_XF,11_0->SIB0_XF2,09_0	Up
SIB0_XF,11_0->SIB0_XF2,09_0	Up	SIB0_XF2,09_0->SIB0_XF,11_0	Up
SIB0_XF3,13_0->SIB0_XF,12_0	Up	SIB0_XF,12_0->SIB0_XF3,13_0	Up
SIB0_XF,12_0->SIB0_XF3,13_0	Up	SIB0_XF3,13_0->SIB0_XF,12_0	Up
SIB0_XF3,12_0->SIB0_XF,13_0	Up	SIB0_XF,13_0->SIB0_XF3,12_0	Up
SIB0_XF,13_0->SIB0_XF3,12_0	Up	SIB0_XF3,12_0->SIB0_XF,13_0	Up
SIB0_XF3,11_0->SIB0_XF,14_0	Up	SIB0_XF,14_0->SIB0_XF3,11_0	Up
SIB0_XF,14_0->SIB0_XF3,11_0	Up	SIB0_XF3,11_0->SIB0_XF,14_0	Up
SIB0_XF3,10_0->SIB0_XF,15_0	Up	SIB0_XF,15_0->SIB0_XF3,10_0	Up
SIB0_XF,15_0->SIB0_XF3,10_0	Up	SIB0_XF3,10_0->SIB0_XF,15_0	Up

## PFE Links

FPC2PFE0->SIB0_XF1,05_0	Up	SIB0_XF1,05_0->FPC2PFE0	Up
FPC3PFE0->SIB0_XF2,15_0	Up	SIB0_XF2,15_0->FPC3PFE0	Up
FPC5PFE0->SIB0_XF2,05_0	Up	SIB0_XF2,05_0->FPC5PFE0	Up
FPC5PFE1->SIB0_XF2,07_0	Up	SIB0_XF2,07_0->FPC5PFE1	Up
FPC6PFE0->SIB0_XF3,01_0	Up	SIB0_XF3,01_0->FPC6PFE0	Up
FPC6PFE0->SIB0_XF3,01_1	Up	SIB0_XF3,01_1->FPC6PFE0	Up
FPC6PFE0->SIB0_XF3,02_0	Up	SIB0_XF3,02_0->FPC6PFE0	Up
FPC6PFE1->SIB0_XF3,03_0	Up	SIB0_XF3,03_0->FPC6PFE1	Up
FPC6PFE1->SIB0_XF3,03_1	Up	SIB0_XF3,03_1->FPC6PFE1	Up
FPC6PFE1->SIB0_XF3,02_1	Up	SIB0_XF3,02_1->FPC6PFE1	Up

## show chassis fabric topology lcc (TX Matrix Plus Router with 3D SIBs)

```
user@host> show chassis fabric topology lcc 6
lcc6-re0:
```

fchip (mode)			
In-links	State	Out-links	State
SIB0 :			
-----			
CXP0_Evn->LCC_SIB0_XF3,10_0	Up	LCC_SIB0_XF3,10_0->CXP0_Evn	Up
CXP0_Odd->LCC_SIB0_XF3,11_0	Up	LCC_SIB0_XF3,11_0->CXP0_Odd	Up
CXP1_Evn->LCC_SIB0_XF3,12_0	Up	LCC_SIB0_XF3,12_0->CXP1_Evn	Up
CXP1_Odd->LCC_SIB0_XF3,13_0	Up	LCC_SIB0_XF3,13_0->CXP1_Odd	Up
CXP2_Evn->LCC_SIB0_XF2,09_0	Up	LCC_SIB0_XF2,09_0->CXP2_Evn	Up
CXP2_Odd->LCC_SIB0_XF2,10_0	Up	LCC_SIB0_XF2,10_0->CXP2_Odd	Up
CXP3_Evn->LCC_SIB0_XF2,11_0	Up	LCC_SIB0_XF2,11_0->CXP3_Evn	Up
CXP3_Odd->LCC_SIB0_XF2,12_0	Up	LCC_SIB0_XF2,12_0->CXP3_Odd	Up
CXP4_Evn->LCC_SIB0_XF2,13_0	Up	LCC_SIB0_XF2,13_0->CXP4_Evn	Up
CXP4_Odd->LCC_SIB0_XF1,09_0	Up	LCC_SIB0_XF1,09_0->CXP4_Odd	Up
CXP5_Evn->LCC_SIB0_XF2,14_0	Up	LCC_SIB0_XF2,14_0->CXP5_Evn	Up
CXP5_Odd->LCC_SIB0_XF1,10_0	Up	LCC_SIB0_XF1,10_0->CXP5_Odd	Up

CXP6_Evn->LCC_SIB0_XF1,11_0	Up	LCC_SIB0_XF1,11_0->CXP6_Evn	Up
CXP6_Odd->LCC_SIB0_XF1,12_0	Up	LCC_SIB0_XF1,12_0->CXP6_Odd	Up
CXP7_Evn->LCC_SIB0_XF1,13_0	Up	LCC_SIB0_XF1,13_0->CXP7_Evn	Up
CXP7_Odd->LCC_SIB0_XF1,14_0	Up	LCC_SIB0_XF1,14_0->CXP7_Odd	Up
SIB1 :			
-----			
SIB2 :			
-----			
CXP0_Evn->LCC_SIB2_XF3,10_0	Up	LCC_SIB2_XF3,10_0->CXP0_Evn	Up
CXP0_Odd->LCC_SIB2_XF3,11_0	Up	LCC_SIB2_XF3,11_0->CXP0_Odd	Up
CXP1_Evn->LCC_SIB2_XF3,12_0	Up	LCC_SIB2_XF3,12_0->CXP1_Evn	Up
CXP1_Odd->LCC_SIB2_XF3,13_0	Up	LCC_SIB2_XF3,13_0->CXP1_Odd	Up
CXP2_Evn->LCC_SIB2_XF2,09_0	Up	LCC_SIB2_XF2,09_0->CXP2_Evn	Up
CXP2_Odd->LCC_SIB2_XF2,10_0	Up	LCC_SIB2_XF2,10_0->CXP2_Odd	Up
CXP3_Evn->LCC_SIB2_XF2,11_0	Up	LCC_SIB2_XF2,11_0->CXP3_Evn	Up
CXP3_Odd->LCC_SIB2_XF2,12_0	Up	LCC_SIB2_XF2,12_0->CXP3_Odd	Up
CXP4_Evn->LCC_SIB2_XF2,13_0	Up	LCC_SIB2_XF2,13_0->CXP4_Evn	Up
CXP4_Odd->LCC_SIB2_XF1,09_0	Up	LCC_SIB2_XF1,09_0->CXP4_Odd	Up
CXP5_Evn->LCC_SIB2_XF2,14_0	Up	LCC_SIB2_XF2,14_0->CXP5_Evn	Up
CXP5_Odd->LCC_SIB2_XF1,10_0	Up	LCC_SIB2_XF1,10_0->CXP5_Odd	Up
CXP6_Evn->LCC_SIB2_XF1,11_0	Up	LCC_SIB2_XF1,11_0->CXP6_Evn	Up
CXP6_Odd->LCC_SIB2_XF1,12_0	Up	LCC_SIB2_XF1,12_0->CXP6_Odd	Up
CXP7_Evn->LCC_SIB2_XF1,13_0	Up	LCC_SIB2_XF1,13_0->CXP7_Evn	Up
CXP7_Odd->LCC_SIB2_XF1,14_0	Up	LCC_SIB2_XF1,14_0->CXP7_Odd	Up
SIB3 :			
-----			
CXP0_Evn->LCC_SIB3_XF3,10_0	Up	LCC_SIB3_XF3,10_0->CXP0_Evn	Up
CXP0_Odd->LCC_SIB3_XF3,11_0	Up	LCC_SIB3_XF3,11_0->CXP0_Odd	Up
CXP1_Evn->LCC_SIB3_XF3,12_0	Up	LCC_SIB3_XF3,12_0->CXP1_Evn	Up
CXP1_Odd->LCC_SIB3_XF3,13_0	Up	LCC_SIB3_XF3,13_0->CXP1_Odd	Up
CXP2_Evn->LCC_SIB3_XF2,09_0	Up	LCC_SIB3_XF2,09_0->CXP2_Evn	Up
CXP2_Odd->LCC_SIB3_XF2,10_0	Up	LCC_SIB3_XF2,10_0->CXP2_Odd	Up
CXP3_Evn->LCC_SIB3_XF2,11_0	Up	LCC_SIB3_XF2,11_0->CXP3_Evn	Up
CXP3_Odd->LCC_SIB3_XF2,12_0	Up	LCC_SIB3_XF2,12_0->CXP3_Odd	Up
CXP4_Evn->LCC_SIB3_XF2,13_0	Up	LCC_SIB3_XF2,13_0->CXP4_Evn	Up
CXP4_Odd->LCC_SIB3_XF1,09_0	Up	LCC_SIB3_XF1,09_0->CXP4_Odd	Up
CXP5_Evn->LCC_SIB3_XF2,14_0	Up	LCC_SIB3_XF2,14_0->CXP5_Evn	Up
CXP5_Odd->LCC_SIB3_XF1,10_0	Up	LCC_SIB3_XF1,10_0->CXP5_Odd	Up
CXP6_Evn->LCC_SIB3_XF1,11_0	Up	LCC_SIB3_XF1,11_0->CXP6_Evn	Up
CXP6_Odd->LCC_SIB3_XF1,12_0	Up	LCC_SIB3_XF1,12_0->CXP6_Odd	Up
CXP7_Evn->LCC_SIB3_XF1,13_0	Up	LCC_SIB3_XF1,13_0->CXP7_Evn	Up
CXP7_Odd->LCC_SIB3_XF1,14_0	Up	LCC_SIB3_XF1,14_0->CXP7_Odd	Up
SIB4 :			
-----			
CXP0_Evn->LCC_SIB4_XF3,10_0	Up	LCC_SIB4_XF3,10_0->CXP0_Evn	Up
CXP0_Odd->LCC_SIB4_XF3,11_0	Up	LCC_SIB4_XF3,11_0->CXP0_Odd	Up
CXP1_Evn->LCC_SIB4_XF3,12_0	Up	LCC_SIB4_XF3,12_0->CXP1_Evn	Up
CXP1_Odd->LCC_SIB4_XF3,13_0	Up	LCC_SIB4_XF3,13_0->CXP1_Odd	Up
CXP2_Evn->LCC_SIB4_XF2,09_0	Up	LCC_SIB4_XF2,09_0->CXP2_Evn	Up
CXP2_Odd->LCC_SIB4_XF2,10_0	Up	LCC_SIB4_XF2,10_0->CXP2_Odd	Up
CXP3_Evn->LCC_SIB4_XF2,11_0	Up	LCC_SIB4_XF2,11_0->CXP3_Evn	Up
CXP3_Odd->LCC_SIB4_XF2,12_0	Up	LCC_SIB4_XF2,12_0->CXP3_Odd	Up
CXP4_Evn->LCC_SIB4_XF2,13_0	Up	LCC_SIB4_XF2,13_0->CXP4_Evn	Up
CXP4_Odd->LCC_SIB4_XF1,09_0	Up	LCC_SIB4_XF1,09_0->CXP4_Odd	Up
CXP5_Evn->LCC_SIB4_XF2,14_0	Up	LCC_SIB4_XF2,14_0->CXP5_Evn	Up
CXP5_Odd->LCC_SIB4_XF1,10_0	Up	LCC_SIB4_XF1,10_0->CXP5_Odd	Up
CXP6_Evn->LCC_SIB4_XF1,11_0	Up	LCC_SIB4_XF1,11_0->CXP6_Evn	Up
CXP6_Odd->LCC_SIB4_XF1,12_0	Up	LCC_SIB4_XF1,12_0->CXP6_Odd	Up



```

CXP7_Evn->LCC_SIB4_XF1,13_0    Up    LCC_SIB4_XF1,13_0->CXP7_Evn    Up
CXP7_Odd->LCC_SIB4_XF1,14_0    Up    LCC_SIB4_XF1,14_0->CXP7_Odd    Up

```

### show chassis fabric topology sfc (TX Matrix Plus Router with 3D SIBs)

```

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

```

```

-----
fchip (mode)
In-links          State          Out-links          State
-----
F13_SIB0 :
-----
CXP0_Evn->F13_SIB0_XF2,04_0    Up    F13_SIB0_XF2,04_0->CXP0_Evn    Up
CXP0_Odd->F13_SIB0_XF2,03_0    Up    F13_SIB0_XF2,03_0->CXP0_Odd    Up
CXP1_Evn->F13_SIB0_XF2,06_0    Up    F13_SIB0_XF2,06_0->CXP1_Evn    Up
CXP1_Odd->F13_SIB0_XF2,05_0    Up    F13_SIB0_XF2,05_0->CXP1_Odd    Up
CXP2_Evn->F13_SIB0_XF2,08_0    Up    F13_SIB0_XF2,08_0->CXP2_Evn    Up
CXP2_Odd->F13_SIB0_XF2,07_0    Up    F13_SIB0_XF2,07_0->CXP2_Odd    Up
CXP3_Evn->F13_SIB0_XF2,10_0    Up    F13_SIB0_XF2,10_0->CXP3_Evn    Up
CXP3_Odd->F13_SIB0_XF2,09_0    Up    F13_SIB0_XF2,09_0->CXP3_Odd    Up
CXP4_Evn->F13_SIB0_XF0,04_0    Up    F13_SIB0_XF0,04_0->CXP4_Evn    Up
CXP4_Odd->F13_SIB0_XF0,03_0    Up    F13_SIB0_XF0,03_0->CXP4_Odd    Up
CXP5_Evn->F13_SIB0_XF0,06_0    Up    F13_SIB0_XF0,06_0->CXP5_Evn    Up
CXP5_Odd->F13_SIB0_XF0,05_0    Up    F13_SIB0_XF0,05_0->CXP5_Odd    Up
CXP6_Evn->F13_SIB0_XF0,08_0    Up    F13_SIB0_XF0,08_0->CXP6_Evn    Up
CXP6_Odd->F13_SIB0_XF0,07_0    Up    F13_SIB0_XF0,07_0->CXP6_Odd    Up
CXP7_Evn->F13_SIB0_XF0,10_0    Up    F13_SIB0_XF0,10_0->CXP7_Evn    Up
CXP7_Odd->F13_SIB0_XF0,09_0    Up    F13_SIB0_XF0,09_0->CXP7_Odd    Up
CXP8_Evn->F13_SIB0_XF3,04_0    Up    F13_SIB0_XF3,04_0->CXP8_Evn    Up
CXP8_Odd->F13_SIB0_XF3,03_0    Up    F13_SIB0_XF3,03_0->CXP8_Odd    Up
CXP9_Evn->F13_SIB0_XF3,06_0    Up    F13_SIB0_XF3,06_0->CXP9_Evn    Up
CXP9_Odd->F13_SIB0_XF3,05_0    Up    F13_SIB0_XF3,05_0->CXP9_Odd    Up
CXP10_Evn->F13_SIB0_XF3,08_0    Up    F13_SIB0_XF3,08_0->CXP10_Evn    Up
CXP10_Odd->F13_SIB0_XF3,07_0    Up    F13_SIB0_XF3,07_0->CXP10_Odd    Up
CXP11_Evn->F13_SIB0_XF3,10_0    Up    F13_SIB0_XF3,10_0->CXP11_Evn    Up
CXP11_Odd->F13_SIB0_XF3,09_0    Up    F13_SIB0_XF3,09_0->CXP11_Odd    Up
CXP12_Evn->F13_SIB0_XF1,04_0    Up    F13_SIB0_XF1,04_0->CXP12_Evn    Up
CXP12_Odd->F13_SIB0_XF1,03_0    Up    F13_SIB0_XF1,03_0->CXP12_Odd    Up
CXP13_Evn->F13_SIB0_XF1,06_0    Up    F13_SIB0_XF1,06_0->CXP13_Evn    Up
CXP13_Odd->F13_SIB0_XF1,05_0    Up    F13_SIB0_XF1,05_0->CXP13_Odd    Up
CXP14_Evn->F13_SIB0_XF1,08_0    Up    F13_SIB0_XF1,08_0->CXP14_Evn    Up
CXP14_Odd->F13_SIB0_XF1,07_0    Up    F13_SIB0_XF1,07_0->CXP14_Odd    Up
CXP15_Evn->F13_SIB0_XF1,10_0    Up    F13_SIB0_XF1,10_0->CXP15_Evn    Up
CXP15_Odd->F13_SIB0_XF1,09_0    Up    F13_SIB0_XF1,09_0->CXP15_Odd    Up
F13_SIB0_XF4,00_0->F13_SIB0_XF2,02_0 Up    F13_SIB0_XF2,02_0->F13_SIB0_XF4,00_0 Up
F13_SIB0_XF4,01_0->F13_SIB0_XF2,01_0 Up    F13_SIB0_XF2,01_0->F13_SIB0_XF4,01_0 Up
F13_SIB0_XF4,02_0->F13_SIB0_XF2,00_0 Up    F13_SIB0_XF2,00_0->F13_SIB0_XF4,02_0 Up
F13_SIB0_XF4,03_0->F13_SIB0_XF2,15_0 Up    F13_SIB0_XF2,15_0->F13_SIB0_XF4,03_0 Up
F13_SIB0_XF4,04_0->F13_SIB0_XF2,14_0 Up    F13_SIB0_XF2,14_0->F13_SIB0_XF4,04_0 Up
F13_SIB0_XF4,05_0->F13_SIB0_XF2,13_0 Up    F13_SIB0_XF2,13_0->F13_SIB0_XF4,05_0 Up
F13_SIB0_XF4,06_0->F13_SIB0_XF2,12_0 Up    F13_SIB0_XF2,12_0->F13_SIB0_XF4,06_0 Up
F13_SIB0_XF4,07_0->F13_SIB0_XF2,11_0 Up    F13_SIB0_XF2,11_0->F13_SIB0_XF4,07_0 Up

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F13_SIB0_XF4,08_0->F13_SIB0_XF0,02_0 Up	F13_SIB0_XF0,02_0->F13_SIB0_XF4,08_0 Up
F13_SIB0_XF4,09_0->F13_SIB0_XF0,01_0 Up	F13_SIB0_XF0,01_0->F13_SIB0_XF4,09_0 Up
F13_SIB0_XF4,10_0->F13_SIB0_XF0,00_0 Up	F13_SIB0_XF0,00_0->F13_SIB0_XF4,10_0 Up
F13_SIB0_XF4,11_0->F13_SIB0_XF0,15_0 Up	F13_SIB0_XF0,15_0->F13_SIB0_XF4,11_0 Up
F13_SIB0_XF4,12_0->F13_SIB0_XF0,14_0 Up	F13_SIB0_XF0,14_0->F13_SIB0_XF4,12_0 Up
F13_SIB0_XF4,13_0->F13_SIB0_XF0,13_0 Up	F13_SIB0_XF0,13_0->F13_SIB0_XF4,13_0 Up
F13_SIB0_XF4,14_0->F13_SIB0_XF0,12_0 Up	F13_SIB0_XF0,12_0->F13_SIB0_XF4,14_0 Up
F13_SIB0_XF4,15_0->F13_SIB0_XF0,11_0 Up	F13_SIB0_XF0,11_0->F13_SIB0_XF4,15_0 Up
F13_SIB0_XF6,08_0->F13_SIB0_XF3,02_0 Up	F13_SIB0_XF3,02_0->F13_SIB0_XF6,08_0 Up
F13_SIB0_XF6,09_0->F13_SIB0_XF3,01_0 Up	F13_SIB0_XF3,01_0->F13_SIB0_XF6,09_0 Up
F13_SIB0_XF6,10_0->F13_SIB0_XF3,00_0 Up	F13_SIB0_XF3,00_0->F13_SIB0_XF6,10_0 Up
F13_SIB0_XF6,11_0->F13_SIB0_XF3,15_0 Up	F13_SIB0_XF3,15_0->F13_SIB0_XF6,11_0 Up
F13_SIB0_XF6,12_0->F13_SIB0_XF3,14_0 Up	F13_SIB0_XF3,14_0->F13_SIB0_XF6,12_0 Up
F13_SIB0_XF6,13_0->F13_SIB0_XF3,13_0 Up	F13_SIB0_XF3,13_0->F13_SIB0_XF6,13_0 Up
F13_SIB0_XF6,14_0->F13_SIB0_XF3,12_0 Up	F13_SIB0_XF3,12_0->F13_SIB0_XF6,14_0 Up
F13_SIB0_XF6,15_0->F13_SIB0_XF3,11_0 Up	F13_SIB0_XF3,11_0->F13_SIB0_XF6,15_0 Up
F13_SIB0_XF6,00_0->F13_SIB0_XF1,02_0 Up	F13_SIB0_XF1,02_0->F13_SIB0_XF6,00_0 Up
F13_SIB0_XF6,01_0->F13_SIB0_XF1,01_0 Up	F13_SIB0_XF1,01_0->F13_SIB0_XF6,01_0 Up
F13_SIB0_XF6,02_0->F13_SIB0_XF1,00_0 Up	F13_SIB0_XF1,00_0->F13_SIB0_XF6,02_0 Up
F13_SIB0_XF6,03_0->F13_SIB0_XF1,15_0 Up	F13_SIB0_XF1,15_0->F13_SIB0_XF6,03_0 Up
F13_SIB0_XF6,04_0->F13_SIB0_XF1,14_0 Up	F13_SIB0_XF1,14_0->F13_SIB0_XF6,04_0 Up
F13_SIB0_XF6,05_0->F13_SIB0_XF1,13_0 Up	F13_SIB0_XF1,13_0->F13_SIB0_XF6,05_0 Up
F13_SIB0_XF6,06_0->F13_SIB0_XF1,12_0 Up	F13_SIB0_XF1,12_0->F13_SIB0_XF6,06_0 Up
F13_SIB0_XF6,07_0->F13_SIB0_XF1,11_0 Up	F13_SIB0_XF1,11_0->F13_SIB0_XF6,07_0 Up
F13_SIB0_XF2,02_0->F13_SIB0_XF5,00_0 Up	F13_SIB0_XF5,00_0->F13_SIB0_XF2,02_0 Up
F13_SIB0_XF2,01_0->F13_SIB0_XF5,01_0 Up	F13_SIB0_XF5,01_0->F13_SIB0_XF2,01_0 Up
F13_SIB0_XF2,00_0->F13_SIB0_XF5,02_0 Up	F13_SIB0_XF5,02_0->F13_SIB0_XF2,00_0 Up
F13_SIB0_XF2,15_0->F13_SIB0_XF5,03_0 Up	F13_SIB0_XF5,03_0->F13_SIB0_XF2,15_0 Up
F13_SIB0_XF2,14_0->F13_SIB0_XF5,04_0 Up	F13_SIB0_XF5,04_0->F13_SIB0_XF2,14_0 Up
F13_SIB0_XF2,13_0->F13_SIB0_XF5,05_0 Up	F13_SIB0_XF5,05_0->F13_SIB0_XF2,13_0 Up
F13_SIB0_XF2,12_0->F13_SIB0_XF5,06_0 Up	F13_SIB0_XF5,06_0->F13_SIB0_XF2,12_0 Up

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F13_SIB0_XF2,11_0->F13_SIB0_XF5,07_0 Up  F13_SIB0_XF5,07_0->F13_SIB0_XF2,11_0 Up
F13_SIB0_XF0,02_0->F13_SIB0_XF5,08_0 Up  F13_SIB0_XF5,08_0->F13_SIB0_XF0,02_0 Up
F13_SIB0_XF0,01_0->F13_SIB0_XF5,09_0 Up  F13_SIB0_XF5,09_0->F13_SIB0_XF0,01_0 Up
F13_SIB0_XF0,00_0->F13_SIB0_XF5,10_0 Up  F13_SIB0_XF5,10_0->F13_SIB0_XF0,00_0 Up
F13_SIB0_XF0,15_0->F13_SIB0_XF5,11_0 Up  F13_SIB0_XF5,11_0->F13_SIB0_XF0,15_0 Up
F13_SIB0_XF0,14_0->F13_SIB0_XF5,12_0 Up  F13_SIB0_XF5,12_0->F13_SIB0_XF0,14_0 Up
F13_SIB0_XF0,13_0->F13_SIB0_XF5,13_0 Up  F13_SIB0_XF5,13_0->F13_SIB0_XF0,13_0 Up
F13_SIB0_XF0,12_0->F13_SIB0_XF5,14_0 Up  F13_SIB0_XF5,14_0->F13_SIB0_XF0,12_0 Up
F13_SIB0_XF0,11_0->F13_SIB0_XF5,15_0 Up  F13_SIB0_XF5,15_0->F13_SIB0_XF0,11_0 Up
F13_SIB0_XF3,02_0->F13_SIB0_XF7,08_0 Up  F13_SIB0_XF7,08_0->F13_SIB0_XF3,02_0 Up
F13_SIB0_XF3,01_0->F13_SIB0_XF7,09_0 Up  F13_SIB0_XF7,09_0->F13_SIB0_XF3,01_0 Up
F13_SIB0_XF3,00_0->F13_SIB0_XF7,10_0 Up  F13_SIB0_XF7,10_0->F13_SIB0_XF3,00_0 Up
F13_SIB0_XF3,15_0->F13_SIB0_XF7,11_0 Up  F13_SIB0_XF7,11_0->F13_SIB0_XF3,15_0 Up
F13_SIB0_XF3,14_0->F13_SIB0_XF7,12_0 Up  F13_SIB0_XF7,12_0->F13_SIB0_XF3,14_0 Up
F13_SIB0_XF3,13_0->F13_SIB0_XF7,13_0 Up  F13_SIB0_XF7,13_0->F13_SIB0_XF3,13_0 Up
F13_SIB0_XF3,12_0->F13_SIB0_XF7,14_0 Up  F13_SIB0_XF7,14_0->F13_SIB0_XF3,12_0 Up
F13_SIB0_XF3,11_0->F13_SIB0_XF7,15_0 Up  F13_SIB0_XF7,15_0->F13_SIB0_XF3,11_0 Up
F13_SIB0_XF1,02_0->F13_SIB0_XF7,00_0 Up  F13_SIB0_XF7,00_0->F13_SIB0_XF1,02_0 Up
F13_SIB0_XF1,01_0->F13_SIB0_XF7,01_0 Up  F13_SIB0_XF7,01_0->F13_SIB0_XF1,01_0 Up
F13_SIB0_XF1,00_0->F13_SIB0_XF7,02_0 Up  F13_SIB0_XF7,02_0->F13_SIB0_XF1,00_0 Up
F13_SIB0_XF1,15_0->F13_SIB0_XF7,03_0 Up  F13_SIB0_XF7,03_0->F13_SIB0_XF1,15_0 Up
F13_SIB0_XF1,14_0->F13_SIB0_XF7,04_0 Up  F13_SIB0_XF7,04_0->F13_SIB0_XF1,14_0 Up
F13_SIB0_XF1,13_0->F13_SIB0_XF7,05_0 Up  F13_SIB0_XF7,05_0->F13_SIB0_XF1,13_0 Up
F13_SIB0_XF1,12_0->F13_SIB0_XF7,06_0 Up  F13_SIB0_XF7,06_0->F13_SIB0_XF1,12_0 Up
F13_SIB0_XF1,11_0->F13_SIB0_XF7,07_0 Up  F13_SIB0_XF7,07_0->F13_SIB0_XF1,11_0 Up
F2S_SIB2_XF,12_0->F13_SIB0_XF4,00_0 Up  F13_SIB0_XF4,00_0->F2S_SIB2_XF,12_0 Up
F2S_SIB2_XF,08_0->F13_SIB0_XF4,01_0 Up  F13_SIB0_XF4,01_0->F2S_SIB2_XF,08_0 Up
F2S_SIB2_XF,14_0->F13_SIB0_XF4,02_0 Up  F13_SIB0_XF4,02_0->F2S_SIB2_XF,14_0 Up
F2S_SIB2_XF,10_0->F13_SIB0_XF4,03_0 Up  F13_SIB0_XF4,03_0->F2S_SIB2_XF,10_0 Up
F2S_SIB3_XF,12_0->F13_SIB0_XF4,04_0 Up  F13_SIB0_XF4,04_0->F2S_SIB3_XF,12_0 Up

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F2S_SIB3_XF,08_0->F13_SIB0_XF4,05_0 Up	F13_SIB0_XF4,05_0->F2S_SIB3_XF,08_0 Up
F2S_SIB3_XF,14_0->F13_SIB0_XF4,06_0 Up	F13_SIB0_XF4,06_0->F2S_SIB3_XF,14_0 Up
F2S_SIB3_XF,10_0->F13_SIB0_XF4,07_0 Up	F13_SIB0_XF4,07_0->F2S_SIB3_XF,10_0 Up
F2S_SIB0_XF,12_0->F13_SIB0_XF4,08_0 Up	F13_SIB0_XF4,08_0->F2S_SIB0_XF,12_0 Up
F2S_SIB0_XF,08_0->F13_SIB0_XF4,09_0 Up	F13_SIB0_XF4,09_0->F2S_SIB0_XF,08_0 Up
F2S_SIB0_XF,14_0->F13_SIB0_XF4,10_0 Up	F13_SIB0_XF4,10_0->F2S_SIB0_XF,14_0 Up
F2S_SIB0_XF,10_0->F13_SIB0_XF4,11_0 Up	F13_SIB0_XF4,11_0->F2S_SIB0_XF,10_0 Up
F2S_SIB1_XF,12_0->F13_SIB0_XF4,12_0 Up	F13_SIB0_XF4,12_0->F2S_SIB1_XF,12_0 Up
F2S_SIB1_XF,08_0->F13_SIB0_XF4,13_0 Up	F13_SIB0_XF4,13_0->F2S_SIB1_XF,08_0 Up
F2S_SIB1_XF,14_0->F13_SIB0_XF4,14_0 Up	F13_SIB0_XF4,14_0->F2S_SIB1_XF,14_0 Up
F2S_SIB1_XF,10_0->F13_SIB0_XF4,15_0 Up	F13_SIB0_XF4,15_0->F2S_SIB1_XF,10_0 Up
F2S_SIB2_XF,13_0->F13_SIB0_XF6,00_0 Up	F13_SIB0_XF6,00_0->F2S_SIB2_XF,13_0 Up
F2S_SIB2_XF,09_0->F13_SIB0_XF6,01_0 Up	F13_SIB0_XF6,01_0->F2S_SIB2_XF,09_0 Up
F2S_SIB2_XF,15_0->F13_SIB0_XF6,02_0 Up	F13_SIB0_XF6,02_0->F2S_SIB2_XF,15_0 Up
F2S_SIB2_XF,11_0->F13_SIB0_XF6,03_0 Up	F13_SIB0_XF6,03_0->F2S_SIB2_XF,11_0 Up
F2S_SIB3_XF,13_0->F13_SIB0_XF6,04_0 Up	F13_SIB0_XF6,04_0->F2S_SIB3_XF,13_0 Up
F2S_SIB3_XF,09_0->F13_SIB0_XF6,05_0 Up	F13_SIB0_XF6,05_0->F2S_SIB3_XF,09_0 Up
F2S_SIB3_XF,15_0->F13_SIB0_XF6,06_0 Up	F13_SIB0_XF6,06_0->F2S_SIB3_XF,15_0 Up
F2S_SIB3_XF,11_0->F13_SIB0_XF6,07_0 Up	F13_SIB0_XF6,07_0->F2S_SIB3_XF,11_0 Up
F2S_SIB0_XF,13_0->F13_SIB0_XF6,08_0 Up	F13_SIB0_XF6,08_0->F2S_SIB0_XF,13_0 Up
F2S_SIB0_XF,09_0->F13_SIB0_XF6,09_0 Up	F13_SIB0_XF6,09_0->F2S_SIB0_XF,09_0 Up
F2S_SIB0_XF,15_0->F13_SIB0_XF6,10_0 Up	F13_SIB0_XF6,10_0->F2S_SIB0_XF,15_0 Up
F2S_SIB0_XF,11_0->F13_SIB0_XF6,11_0 Up	F13_SIB0_XF6,11_0->F2S_SIB0_XF,11_0 Up
F2S_SIB1_XF,13_0->F13_SIB0_XF6,12_0 Up	F13_SIB0_XF6,12_0->F2S_SIB1_XF,13_0 Up
F2S_SIB1_XF,09_0->F13_SIB0_XF6,13_0 Up	F13_SIB0_XF6,13_0->F2S_SIB1_XF,09_0 Up
F2S_SIB1_XF,15_0->F13_SIB0_XF6,14_0 Up	F13_SIB0_XF6,14_0->F2S_SIB1_XF,15_0 Up
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F13_SIB0_XF5,00_0->F2S_SIB2_XF,12_0 Up	F2S_SIB2_XF,12_0->F13_SIB0_XF5,00_0 Up
F13_SIB0_XF5,01_0->F2S_SIB2_XF,08_0 Up	F2S_SIB2_XF,08_0->F13_SIB0_XF5,01_0 Up
F13_SIB0_XF5,02_0->F2S_SIB2_XF,14_0 Up	F2S_SIB2_XF,14_0->F13_SIB0_XF5,02_0 Up
F13_SIB0_XF5,03_0->F2S_SIB2_XF,10_0 Up	F2S_SIB2_XF,10_0->F13_SIB0_XF5,03_0 Up

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F13_SIB0_XF5,04_0->F2S_SIB3_XF,12_0 Up    F2S_SIB3_XF,12_0->F13_SIB0_XF5,04_0 Up
F13_SIB0_XF5,05_0->F2S_SIB3_XF,08_0 Up    F2S_SIB3_XF,08_0->F13_SIB0_XF5,05_0 Up
F13_SIB0_XF5,06_0->F2S_SIB3_XF,14_0 Up    F2S_SIB3_XF,14_0->F13_SIB0_XF5,06_0 Up
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F13_SIB0_XF5,08_0->F2S_SIB0_XF,12_0 Up    F2S_SIB0_XF,12_0->F13_SIB0_XF5,08_0 Up
F13_SIB0_XF5,09_0->F2S_SIB0_XF,08_0 Up    F2S_SIB0_XF,08_0->F13_SIB0_XF5,09_0 Up
F13_SIB0_XF5,10_0->F2S_SIB0_XF,14_0 Up    F2S_SIB0_XF,14_0->F13_SIB0_XF5,10_0 Up
F13_SIB0_XF5,11_0->F2S_SIB0_XF,10_0 Up    F2S_SIB0_XF,10_0->F13_SIB0_XF5,11_0 Up
F13_SIB0_XF5,12_0->F2S_SIB1_XF,12_0 Up    F2S_SIB1_XF,12_0->F13_SIB0_XF5,12_0 Up
F13_SIB0_XF5,13_0->F2S_SIB1_XF,08_0 Up    F2S_SIB1_XF,08_0->F13_SIB0_XF5,13_0 Up
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F13_SIB0_XF5,15_0->F2S_SIB1_XF,10_0 Up    F2S_SIB1_XF,10_0->F13_SIB0_XF5,15_0 Up
F13_SIB0_XF7,00_0->F2S_SIB2_XF,13_0 Up    F2S_SIB2_XF,13_0->F13_SIB0_XF7,00_0 Up
F13_SIB0_XF7,01_0->F2S_SIB2_XF,09_0 Up    F2S_SIB2_XF,09_0->F13_SIB0_XF7,01_0 Up
F13_SIB0_XF7,02_0->F2S_SIB2_XF,15_0 Up    F2S_SIB2_XF,15_0->F13_SIB0_XF7,02_0 Up
F13_SIB0_XF7,03_0->F2S_SIB2_XF,11_0 Up    F2S_SIB2_XF,11_0->F13_SIB0_XF7,03_0 Up
F13_SIB0_XF7,04_0->F2S_SIB3_XF,13_0 Up    F2S_SIB3_XF,13_0->F13_SIB0_XF7,04_0 Up
F13_SIB0_XF7,05_0->F2S_SIB3_XF,09_0 Up    F2S_SIB3_XF,09_0->F13_SIB0_XF7,05_0 Up
F13_SIB0_XF7,06_0->F2S_SIB3_XF,15_0 Up    F2S_SIB3_XF,15_0->F13_SIB0_XF7,06_0 Up
F13_SIB0_XF7,07_0->F2S_SIB3_XF,11_0 Up    F2S_SIB3_XF,11_0->F13_SIB0_XF7,07_0 Up
F13_SIB0_XF7,08_0->F2S_SIB0_XF,13_0 Up    F2S_SIB0_XF,13_0->F13_SIB0_XF7,08_0 Up
F13_SIB0_XF7,09_0->F2S_SIB0_XF,09_0 Up    F2S_SIB0_XF,09_0->F13_SIB0_XF7,09_0 Up
F13_SIB0_XF7,10_0->F2S_SIB0_XF,15_0 Up    F2S_SIB0_XF,15_0->F13_SIB0_XF7,10_0 Up
F13_SIB0_XF7,11_0->F2S_SIB0_XF,11_0 Up    F2S_SIB0_XF,11_0->F13_SIB0_XF7,11_0 Up
F13_SIB0_XF7,12_0->F2S_SIB1_XF,13_0 Up    F2S_SIB1_XF,13_0->F13_SIB0_XF7,12_0 Up
F13_SIB0_XF7,13_0->F2S_SIB1_XF,09_0 Up    F2S_SIB1_XF,09_0->F13_SIB0_XF7,13_0 Up
F13_SIB0_XF7,14_0->F2S_SIB1_XF,15_0 Up    F2S_SIB1_XF,15_0->F13_SIB0_XF7,14_0 Up
F13_SIB0_XF7,15_0->F2S_SIB1_XF,11_0 Up    F2S_SIB1_XF,11_0->F13_SIB0_XF7,15_0 Up

...

```

## show chassis fabric topology (PTX Series Packet Transport Routers)

```
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 firmware

<b>Syntax</b>	show chassis firmware
<b>Syntax (TX Matrix Routers)</b>	show chassis firmware <lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Routers)</b>	show chassis firmware <lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (MX Series Routers)</b>	show chassis firmware <all-members> <local> <member <i>member-id</i> >
<b>Syntax (MX104, MX2010, and MX2020 3D Universal Edge Routers)</b>	show chassis firmware
<b>Syntax (QFX Series)</b>	show chassis firmware interconnect-device <i>name</i> node-device <i>name</i>
<b>Syntax (ACX Series Universal Access Routers)</b>	show chassis firmware
<b>Syntax (EX Series Switches)</b>	show chassis firmware <detail>
<b>Release Information</b>	<p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.4 for EX Series switches.</p> <p><b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6.</p> <p>Command introduced for EX8200 switches in Junos OS Release 10.2 for EX Series switches.</p> <p>Command introduced in Junos OS Release 11.1 for QFX Series.</p> <p>Command introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 12.3 for ACX4000 Universal Access Routers.</p> <p>Command introduced in Junos OS Release 13.2 for MX104 3D Universal Edge Routers.</p>
<b>Description</b>	<p>On routers and switches, display the version levels of the firmware running on the System Control Board (SCB), Switching and Forwarding Module (SFM), System and Switch Board (SSB), Forwarding Engine Board (FEB), Flexible PIC Concentrators (FPCs), and Routing Engines. On a TX Matrix Plus router, display the version levels of the firmware running on the FPCs and the Switch Processor Mezzanine Board (SPMBs).</p> <p>On EX2200, EX3200, and EX4200 switches, and the QFX Series, display the version levels of the firmware running on the switch. On an EX8208 switch, display the version</p>

levels of the firmware running on the Switch Fabric and Routing Engine (SRE) modules and on the line cards (shown as FPCs). On an EX8216 switch, display the version levels of the firmware running on the Routing Engine (RE) modules and on the line cards (shown as FPCs).

**Options** **none**—Display the version levels of the firmware running. For an EX4200 switch that is a member of a Virtual Chassis, display version levels for all members. For a TX Matrix router, display version levels for the firmware on the TX Matrix router and on all the T640 routers connected to the TX Matrix router. For a TX Matrix Plus router, display version levels for the firmware on the TX Matrix Plus router and on all the routers connected to the TX Matrix Plus router.

**all-members**—(MX Series routers only) (Optional) Display the version levels of the firmware running for all members of the Virtual Chassis configuration.

**interconnect-device *name***—(QFabric systems) (Optional) Display the version levels of the firmware running on the Interconnect device.

**lcc *number***—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display version levels for the firmware on a specified T640 router (line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display the version levels for the firmware on a specified router (line-card chassis) that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(MX Series routers only) (Optional) Display the version levels of the firmware running for the local Virtual Chassis member.

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

**node-device**—(QFabric systems only) (Optional) Display the version levels of the firmware running on the Node device.

**scc**—(TX Matrix router only) (Optional) Display version levels for the firmware on the TX Matrix router (switch-card chassis).

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

**detail**—(EX3200, EX3300, EX4200, and EX4500 standalone and Virtual Chassis member switches only) (Optional) Display version levels of the firmware running on the switch for its programmable hardware components.

**Required Privilege Level** view

**Related Documentation**

- *Upgrading the HSM Firmware*

**List of Sample Output**

[show chassis firmware \(M10 Router\) on page 592](#)  
[show chassis firmware \(M20 Router\) on page 592](#)  
[show chassis firmware \(M40 Router\) on page 592](#)  
[show chassis firmware \(M120 Router\) on page 593](#)  
[show chassis firmware \(M160 Router\) on page 593](#)  
[show chassis firmware \(MX104 Router\) on page 593](#)  
[show chassis firmware \(MX240 Router\) on page 593](#)  
[show chassis firmware \(MX480 Router\) on page 593](#)  
[show chassis firmware \(MX960 Router\) on page 594](#)  
[show chassis firmware \(MX2010 Router\) on page 594](#)  
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[show chassis firmware \(MX240, MX480, MX960 Router with Application Services Modular Line Card\) on page 595](#)  
[show chassis firmware \(EX4200 Switch\) on page 595](#)  
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[show chassis firmware \(TX Matrix Plus Router\) on page 596](#)  
[show chassis firmware lcc \(TX Matrix Plus Router\) on page 597](#)  
[show chassis firmware sfc \(TX Matrix Plus Router\) on page 598](#)  
[show chassis firmware \(QFX Series\) on page 598](#)  
[show chassis firmware interconnect-device \(QFabric System\) on page 598](#)  
[show chassis firmware \(ACX2000 Universal Access Router\) on page 598](#)  
[show chassis firmware detail \(EX3300 Switch\) on page 599](#)  
[show chassis firmware \(MX Routers with Media Services Blade \[MSB\]\) on page 599](#)

**Output Fields** [Table 29 on page 591](#) lists the output fields for the **show chassis firmware** command. Output fields are listed in the approximate order in which they appear.

**Table 29: show chassis firmware Output Fields**

Field Name	Field Description
<b>Part</b>	(MX Series, MX2010, and MX2020 routers) Chassis part name.
<b>Type</b>	(MX Series, MX2010, and MX2020 routers) Type of firmware: On routers: <b>ROM</b> or <b>O/S</b> . On switches: <b>uboot</b> or <b>loader</b> .
<b>Version</b>	(MX Series, MX2010, and MX2020 routers) Version of firmware running on the chassis part.

Table 29: show chassis firmware Output Fields (*continued*)

Field Name	Field Description
FPC	( <i>detail</i> option only) Number of FPC. For a standalone switch, the value is 0. For a Virtual Chassis configuration, value in the range of 0-9; refers to the member ID assigned to the switch.
AFEB	(MX104 routers) Version of the compact Forwarding Engine Board.
Boot	( <i>detail</i> option only) Version of the SYSPLD.
PoE	( <i>detail</i> option only) Version of the PoE firmware.
PFE-<number>	( <i>detail</i> option only) Version of the PFE used in the switch.
PHY-	( <i>detail</i> option only) Version of the physical layer device (PHY) used in the switch.
microcode	( <i>detail</i> option only) Microcode of the physical layer devices (PHY) used in the switch.
uboot	( <i>detail</i> option only) Version of the u-boot used in the switch.
loader	( <i>detail</i> option only) Version of the loader used in the switch.

## Sample Output

### show chassis firmware (M10 Router)

```

user@host> show chassis firmware
Part                Type      Version
Forwarding engine board ROM      Juniper ROM Monitor Version 4.1b2
                                O/S      Version 4.1I1 by tlim on 2000-04-24 11:27

```

### show chassis firmware (M20 Router)

```

user@host> show chassis firmware
Part                Type      Version
System switch board ROM      Juniper ROM Monitor Version 3.4b26
                                O/S      Version 3.4I16 by smackie on 2000-02-29 2
FPC 1                ROM      Juniper ROM Monitor Version 3.0b1
                                O/S      Version 3.4I4 by smackie on 2000-02-25 21
FPC 2                ROM      Juniper ROM Monitor Version 3.0b1
                                O/S      Version 3.4I4 by smackie on 2000-02-25 21

```

### show chassis firmware (M40 Router)

```

user@host> show chassis firmware
Part                Type      Version
System control board ROM      Juniper ROM Monitor Version 2.0i126Copyri
                                O/S      Version 2.0i1 by root on Thu Jul 23 00:51

```

FPC 5	ROM	Juniper ROM Monitor Version 2.0i49Copyrig
	O/S	Version 2.0i1 by root on Thu Jul 23 00:59

#### show chassis firmware (M120 Router)

```
user@host> show chassis firmware
```

FPC 2	ROM	Juniper ROM Monitor Version 8.0b29
	O/S	Version 8.2B1 by builder on 2006-10-18 16:2
FPC 3	ROM	Juniper ROM Monitor Version 8.0b29
	O/S	Version 8.2B1 by builder on 2006-10-18 16:2
FPC 4	ROM	Juniper ROM Monitor Version 8.0b29
	O/S	Version 8.2B1 by builder on 2006-10-18 16:2
FEB 3	ROM	Juniper ROM Monitor Version 8.0b29
	O/S	Version 8.2B1 by builder on 2006-10-18 16:1
FEB 4	ROM	Juniper ROM Monitor Version 8.0b29
	O/S	Version 8.2B1 by builder on 2006-10-18 16:1

#### show chassis firmware (M160 Router)

```
user@host> show chassis firmware
```

Part	Type	Version
SFM 0	ROM	Juniper ROM Monitor Version 4.0b2
	O/S	Version 4.0I1 by tlim on 2000-02-29 11:50
SFM 1	ROM	Juniper ROM Monitor Version 4.0b2
	O/S	Version 4.0I1 by tlim on 2000-02-29 11:50
FPC 0	ROM	Juniper ROM Monitor Version 4.0b2
	O/S	Version 4.0I1 by tlim on 2000-02-29 11:56
FPC 1	ROM	Juniper ROM Monitor Version 4.0b2
	O/S	Version 4.0I1 by tlim on 2000-02-29 11:56
FPC 2	ROM	Juniper ROM Monitor Version 4.0b3
	O/S	Version 4.0I1 by tlim on 2000-02-29 11:56

#### show chassis firmware (MX104 Router)

```
user@host > show chassis firmware
```

Part	Type	Version
FPC 0	ROM	Juniper ROM Monitor Version 13.1b24
	O/S	Version 13.2-20130514.1 by builder on 2013-
FPC 1	ROM	Juniper ROM Monitor Version 13.1b24
	O/S	Version 13.2-20130514.1 by builder on 2013-
FPC 2	ROM	Juniper ROM Monitor Version 13.1b24
	O/S	Version 13.2-20130514.1 by builder on 2013-
AFEB	ROM	Juniper ROM Monitor Version 13.1b24
	O/S	Version 13.2-20130514.1 by builder on 2013-

#### show chassis firmware (MX240 Router)

```
user@host> show chassis firmware
```

Part	Type	Version
FPC 1	ROM	Juniper ROM Monitor Version 8.3b1
	O/S	Version 9.0-20080103.0 by builder on 2008-0
FPC 2	ROM	Juniper ROM Monitor Version 8.3b1
	O/S	Version 9.0-20080103.0 by builder on 2008-0

#### show chassis firmware (MX480 Router)

```
user@host> show chassis firmware
```

Part	Type	Version
FPC 1	ROM	Juniper ROM Monitor Version 8.3b1
	O/S	Version 9.0-20070916.3 by builder on 2007-0

**show chassis firmware (MX960 Router)**

```

user@host> show chassis firmware
Part      Type      Version
FPC 4     ROM       Juniper ROM Monitor Version 8.0b8
           O/S       Version 8.2I59 by artem on 2006-10-31 19:22
FPC 7     ROM       Juniper ROM Monitor Version 8.2b1
           O/S       Version 8.2-20061026.1 by builder on 2006-1

```

**show chassis firmware (MX2010 Router)**

```

user@host> show chassis firmware
Part      Type      Version
FPC 0     ROM       Juniper ROM Monitor Version 12.3b1
           O/S       Version 12.3-20121220.0 by builder on 2012-
FPC 1     ROM       Juniper ROM Monitor Version 10.1b3
           O/S       Version 12.3-20121220.0 by builder on 2012-
FPC 2     ROM       Juniper ROM Monitor Version 10.1b3
           O/S       Version 12.3-20121220.0 by builder on 2012-
FPC 3     ROM       Juniper ROM Monitor Version 10.1b3
           O/S       Version 12.3-20121220.0 by builder on 2012-
FPC 4     ROM       Juniper ROM Monitor Version 10.0b39
           O/S       Version 12.3-20121220.0 by builder on 2012-
FPC 5     ROM       Juniper ROM Monitor Version 10.0b39
           O/S       Version 12.3-20121220.0 by builder on 2012-
FPC 6     ROM       Juniper ROM Monitor Version 10.4b1
           O/S       Version 12.3-20121220.0 by builder on 2012-
FPC 7     ROM       Juniper ROM Monitor Version 10.1b3
           O/S       Version 12.3-20121220.0 by builder on 2012-
FPC 8     ROM       Juniper ROM Monitor Version 10.4b1
           O/S       Version 12.3-20121220.0 by builder on 2012-
FPC 9     ROM       Juniper ROM Monitor Version 10.4b1
           O/S       Version 12.3-20121220.0 by builder on 2012-
SPMB 0    ROM       Juniper ROM Monitor Version 12.1b1
           O/S       Version 12.3-20121220.0 by builder on 2012-
SPMB 1    ROM       Juniper ROM Monitor Version 12.1b1
           O/S       Version 12.3-20121220.0 by builder on 2012-

```

**show chassis firmware (MX2020 Router)**

```

user@host> show chassis firmware
Part      Type      Version
FPC 0     ROM       Juniper ROM Monitor Version 10.0b39
           O/S       Version 12.3-20130415.0 by builder on 2013-
FPC 1     ROM       Juniper ROM Monitor Version 10.0b39
           O/S       Version 12.3-20130415.0 by builder on 2013-
FPC 2     ROM       Juniper ROM Monitor Version 10.0b39
           O/S       Version 12.3-20130415.0 by builder on 2013-
FPC 3     ROM       Juniper ROM Monitor Version 10.0b39
           O/S       Version 12.3-20130415.0 by builder on 2013-
FPC 4     ROM       Juniper ROM Monitor Version 10.0b39
           O/S       Version 12.3-20130415.0 by builder on 2013-
FPC 5     ROM       Juniper ROM Monitor Version 10.0b39
           O/S       Version 12.3-20130415.0 by builder on 2013-
FPC 6     ROM       Juniper ROM Monitor Version 10.0b39
           O/S       Version 12.3-20130415.0 by builder on 2013-
FPC 7     ROM       Juniper ROM Monitor Version 10.0b39
           O/S       Version 12.3-20130415.0 by builder on 2013-
FPC 8     ROM       Juniper ROM Monitor Version 10.0b39
           O/S       Version 12.3-20130415.0 by builder on 2013-
FPC 9     ROM       Juniper ROM Monitor Version 10.0b39

```

FPC 10	O/S	Version 12.3-20130415.0 by builder on 2013-
	ROM	Juniper ROM Monitor Version 10.0b39
FPC 11	O/S	Version 12.3-20130415.0 by builder on 2013-
	ROM	Juniper ROM Monitor Version 10.0b39
FPC 12	O/S	Version 12.3-20130415.0 by builder on 2013-
	ROM	Juniper ROM Monitor Version 10.0b39
FPC 13	O/S	Version 12.3-20130415.0 by builder on 2013-
	ROM	Juniper ROM Monitor Version 10.0b39
FPC 14	O/S	Version 12.3-20130415.0 by builder on 2013-
	ROM	Juniper ROM Monitor Version 10.0b39
FPC 15	O/S	Version 12.3-20130415.0 by builder on 2013-
	ROM	Juniper ROM Monitor Version 10.0b39
FPC 16	O/S	Version 12.3-20130415.0 by builder on 2013-
	ROM	Juniper ROM Monitor Version 10.0b39
FPC 17	O/S	Version 12.3-20130415.0 by builder on 2013-
	ROM	Juniper ROM Monitor Version 10.0b39
FPC 18	O/S	Version 12.3-20130415.0 by builder on 2013-
	ROM	Juniper ROM Monitor Version 10.0b39
FPC 19	O/S	Version 12.3-20130415.0 by builder on 2013-
	ROM	Juniper ROM Monitor Version 10.0b39
SPMB 0	O/S	Version 12.3-20130415.0 by builder on 2013-
	ROM	Juniper ROM Monitor Version 12.1b1
SPMB 1	O/S	Version 12.3-20130415.0 by builder on 2013-
	ROM	Juniper ROM Monitor Version 12.1b1
	O/S	Version 12.3-20130415.0 by builder on 2013-

#### show chassis firmware (MX240, MX480, MX960 Router with Application Services Modular Line Card)

```
user@host> show chassis firmware
```

Part	Type	Version
FPC 1	ROM	Juniper ROM Monitor Version 12.1b1
	O/S	Version 12.2I21 by manish on 2012-06-19 17:

#### show chassis firmware (EX4200 Switch)

```
user@switch> show chassis firmware
```

Part	Type	Version
FPC 0	uboot	U-Boot 1.1.6 (Feb 6 2008 - 11:27:42)
	loader	FreeBSD/PowerPC U-Boot bootstrap loader 2.1
FPC 1	uboot	U-Boot 1.1.6 (Feb 6 2008 - 11:27:42)
	loader	FreeBSD/PowerPC U-Boot bootstrap loader 2.1
FPC 2	uboot	U-Boot 1.1.6 (Feb 6 2008 - 11:27:42)
	loader	FreeBSD/PowerPC U-Boot bootstrap loader 2.1

#### show chassis firmware (EX8200 Switch)

```
user@switch> show chassis firmware
```

Part	Type	Version
FPC 0	U-Boot	U-Boot 1.1.6 (Mar 25 2009 - 06:13:12) 2.4.0
	loader	FreeBSD/PowerPC U-Boot bootstrap loader 2.2
FPC 3	U-Boot	U-Boot 1.1.6 (Dec 4 2009 - 13:17:34) 3.1.0
	loader	FreeBSD/PowerPC U-Boot bootstrap loader 2.2
FPC 5	U-Boot	U-Boot 1.1.6 (Mar 25 2009 - 06:13:12) 2.4.0
	loader	FreeBSD/PowerPC U-Boot bootstrap loader 2.2
FPC 7	U-Boot	U-Boot 1.1.6 (Feb 6 2009 - 05:31:46) 2.4.0
	loader	FreeBSD/PowerPC U-Boot bootstrap loader 2.2
Routing Engine 0	U-Boot	U-Boot 1.1.6 (Mar 25 2009 - 06:13:12) 2.4.0
	loader	FreeBSD/PowerPC U-Boot bootstrap loader 2.2

Routing Engine 1	U-Boot Loader	U-Boot 1.1.6 (Mar 25 2009 - 06:13:12) 2.4.0 FreeBSD/PowerPC U-Boot bootstrap loader 2.2
------------------	---------------	--

**show chassis firmware lcc (TX Matrix Router)**

```
user@host> show chassis firmware lcc 0
lcc0-re0:
```

Part	Type	Version
FPC 1	ROM	Juniper ROM Monitor Version 6.4b18
	O/S	Version 7.0-20040804.0 by builder on 2004-0
FPC 2	ROM	Juniper ROM Monitor Version 6.4b20
	O/S	Version 7.0-20040804.0 by builder on 2004-0
SPMB 0	ROM	Juniper ROM Monitor Version 6.4b18
	O/S	Version 7.0-20040804.0 by builder on 2004-0

**show chassis firmware scc (TX Matrix Router)**

```
user@host> show chassis firmware scc
scc-re0:
```

Part	Type	Version
SPMB 0	ROM	Juniper ROM Monitor Version 6.4b18
	O/S	Version 7.0-20040804.0 by builder on 2004-0

**show chassis firmware (TX Matrix Plus Router)**

```
user@host> show chassis firmware
sfc0-re0:
```

Part	Type	Version
Global FPC 4		
Global FPC 6		
Global FPC 7		
Global FPC 12		
Global FPC 14		
Global FPC 15		
Global FPC 20		
Global FPC 21		
Global FPC 22		
Global FPC 23		
Global FPC 24		
Global FPC 25		
Global FPC 26		
Global FPC 28		
Global FPC 29		
Global FPC 31		
SPMB 0	ROM	Juniper ROM Monitor Version 9.5b1
	O/S	Version 9.6-20090507.0 by builder on 2009-0
SPMB 1	ROM	Juniper ROM Monitor Version 9.5b1
	O/S	Version 9.6-20090507.0 by builder on 2009-0

```
lcc0-re1:
```

Part	Type	Version
FPC 4	ROM	Juniper ROM Monitor Version 9.0b2
	O/S	Version 9.6-20090507.0 by builder on 2009-0
FPC 6	ROM	Juniper ROM Monitor Version 9.0b2
	O/S	Version 9.6-20090507.0 by builder on 2009-0
FPC 7	ROM	Juniper ROM Monitor Version 9.0b2
	O/S	Version 9.6-20090507.0 by builder on 2009-0



```

SPMB 0          ROM      Juniper ROM Monitor Version 9.5b1
                O/S      Version 9.6-20090507.0 by builder on 2009-0
SPMB 1          ROM      Juniper ROM Monitor Version 9.5b1
                O/S      Version 9.6-20090507.0 by builder on 2009-0

```

#### lcc1-re1:

```

-----
Part           Type      Version
FPC 4          ROM      Juniper ROM Monitor Version 9.0b2
                O/S      Version 9.6-20090507.0 by builder on 2009-0
FPC 6          ROM      Juniper ROM Monitor Version 9.0b2
                O/S      Version 9.6-20090507.0 by builder on 2009-0
FPC 7          ROM      Juniper ROM Monitor Version 9.0b2
                O/S      Version 9.6-20090507.0 by builder on 2009-0
SPMB 0          ROM      Juniper ROM Monitor Version 9.5b1
                O/S      Version 9.6-20090507.0 by builder on 2009-0
SPMB 1          ROM      Juniper ROM Monitor Version 9.5b1
                O/S      Version 9.6-20090507.0 by builder on 2009-0

```

#### lcc2-re1:

```

-----
Part           Type      Version
FPC 4          ROM      Juniper ROM Monitor Version 9.0b2
                O/S      Version 9.6-20090507.0 by builder on 2009-0
FPC 5          ROM      Juniper ROM Monitor Version 9.0b2
                O/S      Version 9.6-20090507.0 by builder on 2009-0
FPC 6          ROM      Juniper ROM Monitor Version 9.0b2
                O/S      Version 9.6-20090507.0 by builder on 2009-0
FPC 7          ROM      Juniper ROM Monitor Version 7.5b4
                O/S      Version 9.6-20090507.0 by builder on 2009-0
SPMB 0          ROM      Juniper ROM Monitor Version 9.5b1
                O/S      Version 9.6-20090507.0 by builder on 2009-0
SPMB 1          ROM      Juniper ROM Monitor Version 9.5b1
                O/S      Version 9.6-20090507.0 by builder on 2009-0

```

#### lcc3-re1:

```

-----
Part           Type      Version
FPC 0          ROM      Juniper ROM Monitor Version 9.0b2
                O/S      Version 9.6-20090507.0 by builder on 2009-0
FPC 1          ROM      Juniper ROM Monitor Version 9.0b2
                O/S      Version 9.6-20090507.0 by builder on 2009-0
FPC 2          ROM      Juniper ROM Monitor Version 9.0b2
                O/S      Version 9.6-20090507.0 by builder on 2009-0
FPC 4          ROM      Juniper ROM Monitor Version 7.5b4
                O/S      Version 9.6-20090507.0 by builder on 2009-0
FPC 5          ROM      Juniper ROM Monitor Version 9.0b2
                O/S      Version 9.6-20090507.0 by builder on 2009-0
FPC 7          ROM      Juniper ROM Monitor Version 9.0b2
                O/S      Version 9.6-20090507.0 by builder on 2009-0
SPMB 0          ROM      Juniper ROM Monitor Version 9.5b1
                O/S      Version 9.6-20090507.0 by builder on 2009-0
SPMB 1          ROM      Juniper ROM Monitor Version 9.5b1
                O/S      Version 9.6-20090507.0 by builder on 2009-0

```

### show chassis firmware lcc (TX Matrix Plus Router)

```

user@host> show chassis firmware lcc 0
lcc0-re1:

```

```

-----
Part           Type      Version

```

FPC 4	ROM	Juniper ROM Monitor Version 9.0b2
	O/S	Version 9.6-20090507.0 by builder on 2009-0
FPC 6	ROM	Juniper ROM Monitor Version 9.0b2
	O/S	Version 9.6-20090507.0 by builder on 2009-0
FPC 7	ROM	Juniper ROM Monitor Version 9.0b2
	O/S	Version 9.6-20090507.0 by builder on 2009-0
SPMB 0	ROM	Juniper ROM Monitor Version 9.5b1
	O/S	Version 9.6-20090507.0 by builder on 2009-0
SPMB 1	ROM	Juniper ROM Monitor Version 9.5b1
	O/S	Version 9.6-20090507.0 by builder on 2009-0

#### show chassis firmware sfc (TX Matrix Plus Router)

```
user@host> show chassis firmware sfc 0
sfc0-re0:
```

Part	Type	Version
Global FPC 4		
Global FPC 6		
Global FPC 7		
Global FPC 12		
Global FPC 14		
Global FPC 15		
Global FPC 20		
Global FPC 21		
Global FPC 22		
Global FPC 23		
Global FPC 24		
Global FPC 25		
Global FPC 26		
Global FPC 28		
Global FPC 29		
Global FPC 31		
SPMB 0	ROM	Juniper ROM Monitor Version 9.5b1
	O/S	Version 9.6-20090507.0 by builder on 2009-0
SPMB 1	ROM	Juniper ROM Monitor Version 9.5b1
	O/S	Version 9.6-20090507.0 by builder on 2009-0

#### show chassis firmware (QFX Series)

```
user@switch> show chassis firmware
```

Part	Type	Version
FPC 0		
Routing Engine 0	U-Boot loader	U-Boot 1.1.6 (Sep 15 2010 - 02:11:11) 1.0.5 FreeBSD/MIPS U-Boot bootstrap loader 0.1

#### show chassis firmware interconnect-device (QFabric System)

```
user@switch> show chassis firmware interconnect-device interconnect1
```

Part	Type	Version
Routing Engine 0	U-Boot loader	U-Boot 1.1.6 (May 10 2011 - 04:52:59) 1.1.1 FreeBSD/MIPS U-Boot bootstrap loader 0.1
Routing Engine 1	U-Boot loader	U-Boot 1.1.6 (May 10 2011 - 04:52:59) 1.1.1 FreeBSD/MIPS U-Boot bootstrap loader 0.1

#### show chassis firmware (ACX2000 Universal Access Router)

```
user@switch> show chassis firmware
```

Part	Type	Version
FPC	O/S	Version 12.2I13 by jisjoy on 2012-05-29 06:
FEB	O/S	Version 12.2I13 by jisjoy on 2012-05-29 06:

**show chassis firmware detail (EX3300 Switch)**

```
user@switch> show chassis firmware detail
FPC 0
  Boot SYSPLD          3
  PoE firmware         4.1.6
  PFE-0                3
  PFE-1                3
  PHY
    microcode          0x514
  Boot Firmware
    uboot              U-Boot 1.1.6 (Aug 21 2011 - 01:45:26)  1.0.0
    loader             FreeBSD/arm U-Boot loader 1.0
```

**show chassis firmware (MX Routers with Media Services Blade [MSB])**

```
user@switch> show chassis firmware
Part      Type      Version
FPC 1     ROM       Juniper ROM Monitor Version 12.1b1
          O/S      Version 12.2I21 by manish on 2012-06-19 17:
```

## show chassis fpc

---

<b>Syntax</b>	show chassis fpc <detail <slot>>   <pic-status <slot>>
<b>Syntax (EX Series Switches)</b>	show chassis fpc <detail <fpc-slot>>   <pic-status <fpc-slot>> <fpc-slot>
<b>Syntax (T4000 Routers)</b>	show chassis fpc <detail <fpc-slot>> <pic-status <fpc-slot>>
<b>Syntax (TX Matrix and TX Matrix Plus Routers)</b>	show chassis fpc <detail <fpc-slot>>   <pic-status <fpc-slot>> <slot>
<b>Syntax (MX Series Routers)</b>	show chassis fpc <detail <slot>>   <pic-status <slot>> <all-members> <local> <member <i>member-id</i> >
<b>Syntax (MX104, MX2010, and MX2020 3D Universal Edge Routers)</b>	show chassis fpc <slot> detail   <detail <slot>>   <pic-status <slot>> <fpc-slot>
<b>Syntax (QFX Series)</b>	show chassis fpc <detail> <interconnect-device <i>name</i> <fpc-slot fpc-slot>> <node-device <i>name</i> >
<b>Syntax (PTX Series Packet Transport Routers)</b>	show chassis fpc <detail <fpc-slot>>   <pic-status <fpc-slot>> <fpc-slot>
<b>Syntax (ACX Series Universal Access Routers)</b>	show chassis fpc <detail <fpc-slot>>   <pic-status <fpc-slot>> <fpc-slot>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. Command introduced in Junos OS Release 11.1 for QFX Series. Command introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers. Command introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers. Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers. Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers. Command introduced in Junos OS Release 13.2 for MX04 3D Universal Edge Routers.

**Description** Display status information about the installed Flexible PIC Concentrators (FPCs) and PICs.

**Options** **none**—Display status information for all FPCs. On a TX Matrix router, display status information for all FPCs on the attached T640 routers in the routing matrix. On a TX Matrix Plus router, display status information for all FPCs on the attached routers in the routing matrix.



**NOTE:** In EX8200 switches, line cards initialize Packet Forwarding Engine during startup. If an error occurs during hardware initialization, the FPCs with bad hardware parts power down after transferring the debug information to the Routing Engine. The Routing Engine marks the FPC offline, logs the error in system log messages (/var/log/messages), and generates an alarm to inform the user.

See the following sample output:

```
user@host> show chassis fpc
```

Utilization (%)	Temp	CPU	Utilization (%)	Memory
Slot State	(C)	Total	Interrupt	DRAM (MB) Heap
Buffer				
0 Empty				
1 Empty				
2 Empty				
3 Empty				
4 Empty				
5 Offline	---	Hard FPC error---		
6 Empty				
7 Online	26	4	0	1024 0
32				

The following sample output shows the alarm raised for the failed FPCs.

```
user@host > show chassis alarms
4 alarms currently active
```

Alarm time	Class	Description
2011-03-24 00:52:51 UTC	Major	FPC 5 Hard errors
2011-03-24 00:52:31 UTC	Major	Fan Tray Failure
2011-03-24 00:52:31 UTC	Major	Fan Tray Failure
2011-03-24 00:51:26 UTC	Minor	Loss of communication with Backup RE



**NOTE:** On T4000 routers, when you include the enhanced-mode statement at the [edit chassis network-services] hierarchy level and reboot the system, only the T4000 Type 5 FPCs present on the router become online while the remaining FPCs are offline, and FPC misconfiguration alarms are generated. The show chassis alarm command output displays FPC misconfiguration (FPC *fpc-slot* misconfig) as the reason for the generation the alarms.

The following sample output shows the FPC status after the enhanced-mode statement is configured on the T4000 router. The T4000 Type 5 FPC present in slot 5 becomes online while the remaining FPCs are offline.

```
user@host> show chassis fpc
```

	Temp	CPU Utilization (%)		Memory	
Utilization (%)					
Slot State	(C)	Total	Interrupt	DRAM (MB)	Heap
Buffer					
0 offline		---FPC misconfiguration---			
1 offline		---FPC misconfiguration---			
2 offline		---FPC misconfiguration---			
3 Empty					
4 Empty					
5 Online	66	50	0	2816	29
27					

The following sample output shows FPC misconfiguration alarms.

```
user@host > show chassis alarms
3 alarms currently active
Alarm time      Class  Description
2011-03-24 00:52:51 PST Major  FPC 1 misconfig
2011-03-24 00:52:31 PST Major  FPC 2 misconfig
2011-03-24 00:52:31 PST Major  FPC 3 misconfig
```

**detail**—(Optional) Display detailed status information for all FPCs or for the FPC in the specified slot (see *fpc-slot* or *slot*).

**all-members**—(MX Series routers only) (Optional) Display status information for all FPCs on all members of the Virtual Chassis configuration.

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

***fpc-slot***—(Optional) FPC slot number:

- (TX Matrix and TX Matrix Plus router only)—On a TX Matrix router, if you specify the number of the T640 router (line-card chassis) by using the **lcc *number*** option (the recommended method), replace ***fpc-slot*** with a value from 0 through 7. Otherwise, replace ***fpc-slot*** with a value from 0 through 31. Likewise, on a TX Matrix Plus router, if you specify the number of the specified router (line-card chassis)

by using the **lcc number** option (the recommended method), replace **fpc-slot** with a value from 0 through 7. Otherwise, replace **fpc-slot** with a value from 0 through 31. For example, the following commands have the same result:

```
user@host> show chassis fpc detail 1 lcc 1
user@host> show chassis fpc detail 9
```

- M120 router—Replace **fpc-slot** with a value from 0 through 5.
- MX80 router—Replace **fpc-slot** with a value from 0 through 1.
- MX104 router—Replace **fpc-slot** with a value from 0 through 2.
- MX240 router—Replace **fpc-slot** with a value from 0 through 2.
- MX480 router—Replace **fpc-slot** with a value from 0 through 5.
- MX-960 router—Replace **fpc-slot** with a value from 0 through 11.
- MX2010 router—Replace **fpc-slot-number** with a value from 0 through 9.
- MX2020 router—Replace **fpc-slot-number** with a value from 0 through 19.
- Other routers—Replace **fpc-slot** with a value from 0 through 7.
- EX Series switches:
  - EX3200 switches and EX4200 standalone switches—Replace **fpc-slot** with 0.
  - EX4200 switches in a Virtual Chassis configuration—Replace **fpc-slot** with a value from 0 through 9.
  - EX6210 switches—Replace **fpc-slot** with a value from 0 through 9.
  - EX8208 switches—Replace **fpc-slot** with a value from 0 through 7.
  - EX8216 switches—Replace **fpc-slot** with a value from 0 through 15.
- QFX Series:
  - QFX3500 switches—Replace **fpc-slot** with 0.
  - QFabric systems—Replace **fpc-slot** with 0 through 31 on the Interconnect device.
- PTX Series Packet Transport Routers:
  - PTX5000 Packet Transport Router—Replace **fpc-slot** with a value from 0 through 7.
- ACX Series Universal Access Routers:
  - ACX1000 and ACX2000 Universal Access Routers—Replace **fpc-slot** with 0.

**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 systems only) (Optional) Display status information for each Node device. Each Node device is equivalent to an FPC.

**pic-status**—(Optional) Display status information for all PICs or for the PIC in the specified slot (see *fpc-slot*).



**NOTE:** On T1600 routers, Type 4 FPCs with ASICs based on the SL2.0 chipset do not support the 10-Gigabit Ethernet LAN/WAN PIC with SFP+ (10x10GE [LAN/WAN] SFPP). If you issue the `show chassis fpc` command with the `pic-status` option, the CLI displays the string “Not Supported” for 10x10GE (LAN/WAN) SFPP PICs installed on such FPCs. The following is a sample output:

```
user@host> show chassis fpc pic-status
Slot 0  Online      E2-FPC Type 1
  PIC 0  Online      1x G/E SFP, 1000 BASE
  PIC 1  Online      Adaptive Services-II
  PIC 2  Online      1x G/E IQ, 1000 BASE
  PIC 3  Online      1x G/E IQ, 1000 BASE
Slot 1  Online      FPC Type 3-ES
  PIC 0  Present     UNUSED- Not Supported
Slot 2  Online      FPC Type 4-ES
  PIC 0  Offline     4x OC-192 SONET XFP
  PIC 1  Present     10x10GE(LAN/WAN) SFPP- Not Supported
<<<<<<
Slot 4  Offline     FPC Type 1-ES
Slot 5  Offline     FPC Type 2-ES
Slot 6  Online      E2-FPC Type 3
  PIC 0  Online      1x OC-192 SONET XFP
  PIC 1  Online      4x OC-48 SONET
  PIC 2  Online      4x OC-48 SONET
  PIC 3  Online      MultiServices 500
Slot 7  Online      FPC Type 4-ES
  PIC 0  Online      4x 10GE (LAN/WAN) XFP
  PIC 1  Online      4x 10GE (LAN/WAN) XFP
```

In addition, an entry is logged in the system log messages (/var/log/messages) that the PIC is not supported. The following is a sample message logged in the system log:

```
Apr  5 08:47:36 router1 chassisd[2770]: CHASSISD_UNSUPPORTED_PIC:
  PIC 1 in FPC 2 (type 763, version 257) is not supported
```

If you see this issue, contact Juniper Networks Technical Assistance Center (JTAC) for a possible fix. For more information about this issue and a possible solution, see [PSN-2010-03-696](#).





**NOTE:** When there is a double-bit ECC error in a network processor's memory, the Channelized OC3/STM1 (Multi-Rate) Circuit Emulation MIC with SFP or Channelized E1/T1 Circuit Emulation MIC is switched to the offline state.

```
user@host> show chassis fpc pic-status
Slot 1   Online      MPC Type 2 3D Q
PIC 0    Offline     1xC0C12/4xC0C3 CH-CE- ECC error detected
```

**lcc *number***—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**Required Privilege Level** view

- Related Documentation**
- [request chassis fpc on page 201](#)
  - [show chassis fpc-feb-connectivity](#)
  - [show chassis fabric fpcs on page 468](#)
  - *Configuring the Junos OS to Resynchronize FPC Sequence Numbers with Active FPCs when an FPC Comes Online*
  - *MX960 Flexible PIC Concentrator Description*
  - *ACX2000 and ACX2100 Routers Hardware and CLI Terminology Mapping*
  - *enhanced-mode*

- List of Sample Output**
- [show chassis fpc \(EX6210 Switch\) on page 608](#)
  - [show chassis fpc \(M10 Router\) on page 609](#)
  - [show chassis fpc \(M20 Router\) on page 609](#)
  - [show chassis fpc detail \(M Series Routers\) on page 609](#)
  - [show chassis fpc detail \(MX80 Router\) on page 609](#)
  - [show chassis fpc \(MX104 Router\) on page 610](#)
  - [show chassis fpc detail \(MX104 Router\) on page 610](#)
  - [show chassis fpc pic-status \(MX104 Router\) on page 610](#)

[show chassis fpc \(MX240 Router\) on page 610](#)  
[show chassis fpc \(MX480 Router\) on page 610](#)  
[show chassis fpc \(MX480 Router with 100-Gigabit Ethernet CFP\) on page 611](#)  
[show chassis fpc pic-status \(MX480 Router with 100-Gigabit Ethernet CFP\) on page 611](#)  
[show chassis fpc \(MX480 Router with MPC4E\) on page 611](#)  
[show chassis fpc detail \(MX480 Router with MPC4E\) on page 611](#)  
[show chassis fpc \(MX960 Router\) on page 612](#)  
[show chassis fpc \(MX240, MX480, MX960 Routers with Application Services Modular Line Card\) on page 612](#)  
[show chassis fpc \(MX240, MX480, MX960 with Application Services Modular Line Card\) on page 612](#)  
[show chassis fpc \(MX2010 Routers\) on page 612](#)  
[show chassis fpc \(MX2020 Routers\) on page 613](#)  
[show chassis fpc \(MX2020 Router with MPC4E\) on page 613](#)  
[show chassis fpc detail \(MX2020 Router with MPC4E\) on page 614](#)  
[show chassis fpc detail \(MX Series Routers\) on page 614](#)  
[show chassis fpc \(Hardware Not Supported\) on page 615](#)  
[show chassis fpc detail \(Hardware Not Supported\) on page 615](#)  
[show chassis fpc pic-status on page 615](#)  
[show chassis fpc pic-status \(M Series Routers\) on page 615](#)  
[show chassis fpc pic-status \(M120 Router\) on page 616](#)  
[show chassis fpc pic-status \(MX240, MX480, and MX960 Routers with Application Services Modular Line Card\) on page 616](#)  
[show chassis fpc lcc \(TX Matrix Router\) on page 616](#)  
[show chassis fpc pic-status \(TX Matrix Router\) on page 617](#)  
[show chassis fpc pic-status lcc \(TX Matrix Router\) on page 617](#)  
[show chassis fpc \(TX Matrix Plus Router\) on page 617](#)  
[show chassis fpc lcc \(TX Matrix Plus Router\) on page 618](#)  
[show chassis fpc detail \(TX Matrix Plus Router\) on page 618](#)  
[show chassis fpc pic-status \(TX Matrix Plus Router\) on page 621](#)  
[show chassis fpc \(T1600 Router\) on page 621](#)  
[show chassis fpc detail \(T1600 Router\) on page 622](#)  
[show chassis fpc slot \(T1600 Router\) on page 622](#)  
[show chassis fpc pic-status \(T1600 Router\) on page 622](#)  
[show chassis fpc \(T4000 Router\) on page 623](#)  
[show chassis fpc detail \(T4000 Router\) on page 623](#)  
[show chassis fpc pic-status \(T4000 Router\) on page 624](#)  
[show chassis fpc \(QFX Series\) on page 624](#)  
[show chassis fpc detail \(QFX3500 Switches\) on page 624](#)  
[show chassis fpc pic-status \(QFX3500 Switches\) on page 624](#)  
[show chassis fpc interconnect-device \(QFabric System\) on page 624](#)  
[show chassis fpc interconnect-device \(QFabric System\) on page 625](#)  
[show chassis fpc interconnect-device detail \(QFabric System\) on page 625](#)  
[show chassis fpc pic-status interconnect-device \(QFabric System\) on page 625](#)  
[show chassis fpc pic-status node-device \(QFabric System\) on page 626](#)  
[show chassis fpc \(PTX5000 Packet Transport Router\) on page 626](#)  
[show chassis fpc detail \(PTX5000 Packet Transport Router\) on page 626](#)  
[show chassis fpc pic-status \(PTX5000 Packet Transport Router\) on page 627](#)  
[show chassis fpc \(ACX2000 Universal Access Router\) on page 627](#)

[show chassis fpc 0 \(ACX2000 Universal Access Router\) on page 627](#)  
[show chassis fpc detail \(ACX2000 Universal Access Router\) on page 627](#)  
[show chassis fpc pic-status \(ACX2000 Universal Access Router\) on page 628](#)  
[show chassis FPC 1 \(MX Routers with Media Services Blade \[MSB\]\) on page 628](#)  
[show chassis FPC 1 detail \(MX Routers with Media Services Blade \[MSB\]\) on page 628](#)

**Output Fields** Table 30 on page 607 lists the output fields for the **show chassis fpc** command. Output fields are listed in the approximate order in which they appear.

**Table 30: show chassis fpc Output Fields**

Field Name	Field Description	Level of Output
<b>Slot or Slot State</b>	Slot number and state. The state can be one of the following conditions: <ul style="list-style-type: none"> <li>• <b>Dead</b>—Held in reset because of errors.</li> <li>• <b>Diag</b>—Slot is being ignored while the FPC is running diagnostics.</li> <li>• <b>Dormant</b>—Held in reset.</li> <li>• <b>Empty</b>—No FPC is present.</li> <li>• <b>Offline</b>—(PTX Series Packet Transport Routers only) One of the following two states is displayed: <ul style="list-style-type: none"> <li>• <b>FPC offlined due to unreachable destinations</b></li> <li>• <b>FPC Offlined due to degraded FPC action</b></li> </ul> </li> <li>• <b>Online</b>—FPC is online and running.</li> <li>• <b>Present</b>—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 <b>Hardware Not Supported</b> or <b>Hardware Not In Right Slot</b>. The FPC is coming up but not yet online.</li> <li>• <b>Probed</b>—Probe is complete; awaiting restart of the Packet Forwarding Engine.</li> <li>• <b>Probe-wait</b>—Waiting to be probed.</li> </ul>	all levels
<b>Logical slot</b>	Slot number.	all levels
<b>Temp (C) or Temperature</b>	Temperature of the air passing by the FPC, in degrees Celsius or in both Celsius and Fahrenheit.	all levels all levels
<b>Temperature (PTX Series)</b>	On PTX Series Packet Transport Routers, temperature details are provided in degrees Celsius and Fahrenheit. Output includes: <ul style="list-style-type: none"> <li>• <b>Temperature (PMB)</b>—Temperature of the air passing by the Processor Mezzanine Board (PMB) at the bottom of the FPC.</li> <li>• <b>Temperature (Intake)</b>—Temperature of the air flowing into the chassis.</li> <li>• <b>Temperature (Exhaust)</b>—Exhaust temperatures for multiple zones (Exhaust A and Exhaust B).</li> <li>• <b>Temperature (TLn)</b>—Temperature of the specified Lookup ASIC (TL) of the packet forwarding engine on the FPC.</li> <li>• <b>Temperature (TQn)</b>—Temperature of the specified Queuing and Memory Interface ASIC (TQ) of the packet forwarding engine on the FPC.</li> </ul>	<b>detail</b>
<b>Total CPU Utilization (%)</b>	Total percentage of CPU being used by the FPC's processor.	all levels

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

Field Name	Field Description	Level of Output
<b>Interrupt CPU Utilization (%)</b>	Of the total CPU being used by the FPC's processor, the percentage being used for interrupts.	none specified
<b>Memory DRAM (MB)</b>	Total DRAM, in megabytes, available to the FPC's processor.	none specified
<b>Heap Utilization (%)</b>	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).  <b>NOTE:</b> On MX Series routers in a broadband edge environment, heap utilization levels higher than 70 percent can affect unified ISSU, router stability, or scaling capability.	none specified
<b>Buffer Utilization (%)</b>	Percentage of buffer space being used by the FPC's processor for buffering internal messages.	none specified
<b>Total CPU DRAM</b>	Amount of DRAM available to the FPC's CPU.	<b>detail</b>
<b>Total RLDRAM</b>	Amount of reduced latency dynamic random access memory (RLDRAM) available to the FPC CPU.	<b>detail</b>
<b>Total DDR DRAM</b>	Amount of double data rate dynamic random access memory (DDR DRAM) available to the FPC CPU.	<b>detail</b>
<b>Total SRAM</b>	Amount of static RAM (SRAM) used by the FPC's CPU.	<b>detail</b>
<b>Total SDRAM</b>	Total amount of memory used for storing packets and notifications.	<b>detail</b>
<b>I/O Manager ASICs information</b>	I/O Manager version number, manufacturer, and part number.	<b>detail</b>
<b>Start time</b>	Time when the Routing Engine detected that the FPC was running.	<b>detail</b>
<b>Uptime</b>	How long the Routing Engine has been connected to the FPC and, therefore, how long the FPC has been up and running.	<b>detail</b>
<b>PIC type</b>	( <b>pic-status</b> output only) Type of PIC.	none specified

## Sample Output

### show chassis fpc (EX6210 Switch)

```

user@switch> show chassis fpc

```

Slot	State	Temp (C)	CPU Utilization (%) Total Interrupt	Memory DRAM (MB)	Utilization (%) 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 Router)

```
user@host> show chassis fpc
FPC status:
      Temp
Slot State (C)
  0 Online   27
  1 Online   28
```

#### show chassis fpc (M20 Router)

```
user@host> show chassis fpc
FPC status:
      Temp CPU Utilization (%) Memory Utilization (%)
Slot State (C) Total Interrupt DRAM (MB) Heap Buffer
  0 Empty   0      0      0      0      0      0
  1 Online  38      0      0      8      0      4
  2 Online  35      0      0      8      0      3
  3 Empty   0      0      0      0      0      0
```

#### show chassis fpc detail (M Series Routers)

```
user@host> show chassis fpc detail 1
Slot 1 information:
  State Online
  Temperature 48 degrees C
  Total CPU DRAM 32 MB
  Total SRAM 4 MB
  Total SDRAM 256 MB
  I/O Manager ASICs information Version 2.0, Foundry IBM, Part number 0
  I/O Manager ASICs information Version 2.0, Foundry IBM, Part number 0
  Start time 2000-02-08 02:18:49 UTC
  Uptime 14 hours, 41 minutes, 41 seconds
```

#### show chassis fpc detail (MX80 Router)

```
user@host> show chassis fpc detail
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 (MX104 Router)**

```

user@host> show chassis fpc
Temp  CPU Utilization (%)  Memory      Utilization (%)
Slot State              (C)  Total  Interrupt      DRAM (MB) Heap      Buffer
0  Online                32    15      5        2048      22      13
1  Online                32    15      5        2048      22      13
2  Online                32    15      5        2048      22      13

```

**show chassis fpc detail (MX104 Router)**

```

user@host> show chassis fpc detail
Slot 0 information:
State                Online
Temperature          32 (C)
Total CPU DRAM       2048 MB
Total SRAM            403 MB
Total SDRAM          1316 MB
Start time           2013-05-23 14:39:18 IST
Uptime               1 hour, 20 minutes, 22 seconds
Slot 1 information:
State                Online
Temperature          32 (C)
Total CPU DRAM       2048 MB
Total SRAM            403 MB
Total SDRAM          1316 MB
Start time           2013-05-23 14:39:18 IST
Uptime               1 hour, 20 minutes, 22 seconds
Slot 2 information:
State                Online
Temperature          32 (C)
Total CPU DRAM       2048 MB
Total SRAM            403 MB
Total SDRAM          1316 MB
Start time           2013-05-23 14:39:18 IST
Uptime               1 hour, 20 minutes, 22 seconds

```

**show chassis fpc pic-status (MX104 Router)**

```

user@host> show chassis fpc pic-status
Slot 0  Online
Slot 1  Online
PIC 0   Online    10x 1GE(LAN) -E SFP
PIC 1   Online    10x 1GE(LAN) -E SFP
Slot 2  Online
PIC 0   Online    4x 10GE(LAN) SFP+

```

**show chassis fpc (MX240 Router)**

```

user@host> show chassis fpc
Temp  CPU Utilization (%)  Memory      Utilization (%)
Slot State              (C)  Total  Interrupt      DRAM (MB) Heap      Buffer
0  Empty                34     6      0        1024      18      30
1  Online                33     9      0        1024      24      30
2  Online                33     9      0        1024      24      30

```

**show chassis fpc (MX480 Router)**

```

user@host> show chassis fpc
Temp  CPU Utilization (%)  Memory      Utilization (%)
Slot State              (C)  Total  Interrupt      DRAM (MB) Heap      Buffer

```

```

0 Empty
1 Online          36      9      0      1024      17      57
2 Empty
3 Empty
4 Empty
5 Empty

```

#### show chassis fpc (MX480 Router with 100-Gigabit Ethernet CFP)

```

user@host> show chassis fpc

```

Slot	State	Temp (C)	CPU Utilization (%)	Memory Utilization (%)	DRAM (MB)	Heap	Buffer
0	Online	33	4	0	2048	10	13
1	Online	36	7	0	2048	16	13
2	Online	29	6	0	1024	27	29
3	Online	33	0	0	0	0	0
4	Online	36	7	0	2048	19	13
5	Online	34	31	11	2048	14	13

#### show chassis fpc pic-status (MX480 Router with 100-Gigabit Ethernet CFP)

```

user@host> show chassis fpc pic-status
Slot 1 Online MPC Type 3
PIC 2 Online 1X100GE CFP
Slot 2 Online DPCE 40x 1GE R EQ
PIC 0 Online 10x 1GE(LAN) EQ
PIC 1 Online 10x 1GE(LAN) EQ
PIC 2 Online 10x 1GE(LAN) EQ
PIC 3 Online 10x 1GE(LAN) EQ
Slot 3 Online MPC Type 3
PIC 0 Online 1X100GE CFP
PIC 2 Online 1X100GE CFP
Slot 4 Online MPC Type 3
PIC 0 Online 1X100GE CFP
PIC 2 Online 1X100GE CFP
Slot 5 Online MPC Type 2 3D EQ
PIC 0 Online 2x 10GE XFP
PIC 1 Online 2x 10GE XFP
PIC 2 Online 10x 1GE(LAN) SFP
PIC 3 Online 10x 1GE(LAN) SFP

```

#### show chassis fpc (MX480 Router with MPC4E)

```

user@host> show chassis fpc

```

Slot	State	Temp (C)	CPU Utilization (%)	Memory Utilization (%)	DRAM (MB)	Heap	Buffer
0	Empty						
1	Empty						
2	Online	38	7	0	2048	19	14
3	Online	39	8	0	2048	18	14
4	Online	39	7	0	2048	17	14
5	Empty						

#### show chassis fpc detail (MX480 Router with MPC4E)

```

user@host> show chassis fpc detail
Slot 2 information:
State Online
Temperature 38
Total CPU DRAM 2048 MB
Total RLDRAM 1036 MB
Total DDR DRAM 11264 MB

```

```

Start time:                2013-02-18 05:06:57 PST
Uptime:                    17 hours, 41 minutes, 9 seconds
Max Power Consumption      610 Watts
Slot 3 information:
State                      Online
Temperature                38
Total CPU DRAM             2048 MB
Total RLD RAM              1036 MB
Total DDR DRAM             11264 MB
Start time:                2013-02-18 05:07:00 PST
Uptime:                    17 hours, 41 minutes, 6 seconds
Max Power Consumption      610 Watts
Slot 4 information:
State                      Diagnostics
Temperature                37
Total CPU DRAM             0 MB
Total RLD RAM              0 MB
Total DDR DRAM             0 MB
Max Power Consumption      520 Watts

```

#### show chassis fpc (MX960 Router)

```

user@host> show chassis fpc

```

Slot	State	Temp (C)	CPU Total	Utilization (%) Interrupt	Memory DRAM (MB)	Utilization (%) 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 (MX240, MX480, MX960 Routers with Application Services Modular Line Card)

```

user@host> show chassis fpc 1

```

Slot	State	Temp (C)	CPU Total	Utilization (%) Interrupt	Memory DRAM (MB)	Utilization (%) Heap	Buffer
1	Online	34	5	0	3072	5	13

#### show chassis fpc (MX240, MX480, MX960 with Application Services Modular Line Card)

```

user@host> show chassis fpc 1 detail
Slot 1 information:
State                      Online
Temperature                34
Total CPU DRAM             3072 MB
Total RLD RAM              259 MB
Total DDR DRAM             4864 MB
Start time:                2012-06-19 10:51:43 PDT
Uptime:                    16 minutes, 48 seconds
Max Power Consumption      550 Watts

```

#### show chassis fpc (MX2010 Routers)

```

user@host> show chassis fpc

```



Slot	Temp State	CPU Utilization (%)		Memory Utilization (%)		Heap	Buffer
		(C)	Total	Interrupt	DRAM (MB)		
0	Online	34	9	0	2048	18	13
1	Online	32	9	0	2048	15	13
2	Empty						
3	Empty						
4	Empty						
5	Empty						
6	Empty						
7	Empty						
8	Online	31	13	0	2048	11	13
9	Online	33	10	0	2048	18	13

### show chassis fpc (MX2020 Routers)

```
user@host> show chassis fpc
```

Slot	Temp State	CPU Utilization (%)		Memory Utilization (%)		Heap	Buffer
		(C)	Total	Interrupt	DRAM (MB)		
0	Online	10	12	0	2048	18	13
1	Online	8	9	0	2048	18	13
2	Online	7	9	0	2048	18	13
3	Online	8	10	0	2048	18	13
4	Online	9	10	0	2048	18	13
5	Online	8	9	0	2048	18	13
6	Online	8	10	0	2048	18	13
7	Online	9	9	0	2048	18	13
8	Online	9	10	0	2048	18	13
9	Online	10	9	0	2048	18	13
10	Online	16	8	0	2048	18	13
11	Online	11	10	0	2048	18	13
12	Online	10	10	0	2048	18	13
13	Online	11	9	0	2048	18	13
14	Online	12	10	0	2048	18	13
15	Online	13	9	0	2048	18	13
16	Online	13	9	0	2048	18	13
17	Online	12	9	0	2048	18	13
18	Online	12	8	0	2048	18	13
19	Online	14	10	0	2048	18	13

### show chassis fpc (MX2020 Router with MPC4E)

```
user@host> show chassis fpc
```

Slot	Temp State	CPU Utilization (%)		Memory Utilization (%)		Heap	Buffer
		(C)	Total	Interrupt	DRAM (MB)		
0	Online	33	12	2	2048	11	13
1	Empty						
2	Empty						
3	Empty						
4	Empty						
5	Empty						
6	Empty						
7	Empty						
8	Empty						
9	Online	31	10	0	2048	11	13
10	Online	32	7	0	2048	14	13
11	Empty						
12	Empty						
13	Empty						
14	Online	28	12	0	2048	15	14
15	Empty						
16	Empty						

```

17 Empty
18 Empty
19 Online          38      8          0      2048      18      13

```

#### show chassis fpc detail (MX2020 Router with MPC4E)

```

user@host> show chassis fpc detail
Slot 0 information:
  State                Online
  Temperature          34
  Total CPU DRAM       2048 MB
  Total RLD RAM        806 MB
  Total DDR DRAM       2632 MB
  Start time:          2013-02-17 08:17:35 PST
  Uptime:              1 day, 14 hours, 50 minutes, 39 seconds
  Max Power Consumption 368 Watts
Slot 9 information:
  State                Online
  Temperature          32
  Total CPU DRAM       2048 MB
  Total RLD RAM        806 MB
  Total DDR DRAM       2632 MB
  Start time:          2013-02-17 08:17:43 PST
  Uptime:              1 day, 14 hours, 50 minutes, 31 seconds
  Max Power Consumption 368 Watts
Slot 10 information:
  State                Online
  Temperature          37
  Total CPU DRAM       2048 MB
  Total RLD RAM        1036 MB
  Total DDR DRAM       6656 MB
  Start time:          2013-02-17 08:17:54 PST
  Uptime:              1 day, 14 hours, 50 minutes, 20 seconds
  Max Power Consumption 520 Watts
Slot 14 information:
  State                Online
  Temperature          32
  Total CPU DRAM       2048 MB
  Total RLD RAM        1036 MB
  Total DDR DRAM       11264 MB
  Start time:          2013-02-17 08:18:01 PST
  Uptime:              1 day, 14 hours, 50 minutes, 13 seconds
  Max Power Consumption 610 Watts
Slot 19 information:
  State                Online
  Temperature          38
  Total CPU DRAM       2048 MB
  Total RLD RAM        1324 MB
  Total DDR DRAM       5120 MB
  Start time:          2013-02-17 08:18:08 PST
  Uptime:              1 day, 14 hours, 50 minutes, 6 seconds
  Max Power Consumption 440 Watts

```

#### 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 RLD RAM        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

```

Slot	State	Temp (C)	CPU Utilization (%) Total	Interrupt	Memory Utilization (%) CPU less FPC	DRAM (MB)	Heap	Buffer
0	Online							
1	Present							
2	Online		0	0	0	0	0	0
3	Present							
4	Empty							
5	Empty							
6	Online		0	0	0	0	0	0

### show chassis fpc detail (Hardware Not Supported)

```

user@host> show chassis fpc detail
Slot 0 information:
  State          Online
  Total CPU DRAM ----- CPU less FPC -----
  Start time     2006-07-07 03:21:00 UTC
  Uptime         27 minutes, 51 seconds
Slot 1 information:
  State          Present
  Reason         --- Hardware Not In Right Slot ---
Slot 2 information:
  State          Online
  Total CPU DRAM 32 MB
  Start time     2006-07-07 03:20:59 UTC
  Uptime         27 minutes, 52 seconds
Slot 3 information:
  State          Present
  Reason         --- Hardware Not Supported ---
  Total CPU DRAM 0 MB
Slot 6 information:
  State          Online
  Total CPU DRAM 32 MB
  Start time     2006-07-07 03:21:01 UTC
  Uptime         27 minutes, 50 seconds

```

### show chassis fpc pic-status

```

user@host> show chassis fpc pic-status
Slot 0 Online
  PIC 1    1x OC-12 ATM, MM
  PIC 2    1x OC-12 ATM, MM
  PIC 3    1x OC-12 ATM, MM
Slot 1 Online
  PIC 0    1x OC-48 SONET, SMIR
Slot 2 Online
  PIC 0    1x OC-192 SONET, SMSR

```

### show chassis fpc pic-status (M Series Routers)

```

user@host> show chassis fpc pic-status

```

```

Slot 1  Online      FPC Type 1
        PIC 0 Present 2x OC-3 ATM, MM- Hardware Error
        PIC 1 Online  4x OC-3 SONET, SMIR
Slot 2  Online      E-FPC Type 2
        PIC 0 Online  4x G/E, 1000 BASE-SX
        PIC 1 Online  2x G/E SFP, 1000 BASE
        PIC 3 Online  1x Tunnel
Slot 3  Online      E-FPC Type 1
        PIC 0 Online  1x G/E IQ, 1000 BASE
        PIC 2 Online  1x G/E SFP, 1000 BASE
Slot 4  Online      E-FPC Type 2
        PIC 0 Online  4x G/E SFP, 1000 BASE
        PIC 1 Online  4x G/E SFP, 1000 BASE
        PIC 2 Online  4x G/E SFP, 1000 BASE
        PIC 3 Online  4x G/E SFP, 1000 BASE
Slot 5  Online      FPC Type 2
...

```

#### show chassis fpc pic-status (M120 Router)

```

user@host> show chassis fpc pic-status
Slot 1  Online      M120 CFPC 10GE
        PIC 0 Online  1x 10GE(LAN/WAN) XFP
Slot 3  Online      M120 FPC Type 2 (proto)
        PIC 0 Online  2x G/E IQ, 1000 BASE
        PIC 1 Online  4x OC-3 SONET, SMIR
        PIC 2 Online  2x G/E IQ, 1000 BASE
        PIC 3 Online  8x 1GE(LAN), IQ2
Slot 4  Online      M120 FPC Type 3 (proto)
        PIC 0 Online  10x 1GE(LAN), 1000 BASE
Slot 5  Online      M120 FPC Type 1 (proto)
        PIC 0 Present 1x G/E, 1000 BASE-LX- Not Supported
        PIC 1 Online  1x CHOC3 IQ SONET, SMLR
        PIC 2 Online  4x CHDS3 IQ
        PIC 3 Online  1x G/E SFP, 1000 BASE

```

#### show chassis fpc pic-status (MX240, MX480, and MX960 Routers with Application Services Modular Line Card)

In the following output **Slot 1** and **Slot 5** are the Application Services Modular Carrier Cards (AS MCC), **PIC 0** is the Application Services Modular Storage Card (AS MSC), and **PIC 2** is the Application Services Modular Processing Card (AS MXC).

```

user@host> show chassis fpc pic-status
Slot 2  Online      MPC Type 1 3D Q
Slot 1  Online      AS-MCC
        PIC 0 Online  AS-MSC
        PIC 2 Online  AS-MXC
Slot 4  Offline     MPC 3D 16x 10GE
Slot 5  Offline     AS-MCC

```

#### show chassis fpc lcc (TX Matrix Router)

```

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

```

Slot	State	Temp (C)	CPU Total	Utilization (%) Interrupt	Utilization (%) DRAM (MB)	Memory Heap	Utilization (%) Buffer
0	Empty						
1	Online	27	2	0	256	8	44
2	Online	27	3	0	256	15	44
3	Empty						

```

4 Empty
5 Empty
6 Empty
7 Empty

```

### show chassis fpc pic-status (TX Matrix Router)

```

user@host> show chassis fpc pic-status
lcc0-re0:

```

```

-----
Slot 0  Online      FPC Type 3
PIC 0   Online      1x OC-192 SM SR1
PIC 1   Online      1x OC-192 SM SR2
PIC 2   Online      1x OC-192 SM SR1
PIC 3   Online      1x Tunnel
Slot 1   Online      FPC Type 2
PIC 0   Online      1x OC-48 SONET, SMSR
PIC 1   Online      1x OC-48 SONET, SMSR

```

```
lcc1-re0:
```

```
lcc2-re0:
```

```

-----
Slot 1   Online      FPC Type 3
PIC 0   Online      1x OC-192 SM SR1
Slot 5   Online      FPC Type 2
PIC 0   Online      1x OC-48 SONET, SMSR
PIC 1   Online      2x G/E, 1000 BASE-LX
PIC 2   Online      2x G/E, 1000 BASE-LX
PIC 3   Online      1x OC-48 SONET, SMSR

```

```
lcc3-re0:
```

### show chassis fpc pic-status lcc (TX Matrix Router)

```

user@host> show chassis fpc pic-status lcc 0
lcc0-re0:

```

```

-----
Slot 0  Online      FPC Type 3
PIC 0   Online      1x OC-192 SM SR2
Slot 1  Online      FPC Type 2
PIC 0   Online      2x OC-12 ATM2 IQ, MM
PIC 1   Online      1x OC-48 SONET, SMSR
PIC 2   Online      1x OC-48 SONET, SMSR
PIC 3   Online      4x G/E, 1000 BASE-SX

```

### show chassis fpc (TX Matrix Plus Router)

```

user@host> show chassis fpc
lcc0-re0:

```

```

-----
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 (TX Matrix Plus 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        38     4      0      2048      3      24
2 Online        43     8      0      2048      6      24
3 Empty
4 Online        43     6      0      2048      6      24
5 Empty
6 Online        42    14      0      2048      6      24
7 Online        45     6      0      2048      3      24

```

#### show chassis fpc detail (TX Matrix Plus Router)

```
user@host> show chassis fpc details
```

```
lcc0-re0:
```

```
Slot 1 information:
```

```

State                Online
Temperature           38 degrees C / 100 degrees F
Total CPU DRAM        2048 MB
Total SRAM             64 MB
Total SDRAM            1280 MB
Start time             2010-10-04 20:06:22 PDT
Uptime                1 hour, 32 minutes, 51 seconds

```

```
Slot 2 information:
```

```

State                Online
Temperature           43 degrees C / 109 degrees F

```

```

Total CPU DRAM          2048 MB
Total SRAM              128 MB
Total SDRAM            2560 MB
Start time              2010-10-04 20:06:37 PDT
Uptime                 1 hour, 32 minutes, 36 seconds
Slot 4 information:
State                  Online
Temperature            43 degrees C / 109 degrees F
Total CPU DRAM        2048 MB
Total SRAM            128 MB
Total SDRAM          2560 MB
Start time            2010-10-04 20:06:40 PDT
Uptime               1 hour, 32 minutes, 33 seconds
Slot 6 information:
State                  Online
Temperature            42 degrees C / 107 degrees F
Total CPU DRAM        2048 MB
Total SRAM            128 MB
Total SDRAM          2560 MB
Start time            2010-10-04 20:06:42 PDT
Uptime               1 hour, 32 minutes, 31 seconds
Slot 7 information:
State                  Online
Temperature            45 degrees C / 113 degrees F
Total CPU DRAM        2048 MB
Total SRAM            64 MB
Total SDRAM          1280 MB
Start time            2010-10-04 20:06:43 PDT
Uptime               1 hour, 32 minutes, 30 seconds

```

lcc2-re0:

```

-----
Slot 0 information:
State                  Online
Temperature            42 degrees C / 107 degrees F
Total CPU DRAM        2048 MB
Total SRAM            128 MB
Total SDRAM          2560 MB
Start time            2010-10-04 20:06:35 PDT
Uptime               1 hour, 32 minutes, 38 seconds
Slot 2 information:
State                  Online
Temperature            42 degrees C / 107 degrees F
Total CPU DRAM        2048 MB
Total SRAM            128 MB
Total SDRAM          2560 MB
Start time            2010-10-04 20:06:37 PDT
Uptime               1 hour, 32 minutes, 36 seconds
Slot 3 information:
State                  Online
Temperature            40 degrees C / 104 degrees F
Total CPU DRAM        2048 MB
Total SRAM            64 MB
Total SDRAM          1280 MB
Start time            2010-10-04 20:06:28 PDT
Uptime               1 hour, 32 minutes, 45 seconds
Slot 4 information:
State                  Online
Temperature            33 degrees C / 91 degrees F
Total CPU DRAM        1024 MB
Total SRAM            64 MB

```

```
Total SDRAM                1280 MB
Start time                  2010-10-04 20:08:03 PDT
Uptime                      1 hour, 31 minutes, 10 seconds
Slot 6 information:
State                       Online
Temperature                 43 degrees C / 109 degrees F
Total CPU DRAM              2048 MB
Total SRAM                  128 MB
Total SDRAM                 2560 MB
Start time                  2010-10-04 20:06:44 PDT
Uptime                      1 hour, 32 minutes, 29 seconds
Slot 7 information:
State                       Online
Temperature                 46 degrees C / 114 degrees F
Total CPU DRAM              2048 MB
Total SRAM                  64 MB
Total SDRAM                 1280 MB
Start time                  2010-10-04 20:06:46 PDT
Uptime                      1 hour, 32 minutes, 27 seconds
```

lcc3-re0:

```
-----
Slot 2 information:
State                       Online
Temperature                 38 degrees C / 100 degrees F
Total CPU DRAM              2048 MB
Total SRAM                  128 MB
Total SDRAM                 2560 MB
Start time                  2010-10-04 20:17:31 PDT
Uptime                      1 hour, 21 minutes, 42 seconds
Slot 4 information:
State                       Online
Temperature                 41 degrees C / 105 degrees F
Total CPU DRAM              2048 MB
Total SRAM                  128 MB
Total SDRAM                 2560 MB
Start time                  2010-10-04 20:17:34 PDT
Uptime                      1 hour, 21 minutes, 39 seconds
Slot 5 information:
State                       Online
Temperature                 41 degrees C / 105 degrees F
Total CPU DRAM              2048 MB
Total SRAM                  128 MB
Total SDRAM                 2560 MB
Start time                  2010-10-04 20:17:36 PDT
Uptime                      1 hour, 21 minutes, 37 seconds
Slot 6 information:
State                       Online
Temperature                 40 degrees C / 104 degrees F
Total CPU DRAM              2048 MB
Total SRAM                  128 MB
Total SDRAM                 2560 MB
Start time                  2010-10-04 20:17:39 PDT
Uptime                      1 hour, 21 minutes, 34 seconds
Slot 7 information:
State                       Online
Temperature                 42 degrees C / 107 degrees F
Total CPU DRAM              2048 MB
Total SRAM                  64 MB
Total SDRAM                 1280 MB
```



```

Start time          2010-10-04 20:17:41 PDT
Uptime              1 hour, 21 minutes, 32 seconds

```

### show chassis fpc pic-status (TX Matrix Plus Router)

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

```
lcc0-re0:
```

```

-----
Slot 1  Online      FPC Type 2-ES
PIC 0   Online      8x 1GE(LAN), IQ2
Slot 2  Online      FPC Type 4-ES
PIC 0   Online      4x 10GE (LAN/WAN) XFP
Slot 4  Online      FPC Type 4-ES
PIC 0   Online      4x 10GE (LAN/WAN) XFP
Slot 6  Online      FPC Type 4-ES
PIC 0   Online      4x 10GE (LAN/WAN) XFP
PIC 1   Online      4x 10GE (LAN/WAN) XFP
Slot 7  Online      FPC Type 3-ES
PIC 0   Online      10x 1GE(LAN), 1000 BASE
PIC 2   Online      1x OC-192 SM SR2
PIC 3   Online      10x 1GE(LAN), 1000 BASE

```

```
lcc2-re0:
```

```

-----
Slot 0  Online      FPC Type 4-ES
PIC 0   Online      4x 10GE (LAN/WAN) XFP
Slot 2  Online      FPC Type 4-ES
PIC 0   Online      4x 10GE (LAN/WAN) XFP
PIC 1   Online      4x 10GE (LAN/WAN) XFP
Slot 3  Online      FPC Type 2-ES
PIC 0   Online      8x 1GE(LAN), IQ2
Slot 4  Online      FPC Type 4
PIC 0   Online      10x10GE(LAN/WAN) SFPP
Slot 6  Online      FPC Type 4-ES
PIC 0   Online      4x OC-192 SONET XFP
Slot 7  Online      FPC Type 3-ES
PIC 0   Online      10x 1GE(LAN), 1000 BASE
PIC 1   Offline     1x 10GE(LAN/WAN) IQ2E
PIC 2   Online      1x OC-192 SM SR2
PIC 3   Online      1x Tunnel

```

```
lcc3-re0:
```

```

-----
Slot 2  Online      FPC Type 4-ES
PIC 0   Online      10x10GE(LAN/WAN) SFPP
Slot 4  Online      FPC Type 4-ES
PIC 0   Online      4x OC-192 SONET XFP
Slot 5  Online      FPC Type 4-ES
PIC 0   Online      4x OC-192 SONET XFP
PIC 1   Online      4x 10GE (LAN/WAN) XFP
Slot 6  Online      FPC Type 4-ES
PIC 1   Online      4x 10GE (LAN/WAN) XFP
Slot 7  Online      FPC Type 3-ES
PIC 0   Online      10x 1GE(LAN), 1000 BASE
PIC 1   Online      8x 1GE(TYPE3), IQ2E
PIC 2   Online      4x OC-48 SONET

```

### show chassis fpc (TI600 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 (TI600 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 (TI600 Router)

```
user@host> show chassis fpc slot 2
```

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 pic-status (TI600 Router)

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

```
Slot 2 Online FPC Type 1-ES
```

```

PIC 0 Online      Load Type 1
PIC 1 Online      4x 1GE(LAN), IQ2E
PIC 3 Online      1x OC-12-3 SFP
Slot 3 Online     FPC Type 4-ES
PIC 0 Online      4x 10GE (LAN/WAN) XFP
PIC 1 Online      4x OC-192 SONET XFP
Slot 5 Online     FPC Type 2-ES
PIC 0 Online      Load Type 2
PIC 1 Online      8x 1GE(LAN), IQ2E
PIC 2 Online      8x 1GE(LAN), IQ2E
PIC 3 Online      1x OC-48-12-3 SFP
Slot 7 Online     FPC Type 4
PIC 0 Online      4x 10GE (LAN/WAN) XFP

```

### show chassis fpc (T4000 Router)

```
user@host> show chassis fpc
```

```

regress@stymphalian# run show chassis fpc

```

Slot	State	Temp (C)	CPU Utilization (%)	Memory DRAM (MB)	Utilization (%)
			Total Interrupt	Heap	Buffer
0	Online	48	15 0	2816	21 27
1	Empty				
2	Empty				
3	Online	51	15 0	2816	21 27
4	Empty				
5	Online	39	8 0	2048	6 23
6	Online	49	15 0	2816	21 27
7	Empty				

### show chassis fpc detail (T4000 Router)

```
user@host> show chassis fpc detail
```

```
Slot 0 information:
```

```

State Online
Temperature 48 degrees C / 118 degrees F
Total CPU DRAM 2816 MB
Total SRAM 1554 MB
Total SDRAM 10752 MB
Start time 2012-02-09 22:56:25 PST
Uptime 2 hours, 40 minutes, 52 seconds

```

```
Slot 3 information:
```

```

State Online
Temperature 51 degrees C / 123 degrees F
Total CPU DRAM 2816 MB
Total SRAM 1554 MB
Total SDRAM 10752 MB
Start time 2012-02-09 22:56:22 PST
Uptime 2 hours, 40 minutes, 55 seconds

```

```
Slot 5 information:
```

```

State Online
Temperature 39 degrees C / 102 degrees F
Total CPU DRAM 2048 MB
Total SRAM 128 MB
Total SDRAM 2560 MB
Start time 2012-02-09 22:51:27 PST
Uptime 2 hours, 45 minutes, 50 seconds

```

```
Slot 6 information:
```

```

State Online
Temperature 49 degrees C / 120 degrees F
Total CPU DRAM 2816 MB

```

```

Total SRAM                1554 MB
Total SDRAM               10752 MB
Start time                2012-02-09 22:56:29 PST
Uptime                    2 hours, 40 minutes, 48 seconds

```

#### show chassis fpc pic-status (T4000 Router)

```

user@host> show chassis fpc pic-status
Slot 0  Online      FPC Type 5-3D
  PIC 0  Online      12x10GE (LAN/WAN) SFPP
  PIC 1  Online      12x10GE (LAN/WAN) SFPP
Slot 3  Online      FPC Type 5-3D
  PIC 0  Online      1x100GE
  PIC 1  Online      12x10GE (LAN/WAN) SFPP
Slot 5  Online      FPC Type 4-ES
  PIC 0  Online      100GE
  PIC 1  Online      100GE CFP
Slot 6  Online      FPC Type 5-3D
  PIC 0  Online      12x10GE (LAN/WAN) SFPP
  PIC 1  Online      12x10GE (LAN/WAN) SFPP

```

#### show chassis fpc (QFX Series)

```

user@switch> show chassis fpc
Temp CPU Utilization (%) Memory      Utilization (%)
Slot State      (C) Total  Interrupt    DRAM (MB) Heap      Buffer
0  Online        26    2         0         2820    0         49

```

#### show chassis fpc detail (QFX3500 Switches)

```

user@switch> show chassis fpc detail
Slot 0 information:
  State                Online
  Temperature          28 degrees C / 82 degrees F
  Total CPU DRAM       2820 MB
  Total SRAM           0 MB
  Total SDRAM          0 MB
  Start time          2010-09-20 01:34:13 PDT
  Uptime              3 days, 3 hours, 31 minutes, 48 seconds

```

#### show chassis fpc pic-status (QFX3500 Switches)

```

user@switch> show chassis fpc pic-status
Slot 0  Online      QFX 48x10G 4x40G Switch
  PIC 0  Online      48x 10G-SFP+
  PIC 1  Online      15x 10G-SFP+

```

#### show chassis fpc interconnect-device (QFabric System)

```

user@switch> show chassis fpc interconnect-device interconnect1
FPC status:
Slot State      Temp
              (C)
0  Online        0
1  Online        0
2  Online        0
3  Online        0
4  Online        0
5  Online        0
6  Online        0
7  Online        0
8  Online        0

```

9	Online	0
10	Online	0
11	Online	0
12	Online	0
13	Online	0
14	Online	0
15	Online	0

### show chassis fpc interconnect-device (QFabric System)

```
user@switch> show chassis fpc interconnect-device interconnect1 3
FPC status:
```

Slot	State	Temp (C)
3	Online	0

### show chassis fpc interconnect-device detail (QFabric System)

```
user@switch> show chassis fpc interconnect-device interconnect1 3 detail
Slot 3 information:
```

State	Online
Temperature	0 degrees C / 32 degrees F
Start time	2011-08-18 10:45:04 PDT
Uptime	1 minute, 49 seconds

### show chassis fpc pic-status interconnect-device (QFabric System)

```
user@switch> show chassis fpc pic-status interconnect-device interconnect1
```

Slot 0	Online	QFX 16-port QSFP+ Front Card
PIC 0	Online	16x 40G-QSFP+
PIC 1	Online	16x 40G-GE
Slot 1	Online	QFX 16-port QSFP+ Front Card
PIC 0	Online	16x 40G-QSFP+
PIC 1	Online	16x 40G-GE
Slot 2	Online	QFX 16-port QSFP+ Front Card
PIC 0	Online	16x 40G-QSFP+
PIC 1	Online	16x 40G-GE
Slot 3	Online	QFX 16-port QSFP+ Front Card
PIC 0	Online	16x 40G-QSFP+
PIC 1	Online	16x 40G-GE
Slot 4	Online	QFX 16-port QSFP+ Front Card
PIC 0	Online	16x 40G-QSFP+
PIC 1	Online	16x 40G-GE
Slot 5	Online	QFX 16-port QSFP+ Front Card
PIC 0	Online	16x 40G-QSFP+
PIC 1	Online	16x 40G-GE
Slot 6	Online	QFX 16-port QSFP+ Front Card
PIC 0	Online	16x 40G-QSFP+
PIC 1	Online	16x 40G-GE
Slot 7	Online	QFX 16-port QSFP+ Front Card
PIC 0	Online	16x 40G-QSFP+
PIC 1	Online	16x 40G-GE
Slot 8	Online	QFX Fabric Rear Card
PIC 0	Online	16x 40G-GE
Slot 9	Online	QFX Fabric Rear Card
PIC 0	Online	16x 40G-GE
Slot 10	Online	QFX Fabric Rear Card
PIC 0	Online	16x 40G-GE
Slot 11	Online	QFX Fabric Rear Card
PIC 0	Online	16x 40G-GE
Slot 12	Online	QFX Fabric Rear Card
PIC 0	Online	16x 40G-GE

```

Slot 13 Online      QFX Fabric Rear Card
PIC 0  Online      16x 40G-GE
Slot 14 Online      QFX Fabric Rear Card
PIC 0  Online      16x 40G-GE
Slot 15 Online      QFX Fabric Rear Card
PIC 0  Online      16x 40G-GE

```

#### show chassis fpc pic-status node-device (QFabric System)

```

user@switch> show chassis fpc pic-status node-device node1
Slot node1 Online      QFX 48x10G 4x40G Switch
PIC 0  Online      48x 10G-SFP+
PIC 1  Online      4x 40G-QSFP+

```

#### show chassis fpc (PTX5000 Packet Transport Router)

```

user@host> show chassis fpc

```

Slot	State	Temp (C)	CPU Utilization (%)	Memory DRAM (MB)	Utilization (%)
			Total Interrupt	Heap	Buffer
0	Empty				
1	Empty				
2	Online	50	6 0	2816	5 27
3	Empty				
4	Empty				
5	Online	48	9 0	2816	5 27
6	Empty				
7	Online	49	8 0	2816	5 27

#### show chassis fpc detail (PTX5000 Packet Transport Router)

```

user@host> show chassis fpc detail
Slot 2 information:
State Online
Temperature 35 degrees C / 95 degrees F (PMB)
Temperature 35 degrees C / 95 degrees F (Intake)
Temperature 50 degrees C / 122 degrees F (Exhaust A)
Temperature 54 degrees C / 129 degrees F (Exhaust B)
Temperature 54 degrees C / 129 degrees F (TL0)
Temperature 52 degrees C / 125 degrees F (TQ0)
Temperature 61 degrees C / 141 degrees F (TL1)
Temperature 58 degrees C / 136 degrees F (TQ1)
Temperature 57 degrees C / 134 degrees F (TL2)
Temperature 58 degrees C / 136 degrees F (TQ2)
Temperature 62 degrees C / 143 degrees F (TL3)
Temperature 61 degrees C / 141 degrees F (TQ3)
Total CPU DRAM 2816 MB
Total SRAM 0 MB
Total SDRAM 0 MB
Start time 2012-01-12 12:05:42 PST
Uptime 3 hours, 14 minutes, 7 seconds
Slot 5 information:
State Online
Temperature 35 degrees C / 95 degrees F (PMB)
Temperature 34 degrees C / 93 degrees F (Intake)
Temperature 48 degrees C / 118 degrees F (Exhaust A)
Temperature 53 degrees C / 127 degrees F (Exhaust B)
Temperature 54 degrees C / 129 degrees F (TL0)
Temperature 52 degrees C / 125 degrees F (TQ0)
Temperature 69 degrees C / 156 degrees F (TL1)
Temperature 56 degrees C / 132 degrees F (TQ1)
Temperature 54 degrees C / 129 degrees F (TL2)

```

```

Temperature          56 degrees C / 132 degrees F (TQ2)
Temperature          59 degrees C / 138 degrees F (TL3)
Temperature          60 degrees C / 140 degrees F (TQ3)
Total CPU DRAM      2816 MB
Total SRAM           0 MB
Total SDRAM          0 MB
Start time           2012-01-12 12:05:43 PST
Uptime               3 hours, 14 minutes, 6 seconds
Slot 7 information:
State                Online
Temperature          35 degrees C / 95 degrees F (PMB)
Temperature          33 degrees C / 91 degrees F (Intake)
Temperature          50 degrees C / 122 degrees F (Exhaust A)
Temperature          55 degrees C / 131 degrees F (Exhaust B)
Temperature          56 degrees C / 132 degrees F (TL0)
Temperature          56 degrees C / 132 degrees F (TQ0)
Temperature          61 degrees C / 141 degrees F (TL1)
Temperature          57 degrees C / 134 degrees F (TQ1)
Temperature          55 degrees C / 131 degrees F (TL2)
Temperature          59 degrees C / 138 degrees F (TQ2)
Temperature          62 degrees C / 143 degrees F (TL3)
Temperature          62 degrees C / 143 degrees F (TQ3)
Total CPU DRAM      2816 MB
Total SRAM           0 MB
Total SDRAM          0 MB
Start time           2012-01-12 12:05:44 PST
Uptime               3 hours, 14 minutes, 5 seconds

```

#### show chassis fpc pic-status (PTX5000 Packet Transport Router)

```

user@host> show chassis fpc pic-status
Slot 2  Online      FPC
PIC 0   Online      24x 10GE(LAN) SFP+
PIC 1   Online      24x 10GE(LAN) SFP+
Slot 5  Online      FPC
PIC 0   Online      24x 10GE(LAN) SFP+
PIC 1   Online      2x 40GE CFP
Slot 7  Online      FPC
PIC 0   Online      24x 10GE(LAN) SFP+
PIC 1   Online      2x 40GE CFP

```

#### show chassis fpc (ACX2000 Universal Access Router)

```

user@host> show chassis fpc

```

Slot	State	Temp (C)	CPU Utilization (%)	Memory DRAM (MB)	Utilization (%)
			Total	Heap	Buffer
0	Online	61	17	512	21

#### show chassis fpc 0 (ACX2000 Universal Access Router)

```

user@host> show chassis fpc 0

```

Slot	State	Temp (C)	CPU Utilization (%)	Memory DRAM (MB)	Utilization (%)
			Total	Heap	Buffer
0	Online	61	17	512	21

#### show chassis fpc detail (ACX2000 Universal Access Router)

```

user@host> show chassis fpc detail
Slot 0 information:
State                Online
Temperature          61 degrees C / 141 degrees F
Total CPU DRAM      512 MB

```

```
Start time          2012-05-29 02:52:06 PDT
Uptime              27 minutes, 17 seconds
```

#### show chassis fpc pic-status (ACX2000 Universal Access Router)

```
user@host> show chassis fpc pic-status
Slot 0  Online
  PIC 0  Online      16x CHE1T1, RJ48
  PIC 1  Online      8x 1GE(LAN) RJ45
  PIC 2  Online      2x 1GE(LAN) SFP
  PIC 3  Online      2x 10GE(LAN) SFP+
```

#### show chassis FPC 1 (MX Routers with Media Services Blade [MSB])

```
user@switch> show chassis fpc 1
          Temp CPU Utilization (%)  Memory  Utilization (%)
Slot State (C) Total Interrupt  DRAM (MB) Heap  Buffer
  1 Online   34    5         0    3072      5    13
```

#### show chassis FPC 1 detail (MX Routers with Media Services Blade [MSB])

```
user@switch> show chassis fpc 1 detail
Slot 1 information:
  State                      Online
  Temperature                 34
  Total CPU DRAM              3072 MB
  Total RLDRAM                259 MB
  Total DDR DRAM              4864 MB
  Start time:                 2012-06-19 10:51:43 PDT
  Uptime:                     16 minutes, 48 seconds
  Max Power Consumption       550 Watts
```



## show chassis hardware

---

<b>Syntax</b>	show chassis hardware <detail   extensive> <clei-models> <models>
<b>Syntax (EX Series)</b>	show chassis hardware <clei-models> <detail   extensive> <models>
<b>Syntax (T4000 Router)</b>	show chassis hardware <clei-models> <detail   extensive> <models>
<b>Syntax (TX Matrix Router)</b>	show chassis hardware <clei-models> <detail   extensive> <models> <lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show chassis hardware <clei-models> <detail   extensive> <models> <lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (MX Series Routers)</b>	show chassis hardware <detail   extensive> <clei-models> <models> <all-members> <local> <member <i>member-id</i> >
<b>Syntax (MX104, MX2010, and MX2020 3D Universal Edge Routers)</b>	show chassis hardware <clei-models> <detail   extensive> <models>
<b>Syntax (QFX Series)</b>	show chassis hardware <detail   extensive> <clei-models> <interconnect-device <i>name</i> > <node-device <i>name</i> > <models>
<b>Syntax (PTX Series Packet Transport Routers)</b>	show chassis hardware <detail   extensive> <clei-models> <models>

**Syntax (ACX Series  
Universal Access  
Routers)** `show chassis hardware`  
`<detail | extensive>`  
`<clei-models>`  
`<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 QFX Series.  
Command introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers.  
Command introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.  
Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers.  
Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.  
Command introduced in Junos OS Release 13.2 for MX104 3D Universal Edge Routers.

**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 routers.

**clei-models**—(Optional) Display Common Language Equipment Identifier (CLEI) barcode and model number for orderable field-replaceable units (FRUs).

**detail**—(Optional) Include RAM and disk information in output.

**extensive**—(Optional) Display ID EEPROM information.

**all-members**—(MX Series routers only) (Optional) Display hardware-specific information for all the members of the Virtual Chassis configuration.

**interconnect-device *name***—(QFabric systems only) (Optional) Display hardware-specific information for the Interconnect device.

**lcc *number***—(TX Matrix routers and TX Matrix Plus router only) (Optional) On a TX Matrix router, display hardware information for a specified T640 router (line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display hardware information for a specified router (line-card chassis) that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

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

**member *member-id***—(MX Series routers and EX Series switches) (Optional) Display hardware-specific information for the specified member of the Virtual Chassis configuration. Replace *member-id* variable with a value 0 or 1.

**models**—(Optional) Display model numbers and part numbers for orderable FRUs and, for components that use ID EEPROM format v2, the CLEI code.

**node-device *name***—(QFabric systems only) (Optional) Display hardware-specific information for the Node device.

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

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

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

**Table 31: 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

<p><b>Related Documentation</b></p>	<ul style="list-style-type: none"> <li>• <a href="#">show chassis power</a></li> </ul>
<p><b>List of Sample Output</b></p>	<p> <a href="#">show chassis hardware (EX8216 Switch) on page 637</a>  <a href="#">show chassis hardware clei-models (EX8216 Switch) on page 638</a>  <a href="#">show chassis hardware clei-models (T1600 Router) on page 638</a>  <a href="#">show chassis hardware detail (EX4200 Switch) on page 639</a>  <a href="#">show chassis hardware models (EX4500 Switch) on page 639</a>  <a href="#">show chassis hardware (J6350 Router) on page 639</a>  <a href="#">show chassis hardware (J6300 Router) on page 640</a>  <a href="#">show chassis hardware (M7i Router) on page 640</a>  <a href="#">show chassis hardware (M10 Router) on page 641</a>  <a href="#">show chassis hardware models (M10 Router) on page 641</a>  <a href="#">show chassis hardware (M20 Router) on page 641</a>  <a href="#">show chassis hardware models (M20 Router) on page 642</a>  <a href="#">show chassis hardware (M40 Router) on page 642</a>  <a href="#">show chassis hardware (M40e Router) on page 643</a>  <a href="#">show chassis hardware (M120 Router) on page 644</a>  <a href="#">show chassis hardware detail (M120 Router) on page 644</a>  <a href="#">show chassis hardware models (M120 Router) on page 645</a>  <a href="#">show chassis hardware (M160 Router) on page 646</a>  <a href="#">show chassis hardware models (M160 Router) on page 646</a>  <a href="#">show chassis hardware detail (M160 Router) on page 647</a>  <a href="#">show chassis hardware (M320 Router) on page 648</a>  <a href="#">show chassis hardware models (M320 Router) on page 649</a>  <a href="#">show chassis hardware (MX5 Router) on page 650</a>  <a href="#">show chassis hardware (MX10 Router) on page 650</a>  <a href="#">show chassis hardware (MX40 Router) on page 651</a>  <a href="#">show chassis hardware (Fixed MX80 Router) on page 652</a>  <a href="#">show chassis hardware (Modular MX80 Router) on page 652</a>  <a href="#">show chassis hardware (MX104 Router) on page 652</a>  <a href="#">show chassis hardware detail (MX104 Router) on page 653</a>  <a href="#">show chassis hardware extensive (MX104 Router) on page 654</a>  <a href="#">show chassis hardware models (MX104 Router) on page 657</a>  <a href="#">show chassis hardware clei-models (MX104 Router) on page 657</a>  <a href="#">show chassis hardware (MX240 Router) on page 657</a>  <a href="#">show chassis hardware detail (MX 240 Router with Routing Engine Displaying DIMM information) on page 658</a>  <a href="#">show chassis hardware (MX240 Router with Enhanced MX SCB) on page 658</a>  <a href="#">show chassis hardware (MX480 Router) on page 659</a>  <a href="#">show chassis hardware (MX480 Router with Enhanced MX SCB) on page 660</a>  <a href="#">show chassis hardware (MX960 Router) on page 660</a>  <a href="#">show chassis hardware (MX960 Router with Bidirectional Optics) on page 661</a>  <a href="#">show chassis hardware (MX960 Router with Enhanced MX SCB) on page 661</a>  <a href="#">show chassis hardware models (MX960 Router with Enhanced MX SCB) on page 663</a>  <a href="#">show chassis hardware detail (MX960 Router) on page 664</a>  <a href="#">show chassis hardware (MX2010 Router) on page 664</a>  <a href="#">show chassis hardware detail (MX2010 Router) on page 667</a>  <a href="#">show chassis hardware extensive (MX2010 Router) on page 671</a> </p>

[show chassis hardware models \(MX2010 Router\) on page 677](#)  
[show chassis hardware clei-models \(MX2010 Routers\) on page 677](#)  
[show chassis hardware \(MX2020 Router\) on page 678](#)  
[show chassis hardware detail \(MX2020 Router\) on page 687](#)  
[show chassis hardware models \(MX2020 Router\) on page 695](#)  
[show chassis hardware clei-models \(MX2020 Router\) on page 697](#)  
[show chassis hardware \(MX Series routers with ATM MIC\) on page 698](#)  
[show chassis hardware \(MX240, MX480, MX960 routers with Application Services Modular Line Card\) on page 699](#)  
[show chassis hardware extensive \(MX240, MX480, MX960 routers with Application Services Modular Line Card\) on page 699](#)  
[show chassis hardware \(MX480 Router with MPC4E\) on page 700](#)  
[show chassis hardware \(MX2020 Router with MPC4E\) on page 701](#)  
[show chassis hardware \(T320 Router\) on page 703](#)  
[show chassis hardware \(T640 Router\) on page 704](#)  
[show chassis hardware models \(T640 Router\) on page 704](#)  
[show chassis hardware extensive \(T640 Router\) on page 705](#)  
[show chassis hardware \(T4000 Router\) on page 706](#)  
[show chassis hardware \(T4000 Router with 16 GB line card chassis \(LCC\) Routing Engine\) on page 708](#)  
[show chassis hardware \(T4000 Router with LSR FPC\) on page 708](#)  
[show chassis hardware clei-models \(T4000 Router\) on page 708](#)  
[show chassis hardware detail \(T4000 Router\) on page 709](#)  
[show chassis hardware models \(T4000 Router\) on page 711](#)  
[show chassis hardware lcc \(TX Matrix Router\) on page 711](#)  
[show chassis hardware scc \(TX Matrix Router\) on page 712](#)  
[show chassis hardware \(T1600 Router\) on page 712](#)  
[show chassis hardware \(TX Matrix Plus Router\) on page 715](#)  
[show chassis hardware sfc \(TX Matrix Plus Router\) on page 720](#)  
[show chassis hardware extensive \(TX Matrix Plus Router\) on page 721](#)  
[show chassis hardware clei-models \(TX Matrix Plus Router\) on page 722](#)  
[show chassis hardware detail \(TX Matrix Plus Router\) on page 724](#)  
[show chassis hardware models \(TX Matrix Plus Router\) on page 726](#)  
[show chassis hardware \(TX Matrix Plus router with 3D SIBs\) on page 729](#)  
[show chassis hardware clei-models \(TX Matrix Plus router with 3D SIBs\) on page 732](#)  
[show chassis hardware detail \(TX Matrix Plus router with 3D SIBs\) on page 736](#)  
[show chassis hardware lcc \(TX Matrix Plus router with 3D SIBs\) on page 740](#)  
[show chassis hardware sfc \(TX Matrix Plus router with 3D SIBs\) on page 741](#)  
[show chassis hardware \(16-Port 10-Gigabit Ethernet MPC with SFP+ Optics \[MX Series Routers\]\) on page 742](#)  
[show chassis hardware \(MPC3E \[MX Series Routers\]\) on page 743](#)  
[show chassis hardware \(QFX3500 Switches\) on page 744](#)  
[show chassis hardware detail \(QFX3500 Switches\) on page 744](#)  
[show chassis hardware models \(QFX3500 Switches\) on page 745](#)  
[show chassis hardware clei-models \(QFX3500 Switches\) on page 745](#)  
[show chassis hardware interconnect-device \(QFabric Systems\) on page 746](#)  
[show chassis hardware node-device \(QFabric Systems\) on page 746](#)  
[show chassis hardware \(PTX5000 Packet Transport Router\) on page 746](#)  
[show chassis hardware clei-models \(PTX5000 Packet Transport Router\) on page 747](#)

[show chassis hardware detail \(PTX5000 Packet Transport Router\) on page 748](#)  
[show chassis hardware models \(PTX5000 Packet Transport Router\) on page 749](#)  
[show chassis hardware extensive \(PTX5000 Packet Transport Router\) on page 750](#)  
[show chassis hardware \(MX Routers with Media Services Blade \[MSB\]\) on page 751](#)  
[show chassis hardware extensive \(MX Routers with Media Services Blade \[MSB\]\) on page 751](#)

**Output Fields** [Table 32 on page 634](#) lists the output fields for the **show chassis hardware** command. Output fields are listed in the approximate order in which they appear.

**Table 32: show chassis hardware Output Fields**

Field Name	Field Description	Level of Output
Item	<p>Chassis component:</p> <ul style="list-style-type: none"> <li>(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 <i>EX Series Switches Hardware and CLI Terminology Mapping</i>.</li> <li>(MX Series routers and EX Series switches)—Information about the backplane, Routing Engine, Power Entry Modules (PEMs), and fan trays. Also displays information about Flexible PIC Concentrators (FPCs) and associated Physical Interface Cards (PICs), Modular Port Concentrators (MPCs) and associated Modular Interface Cards (MICs), or Dense Port Concentrators (DPCs). MX80 routers have a single Routing Engine and a built-in Packet Forwarding Engine that attaches directly to MICs. The Packet Forwarding Engine has two “pseudo” FPCs (FPC 0 and FPC1). MX80 routers also have a Forwarding Engine Board (FEB). MX104 routers have a built-in Packet forwarding Engine and a Forwarding Engine Board (FEB). The Packet Forwarding Engine of the MX104 router has three “pseudo” FPCs (FPC0, FPC1, and FPC2).</li> <li>(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.</li> <li>(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.</li> <li>(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).</li> <li>(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).</li> <li>(MX2010 and MX2020 routers)—Information about the chassis, midplane, craft interface (FPM), power midplane (PMP), Power Supply Modules (PSMs), Power Distribution Modules (PDMs), Routing Engines, Control Boards (CBs) and Switch Processor Mezzanine Boards (SPMBs), Switch Fabric Boards (SFBs), Flexible PIC Concentrators (FPCs), PICs, adapter cards (ADCs) and fan trays.</li> </ul>	All levels

Table 32: show chassis hardware Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Version</b>	Revision level of the chassis component.	All levels
<b>Part number</b>	Part number of the chassis component.	All levels
<b>Serial number</b>	Serial number of the chassis component. The serial number of the backplane is also the serial number of the router chassis. Use this serial number when you need to contact Juniper Networks Customer Support about the router or switch chassis.	All levels
<b>Assb ID or Assembly ID</b>	( <b>extensive</b> keyword only) Identification number that describes the FRU hardware.	<b>extensive</b>
<b>Assembly Version</b>	( <b>extensive</b> keyword only) Version number of the FRU hardware.	<b>extensive</b>
<b>Assembly Flags</b>	( <b>extensive</b> keyword only) Flags.	<b>extensive</b>
<b>FRU model number</b>	( <b>clei-models</b> , <b>extensive</b> , and <b>models</b> keyword only) Model number of the FRU hardware component.	none specified
<b>CLEI code</b>	( <b>clei-models</b> and <b>extensive</b> 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
<b>EEPROM Version</b>	ID EEPROM version used by the hardware component: <b>0x00</b> (version 0), <b>0x01</b> (version 1), or <b>0x02</b> (version 2).	<b>extensive</b>
<b>Description</b>	<p>Brief description of the hardware item:</p> <ul style="list-style-type: none"> <li>• Type of power supply.</li> <li>• Type of PIC. If the PIC type is not supported on the current software release, the output states <b>Hardware Not Supported</b>.</li> <li>• Type of FPC: <b>FPC Type 1</b>, <b>FPC Type 2</b>, <b>FPC Type 3</b>, <b>FPC Type 4</b>, or <b>FPC TypeOC192</b>.</li> </ul> <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"> <li>• <b>2x FE</b>—Either two built-in Fast Ethernet interfaces (fixed PIM) or dual-port Fast Ethernet PIM</li> <li>• <b>4x FE</b>—4-port Fast Ethernet ePIM</li> <li>• <b>1x GE Copper</b>—Copper Gigabit Ethernet ePIM (one 10-Mbps, 100-Mbps, or 1000-Mbps port)</li> <li>• <b>1x GE SFP</b>—SFP Gigabit Ethernet ePIM (one fiber port)</li> <li>• <b>4x GE Base PIC</b>—Four built-in Gigabit Ethernet ports on a J4350 or J6350 chassis (fixed PIM)</li> <li>• <b>2x Serial</b>—Dual-port serial PIM</li> <li>• <b>2x T1</b>—Dual-port T1 PIM</li> <li>• <b>2x E1</b>—Dual-port E1 PIM</li> </ul>	All levels

Table 32: show chassis hardware Output Fields (*continued*)

Field Name	Field Description	Level of Output
	<ul style="list-style-type: none"> <li>• <b>2x CT1E1</b>—Dual-port channelized T1/E1 PIM</li> <li>• <b>1x T3</b>—T3 PIM (one port)</li> <li>• <b>1x E3</b>—E3 PIM (one port)</li> <li>• <b>4x BRI S/T</b>—4-port ISDN BRI S/T PIM</li> <li>• <b>4x BRI U</b>—4-port ISDN BRI U PIM</li> <li>• <b>1x ADSL Annex A</b>—ADSL 2/2+ Annex A PIM (one port, for POTS)</li> <li>• <b>1x ADSL Annex B</b>—ADSL 2/2+ Annex B PIM (one port, for ISDN)</li> <li>• <b>2x SHDSL (ATM)</b>—G SHDSL PIM (2-port two-wire module or 1-port four-wire module)</li> <li>• <b>1x TGM550</b>—TGM550 Telephony Gateway Module (Avaya VoIP gateway module with one console port, two analog <b>LINE</b> ports, and two analog <b>TRUNK</b> ports)</li> <li>• <b>1x DS1 TIM510</b>—TIM510 E1/T1 Telephony Interface Module (Avaya VoIP media module with one E1 or T1 trunk termination port and ISDN PRI backup)</li> <li>• <b>4x FXS, 4x FXO, TIM514</b>—TIM514 Analog Telephony Interface Module (Avaya VoIP media module with four analog <b>LINE</b> ports and four analog <b>TRUNK</b> ports)</li> <li>• <b>4x BRI TIM521</b>—TIM521 BRI Telephony Interface Module (Avaya VoIP media module with four ISDN BRI ports)</li> <li>• <b>Crypto Accelerator Module</b>—For enhanced performance of cryptographic algorithms used in IP Security (IPsec) services</li> <li>• <b>MPC M16x10GE</b>—16-port 10-Gigabit Module Port Concentrator that supports SFP+ optical transceivers. (Not on EX Series switches.)</li> <li>• For hosts, the Routing Engine type.</li> <li>• For small form-factor pluggable transceiver (SFP) modules, the type of fiber: <b>LX</b>, <b>SX</b>, <b>LH</b>, or <b>T</b>.</li> <li>• LCD description for EX Series switches (except EX2200 switches).</li> <li>• <b>MPC2</b>—1-port MPC2 that supports two separate slots for MICs.</li> <li>• <b>MPC3E</b>—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.</li> <li>• 100GBASE-LR4, pluggable CFP optics</li> <li>• Supports the Enhanced MX Switch Control Board with fabric redundancy and existing SCBs without fabric redundancy.</li> <li>• Interoperates with existing MX Series line cards, including Flexible Port Concentrators (FPC), Dense Port Concentrators (DPCs), and Modular Port Concentrators (MPCs).</li> <li>• <b>MPC4E</b>—Fixed configuration MPC4E that is available in two flavors: MPC4E-3D-32XGE-SFPP and MPC4E-3D-20GE-8XGE on MX2020, MX960, MX480, and MX240 routers.</li> <li>• LCD description for MX Series routers</li> </ul>	



## Sample Output

### show chassis hardware (EX8216 Switch)

```

user@host> show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis       REV 06             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 clei-models (EX8216 Switch)

```
user@host> show chassis hardware clei-models
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
FPM Display   REV 05   710-002897
CIP           REV 06   710-002895
PEM 0         Rev 07   740-017906  IPUPAC7KTA PWR-T1600-3-80-DC-S
PEM 1         Rev 18   740-002595
SCG 0         REV 15   710-003423
Routing Engine 0 REV 08   740-014082
Routing Engine 1 REV 07   740-014082
CB 0          REV 05   710-007655
CB 1          REV 03   710-017707
FPC 0         REV 07   710-013558
PIC 0         REV 01   750-010618
PIC 1         REV 06   750-001900
PIC 2         REV 14   750-001901
PIC 3         REV 07   750-001900
FPC 1         REV 06   710-013553
PIC 0         REV 08   750-001072
PIC 1         REV 10   750-012266
PIC 2         REV 22   750-005634
FPC 2
PIC 0         REV 16   750-007141
PIC 1         REV 06   750-015217
PIC 2         REV 05   750-004695
PIC 3         REV 17   750-009553
FPC 3         REV 01   710-010154
PIC 0         REV 07   750-012793
PIC 1         REV 25   750-007141
PIC 2         REV 17   750-009553
PIC 3         REV 32   750-003700
FPC 4         REV 16   710-013037
PIC 1         REV 06   750-034781
```

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 models (EX4500 Switch)

```
user@host> show chassis hardware models
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 (J6350 Router)

```
user@host> show chassis hardware
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
FPC 6          REV 06  750-013492  NC4170        FPC
  PIC 0
Power Supply 0          4x FE

```

**show chassis hardware (J6300 Router)**

```

user@host> show chassis hardware
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
  PIC 0
FPC 1          RevX2.0  750-011380  N3960005      FPC
  PIC 0
FPC 2          RevX2.0  750-011380  N3960002      FPC
  PIC 0
FPC 3          REV 03    750-010354  N0780028      FPC
  PIC 0
                                     1x T3

```

**show chassis hardware (M7i Router)**

```

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
  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
  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
  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
Fan Tray 1
```

### 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
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
Fan Tray 1
```

### show chassis hardware (M20 Router)

```
user@host> show chassis hardware
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 models (M20 Router)

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

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

#### show chassis hardware (M40 Router)

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

Hardware inventory:

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)

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

Hardware inventory:

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 (M120 Router)**

```

user@host> show chassis hardware
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

```

**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	MPBBTOX2HS2E3M	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)

user@host&gt; show chassis hardware models

## Hardware inventory:

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)

```
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
FPM Display   REV 02    710-009351
CIP           REV 03    710-005926
PEM 2         Rev X4    740-009148
PEM 3         Rev X4    740-009148
Routing Engine 0 REV 02    740-008883
Routing Engine 1 REV 02    740-008883
FPC 0         REV 02    710-010419
PIC 0         REV 01    750-001323
PIC 1         REV 02    750-002987
PIC 2         REV 04    750-001894
PIC 3         REV 04    750-001896
FPC 1         REV 02    710-010419
PIC 0         REV 04    750-001894
PIC 1         REV 04    750-001894
PIC 3         REV 03    750-001894
FPC 2         REV 02    710-010419
PIC 0         REV 10    750-005634
PIC 1         REV 10    750-005634
PIC 2         REV 07    750-005634
PIC 3         REV 07    750-005634
PIC 1         REV 10    750-005634
PIC 2         REV 07    750-005634
PIC 3         REV 07    750-005634
FPC 3
PIC 0         REV 03    750-001895
PIC 1         REV 04    750-001894
PIC 3         REV 04    750-003141
FPC 4         REV 02    710-010419
FPC 5         REV 02    710-010419
FPC 6         REV 02    710-010419
FPC 7
PIC 0         REV 15    750-001901
PIC 1         REV 06    750-001900
PIC 2         REV 07    750-001900
PIC 3         REV 05    750-003737
SIB 0         REV 03    710-009184
SIB 1         REV 03    710-009184
SIB 2         REV 03    710-009184
SIB 3         REV 03    710-009184
Fan Tray 0
Fan Tray 1
Fan Tray 2

```

FRU model number

CHAS-BP-M320-S

CRAFT-M320-S

CIP-M320-S

PWR-M-DC-S

PWR-M-DC-S

RE-1600-2048-S

RE-1600-2048-S

M320-FPC1

P-TUNNEL

PE-10C12-SON-SMIR

PB-1GE-SX

PB-10C12-SON-SMIR

M320-FPC1

PB-1GE-SX

PB-1GE-SX

PB-1GE-SX

M320-FPC1

PB-1CHOC12SMIR-QPP

PB-1CHOC12SMIR-QPP

PB-1CHOC12SMIR-QPP

PB-1CHOC12SMIR-QPP

PB-1CHOC12SMIR-QPP

PB-1CHOC12SMIR-QPP

PB-1CHOC12SMIR-QPP

PB-1CHOC12SMIR-QPP

PB-10C12-SON-MM

PB-1GE-SX

PB-1GE-SX-B

M320-FPC1

M320-FPC1

M320-FPC1

PB-40C12-SON-SMIR

PB-10C48-SON-SMSR

PB-10C48-SON-SMSR

PB-4GE-SX

SIB-M-S

SIB-M-S

SIB-M-S

SIB-M-S

FFANTRAY-M320-S

FFANTRAY-M320-S

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
Midplane      REV 02    710-001245   S/N AB4107    M160
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
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 (MX5 Router)**

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

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			E1368	MX5-T
Midplane			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	P9P0XV3	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	P9M0U37	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 (MX10 Router)**

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

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
Fan Tray
NON-JNPR
CA49BK0AE
XFP-10G-SR
Fan Tray

```

#### show chassis hardware (Fixed MX80 Router)

```

user@host> show chassis hardware
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 (Modular MX80 Router)

```

user@host> show chassis hardware
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

```

#### show chassis hardware (MX104 Router)

```

user@host> show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description

```



Chassis			G3503	MX104
Midplane	REV 28	750-044219	CAAX5741	MX104
PEM 0	REV 03	740-045933	1H072500016	AC Power Entry Module
PEM 1	REV 03	740-045932	1H073050017	DC Power Entry Module
Routing Engine 0	REV 20	750-044228	CAAY7935	RE-MX-104
Routing Engine 1	REV 13	750-044228	CAAM6380	RE-MX-104
AFEB 0		BUILTIN	BUILTIN	Forwarding Engine
Processor				
FPC 0		BUILTIN	BUILTIN	MPC BUILTIN
FPC 1		BUILTIN	BUILTIN	MPC BUILTIN
MIC 0	REV 15	750-036132	CAAF7948	2xOC12/8xOC3 CC-CE
PIC 0		BUILTIN	BUILTIN	2xOC12/8xOC3 CC-CE
Xcvr 0	REV 01	740-011615	PCQOU2J	SFP-IR
Xcvr 1	REV 01	740-016068	PJL7A6G	SFP-SR
Xcvr 2	REV 01	740-016068	PJL7A5J	SFP-SR
Xcvr 3	REV 01	740-016065	PJN5HPZ	SFP-SR
Xcvr 4	REV 01	740-029122	PKB38TL	SFP-LR
Xcvr 5	REV 01	740-011787	P6A107G	SFP-LR
Xcvr 6	REV 01	740-029122	PKB38TR	SFP-LR
Xcvr 7	REV 01	740-011787	PBKONK3	SFP-LR
MIC 1				
FPC 2		BUILTIN	BUILTIN	MPC BUILTIN
MIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B10F00465	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B10F00461	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B10G01545	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B10G01385	SFP+-10G-SR
Fan Tray 0	REV 02	711-049570	CAAX6538	Fan Tray

### show chassis hardware detail (MX104 Router)

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

Hardware inventory:				
Item	Version	Part number	Serial number	Description
Chassis			G3503	MX104
Midplane	REV 28	750-044219	CAAX5741	MX104
PEM 0	REV 03	740-045933	1H072500016	AC Power Entry Module
PEM 1	REV 03	740-045932	1H073050017	DC Power Entry Module
Routing Engine 0	REV 20	750-044228	CAAY7935	RE-MX-104
da0	7836 MB	ATP IG eUSB SSD		Nand Flash 0
usb0 (addr 1)		EHCI root hub 0	Freescape	uhub0
usb0 (addr 2)		USB2513Bi 9491	SMSC	uhub1
usb0 (addr 3)		ATP IG eUSB SSD 44801	ATP Electronics	umass0
Routing Engine 1	REV 13	750-044228	CAAM6380	RE-MX-104
da0	7836 MB	ATP IG eUSB SSD		Nand Flash 0
AFEB 0		BUILTIN	BUILTIN	Forwarding Engine
Processor				
FPC 0		BUILTIN	BUILTIN	MPC BUILTIN
FPC 1		BUILTIN	BUILTIN	MPC BUILTIN
MIC 0	REV 15	750-036132	CAAF7948	2xOC12/8xOC3 CC-CE
PIC 0		BUILTIN	BUILTIN	2xOC12/8xOC3 CC-CE
Xcvr 0	REV 01	740-011615	PCQOU2J	SFP-IR
Xcvr 1	REV 01	740-016068	PJL7A6G	SFP-SR
Xcvr 2	REV 01	740-016068	PJL7A5J	SFP-SR
Xcvr 3	REV 01	740-016065	PJN5HPZ	SFP-SR
Xcvr 4	REV 01	740-029122	PKB38TL	SFP-LR
Xcvr 5	REV 01	740-011787	P6A107G	SFP-LR
Xcvr 6	REV 01	740-029122	PKB38TR	SFP-LR
Xcvr 7	REV 01	740-011787	PBKONK3	SFP-LR
MIC 1				

FPC 2		BUILTIN	BUILTIN	MPC BUILTIN
MIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B10F00465	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B10F00461	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B10G01545	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B10G01385	SFP+-10G-SR
Fan Tray 0	REV 02	711-049570	CAAX6538	Fan Tray

### show chassis hardware extensive (MX104 Router)

```

user@host> show chassis hardware extensive
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis
Jedec Code:   0x7fb0          EEPROM Version: 0x02
S/N:          G3503
Assembly ID:  0x0560          Assembly Version: 00.00
Date:         00-00-0000      Assembly Flags:  0x00
ID: MX104
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 60 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: 47 33 35 30 33 00 00 00 00 00 00 00 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
Midplane      REV 28    750-044219  CAAX5741      MX104
Jedec Code:   0x7fb0          EEPROM Version: 0x02
P/N:          750-044219      S/N:          S/N CAAX5741
Assembly ID:  0x0560          Assembly Version: 01.28
Date:         03-27-2013      Assembly Flags:  0x00
Version:      REV 28          CLEI Code:     PROTOXCLEI
ID: MX104      FRU Model Number: PROTO-ASSEMBLY
Board Information Record:
Address 0x00: ad 01 08 00 b0 a8 6e a7 f8 00 ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 05 60 01 1c 52 45 56 20 32 38 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 34 34 32 31 39 00 00
Address 0x20: 53 2f 4e 20 43 41 41 58 35 37 34 31 00 1b 03 07
Address 0x30: dd ff ff ff ad 01 08 00 b0 a8 6e a7 f8 00 ff ff
Address 0x40: ff ff ff ff 01 50 52 4f 54 4f 58 43 4c 45 49 50
Address 0x50: 52 4f 54 4f 2d 41 53 53 45 4d 42 4c 59 00 00 00
Address 0x60: 00 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff
Address 0x70: ff ff ff c2 47 33 35 30 33 00 00 00 00 00 00 00
PEM 0          REV 03    740-045933  1H072500016  AC Power Entry Module
Jedec Code:   0x7fb0          EEPROM Version: 0x02
P/N:          740-045933      S/N:          1H072500016
Assembly ID:  0x0475          Assembly Version: 00.03
Date:         12-14-2012      Assembly Flags:  0x00
Version:      REV 03          CLEI Code:     IPUPAJ9KAA
ID: AC Power Entry Module      FRU Model Number: PWR-AMX1100-AC-S
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff 02 02 00 ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 04 75 00 03 52 45 56 20 30 33 00 00
Address 0x10: 00 00 00 00 37 34 30 2d 30 34 35 39 33 33 00 00

```

```

Address 0x20: 31 48 30 37 32 35 30 30 30 31 36 00 00 0e 0c 07
Address 0x30: dc 30 43 ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: 02 02 00 ff 01 49 50 55 50 41 4a 39 4b 41 41 50
Address 0x50: 57 52 2d 41 4d 58 31 31 30 30 2d 41 43 2d 53 00
Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff
Address 0x70: ff ff ff 70 ff ff ff ff ff ff ff ff ff ff ff
PEM 1          REV 03    740-045932    1H073050017    DC Power Entry Module
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           740-045932      S/N:              1H073050017
Assembly ID:   0x0476          Assembly Version:  00.03
Date:          01-30-2013      Assembly Flags:    0x00
Version:       REV 03          CLEI Code:         IPUPAJ8KAA
ID: DC Power Entry Module      FRU Model Number:  PWR-AMX1100-DC-S
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff 02 02 00 ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 04 76 00 03 52 45 56 20 30 33 00 00
Address 0x10: 00 00 00 00 37 34 30 2d 30 34 35 39 33 32 00 00
Address 0x20: 31 48 30 37 33 30 35 30 30 31 37 00 00 1e 01 07
Address 0x30: dd 30 44 ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: 02 02 00 ff 01 49 50 55 50 41 4a 38 4b 41 41 50
Address 0x50: 57 52 2d 41 4d 58 31 31 30 30 2d 44 43 2d 53 00
Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff
Address 0x70: ff ff ff 72 ff ff ff ff ff ff ff ff ff ff ff
Routing Engine 0 REV 20    750-044228    CAAY7935          RE-MX-104
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           750-044228      S/N:              S/N CAAY7935
Assembly ID:   0x0b81          Assembly Version:  01.20
Date:          03-18-2013      Assembly Flags:    0x00
Version:       REV 20          CLEI Code:         PROTOXCLEI
ID: RE-MX-104          FRU Model Number:  PROTO-ASSEMBLY
Board Information Record:
Address 0x00: ad 01 00 08 b0 a8 6e a6 fc 10 ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 fe 0b 81 01 14 52 45 56 20 32 30 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 34 34 32 32 38 00 00
Address 0x20: 53 2f 4e 20 43 41 41 59 37 39 33 35 00 12 03 07
Address 0x30: dd ff ff ff ad 01 00 08 b0 a8 6e a6 fc 10 ff ff
Address 0x40: ff ff ff ff 01 50 52 4f 54 4f 58 43 4c 45 49 50
Address 0x50: 52 4f 54 4f 2d 41 53 53 45 4d 42 4c 59 00 00 00
Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff
Address 0x70: ff ff ff c2 ff ff ff ff ff ff ff ff ff ff ff
da0    7836 MB  ATP IG eUSB SSD                      Nand Flash 0
usb0 (addr 1) EHCI root hub 0          Freescale          uhub0
usb0 (addr 2) USB2513Bi 9491            SMSC                uhub1
usb0 (addr 3) ATP IG eUSB SSD 44801 ATP Electronics    umass0
Routing Engine 1 REV 13    750-044228    CAAM6380          RE-MX-104
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           750-044228      S/N:              S/N CAAM6380
Assembly ID:   0x0b81          Assembly Version:  01.13
Date:          09-17-2012      Assembly Flags:    0x00
Version:       REV 13          CLEI Code:         PROTOXCLEI
ID: RE-MX-104          FRU Model Number:  PROTO-ASSEMBLY
Board Information Record:
Address 0x00: ad 01 00 08 64 87 88 27 08 18 ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 fe 0b 81 01 0d 52 45 56 20 31 33 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 34 34 32 32 38 00 00
Address 0x20: 53 2f 4e 20 43 41 41 4d 36 33 38 30 00 11 09 07
Address 0x30: dc ff ff ff ad 01 00 08 64 87 88 27 08 18 ff ff
Address 0x40: ff ff ff ff 01 50 52 4f 54 4f 58 43 4c 45 49 50

```

```

Address 0x50: 52 4f 54 4f 2d 41 53 53 45 4d 42 4c 59 00 00 00
Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff
Address 0x70: ff ff ff c2 ff ff ff ff ff ff ff ff ff ff ff
da0      7836 MB  ATP IG eUSB SSD                      Nand Flash 0
AFEB 0                                BUILTIN          BUILTIN          Forwarding Engine
Processor
FPC 0                                BUILTIN          BUILTIN          MPC BUILTIN
FPC 1                                BUILTIN          BUILTIN          MPC BUILTIN
MIC 0          REV 15  750-036132  CAAF7948          2x0C12/8x0C3 CC-CE
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           750-036132      S/N:           S/N CAAF7948
Assembly ID:   0x0a1a          Assembly Version: 01.15
Date:          07-03-2012      Assembly Flags: 0x00
Version:       REV 15          CLEI Code:     IP9IAM2DAA
ID: 2x0C12/8x0C3 CC-CE        FRU Model Number: MIC-3D-80C3-20C12-ATM
Board Information Record:
Address 0x00: 12 01 05 03 05 ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 0a 1a 01 0f 52 45 56 20 31 35 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 33 36 31 33 32 00 00
Address 0x20: 53 2f 4e 20 43 41 41 46 37 39 34 38 00 03 07 07
Address 0x30: dc ff ff ff 12 01 05 03 05 ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 49 50 39 49 41 4d 32 44 41 41 4d
Address 0x50: 49 43 2d 33 44 2d 38 4f 43 33 2d 32 4f 43 31 32
Address 0x60: 2d 41 54 4d 00 00 41 00 00 ff ff ff ff ff ff ff
Address 0x70: ff ff ff e3 c0 02 a3 9c 00 00 00 00 0a 60 00 00
PIC 0                                BUILTIN          BUILTIN          2x0C12/8x0C3 CC-CE
Xcvr 0          REV 01  740-011615  PCQ0U2J           SFP-IR
Xcvr 1          REV 01  740-016068  P3L7A6G           SFP-SR
Xcvr 2          REV 01  740-016068  P3L7A5J           SFP-SR
Xcvr 3          REV 01  740-016065  PJN5HPZ           SFP-SR
Xcvr 4          REV 01  740-029122  PKB38TL           SFP-LR
Xcvr 5          REV 01  740-011787  P6A107G           SFP-LR
Xcvr 6          REV 01  740-029122  PKB38TR           SFP-LR
Xcvr 7          REV 01  740-011787  PBKONK3           SFP-LR
MIC 1
FPC 2                                BUILTIN          BUILTIN          MPC BUILTIN
MIC 0                                BUILTIN          BUILTIN          4x 10GE(LAN) SFP+
Jedec Code:    0x0000          EEPROM Version:    0x00
P/N:           BUILTIN          S/N:           BUILTIN
Assembly ID:   0x0a60          Assembly Version: 00.00
Date:          00-00-0000      Assembly Flags: 0x00
ID: 4x 10GE(LAN) SFP+
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: 00 00 00 00 0a 60 00 00 00 00 00 00 00 00 00 00
Address 0x10: 00 00 00 00 42 55 49 4c 54 49 4e 00 4d 58 43 00
Address 0x20: 42 55 49 4c 54 49 4e 00 4d 58 43 00 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 c0 02 a5 04 7f b0 02 ff 0a 1a 01 0f
PIC 0                                BUILTIN          BUILTIN          4x 10GE(LAN) SFP+
Xcvr 0          REV 01  740-031980  B10F00465         SFP+-10G-SR
Xcvr 1          REV 01  740-031980  B10F00461         SFP+-10G-SR
Xcvr 2          REV 01  740-031980  B10G01545         SFP+-10G-SR
Xcvr 3          REV 01  740-031980  B10G01385         SFP+-10G-SR
Fan Tray 0      REV 02  711-049570  CAAX6538          Fan Tray
Jedec Code:    0x7fb0          EEPROM Version:    0x02

```

```

P/N:          711-049570      S/N:          S/N CAAX6538
Assembly ID:  0x0b82         Assembly Version: 01.02
Date:         03-01-2013     Assembly Flags:  0x00
Version:      REV 02         CLEI Code:      PROTOXCLEI
ID: Fan Tray          FRU Model Number: PROTO-ASSEMBLY

Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 0b 82 01 02 52 45 56 20 30 32 00 00
Address 0x10: 00 00 00 00 37 31 31 2d 30 34 39 35 37 30 00 00
Address 0x20: 53 2f 4e 20 43 41 41 58 36 35 33 38 00 01 03 07
Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 50 52 4f 54 4f 58 43 4c 45 49 50
Address 0x50: 52 4f 54 4f 2d 41 53 53 45 4d 42 4c 59 00 00 00
Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff ff
Address 0x70: ff ff ff c2 ff ff ff ff ff ff ff ff ff ff ff ff

```

### show chassis hardware models (MX104 Router)

```

user@host> show chassis hardware models
Hardware inventory:
Item          Version  Part number  Serial number  FRU model number
Midplane      REV 20   750-044219   CAAS5849       PROTO-ASSEMBLY
PEM 0         REV 01   740-045932   1H072400065
Routing Engine 0 REV 16   750-044228   CAAR5915       PROTO-ASSEMBLY
AFEB 0
FPC 0         BUILTIN   BUILTIN
FPC 1         BUILTIN   BUILTIN
MIC 0         REV 01   750-046905   CAAK7103       MIC-3D-20GE-SFP-EH
FPC 2         BUILTIN   BUILTIN
Fan Tray      REV 02   711-049570   CAAX6538       PROTO-ASSEMBLY

```

### show chassis hardware clei-models (MX104 Router)

```

user@host> show chassis hardware clei-models
Hardware inventory:
Item          Version  Part number  CLEI code      FRU model number
Midplane      REV 20   750-044219   PROTOXCLEI     PROTO-ASSEMBLY
PEM 0         REV 01   740-045932
Routing Engine 0 REV 16   750-044228   PROTOXCLEI     PROTO-ASSEMBLY
AFEB 0
FPC 0         BUILTIN   BUILTIN
FPC 1         BUILTIN   BUILTIN
MIC 0         REV 01   750-046905   PROTOXCLEI     MIC-3D-20GE-SFP-EH
FPC 2         BUILTIN
Fan Tray      REV 02   711-049570   CAAX6538       PROTO-ASSEMBLY

```

### show chassis hardware (MX240 Router)

```

user@host> show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis
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	REV 01	740-031117	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)

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

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	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 (MX480 Router with Enhanced MX SCB)**

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

```
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 (MX960 Router)**

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

```
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 (MX960 Router with Bidirectional Optics)

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user@host> show chassis hardware
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

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## show chassis hardware (MX960 Router with Enhanced MX SCB)

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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

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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 OC-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 OC-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)

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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      NR0WT5925N77    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 (MX2010 Router)

```

user@host > show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               MX2010
Midplane      REV 01    750-044636   ABAB8506       Lower Backplane
Midplane 1    REV 01    711-044557   ZY8296         Upper Backplane
PMP           REV 03    711-032426   ACAJ1388       Power Midplane
FPM Board     REV 06    711-032349   ZX8744         Front Panel Display
PSM 4         REV 0C    740-033727   VK00254        DC 52V Power Supply
Module
PSM 5         REV 0B    740-033727   VG00015        DC 52V Power Supply
Module
PSM 6         REV 0B    740-033727   VH00097        DC 52V Power Supply
Module
PSM 7         REV 0C    740-033727   VJ00151        DC 52V Power Supply
Module
PSM 8         REV 0C    740-033727   VJ00149        DC 52V Power Supply
Module
PDM 0         REV 0B    740-038109   WA00008        DC Power Dist Module

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PDM 1	REV 0B	740-038109	WA00014	DC Power Dist Module
Routing Engine 0	REV 02	740-041821	9009094134	RE-S-1800x4
Routing Engine 1	REV 02	740-041821	9009094141	RE-S-1800x4
CB 0	REV 08	750-040257	CAAB3491	Control Board
CB 1	REV 08	750-040257	CAAB3489	Control Board
SPMB 0	REV 02	711-041855	CAAA6135	PMB Board
SPMB 1	REV 02	711-041855	CAAA6137	PMB Board
SFB 0	REV 06	711-032385	ZV1828	Switch Fabric Board
SFB 1	REV 07	711-032385	ZZ2568	Switch Fabric Board
SFB 2	REV 07	711-032385	ZZ2563	Switch Fabric Board
SFB 3	REV 07	711-032385	ZZ2564	Switch Fabric Board
SFB 4	REV 07	711-032385	ZZ2580	Switch Fabric Board
SFB 5	REV 07	711-032385	ZZ2579	Switch Fabric Board
SFB 6	REV 07	711-032385	CAAB4882	Switch Fabric Board
SFB 7	REV 07	711-032385	CAAB4898	Switch Fabric Board
FPC 0	REV 33	750-028467	CAAB1919	MPC 3D 16x 10GE
CPU	REV 11	711-029089	CAAB7174	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	AMH02RE	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AMH038C	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AMH0390	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AMG0SUA	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	AMH0579	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AMG0SGP	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AMH04SV	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AMH04X3	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	AMH0135	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AMH02NC	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AMH02XB	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AMH02PN	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	AMH057Y	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AMG0JHE	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AMH02HT	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AMH04V4	SFP+-10G-SR
FPC 1	REV 21	750-033205	ZG5027	MPC Type 3
CPU	REV 04	711-035209	YT4780	HMPC PMB 2G
MIC 0	REV 03	750-033307	ZV6299	10X10GE SFPP
PIC 0		BUILTIN	BUILTIN	10X10GE SFPP
Xcvr 0	REV 01	740-031980	083363A00410	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	083363A00334	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	113363A00125	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	083363A00953	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	AHR013D	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	AJ40JUR	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	AJ40JKL	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	AJ30ECK	SFP+-10G-SR
Xcvr 8	REV 01	740-021308	19T511100864	SFP+-10G-SR
Xcvr 9	REV 01	740-021308	19T511100868	SFP+-10G-SR
MIC 1	REV 03	750-033307	ZV6268	10X10GE SFPP
PIC 2		BUILTIN	BUILTIN	10X10GE SFPP
Xcvr 0	REV 01	740-031980	AJC0JML	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AJ403PC	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AJ10N25	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AJ40JF4	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	AJ40JSJ	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	AJ403V7	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	AJ40JN3	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	AJ40JSU	SFP+-10G-SR

Xcvr 8	REV 01	740-021308	19T511100468	SFP+-10G-SR
Xcvr 9	REV 01	740-021308	19T511101363	SFP+-10G-SR
FPC 8	REV 22	750-031089	ZT9746	MPC Type 2 3D
CPU	REV 06	711-030884	ZS1271	MPC PMB 2G
MIC 0	REV 26	750-028392	ABBS1150	3D 20x 1GE(LAN) SFP
PIC 0		BUILTIN	BUILTIN	10x 1GE(LAN) SFP
Xcvr 0	REV 01	740-031851	PLG023C	SFP-SX
Xcvr 1	REV 01	740-031851	PLG09C6	SFP-SX
Xcvr 2	REV 02	740-011613	AM0950SF9L7	SFP-SX
Xcvr 3	REV 02	740-011613	AM1001SFN1H	SFP-SX
Xcvr 4	REV 02	740-011613	AM1001SFM9D	SFP-SX
Xcvr 5	REV 02	740-011613	AM1001SFLTJ	SFP-SX
Xcvr 6	REV 01	740-031851	AC1108S03L9	SFP-SX
Xcvr 7	REV 01	740-031851	AC1102S00NC	SFP-SX
Xcvr 8	REV 01	740-031851	AC1102S00MX	SFP-SX
Xcvr 9	REV 01	740-031851	AC1102S0085	SFP-SX
PIC 1		BUILTIN	BUILTIN	10x 1GE(LAN) SFP
Xcvr 0	REV 01	740-031851	AC1102S00KU	SFP-SX
Xcvr 1	REV 01	740-031851	AC1102S00NG	SFP-SX
Xcvr 2	REV 01	740-031851	AC1102S00K3	SFP-SX
Xcvr 3	REV 01	740-031851	AC1102S008R	SFP-SX
Xcvr 4	REV 01	740-031851	AM1107SUFVJ	SFP-SX
Xcvr 5	REV 01	740-031851	AC1108S03LC	SFP-SX
MIC 1	REV 26	750-028387	ABBR9582	3D 4x 10GE XFP
PIC 2		BUILTIN	BUILTIN	2x 10GE XFP
Xcvr 0		NON-JNPR	T10A91703	XFP-10G-SR
Xcvr 1		NON-JNPR	T09L42604	XFP-10G-SR
PIC 3		BUILTIN	BUILTIN	2x 10GE XFP
FPC 9	REV 11	750-036284	ZL3591	MPC 3D 16x 10GE EM
CPU	REV 10	711-029089	ZL0513	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	1YT517101825	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	1YT517101821	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	1YT517101682	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	ALQ13R6	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	1YT517101828	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	1YT517101716	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	1YT517101732	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	ALPOTR1	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	1YT517101741	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	1YT517101829	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	1YT517101669	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	ALQ14E3	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	1YT517101826	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	1YT517101817	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	1YT517101735	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	ALQ159A	SFP+-10G-SR
ADC 0	REV 05	750-043596	CAAC2073	Adapter Card
ADC 1	REV 01	750-043596	ZV4117	Adapter Card
ADC 8	REV 01	750-043596	ZV4107	Adapter Card
ADC 9	REV 02	750-043596	ZW1555	Adapter Card
Fan Tray 0	REV 2A	760-046960	ACAY0015	172mm FanTray - 6 Fans
Fan Tray 1	REV 2A	760-046960	ACAY0019	172mm FanTray - 6 Fans
Fan Tray 2	REV 2A	760-046960	ACAY0020	172mm FanTray - 6 Fans
Fan Tray 3	REV 2A	760-046960	ACAY0021	172mm FanTray - 6 Fans

## show chassis hardware detail (MX2010 Router)

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Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               JN11E233DAFK  MX2010
Midplane      REV 26   750-044636   ABAB9357      Lower Backplane
Midplane 1    REV 01   711-044557   ABAB8643      Upper Backplane
PMP           REV 04   711-032426   ACAJ1677      Power Midplane
FPM Board     REV 08   760-044634   ABBV9726      Front Panel Display
PSM 0         REV 01   740-045050   1E02224000P   DC 52V Power Supply
Module
PSM 1         REV 01   740-045050   1E02224000M   DC 52V Power Supply
Module
PSM 2         REV 01   740-045050   1E022240010   DC 52V Power Supply
Module
PSM 3         REV 01   740-045050   1E02224000G   DC 52V Power Supply
Module
PSM 4         REV 01   740-045050   1E022240013   DC 52V Power Supply
Module
PSM 5         REV 01   740-045050   1E022240007   DC 52V Power Supply
Module
PSM 6         REV 01   740-045050   1E02224001C   DC 52V Power Supply
Module
PSM 7         REV 01   740-045050   1E02224001D   DC 52V Power Supply
Module
PSM 8         REV 01   740-045050   1E02224001B   DC 52V Power Supply
Module
PDM 0         REV 01   740-045234   1E262250067   DC Power Dist Module
Routing Engine 0 REV 02   740-041821   9009099704    RE-S-1800x4
  ad0  3831 MB  UGB30SFA4000T1  SFA4000T1 00000651 Compact Flash
  ad1  30533 MB UGB94BPH32H0S1-KCI 11000019592 Disk 1
  usb0 (addr 1) EHCI root hub 0 Intel uhub0
  usb0 (addr 2) product 0x0020 32 vendor 0x8087 uhub1
  DIMM 0 SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
  DIMM 1 SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
  DIMM 2 SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
  DIMM 3 SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
Routing Engine 1 REV 02   740-041821   9009099706    RE-S-1800x4
  ad0  3998 MB  Virtium - TuffDrive VCF P1T0200262860208 114 Compact Flash
  ad1  30533 MB UGB94ARF32H0S3-KC UNIGEN-499551-000404 Disk 1
CB 0          REV 13   750-040257   CAAF8436      Control Board
CB 1          REV 13   750-040257   CAAF8434      Control Board
SPMB 0        REV 02   711-041855   ABBV3825      PMB Board
SPMB 1        REV 02   711-041855   ABBV3833      PMB Board
SFB 0         REV 05   711-044466   ABBX5682      Switch Fabric Board
SFB 1         REV 05   711-044466   ABBX5676      Switch Fabric Board
SFB 2         REV 05   711-044466   ABBX5665      Switch Fabric Board
SFB 3         REV 05   711-044466   ABBX5699      Switch Fabric Board
SFB 4         REV 05   711-044466   ABBX5603      Switch Fabric Board
SFB 5         REV 05   711-044466   ABBX5587      Switch Fabric Board
SFB 6         REV 05   711-044466   ABBX5607      Switch Fabric Board
SFB 7         REV 05   711-044466   ABBX5669      Switch Fabric Board
FPC 0         REV 09   750-037355   CAAF0924      MPC Type 4-2
CPU           REV 08   711-035209   CAAB9842      HMPD PMB 2G
PIC 0         BUILTIN  BUILTIN      4x10GE SFPP
  Xcvr 0       REV 01   740-021308   19T511101656 SFP+-10G-SR
  Xcvr 1       REV 01   740-031980   AMA04RU      SFP+-10G-SR
  Xcvr 2       REV 01   740-031980   193363A00558 SFP+-10G-SR
  Xcvr 3       REV 01   740-031980   B10M00202    SFP+-10G-SR
PIC 1         BUILTIN  BUILTIN      1x100GE CFP

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Xcvr 0		NON-JNPR	X12J00328	CFP-100G-SR10
PIC 2		BUILTIN	BUILTIN	4x10GE SFPP
Xcvr 0	REV 01	740-031980	AMA088W	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B10L04211	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	19T511101602	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B10L04151	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0		NON-JNPR	X12J00332	CFP-100G-SR10
FPC 1	REV 18	750-033205	ZE0128	MPC Type 3
CPU	REV 06	711-035209	ZG5431	HMPC PMB 2G
MIC 0	REV 15	750-033199	ZP6435	1X100GE CFP
PIC 0		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0	REV 01	740-032210	J11E46118	CFP-100G-LR4
MIC 1	REV 15	750-033199	ZP6442	1X100GE CFP
PIC 2		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0	REV 01	740-032210	UMN03T4	CFP-100G-LR4
FPC 2	REV 16	750-037358	CAAL1001	MPC Type 4-1
CPU	REV 08	711-035209	CAAK7927	HMPC PMB 2G
PIC 0		BUILTIN	BUILTIN	8X10GE SFPP
Xcvr 0	REV 01	740-031980	193363A00589	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	973152A00028	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	193363A00376	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	973152A00016	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	193363A00499	SFP+-10G-SR
Xcvr 5	REV 01	740-021308	973152A00039	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	B11E01239	SFP+-10G-SR
Xcvr 7	REV 01	740-021308	973152A00058	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	8X10GE SFPP
Xcvr 0	REV 01	740-031980	B10M00075	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	973152A00014	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AMA0638	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	973152A00063	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	AMA0629	SFP+-10G-SR
Xcvr 5	REV 01	740-021308	973152A00053	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	193363A00344	SFP+-10G-SR
Xcvr 7	REV 01	740-021308	973152A00046	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	8X10GE SFPP
Xcvr 0	REV 01	740-031980	AMA062M	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	973152A00080	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	193363A00580	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	973152A00064	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	093363A01494	SFP+-10G-SR
Xcvr 5	REV 01	740-021308	973152A00020	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	123363A00047	SFP+-10G-SR
Xcvr 7	REV 01	740-021308	973152A00072	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	8X10GE SFPP
Xcvr 0	REV 01	740-021308	03DZ06A01033	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	973152A00022	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	03DZ06A01026	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	973152A00013	SFP+-10G-SR
Xcvr 4	REV 01	740-021308	03DZ06A01028	SFP+-10G-SR
Xcvr 5	REV 01	740-021308	973152A00079	SFP+-10G-SR
Xcvr 6	REV 01	740-021308	03DZ06A01018	SFP+-10G-SR
Xcvr 7	REV 01	740-021308	973152A00025	SFP+-10G-SR
FPC 3	REV 33	750-028467	CAAF5400	MPC 3D 16x 10GE
CPU	REV 11	711-029089	CAAH7626	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	973152A00066	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	973152A00021	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	973152A00062	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	973152A00027	SFP+-10G-SR



PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	973152A00065	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	973152A00069	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	973152A00026	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	973152A00003	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	973152A00035	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	973152A00004	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	973152A00049	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	973152A00055	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	973152A00010	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	973152A00001	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	973152A00073	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	973152A00012	SFP+-10G-SR
FPC 4	REV 21	750-033205	ZG5028	MPC Type 3
CPU	REV 05	711-035209	YX3911	HMPC PMB 2G
MIC 0	REV 03	750-036233	ZL2036	2X40GE QSFP
PIC 0		BUILTIN	BUILTIN	2X40GE QSFP
Xcvr 0	REV 01	740-032986	QB220708	QSFP+-40G-SR4
Xcvr 1	REV 01	740-032986	QB220735	QSFP+-40G-SR4
MIC 1	REV 03	750-036233	ZL2028	2X40GE QSFP
PIC 2		BUILTIN	BUILTIN	2X40GE QSFP
Xcvr 0	REV 01	740-032986	QB220727	QSFP+-40G-SR4
Xcvr 1	REV 01	740-032986	QB220715	QSFP+-40G-SR4
FPC 5	REV 11	750-037358	CAAE2196	MPC Type 4-1
CPU	REV 08	711-035209	CAAD9074	HMPC PMB 2G
PIC 0		BUILTIN	BUILTIN	8X10GE SFPP
Xcvr 0	REV 01	740-031980	AMA062S	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AMA062P	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AMA052R	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AMA0632	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	193363A00564	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	193363A00229	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	193363A00363	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	193363A00278	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	8X10GE SFPP
Xcvr 0	REV 01	740-031980	AMA04CC	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AD0927A001W	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AMA04N2	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AMA062U	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	193363A00491	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	183363A01511	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	193363A00565	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	193363A00405	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	8X10GE SFPP
Xcvr 0	REV 01	740-031980	AMA07QX	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AMA06MS	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	193363A00318	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	193363A00402	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	193363A00174	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	193363A00388	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	193363A00377	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	193363A00234	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	8X10GE SFPP
Xcvr 0	REV 01	740-031980	AMA062T	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	193363A00550	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	193363A00364	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AMA0630	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	193363A00509	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	193363A00459	SFP+-10G-SR

Xcvr 6	REV 01	740-031980	113363A00191	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	193363A00352	SFP+-10G-SR
FPC 6	REV 33	750-028467	CAAF5552	MPC 3D 16x 10GE
CPU	REV 11	711-029089	CAAH7601	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	AD0927A0036	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AD0927A003M	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AD0927A003G	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AD0927A0031	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	193363A00331	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	193363A00325	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	193363A00417	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	183363A02509	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	T09K75140	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11A04356	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01952	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K01914	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	T09K75157	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	T09K75194	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01926	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K01936	SFP+-10G-SR
FPC 7	REV 16	750-037358	CAAL1012	MPC Type 4-1
CPU	REV 08	711-035209	CAAJ3851	HMPC PMB 2G
PIC 0		BUILTIN	BUILTIN	8X10GE SFPP
Xcvr 0	REV 01	740-031980	AMA04NK	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11F00260	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11E02192	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AMA04CP	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	AJ40JJK	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	B11F00238	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	B10M00275	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	193363A00211	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	8X10GE SFPP
Xcvr 0	REV 01	740-031980	B11D05577	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11G00586	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AMA08B7	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AMA04Q0	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	B11D05840	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	B11E00467	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	B11E00029	SFP+-10G-SR
Xcvr 7	REV 01	740-021308	19T511101712	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	8X10GE SFPP
Xcvr 0	REV 01	740-031980	193363A00568	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B10M00166	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B10M00212	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11D05823	SFP+-10G-SR
Xcvr 4	REV 01	740-021308	03DZ06A01005	SFP+-10G-SR
Xcvr 5	REV 01	740-021308	03DZ06A01003	SFP+-10G-SR
Xcvr 6	REV 01	740-021308	03DZ06A01009	SFP+-10G-SR
Xcvr 7	REV 01	740-021308	03DZ06A01004	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	8X10GE SFPP
Xcvr 0	REV 01	740-021308	03DZ06A01017	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	03DZ06A01016	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	03DZ06A01024	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	03DZ06A01008	SFP+-10G-SR
Xcvr 4	REV 01	740-030658	AD0946A02UH	SFP+-10G-USR
Xcvr 5	REV 01	740-021308	T09J67913	SFP+-10G-SR
Xcvr 6	REV 01	740-021308	AD0837E509G	SFP+-10G-SR

Xcvr 7	REV 01	740-021308	03DZ06A01015	SFP+-10G-SR
FPC 8	REV 03	750-045372	CAAD3111	MPC Type 3
CPU	REV 08	711-035209	CAAD8033	HMPC PMB 2G
MIC 0	REV 03	750-036233	ZL2032	2X40GE QSFP
PIC 0		BUILTIN	BUILTIN	2X40GE QSFP
Xcvr 0	REV 01	740-032986	QB230273	QSFP+-40G-SR4
Xcvr 1	REV 01	740-032986	QB230254	QSFP+-40G-SR4
MIC 1	REV 03	750-036233	ZL2021	2X40GE QSFP
PIC 2		BUILTIN	BUILTIN	2X40GE QSFP
Xcvr 0	REV 01	740-032986	QB390962	QSFP+-40G-SR4
Xcvr 1	REV 01	740-032986	QB390960	QSFP+-40G-SR4
FPC 9	REV 09	750-037355	CAAF1531	MPC Type 4-2
CPU	REV 08	711-035209	CAAB9927	HMPC PMB 2G
PIC 0		BUILTIN	BUILTIN	4x10GE SFPP
Xcvr 0	REV 01	740-031980	193363A00525	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	193363A00504	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	193363A00368	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AJ40JSS	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	1X100GE CFP
PIC 2		BUILTIN	BUILTIN	4x10GE SFPP
Xcvr 0	REV 01	740-031980	123363A00042	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B10M00023	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AJ802EM	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11E02348	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	1X100GE CFP
ADC 0	REV 13	750-043596	ABBX5532	Adapter Card
ADC 1	REV 13	750-043596	ABBX5550	Adapter Card
ADC 2	REV 13	750-043596	ABBX5571	Adapter Card
ADC 3	REV 13	750-043596	ABBX5568	Adapter Card
ADC 4	REV 13	750-043596	ABBX5556	Adapter Card
ADC 5	REV 13	750-043596	ABBX5553	Adapter Card
ADC 6	REV 13	750-043596	ABBX5541	Adapter Card
ADC 7	REV 13	750-043596	ABBX5578	Adapter Card
ADC 8	REV 13	750-043596	ABBX5560	Adapter Card
ADC 9	REV 07	750-043596	ABBV7188	Adapter Card
Fan Tray 0	REV 03	760-046960	ACAY0127	172mm FanTray - 6 Fans
Fan Tray 1	REV 2A	760-046960	ACAY0068	172mm FanTray - 6 Fans
Fan Tray 2	REV 2A	760-046960	ACAY0072	172mm FanTray - 6 Fans
Fan Tray 3	REV 2A	760-046960	ACAY0070	172mm FanTray - 6 Fans

### show chassis hardware extensive (MX2010 Router)

```

user@host > show chassis hardware extensive
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               JN11E233DAFK  MX2010
Jedec Code:   0x7fb0                  EEPROM Version: 0x02
                                           S/N:           JN11E233DAFK
Assembly ID:  0x0557                  Assembly Version: 00.00
Date:          00-00-0000              Assembly Flags:  0x00
ID: MX2010
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 57 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 45 32 33 33 44 41 46 4b 00 00 00 00
Address 0x30: 00 00 00 ff 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
Midplane          REV 26   750-044636   ABAB9357           Lower Backplane
Jedec Code:      0x7fb0           EEPROM Version:    0x02
P/N:             750-044636       S/N:              S/N ABAB9357
Assembly ID:     0x0b66           Assembly Version:  01.26
Date:            08-28-2012       Assembly Flags:    0x00
Version:         REV 26           CLEI Code:        PROTOXCLEI
ID: Lower Backplane              FRU Model Number:  PROTO-ASSEMBLY
Board Information Record:
Address 0x00: ad 01 08 00 2c 21 72 70 a0 00 ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 0b 66 01 1a 52 45 56 20 32 36 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 34 34 36 33 36 00 00
Address 0x20: 53 2f 4e 20 41 42 41 42 39 33 35 37 00 1c 08 07
Address 0x30: dc ff ff ff ad 01 08 00 2c 21 72 70 a0 00 ff ff
Address 0x40: ff ff ff ff 01 50 52 4f 54 4f 58 43 4c 45 49 50
Address 0x50: 52 4f 54 4f 2d 41 53 53 45 4d 42 4c 59 00 00 00
Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff ff
Address 0x70: ff ff ff c2 ff ff ff ff ff ff ff ff ff ff ff ff ff

Midplane 1        REV 01   711-044557   ABAB8643           Upper Backplane
Jedec Code:      0x7fb0           EEPROM Version:    0x01
P/N:             711-044557       S/N:              S/N ABAB8643
Assembly ID:     0x0b65           Assembly Version:  01.01
Date:            07-27-2012       Assembly Flags:    0x00
Version:         REV 01
ID: Upper Backplane
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 0b 65 01 01 52 45 56 20 30 31 00 00
Address 0x10: 00 00 00 00 37 31 31 2d 30 34 34 35 35 37 00 00
Address 0x20: 53 2f 4e 20 41 42 41 42 38 36 34 33 00 1b 07 07
Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 00 ff 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 ff
Address 0x60: ff 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 ff

PMP               REV 04   711-032426   ACAJ1677           Power Midplane
Jedec Code:      0x7fb0           EEPROM Version:    0x01
P/N:             711-032426       S/N:              S/N ACAJ1677
Assembly ID:     0x045d           Assembly Version:  01.04
Date:            07-20-2012       Assembly Flags:    0x00
Version:         REV 04
ID: Power Midplane
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 04 5d 01 04 52 45 56 20 30 34 00 00
Address 0x10: 00 00 00 00 37 31 31 2d 30 33 32 34 32 36 00 00
Address 0x20: 53 2f 4e 20 41 43 41 4a 31 36 37 37 00 14 07 07
Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 00 ff 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 ff
Address 0x60: ff 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 ff

FPM Board         REV 08   760-044634   ABBV9726           Front Panel Display
Jedec Code:      0x7fb0           EEPROM Version:    0x02
P/N:             760-044634       S/N:              S/N ABBV9726
Assembly ID:     0x0b64           Assembly Version:  01.08
Date:            09-10-2012       Assembly Flags:    0x00
Version:         REV 08           CLEI Code:        IPMYA4EJRA

```

```

ID: Front Panel Display          FRU Model Number: MX2010-CRAFT-S
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 0b 64 01 08 52 45 56 20 30 38 00 00
  Address 0x10: 00 00 00 00 37 36 30 2d 30 34 34 36 33 34 00 00
  Address 0x20: 53 2f 4e 20 41 42 42 56 39 37 32 36 00 0a 09 07
  Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 49 50 4d 59 41 34 45 4a 52 41 4d
  Address 0x50: 58 32 30 31 30 2d 43 52 41 46 54 2d 53 00 00 00
  Address 0x60: 00 00 00 00 00 00 41 00 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 93 ff ff ff ff ff ff ff ff ff ff ff ff
PSM 0          REV 01   740-045050   1E02224000P   DC 52V Power Supply
Module
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           740-045050      S/N:              1E02224000P
Assembly ID:   0x0478          Assembly Version:  01.01
Date:          12-06-2012      Assembly Flags:    0x00
Version:       REV 01          CLEI Code:         XXXXXXXXXX
ID: DC 52V Power Supply Module FRU Model Number: MX2000-PSM-HC-DC-S-A
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 78 01 01 52 45 56 20 30 31 00 00
  Address 0x10: 00 00 00 00 37 34 30 2d 30 34 35 30 35 30 00 00
  Address 0x20: 31 45 30 32 32 32 34 30 30 30 50 00 00 06 0c 07
  Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 58 58 58 58 58 58 58 58 58 58 4d
  Address 0x50: 58 32 30 30 30 2d 50 53 4d 2d 48 43 2d 44 43 2d
  Address 0x60: 53 2d 41 00 00 00 31 30 31 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 4a 00 00 00 00 00 00 00 00 00 00 00 00
PSM 1          REV 01   740-045050   1E02224000M   DC 52V Power Supply
Module
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           740-045050      S/N:              1E02224000M
Assembly ID:   0x0478          Assembly Version:  01.01
Date:          12-06-2012      Assembly Flags:    0x00
Version:       REV 01          CLEI Code:         XXXXXXXXXX
ID: DC 52V Power Supply Module FRU Model Number: MX2000-PSM-HC-DC-S-A
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 78 01 01 52 45 56 20 30 31 00 00
  Address 0x10: 00 00 00 00 37 34 30 2d 30 34 35 30 35 30 00 00
  Address 0x20: 31 45 30 32 32 32 34 30 30 30 4d 00 00 06 0c 07
  Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 58 58 58 58 58 58 58 58 58 58 4d
  Address 0x50: 58 32 30 30 30 2d 50 53 4d 2d 48 43 2d 44 43 2d
  Address 0x60: 53 2d 41 00 00 00 31 30 31 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 4a 00 00 00 00 00 00 00 00 00 00 00 00
...
PDM 0          REV 01   740-045234   1E262250067   DC Power Dist Module
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           740-045234      S/N:              1E262250067
Assembly ID:   0x047b          Assembly Version:  01.01
Date:          06-28-2012      Assembly Flags:    0x00
Version:       REV 01          CLEI Code:         IPUPAJSKAA
ID: DC Power Dist Module      FRU Model Number: MX2000-PDM-DC-S-A
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 7b 01 01 52 45 56 20 30 31 00 00
Address 0x10: 00 00 00 00 37 34 30 2d 30 34 35 32 33 34 00 00
Address 0x20: 31 45 32 36 32 32 35 30 30 36 37 00 00 1c 06 07
Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 49 50 55 50 41 4a 53 4b 41 41 4d
Address 0x50: 58 32 30 30 30 2d 50 44 4d 2d 44 43 2d 53 2d 41
Address 0x60: 00 00 00 00 00 00 00 31 30 31 ff ff ff ff ff ff
Address 0x70: ff ff ff 89 00 00 00 00 00 00 00 00 00 00 00 00
Routing Engine 0 REV 02 740-041821 9009099704 RE-S-1800x4
Jedec Code: 0x7fb0 EEPROM Version: 0x02
P/N: 740-041821 S/N: 9009099704
Assembly ID: 0x09c0 Assembly Version: 01.02
Date: 03-15-2012 Assembly Flags: 0x00
Version: REV 02
ID: RE-S-1800x4 FRU Model Number: RE-S-1800X4-16G-S
Board Information Record:
Address 0x00: 54 32 30 32 37 44 41 2d 34 34 47 42 23 41 23 00
I2C Hex Data:
Address 0x00: 7f b0 02 ff 09 c0 01 02 52 45 56 20 30 32 00 00
Address 0x10: 00 00 00 00 37 34 30 2d 30 34 31 38 32 31 00 00
Address 0x20: 39 30 30 39 30 39 39 37 30 34 00 00 00 0f 03 07
Address 0x30: dc ff ff ff 54 32 30 32 37 44 41 2d 34 34 47 42
Address 0x40: 23 41 23 00 01 00 00 00 00 00 00 00 00 00 00 52
Address 0x50: 45 2d 53 2d 31 38 30 30 58 34 2d 31 36 47 2d 53
Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 8c ff ff ff ff ff ff ff ff ff ff ff ff
ad0 3831 MB UGB30SFA4000T1 SFA4000T1 00000651 Compact Flash
ad1 30533 MB UGB94BPH32H0S1-KCI 11000019592 Disk 1
usb0 (addr 1) EHCI root hub 0 Intel uhub0
usb0 (addr 2) product 0x0020 32 vendor 0x8087 uhub1
DIMM 0 SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
DIMM 1 SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
DIMM 2 SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
DIMM 3 SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
Routing Engine 1 REV 02 740-041821 9009099706 RE-S-1800x4
Jedec Code: 0x7fb0 EEPROM Version: 0x02
P/N: 740-041821 S/N: 9009099706
Assembly ID: 0x09c0 Assembly Version: 01.02
Date: 02-23-2012 Assembly Flags: 0x00
Version: REV 02
ID: RE-S-1800x4 FRU Model Number: RE-S-1800X4-16G-S
Board Information Record:
Address 0x00: 54 32 30 32 37 44 41 2d 34 34 47 42 23 41 23 00
I2C Hex Data:
Address 0x00: 7f b0 02 ff 09 c0 01 02 52 45 56 20 30 32 00 00
Address 0x10: 00 00 00 00 37 34 30 2d 30 34 31 38 32 31 00 00
Address 0x20: 39 30 30 39 30 39 39 37 30 36 00 00 00 17 02 07
Address 0x30: dc ff ff ff 54 32 30 32 37 44 41 2d 34 34 47 42
Address 0x40: 23 41 23 00 01 00 00 00 00 00 00 00 00 00 00 52
Address 0x50: 45 2d 53 2d 31 38 30 30 58 34 2d 31 36 47 2d 53
Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 8c ff ff ff ff ff ff ff ff ff ff ff ff
ad0 3998 MB Virtium - TuffDrive VCF P1T0200262860208 114 Compact Flash
ad1 30533 MB UGB94ARF32H0S3-KC UNIGEN-499551-000404 Disk 1
CB 0 REV 13 750-040257 CAAF8436 Control Board
Jedec Code: 0x7fb0 EEPROM Version: 0x02
P/N: 750-040257 S/N: S/N CAAF8436
Assembly ID: 0x0b26 Assembly Version: 01.13
Date: 08-29-2012 Assembly Flags: 0x00
Version: REV 13 CLEI Code: PROTOXCLEI
ID: Control Board FRU Model Number: PROTO-ASSEMBLY

```

## 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 0b 26 01 0d 52 45 56 20 31 33 00 00  
 Address 0x10: 00 00 00 00 37 35 30 2d 30 34 30 32 35 37 00 00  
 Address 0x20: 53 2f 4e 20 43 41 41 46 38 34 33 36 00 1d 08 07  
 Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff  
 Address 0x40: ff ff ff ff 01 50 52 4f 54 4f 58 43 4c 45 49 50  
 Address 0x50: 52 4f 54 4f 2d 41 53 53 45 4d 42 4c 59 00 00 00  
 Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff ff  
 Address 0x70: ff ff ff c2 ff ff ff ff ff ff ff ff ff ff ff ff

...

SPMB 0                    REV 02    711-041855    ABBV3825                    PMB Board  
 Jedec Code:    0x7fb0                    EEPROM Version:    0x01  
 P/N:            711-041855                    S/N:                    S/N ABBV3825  
 Assembly ID:    0x0b29                    Assembly Version:    01.02  
 Date:            08-14-2012                    Assembly Flags:    0x00  
 Version:        REV 02  
 ID: PMB Board

## 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 0b 29 01 02 52 45 56 20 30 32 00 00  
 Address 0x10: 00 00 00 00 37 31 31 2d 30 34 31 38 35 35 00 00  
 Address 0x20: 53 2f 4e 20 41 42 42 56 33 38 32 35 00 0e 08 07  
 Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff  
 Address 0x40: ff ff ff ff 00 ff 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 ff  
 Address 0x60: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff  
 Address 0x70: ff ff ff ff 00 00 00 00 00 00 00 00 00 00 00 00

...

SFB 0                    REV 05    711-044466    ABBX5682                    Switch Fabric Board  
 Jedec Code:    0x7fb0                    EEPROM Version:    0x02  
 P/N:            711-044466                    S/N:                    S/N ABBX5682  
 Assembly ID:    0x0b25                    Assembly Version:    01.05  
 Date:            09-07-2012                    Assembly Flags:    0x00  
 Version:        REV 05                    CLEI Code:            PROTOXCLEI  
 ID: Switch Fabric Board                    FRU Model Number:    PROTO-ASSEMBLY

## 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 0b 25 01 05 52 45 56 20 30 35 00 00  
 Address 0x10: 00 00 00 00 37 31 31 2d 30 34 34 34 36 36 00 00  
 Address 0x20: 53 2f 4e 20 41 42 42 58 35 36 38 32 00 07 09 07  
 Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff  
 Address 0x40: ff ff ff ff 01 50 52 4f 54 4f 58 43 4c 45 49 50  
 Address 0x50: 52 4f 54 4f 2d 41 53 53 45 4d 42 4c 59 00 00 00  
 Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff ff  
 Address 0x70: ff ff ff c2 00 00 00 01 00 00 00 00 00 00 48 00

...

FPC 0                    REV 09    750-037355    CAAF0924                    MPC Type 4-2  
 Jedec Code:    0x7fb0                    EEPROM Version:    0x02  
 P/N:            750-037355                    S/N:                    S/N CAAF0924  
 Assembly ID:    0x0b4e                    Assembly Version:    01.09  
 Date:            05-21-2012                    Assembly Flags:    0x00  
 Version:        REV 09                    CLEI Code:            PROTOXCLEI  
 ID: MPC Type 4-2                    FRU Model Number:    MPC4E-2CGE-8XGE

## 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 0b 4e 01 09 52 45 56 20 30 39 00 00

```

Address 0x10: 00 00 00 00 37 35 30 2d 30 33 37 33 35 35 00 00
Address 0x20: 53 2f 4e 20 43 41 41 46 30 39 32 34 00 15 05 07
Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 50 52 4f 54 4f 58 43 4c 45 49 4d
Address 0x50: 50 43 34 45 2d 32 43 47 45 2d 38 58 47 45 00 00
Address 0x60: 00 00 00 00 00 00 30 39 00 ff ff ff ff ff ff ff
Address 0x70: ff ff ff c6 ff ff ff ff ff ff ff ff ff ff ff ff
CPU          REV 08    711-035209    CAAB9842          HMPC PMB 2G
Jedec Code:  0x7fb0          EEPROM Version:  0x01
P/N:         711-035209      S/N:           S/N CAAB9842
Assembly ID: 0x0b04          Assembly Version: 01.08
Date:        05-17-2012      Assembly Flags: 0x00
Version:     REV 08
ID: HMPC PMB 2G
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 01 ff 0b 04 01 08 52 45 56 20 30 38 00 00
Address 0x10: 00 00 00 00 37 31 31 2d 30 33 35 32 30 39 00 00
Address 0x20: 53 2f 4e 20 43 41 41 42 39 38 34 32 00 11 05 07
Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 00 ff 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 00 00 00 00 00 00 00 00 00 00 00 00
PIC 0          BUILTIN      BUILTIN      4x10GE SFPP
Jedec Code:  0x0000          EEPROM Version:  0x00
P/N:         BUILTIN        S/N:           BUILTIN
Assembly ID: 0x0a53          Assembly Version: 00.00
Date:        00-00-0000      Assembly Flags: 0x00
ID: 4x10GE SFPP
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: 00 00 00 00 0a 53 00 00 00 00 00 00 00 00 00 00
Address 0x10: 00 00 00 00 42 55 49 4c 54 49 4e 00 4d 58 43 00
Address 0x20: 42 55 49 4c 54 49 4e 00 4d 58 43 00 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 c0 02 ae 64 00 00 00 00 0a 52 00 00
Xcvr 0      REV 01    740-021308    19T511101656      SFP+-10G-SR
Xcvr 1      REV 01    740-031980    AMA04RU            SFP+-10G-SR
Xcvr 2      REV 01    740-031980    193363A00558      SFP+-10G-SR
Xcvr 3      REV 01    740-031980    B10M00202          SFP+-10G-SR
...
ADC 0      REV 13    750-043596    ABBX5532          Adapter Card
Jedec Code: 0x7fb0          EEPROM Version:  0x02
P/N:        750-043596      S/N:           S/N ABBX5532
Assembly ID: 0x0b3d          Assembly Version: 01.13
Date:       09-12-2012      Assembly Flags: 0x00
Version:    REV 13          CLEI Code:      IPUCBA8CAA
ID: Adapter Card          FRU Model Number: MX2000-LC-ADAPTER
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 0b 3d 01 0d 52 45 56 20 31 33 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 34 33 35 39 36 00 00
Address 0x20: 53 2f 4e 20 41 42 42 58 35 35 33 32 00 0c 09 07
Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff

```



```

Address 0x40: ff ff ff ff 01 49 50 55 43 42 41 38 43 41 41 4d
Address 0x50: 58 32 30 30 30 2d 4c 43 2d 41 44 41 50 54 45 52
Address 0x60: 00 00 00 00 00 00 41 00 00 ff ff ff ff ff ff
Address 0x70: ff ff ff 3a 00 00 00 00 00 00 00 00 00 00 00
...

```

### show chassis hardware models (MX2010 Router)

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

```
Hardware inventory:
```

Item	Version	Part number	Serial number	FRU model number
FPM Board	REV 06	711-032349	ZX8744	711-032349
PSM 4	REV 0C	740-033727	VK00254	000000000000000000000000
PSM 5	REV 0B	740-033727	VG00015	000000000000000000000000
PSM 6	REV 0B	740-033727	VH00097	000000000000000000000000
PSM 7	REV 0C	740-033727	VJ00151	000000000000000000000000
PSM 8	REV 0C	740-033727	VJ00149	000000000000000000000000
PDM 0	REV 0B	740-038109	WA00008	
PDM 1	REV 0B	740-038109	WA00014	
Routing Engine 0	REV 02	740-041821	9009094134	RE-S-1800X4-16G-S
Routing Engine 1	REV 02	740-041821	9009094141	RE-S-1800X4-16G-S
CB 0	REV 08	750-040257	CAAB3491	750-040257
CB 1	REV 08	750-040257	CAAB3489	750-040257
SFB 0	REV 06	711-032385	ZV1828	711-032385
SFB 1	REV 07	711-032385	ZZ2568	711-032385
SFB 2	REV 07	711-032385	ZZ2563	711-032385
SFB 3	REV 07	711-032385	ZZ2564	711-032385
SFB 4	REV 07	711-032385	ZZ2580	711-032385
SFB 5	REV 07	711-032385	ZZ2579	711-032385
SFB 6	REV 07	711-032385	CAAB4882	711-044170
SFB 7	REV 07	711-032385	CAAB4898	711-044170
FPC 0	REV 33	750-028467	CAAB1919	MPC-3D-16XGE-SFPP
FPC 1	REV 21	750-033205	ZG5027	MX-MPC3-3D
MIC 0	REV 03	750-033307	ZV6299	MIC3-3D-10XGE-SFPP
MIC 1	REV 03	750-033307	ZV6268	MIC3-3D-10XGE-SFPP
FPC 8	REV 22	750-031089	ZT9746	MX-MPC2-3D
MIC 0	REV 26	750-028392	ABBS1150	MIC-3D-20GE-SFP
MIC 1	REV 26	750-028387	ABBR9582	MIC-3D-4XGE-XFP
FPC 9	REV 11	750-036284	ZL3591	MPCE-3D-16XGE-SFPP
ADC 0	REV 05	750-043596	CAAC2073	750-043596
ADC 1	REV 01	750-043596	ZV4117	750-043596
ADC 8	REV 01	750-043596	ZV4107	750-043596
ADC 9	REV 02	750-043596	ZW1555	750-043596
Fan Tray 0	REV 2A	760-046960	ACAY0015	
Fan Tray 1	REV 2A	760-046960	ACAY0019	
Fan Tray 2	REV 2A	760-046960	ACAY0020	
Fan Tray 3	REV 2A	760-046960	ACAY0021	

### show chassis hardware clei-models (MX2010 Routers)

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user@host > show chassis hardware clei-models
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Hardware inventory:
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Item	Version	Part number	CLEI code	FRU model number
FPM Board	REV 06	711-032349	PROTOXCLEI	711-032349
PSM 4	REV 0C	740-033727	0000000000	000000000000000000000000
PSM 5	REV 0B	740-033727	0000000000	000000000000000000000000
PSM 6	REV 0B	740-033727	0000000000	000000000000000000000000
PSM 7	REV 0C	740-033727	0000000000	000000000000000000000000
PSM 8	REV 0C	740-033727	0000000000	000000000000000000000000
PDM 0	REV 0B	740-038109		
PDM 1	REV 0B	740-038109		

Routing Engine 0	REV 02	740-041821		RE-S-1800X4-16G-S
Routing Engine 1	REV 02	740-041821		RE-S-1800X4-16G-S
CB 0	REV 08	750-040257	PROTOXCLEI	750-040257
CB 1	REV 08	750-040257	PROTOXCLEI	750-040257
SFB 0	REV 06	711-032385	PROTOXCLEI	711-032385
SFB 1	REV 07	711-032385	PROTOXCLEI	711-032385
SFB 2	REV 07	711-032385	PROTOXCLEI	711-032385
SFB 3	REV 07	711-032385	PROTOXCLEI	711-032385
SFB 4	REV 07	711-032385	PROTOXCLEI	711-032385
SFB 5	REV 07	711-032385	PROTOXCLEI	711-0323856
SFB 6	REV 07	711-032385	PROTOXCLEI	711-044170
SFB 7	REV 07	711-032385	PROTOXCLEI	711-044170
FPC 0	REV 33	750-028467		MPC-3D-16XGE-SFPP
FPC 1	REV 21	750-033205		MX-MPC3-3D
MIC 0	REV 03	750-033307	PROTOXCLEI	MIC3-3D-10XGE-SFPP
MIC 1	REV 03	750-033307	PROTOXCLEI	MIC3-3D-10XGE-SFPP
FPC 8	REV 22	750-031089	COUIBAYBAA	MX-MPC2-3D
MIC 0	REV 26	750-028392	COUIA15BAA	MIC-3D-20GE-SFP
MIC 1	REV 26	750-028387	COUIA16BAA	MIC-3D-4XGE-XFP
FPC 9	REV 11	750-036284	CMUIACGBAA	MPCE-3D-16XGE-SFPP
ADC 0	REV 05	750-043596	PROTOXCLEI	750-043596
ADC 1	REV 01	750-043596	PROTOXCLEI	750-043596
ADC 8	REV 01	750-043596	PROTOXCLEI	750-043596
ADC 9	REV 02	750-043596	PROTOXCLEI	750-043596
Fan Tray 0	REV 2A	760-046960		
Fan Tray 1	REV 2A	760-046960		
Fan Tray 2	REV 2A	760-046960		
Fan Tray 3	REV 2A	760-046960		

## show chassis hardware (MX2020 Router)

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Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN11E2227AFJ	MX2020
Midplane	REV 27	750-040240	ABAB9384	Lower Power Midplane
Midplane 1	REV 04	711-032386	ABAB9386	Upper Backplane
PMP 1	REV 05	711-032428	ACAJ1579	Upper Power Midplane
PMP 0	REV 04	711-032426	ACAJ1524	Lower Power Midplane
FPM Board	REV 06	760-040242	ABBT8837	Front Panel Display
PSM 0	REV 01	740-045050	1E022240056	DC 52V Power Supply
Module				
PSM 1	REV 01	740-045050	1E022240054	DC 52V Power Supply
Module				
PSM 2	REV 01	740-045050	1E02224005H	DC 52V Power Supply
Module				
PSM 3	REV 01	740-045050	1E022240053	DC 52V Power Supply
Module				
PSM 4	REV 01	740-045050	1E02224004K	DC 52V Power Supply
Module				
PSM 7	REV 01	740-045050	1E02224006W	DC 52V Power Supply
Module				
PSM 8	REV 01	740-045050	1E022240062	DC 52V Power Supply
Module				
PSM 9	REV 01	740-045050	1E02224005B	DC 52V Power Supply
Module				
PSM 10	REV 01	740-045050	1E02224005A	DC 52V Power Supply
Module				
PSM 11	REV 01	740-045050	1E022240052	DC 52V Power Supply
Module				
PSM 12	REV 01	740-045050	1E022240051	DC 52V Power Supply

Module				
PSM 13	REV 01	740-045050	1E022240058	DC 52V Power Supply
Module				
PSM 14	REV 01	740-045050	1E02224004L	DC 52V Power Supply
Module				
PSM 15	REV 01	740-045050	1E02224005M	DC 52V Power Supply
Module				
PSM 16	REV 01	740-045050	1E02224006S	DC 52V Power Supply
Module				
PSM 17	REV 01	740-045050	1E02224005Z	DC 52V Power Supply
Module				
PDM 0	REV 01	740-045234	1E012150033	DC Power Dist Module
PDM 1	REV 01	740-045234	1E012150027	DC Power Dist Module
PDM 2	REV 01	740-045234	1E012150028	DC Power Dist Module
PDM 3	REV 01	740-045234	1E012150045	DC Power Dist Module
Routing Engine 0	REV 02	740-041821	9009089704	RE-S-1800x4
Routing Engine 1	REV 02	740-041821	9009094138	RE-S-1800x4
CB 0	REV 14	750-040257	CAAF8430	Control Board
CB 1	REV 08	750-040257	CAAB3482	Control Board
SPMB 0	REV 01	711-041855	ZS2290	PMB Board
SPMB 1	REV 02	711-041855	CAAA6141	PMB Board
SFB 0	REV 03	711-044466	ABBV6789	Switch Fabric Board
SFB 1	REV 05	711-044466	ABBX5666	Switch Fabric Board
SFB 2	REV 05	711-044466	ABBX5678	Switch Fabric Board
SFB 3	REV 05	711-044466	ABBX5687	Switch Fabric Board
SFB 4	REV 05	711-044466	ABBX5609	Switch Fabric Board
SFB 5	REV 05	711-044466	ABBX5675	Switch Fabric Board
SFB 6	REV 03	711-044466	ABBV6805	Switch Fabric Board
SFB 7	REV 05	711-044466	ABBX5701	Switch Fabric Board
FPC 0	REV 30	750-028467	ABBN0284	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN0507	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E00990	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E04357	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01327	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E04375	SFP+-10G-USR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02760	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E02904	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E03963	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E00756	SFP+-10G-USR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E04418	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01077	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E01128	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01253	SFP+-10G-USR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E01140	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11F01626	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E01075	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E01177	SFP+-10G-USR
FPC 1	REV 30	750-028467	ABBN0208	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBJ1084	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E04745	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11F01570	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E04388	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01439	SFP+-10G-USR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E04739	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11F01869	SFP+-10G-USR

Xcvr 2	REV 01	740-030658	B11F01675	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01901	SFP+-10G-USR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01346	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11F01288	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01824	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E04312	SFP+-10G-USR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02811	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E03847	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01495	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01265	SFP+-10G-USR
FPC 2	REV 30	750-028467	ZM5111	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ZP6607	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LJA	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MFZ	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NKL	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80KF4	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80FBJ	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MM2	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LJV	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NXV	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80N1H	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NLS	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80FL5	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NL9	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NG2	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80KDU	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80MG1	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80MM0	SFP+-10G-SR
FPC 3	REV 30	750-028467	ABB0302	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABB0495	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01581	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01176	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01251	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E02752	SFP+-10G-USR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E00786	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01020	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E01023	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E02819	SFP+-10G-USR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02812	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11D04437	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01279	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01333	SFP+-10G-USR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E00978	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01018	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01784	SFP+-10G-USR
Xcvr 3	REV 01	740-031980	AK80NKP	SFP+-10G-SR
FPC 4	REV 30	750-028467	ABB0308	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABB11095	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E04305	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01147	SFP+-10G-USR

Xcvr 2	REV 01	740-030658	B11E01195	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01743	SFP+-10G-USR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01892	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E02880	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E00725	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E01057	SFP+-10G-USR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02816	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11C04501	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E02764	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E00789	SFP+-10G-USR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01250	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E02847	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E00787	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E03803	SFP+-10G-USR
FPC 5	REV 30	750-028467	ABBN0316	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABB11082	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00523	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K01848	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01865	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K00540	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00422	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K00428	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K00423	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K01855	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K01847	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K00526	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K00529	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K00525	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00425	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K00530	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01851	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K00528	SFP+-10G-SR
FPC 6	REV 32	750-028467	ABBN6832	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN6534	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80MB4	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80FQ6	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80N1F	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NLQ	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80KDR	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80FGJ	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80N5G	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80KD8	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LET	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80N1X	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NRF	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NL2	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80N3D	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MRB	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LEQ	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LER	SFP+-10G-SR

FPC 7	REV 32	750-028467	ABBN6811	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN7288	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NK8	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80LJG	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LBU	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80N21	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LEU	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NLM	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NL6	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LES	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LEN	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80ME0	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LMG	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80MM1	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80MG7	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80KF9	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NRQ	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NLE	SFP+-10G-SR
FPC 8	REV 23	750-028467	YN2977	MPC 3D 16x 10GE
CPU	REV 10	711-029089	YP1856	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	183363A00875	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	183363A00851	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	183363A00772	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	183363A00882	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	183363A00735	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	183363A00169	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	183363A00726	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	183363A00077	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	183363A00168	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	183363A00676	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	183363A00732	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	183363A00091	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	183363A00725	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	183363A00642	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	183363A00871	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	183363A00853	SFP+-10G-SR
FPC 9	REV 32	750-028467	ABBN6798	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBK6556	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	9ZDZ06A00055	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	183363A00239	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AD0915E003K	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AD0915E003A	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80MRC	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NL5	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NKN	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80N3U	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80N1T	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AJ808DJ	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NG4	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80FND	SFP+-10G-SR

PIC 3			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80FKQ		SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NLT		SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NKR		SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LKM		SFP+-10G-SR
FPC 10	REV 32	750-028467	ABBN6813		MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBK6542		AMPC PMB
PIC 0			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NA3		SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NLF		SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80MRH		SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80KE4		SFP+-10G-SR
PIC 1			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	973152A00030		SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80L9H		SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80ME8		SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NLR		SFP+-10G-SR
PIC 2			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NG1		SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MCA		SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LFC		SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LEM		SFP+-10G-SR
PIC 3			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80N9X		SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80LAC		SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LF2		SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80N8T		SFP+-10G-SR
FPC 11	REV 30	750-028467	ABBN0281		MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN0526		AMPC PMB
PIC 0			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01326		SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E03973		SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E00950		SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E00674		SFP+-10G-USR
PIC 1			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E00775		SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E04461		SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E01074		SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E02821		SFP+-10G-USR
PIC 2			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E04501		SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E00757		SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01623		SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E01022		SFP+-10G-USR
PIC 3			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E04359		SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E02751		SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E02736		SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E01178		SFP+-10G-USR
FPC 12	REV 32	750-028467	ABBN6796		MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN7259		AMPC PMB
PIC 0			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K01856		SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K01853		SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01863		SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02863		SFP+-10G-SR
PIC 1			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02668		SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02881		SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A01671		SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02627		SFP+-10G-SR

PIC 2			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02725	163363A02725	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02692	163363A02692	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02730	163363A02730	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03081	163363A03081	SFP+-10G-SR
PIC 3			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02736	163363A02736	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02568	163363A02568	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02747	163363A02747	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02579	163363A02579	SFP+-10G-SR
FPC 13	REV 30	750-028467	ABBN0270	ABBN0270	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABB0966	ABB0966	AMPC PMB
PIC 0			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NL1	AK80NL1	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NXW	AK80NXW	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80KD2	AK80KD2	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80FMD	AK80FMD	SFP+-10G-SR
PIC 1			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NKQ	AK80NKQ	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MGH	AK80MGH	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80N38	AK80N38	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NL7	AK80NL7	SFP+-10G-SR
PIC 2			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LEL	AK80LEL	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NKD	AK80NKD	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80KCY	AK80KCY	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LHK	AK80LHK	SFP+-10G-SR
PIC 3			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80M5J	AK80M5J	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MBE	AK80MBE	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NLG	AK80NLG	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LFH	AK80LFH	SFP+-10G-SR
FPC 14	REV 32	750-028467	ABBN6790	ABBN6790	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN6515	ABBN6515	AMPC PMB
PIC 0			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LZM	AK80LZM	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MCC	AK80MCC	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80KCM	AK80KCM	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80KE0	AK80KE0	SFP+-10G-SR
PIC 1			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021310	C10F99155	C10F99155	SFP+-10G-LRM
Xcvr 1	REV 01	740-021310	C10F99049	C10F99049	SFP+-10G-LRM
Xcvr 2	REV 01	740-021310	C10F99128	C10F99128	SFP+-10G-LRM
Xcvr 3	REV 01	740-021310	C10F99169	C10F99169	SFP+-10G-LRM
PIC 2			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LF3	AK80LF3	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02597	163363A02597	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A03060	163363A03060	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03057	163363A03057	SFP+-10G-SR
PIC 3			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LEX	AK80LEX	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80FEU	AK80FEU	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80FNM	AK80FNM	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AJQQQ5G	AJQQQ5G	SFP+-10G-SR
FPC 15	REV 32	750-028467	ABBN6791	ABBN6791	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN7289	ABBN7289	AMPC PMB
PIC 0			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00424	B11K00424	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K01849	B11K01849	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01862	B11K01862	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K01852	B11K01852	SFP+-10G-SR



PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00427	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K00430	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01854	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K00426	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00429	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K01864	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01850	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K00522	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E01144	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E00985	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E00796	SFP+-10G-USR
Xcvr 3	REV 01	740-031980	B11K01866	SFP+-10G-SR
FPC 16	REV 30	750-028467	ABBM4592	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN0465	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01435	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01052	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01328	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01254	SFP+-10G-USR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02738	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E02881	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01624	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E00889	SFP+-10G-USR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02883	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E00681	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E04306	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E02813	SFP+-10G-USR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01801	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E02753	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E01156	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E04324	SFP+-10G-USR
FPC 17	REV 32	750-028467	ABBN6810	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN7237	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02638	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02082	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A01674	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03058	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A03048	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02729	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02566	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02567	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02878	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02739	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A01959	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02660	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02731	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02588	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02673	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02654	SFP+-10G-SR
FPC 18	REV 30	750-028467	ABBM4739	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN0487	AMPC PMB

PIC 0			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02569	SFP+-10G-SR	
Xcvr 1	REV 01	740-031980	163363A02886	SFP+-10G-SR	
Xcvr 2	REV 01	740-031980	163363A03082	SFP+-10G-SR	
Xcvr 3	REV 01	740-031980	133363A00297	SFP+-10G-SR	
PIC 1			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02726	SFP+-10G-SR	
Xcvr 1	REV 01	740-031980	163363A03050	SFP+-10G-SR	
Xcvr 2	REV 01	740-031980	163363A02884	SFP+-10G-SR	
Xcvr 3	REV 01	740-031980	163363A03076	SFP+-10G-SR	
PIC 2			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02581	SFP+-10G-SR	
Xcvr 1	REV 01	740-031980	163363A02873	SFP+-10G-SR	
Xcvr 2	REV 01	740-031980	163363A02582	SFP+-10G-SR	
Xcvr 3	REV 01	740-031980	163363A03083	SFP+-10G-SR	
PIC 3			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031981	UL70BU6	SFP+-10G-LR	
Xcvr 1	REV 01	740-031981	UL50QC6	SFP+-10G-LR	
Xcvr 2	REV 01	740-031981	UL708N6	SFP+-10G-LR	
Xcvr 3	REV 01	740-031981	UL603KK	SFP+-10G-LR	
FPC 19	REV 32	750-028467	ABBN6827	MPC 3D 16x 10GE	
CPU	REV 10	711-029089	ABBK6508	AMPC PMB	
PIC 0			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A01688	SFP+-10G-SR	
Xcvr 1	REV 01	740-031980	163363A01724	SFP+-10G-SR	
Xcvr 2	REV 01	740-031980	163363A01773	SFP+-10G-SR	
Xcvr 3	REV 01	740-031980	163363A02593	SFP+-10G-SR	
PIC 1			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A03061	SFP+-10G-SR	
Xcvr 1	REV 01	740-031980	163363A03056	SFP+-10G-SR	
Xcvr 2	REV 01	740-031980	163363A02669	SFP+-10G-SR	
Xcvr 3	REV 01	740-031980	163363A03070	SFP+-10G-SR	
PIC 2			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02572	SFP+-10G-SR	
Xcvr 1	REV 01	740-031980	163363A02697	SFP+-10G-SR	
Xcvr 2	REV 01	740-031980	163363A02585	SFP+-10G-SR	
Xcvr 3	REV 01	740-031980	163363A03052	SFP+-10G-SR	
PIC 3			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02591	SFP+-10G-SR	
Xcvr 1	REV 01	740-031980	163363A02649	SFP+-10G-SR	
Xcvr 2	REV 01	740-031980	163363A02577	SFP+-10G-SR	
Xcvr 3	REV 01	740-031980	163363A02698	SFP+-10G-SR	
ADC 0	REV 13	750-043596	ABBX5561	Adapter Card	
ADC 1	REV 13	750-043596	ABBX5546	Adapter Card	
ADC 2	REV 13	750-043596	ABBX5535	Adapter Card	
ADC 3	REV 13	750-043596	ABBX5552	Adapter Card	
ADC 4	REV 13	750-043596	ABBX5581	Adapter Card	
ADC 5	REV 13	750-043596	ABBX5545	Adapter Card	
ADC 6	REV 13	750-043596	ABBX5554	Adapter Card	
ADC 7	REV 07	750-043596	ABBV7194	Adapter Card	
ADC 8	REV 07	750-043596	ABBV7251	Adapter Card	
ADC 9	REV 07	750-043596	ABBV7202	Adapter Card	
ADC 10	REV 13	750-043596	ABBX5538	Adapter Card	
ADC 11	REV 13	750-043596	ABBX5566	Adapter Card	
ADC 12	REV 13	750-043596	ABBX5542	Adapter Card	
ADC 13	REV 13	750-043596	ABBX5539	Adapter Card	
ADC 14	REV 13	750-043596	ABBX5555	Adapter Card	
ADC 15	REV 13	750-043596	ABBX5557	Adapter Card	
ADC 16	REV 13	750-043596	ABBX5536	Adapter Card	
ADC 17	REV 13	750-043596	ABBX5559	Adapter Card	
ADC 18	REV 13	750-043596	ABBX5537	Adapter Card	

ADC 19	REV 11	750-043596	ABBW5685	Adapter Card
Fan Tray 0	REV 2A	760-046960	ACAY0030	172mm FanTray - 6 Fans
Fan Tray 1	REV 2A	760-046960	ACAY0039	172mm FanTray - 6 Fans
Fan Tray 2	REV 2A	760-046960	ACAY0033	172mm FanTray - 6 Fans
Fan Tray 3	REV 2A	760-046960	ACAY0062	172mm FanTray - 6 Fans

### show chassis hardware detail (MX2020 Router)

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user@host> show chassis hardware detail
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Hardware inventory:
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Item	Version	Part number	Serial number	Description
Chassis			JN11E2227AFJ	MX2020
Midplane	REV 27	750-040240	ABAB9384	Lower Power Midplane
Midplane 1	REV 04	711-032386	ABAB9386	Upper Backplane
PMP 1	REV 05	711-032428	ACAJ1821	Upper Power Midplane
PMP 0	REV 04	711-032426	ACAJ1524	Lower Power Midplane
FPM Board	REV 06	760-040242	ABBT8837	Front Panel Display
PSM 0	REV 01	740-045050	1E02224006G	DC 52V Power Supply
Module				
PSM 1	REV 01	740-045050	1E022240053	DC 52V Power Supply
Module				
PSM 2	REV 01	740-045050	1E02224004K	DC 52V Power Supply
Module				
PSM 3	REV 01	740-045050	1E022240056	DC 52V Power Supply
Module				
PSM 4	REV 01	740-045050	1E022240054	DC 52V Power Supply
Module				
PSM 5	REV 01	740-045050	1E02224005H	DC 52V Power Supply
Module				
PSM 6	REV 01	740-045050	1E02224006S	DC 52V Power Supply
Module				
PSM 7	REV 01	740-045050	1E02224005M	DC 52V Power Supply
Module				
PSM 8	REV 01	740-045050	1E022240062	DC 52V Power Supply
Module				
PSM 9	REV 03	740-045050	1EDB2350095	DC 52V Power Supply
Module				
PSM 10	REV 03	740-045050	1EDB235009L	DC 52V Power Supply
Module				
PSM 11	REV 03	740-045050	1EDB2350092	DC 52V Power Supply
Module				
PSM 12	REV 03	740-045050	1EDB23500AT	DC 52V Power Supply
Module				
PSM 13	REV 03	740-045050	1EDB2350094	DC 52V Power Supply
Module				
PSM 15	REV 03	740-045050	1EDB235008X	DC 52V Power Supply
Module				
PDM 0	REV 01	740-045234	1E012150033	DC Power Dist Module
PDM 1	REV 01	740-045234	1E012150027	DC Power Dist Module
PDM 2	REV 01	740-045234	1E262250072	DC Power Dist Module
Routing Engine 0	REV 02	740-041821	9009094138	RE-S-1800x4
ad0	3998 MB	Virtium - TuffDisk	VCF3 20110825A021D0000064	Compact Flash
ad1	30533 MB	UGB94ARF32H0S3-KC	UNIGEN-499551-000347	Disk 1
usb0 (addr 1)		EHCI root hub 0	Intel	uhub0
usb0 (addr 2)		product 0x0020 32	vendor 0x8087	uhub1
DIMM 0		SGU04G72H1BD2SA-BB DIE	REV-52 PCB REV-54 MFR ID-ce80	
DIMM 1		SGU04G72H1BD2SA-BB DIE	REV-52 PCB REV-54 MFR ID-ce80	
DIMM 2		SGU04G72H1BD2SA-BB DIE	REV-52 PCB REV-54 MFR ID-ce80	
DIMM 3		SGU04G72H1BD2SA-BB DIE	REV-52 PCB REV-54 MFR ID-ce80	
Routing Engine 1	REV 02	740-041821	9009089709	RE-S-1800x4
ad0	3831 MB	UGB30SFA4000T1	SFA4000T1 00000113	Compact Flash

ad1	30533 MB	UGB94ARF32H0S3-KC	UNIGEN-478612-001044	Disk 1	
CB 0		REV 08	750-040257	CAAB3482	Control Board
CB 1		REV 04	750-040257	ZT2864	Control Board
SPMB 0		REV 02	711-041855	CAAA6141	PMB Board
SPMB 1		REV 01	711-041855	ZS2275	PMB Board
SFB 0		REV 05	711-044466	ABBT2161	Switch Fabric Board
SFB 1		REV 05	711-044466	ABBT2159	Switch Fabric Board
SFB 2		REV 05	711-044466	ABBX3718	Switch Fabric Board
SFB 3		REV 05	711-044466	ABBT2152	Switch Fabric Board
SFB 4		REV 05	711-044466	ABBT2160	Switch Fabric Board
SFB 5		REV 05	711-044466	ABBT2145	Switch Fabric Board
SFB 6		REV 05	711-044466	ABBT2150	Switch Fabric Board
SFB 7		REV 05	711-044466	ABBT2163	Switch Fabric Board
FPC 0		REV 30	750-028467	ABBN0284	MPC 3D 16x 10GE
CPU		REV 10	711-029089	ABBN0507	AMPC PMB
PIC 0			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0		REV 01	740-030658	B11E00990	SFP+-10G-USR
Xcvr 1		REV 01	740-030658	B11E04357	SFP+-10G-USR
Xcvr 2		REV 01	740-030658	B11F01327	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E04375		SFP+-10G-USR
PIC 1			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0		REV 01	740-030658	B11E02760	SFP+-10G-USR
Xcvr 1		REV 01	740-030658	B11E02904	SFP+-10G-USR
Xcvr 2		REV 01	740-030658	B11E03963	SFP+-10G-USR
Xcvr 3		REV 01	740-030658	B11E00756	SFP+-10G-USR
PIC 2			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0		REV 01	740-030658	B11E04418	SFP+-10G-USR
Xcvr 1		REV 01	740-030658	B11E01077	SFP+-10G-USR
Xcvr 2		REV 01	740-030658	B11E01128	SFP+-10G-USR
Xcvr 3		REV 01	740-030658	B11F01253	SFP+-10G-USR
PIC 3			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0		REV 01	740-030658	B11E01140	SFP+-10G-USR
Xcvr 1		REV 01	740-030658	B11F01626	SFP+-10G-USR
Xcvr 2		REV 01	740-030658	B11E01075	SFP+-10G-USR
Xcvr 3		REV 01	740-030658	B11E01177	SFP+-10G-USR
FPC 1		REV 30	750-028467	ABBN0308	MPC 3D 16x 10GE
CPU		REV 10	711-029089	ABBJ1095	AMPC PMB
PIC 0			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0		REV 01	740-030658	B11E04305	SFP+-10G-USR
Xcvr 1		REV 01	740-030658	B11E01147	SFP+-10G-USR
Xcvr 2		REV 01	740-030658	B11E01195	SFP+-10G-USR
Xcvr 3		REV 01	740-030658	B11F01743	SFP+-10G-USR
PIC 1			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0		REV 01	740-030658	B11F01892	SFP+-10G-USR
Xcvr 1		REV 01	740-030658	B11E02880	SFP+-10G-USR
Xcvr 2		REV 01	740-030658	B11E00725	SFP+-10G-USR
Xcvr 3		REV 01	740-030658	B11E01057	SFP+-10G-USR
PIC 2			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0		REV 01	740-030658	B11E02816	SFP+-10G-USR
Xcvr 1		REV 01	740-030658	B11C04501	SFP+-10G-USR
Xcvr 2		REV 01	740-030658	B11E02764	SFP+-10G-USR
Xcvr 3		REV 01	740-030658	B11E00789	SFP+-10G-USR
PIC 3			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0		REV 01	740-030658	B11F01250	SFP+-10G-USR
Xcvr 1		REV 01	740-030658	B11E02847	SFP+-10G-USR
Xcvr 2		REV 01	740-030658	B11E00787	SFP+-10G-USR
Xcvr 3		REV 01	740-030658	B11E03803	SFP+-10G-USR
FPC 2		REV 30	750-028467	ABBN0316	MPC 3D 16x 10GE
CPU		REV 10	711-029089	ABBJ1082	AMPC PMB
PIC 0			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0		REV 01	740-031980	B11K00523	SFP+-10G-SR

Xcvr 1	REV 01	740-031980	B11K01848	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01865	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K00540	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00422	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K00428	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K00423	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K01855	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K01847	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K00526	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K00529	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K00525	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00425	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K00530	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01851	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K00528	SFP+-10G-SR
FPC 3	REV 32	750-028467	ABBN6832	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBK6534	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80MB4	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80FQ6	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80N1F	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NLQ	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80KDR	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80FGJ	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80N5G	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80KD8	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LET	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80N1X	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NRF	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NL2	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80N3D	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MRB	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LEQ	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LER	SFP+-10G-SR
FPC 4	REV 32	750-028467	ABBN6811	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN7288	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NK8	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80LJG	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LBU	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80N21	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LEU	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NLM	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NL6	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LES	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LEN	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80ME0	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LMG	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80MM1	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80MG7	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80KF9	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NRQ	SFP+-10G-SR

Xcvr 3	REV 01	740-031980	AK80NLE	SFP+-10G-SR
FPC 5	REV 32	750-028467	ABBN6791	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN7289	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00424	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K01849	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01862	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K01852	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP
Xcvr 0	REV 01	740-031980	B11K00427	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K00430	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01854	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K00426	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00429	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K01864	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01850	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K00522	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E01144	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E00985	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E00796	SFP+-10G-USR
Xcvr 3	REV 01	740-031980	B11K01866	SFP+-10G-SR
FPC 6	REV 30	750-028467	ABBM4592	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN0465	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01435	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01052	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01328	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01254	SFP+-10G-USR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02738	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E02881	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01624	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E00889	SFP+-10G-USR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02883	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E00681	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E04306	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E02813	SFP+-10G-USR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01801	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E02753	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E01156	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E04324	SFP+-10G-USR
FPC 7	REV 32	750-028467	ABBN6810	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN7237	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A03058	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02082	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A01674	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02638	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A03048	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02729	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02566	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02567	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02878	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02739	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A01959	SFP+-10G-SR

Xcvr 3	REV 01	740-031980	163363A02660	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02731	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02588	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02673	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02654	SFP+-10G-SR
FPC 8	REV 30	750-028467	ABBM4739	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN0487	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02569	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02886	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A03082	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	133363A00297	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02726	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A03050	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02884	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03076	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02581	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02873	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02582	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03083	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031981	UL70BU6	SFP+-10G-LR
Xcvr 1	REV 01	740-031981	UL50QC6	SFP+-10G-LR
Xcvr 2	REV 01	740-031981	UL708N6	SFP+-10G-LR
Xcvr 3	REV 01	740-031981	UL603KK	SFP+-10G-LR
FPC 9	REV 32	750-028467	ABBN6827	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBK6508	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A01688	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A01724	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A01773	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02593	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A03061	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A03056	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02669	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03070	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02572	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02697	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02585	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03052	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02591	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02649	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02577	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02698	SFP+-10G-SR
FPC 10	REV 30	750-028467	ABBN0302	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN0495	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01581	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01176	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01251	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E02752	SFP+-10G-USR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E00786	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01020	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E01023	SFP+-10G-USR

Xcvr 3	REV 01	740-030658	B11E02819	SFP+-10G-USR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02812	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11D04437	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01279	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01333	SFP+-10G-USR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E00978	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01018	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01784	SFP+-10G-USR
Xcvr 3	REV 01	740-031980	AK80NKP	SFP+-10G-SR
FPC 11	REV 32	750-028467	ABBN6790	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBK6515	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LZM	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MCC	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80KCM	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80KE0	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021310	C10F99155	SFP+-10G-LRM
Xcvr 1	REV 01	740-021310	C10F99049	SFP+-10G-LRM
Xcvr 2	REV 01	740-021310	C10F99128	SFP+-10G-LRM
Xcvr 3	REV 01	740-021310	C10F99169	SFP+-10G-LRM
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LF3	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02597	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A03060	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03057	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LEX	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80FEU	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80FNM	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AJQQQ5G	SFP+-10G-SR
FPC 12	REV 30	750-028467	ZM5111	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ZP6607	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LJA	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MFZ	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NKL	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80KF4	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80FBJ	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MM2	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LJV	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NXV	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80N1H	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NLS	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80FL5	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NL9	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NG2	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80KDU	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80MG1	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80MM0	SFP+-10G-SR
FPC 13	REV 30	750-028467	ABBN0208	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABB11084	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E04745	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11F01570	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E04388	SFP+-10G-USR



Xcvr 3	REV 01	740-030658	B11F01439	SFP+-10G-USR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E04739	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11F01869	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01675	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01901	SFP+-10G-USR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01346	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11F01288	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01824	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E04312	SFP+-10G-USR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02811	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E03847	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01495	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01265	SFP+-10G-USR
FPC 14	REV 23	750-028467	YN2977	MPC 3D 16x 10GE
CPU	REV 10	711-029089	YP1856	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	183363A00875	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	183363A00851	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	183363A00772	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	183363A00882	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	183363A00735	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	183363A00169	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	183363A00726	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	183363A00077	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	183363A00168	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	183363A00676	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	183363A00732	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	183363A00091	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	183363A00725	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	183363A00642	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	183363A00871	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	183363A00853	SFP+-10G-SR
FPC 15	REV 32	750-028467	ABBN6798	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN6556	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	9ZDZ06A00055	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	183363A00239	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AD0915E003K	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AD0915E003A	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80MRC	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NL5	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NKN	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80N3U	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80N1T	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AJ808DJ	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NG4	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80FND	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80FKQ	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NLT	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NKR	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LKM	SFP+-10G-SR
FPC 16	REV 30	750-028467	ABBN0270	MPC 3D 16x 10GE

CPU	REV 10	711-029089	ABB0966	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NL1	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NXW	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80KD2	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80FMD	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NKQ	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MGH	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80N38	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NL7	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80M5J	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NKD	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80KCY	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LHK	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LEL	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MBE	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NLG	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LFH	SFP+-10G-SR
FPC 17	REV 32	750-028467	ABBN6796	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN7259	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K01856	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K01853	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01863	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02863	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02668	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02881	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A01671	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02627	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02725	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02692	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02730	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03081	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02736	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02568	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02747	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02579	SFP+-10G-SR
FPC 18	REV 30	750-028467	ABBN0281	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN0526	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01326	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E03973	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E00950	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E00674	SFP+-10G-USR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E00775	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E04461	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E01074	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E02821	SFP+-10G-USR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E04501	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E00757	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01623	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E01022	SFP+-10G-USR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+

Xcvr 0	REV 01	740-030658	B11E04359	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E02751	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E02736	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E01178	SFP+-10G-USR
FPC 19	REV 32	750-028467	ABBN6813	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBK6542	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NA3	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NLF	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80MRH	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80KE4	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	973152A00030	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80L9H	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80ME8	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NLR	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NG1	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MCA	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LFC	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LEM	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80N9X	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80LAC	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LFC	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80N8T	SFP+-10G-SR
ADC 0	REV 13	750-043596	ABBX5561	Adapter Card
ADC 1	REV 13	750-043596	ABBX5546	Adapter Card
ADC 2	REV 13	750-043596	ABBX5535	Adapter Card
ADC 3	REV 13	750-043596	ABBX5552	Adapter Card
ADC 4	REV 13	750-043596	ABBX5581	Adapter Card
ADC 5	REV 13	750-043596	ABBX5545	Adapter Card
ADC 6	REV 13	750-043596	ABBX5554	Adapter Card
ADC 7	REV 07	750-043596	ABBV7194	Adapter Card
ADC 8	REV 07	750-043596	ABBV7251	Adapter Card
ADC 9	REV 07	750-043596	ABBV7202	Adapter Card
ADC 10	REV 13	750-043596	ABBX5579	Adapter Card
ADC 11	REV 13	750-043596	ABBX5548	Adapter Card
ADC 12	REV 13	750-043596	ABBX5575	Adapter Card
ADC 13	REV 13	750-043596	ABBX5539	Adapter Card
ADC 14	REV 13	750-043596	ABBX5555	Adapter Card
ADC 15	REV 13	750-043596	ABBX5557	Adapter Card
ADC 16	REV 13	750-043596	ABBX5536	Adapter Card
ADC 17	REV 13	750-043596	ABBX5559	Adapter Card
ADC 18	REV 13	750-043596	ABBX5537	Adapter Card
ADC 19	REV 11	750-043596	ABBW5685	Adapter Card
Fan Tray 0	REV 04	760-046960	ACAY0090	172mm FanTray - 6 Fans
Fan Tray 1	REV 04	760-046960	ACAY0088	172mm FanTray - 6 Fans
Fan Tray 2	REV 04	760-046960	ACAY0089	172mm FanTray - 6 Fans
Fan Tray 3	REV 04	760-046960	ACAY0108	172mm FanTray - 6 Fans

### show chassis hardware models (MX2020 Router)

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Hardware inventory:
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Item	Version	Part number	Serial number	FRU model number
Midplane	REV 27	750-040240	ABAB9384	750-040240
FPM Board	REV 06	760-040242	ABBT8837	760-040242
PSM 0	REV 01	740-045050	1E02224006G	MX2000-PSM-HC-DC-S-A
PSM 1	REV 01	740-045050	1E022240053	MX2000-PSM-HC-DC-S-A
PSM 2	REV 01	740-045050	1E02224004K	MX2000-PSM-HC-DC-S-A

PSM 3	REV 01	740-045050	1E022240056	MX2000-PSM-HC-DC-S-A
PSM 4	REV 01	740-045050	1E022240054	MX2000-PSM-HC-DC-S-A
PSM 5	REV 01	740-045050	1E02224005H	MX2000-PSM-HC-DC-S-A
PSM 6	REV 01	740-045050	1E02224006S	MX2000-PSM-HC-DC-S-A
PSM 7	REV 01	740-045050	1E02224005M	MX2000-PSM-HC-DC-S-A
PSM 8	REV 01	740-045050	1E022240062	MX2000-PSM-HC-DC-S-A
PSM 9	REV 03	740-045050	1EDB2350095	MX2000-PSM-DC-S-A
PSM 10	REV 03	740-045050	1EDB235009L	MX2000-PSM-DC-S-A
PSM 11	REV 03	740-045050	1EDB2350092	MX2000-PSM-DC-S-A
PSM 12	REV 03	740-045050	1EDB23500AT	MX2000-PSM-DC-S-A
PSM 13	REV 03	740-045050	1EDB2350094	MX2000-PSM-DC-S-A
PSM 15	REV 03	740-045050	1EDB235008X	MX2000-PSM-DC-S-A
PDM 0	REV 01	740-045234	1E012150033	
PDM 1	REV 01	740-045234	1E012150027	
PDM 2	REV 01	740-045234	1E262250072	MX2000-PDM-DC-S-A
Routing Engine 0	REV 02	740-041821	9009094138	RE-S-1800X4-16G-S
Routing Engine 1	REV 02	740-041821	9009089709	RE-S-1800X4-16G-S
CB 0	REV 08	750-040257	CAAB3482	750-040257
CB 1	REV 04	750-040257	ZT2864	750-040257
SFB 0	REV 05	711-044466	ABBT2161	MX2000-SFB-S
SFB 1	REV 05	711-044466	ABBT2159	MX2000-SFB-S
SFB 2	REV 05	711-044466	ABBX3718	MX2000-SFB-S
SFB 4	REV 05	711-044466	ABBT2160	MX2000-SFB-S
SFB 5	REV 05	711-044466	ABBT2145	MX2000-SFB-S
SFB 7	REV 05	711-044466	ABBT2163	MX2000-SFB-S
FPC 0	REV 30	750-028467	ABBN0284	MPC-3D-16XGE-SFPP
FPC 1	REV 30	750-028467	ABBN0308	MPC-3D-16XGE-SFPP
FPC 2	REV 30	750-028467	ABBN0316	MPC-3D-16XGE-SFPP
FPC 3	REV 32	750-028467	ABBN6832	MPC-3D-16XGE-SFPP
FPC 4	REV 32	750-028467	ABBN6811	MPC-3D-16XGE-SFPP
FPC 5	REV 32	750-028467	ABBN6791	MPC-3D-16XGE-SFPP
FPC 6	REV 30	750-028467	ABBM4592	MPC-3D-16XGE-SFPP
FPC 7	REV 32	750-028467	ABBN6810	MPC-3D-16XGE-SFPP
FPC 8	REV 30	750-028467	ABBM4739	MPC-3D-16XGE-SFPP
FPC 9	REV 32	750-028467	ABBN6827	MPC-3D-16XGE-SFPP
FPC 10	REV 30	750-028467	ABBN0302	MPC-3D-16XGE-SFPP
FPC 11	REV 32	750-028467	ABBN6790	MPC-3D-16XGE-SFPP
FPC 12	REV 30	750-028467	ZM5111	MPC-3D-16XGE-SFPP
FPC 13	REV 30	750-028467	ABBN0208	MPC-3D-16XGE-SFPP
FPC 14	REV 23	750-028467	YN2977	MPC-3D-16XGE-SFPP
FPC 15	REV 32	750-028467	ABBN6798	MPC-3D-16XGE-SFPP
FPC 16	REV 30	750-028467	ABBN0270	MPC-3D-16XGE-SFPP
FPC 17	REV 32	750-028467	ABBN6796	MPC-3D-16XGE-SFPP
FPC 18	REV 30	750-028467	ABBN0281	MPC-3D-16XGE-SFPP
FPC 19	REV 32	750-028467	ABBN6813	MPC-3D-16XGE-SFPP
ADC 0	REV 13	750-043596	ABBX5561	PROTO-ASSEMBLY
ADC 1	REV 13	750-043596	ABBX5546	PROTO-ASSEMBLY
ADC 2	REV 13	750-043596	ABBX5535	MX2000-LC-ADAPTER
ADC 3	REV 13	750-043596	ABBX5552	MX2000-LC-ADAPTER
ADC 4	REV 13	750-043596	ABBX5581	MX2000-LC-ADAPTER
ADC 5	REV 13	750-043596	ABBX5545	PROTO-ASSEMBLY
ADC 6	REV 13	750-043596	ABBX5554	PROTO-ASSEMBLY
ADC 7	REV 07	750-043596	ABBV7194	MX2000-LC-ADAPTER
ADC 8	REV 07	750-043596	ABBV7251	MX2000-LC-ADAPTER
ADC 9	REV 07	750-043596	ABBV7202	MX2000-LC-ADAPTER
ADC 10	REV 13	750-043596	ABBX5579	MX2000-LC-ADAPTER
ADC 12	REV 13	750-043596	ABBX5575	MX2000-LC-ADAPTER
ADC 13	REV 13	750-043596	ABBX5539	PROTO-ASSEMBLY
ADC 14	REV 13	750-043596	ABBX5555	PROTO-ASSEMBLY
ADC 15	REV 13	750-043596	ABBX5557	MX2000-LC-ADAPTER
ADC 16	REV 13	750-043596	ABBX5536	PROTO-ASSEMBLY

ADC 17	REV 13	750-043596	ABBX5559	PROTO-ASSEMBLY
ADC 18	REV 13	750-043596	ABBX5537	PROTO-ASSEMBLY
ADC 19	REV 11	750-043596	ABBW5685	PROTO-ASSEMBLY
Fan Tray 0	REV 04	760-046960	ACAY0090	
Fan Tray 1	REV 04	760-046960	ACAY0088	
Fan Tray 2	REV 04	760-046960	ACAY0089	
Fan Tray 3	REV 04	760-046960	ACAY0108	

### show chassis hardware clei-models (MX2020 Router)

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

Hardware inventory:

Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 27	750-040240	PROTOXCLEI	750-040240
FPM Board	REV 06	760-040242	PROTOXCLEI	760-040242
PSM 0	REV 01	740-045050	IPUPAJMKAA	MX2000-PSM-HC-DC-S-A
PSM 1	REV 01	740-045050	IPUPAJMKAA	MX2000-PSM-HC-DC-S-A
PSM 2	REV 01	740-045050	IPUPAJMKAA	MX2000-PSM-HC-DC-S-A
PSM 3	REV 01	740-045050	IPUPAJMKAA	MX2000-PSM-HC-DC-S-A
PSM 4	REV 01	740-045050	IPUPAJMKAA	MX2000-PSM-HC-DC-S-A
PSM 5	REV 01	740-045050	IPUPAJMKAA	MX2000-PSM-HC-DC-S-A
PSM 6	REV 01	740-045050	IPUPAJMKAA	MX2000-PSM-HC-DC-S-A
PSM 7	REV 01	740-045050	IPUPAJMKAA	MX2000-PSM-HC-DC-S-A
PSM 8	REV 01	740-045050	IPUPAJMKAA	MX2000-PSM-HC-DC-S-A
PSM 9	REV 03	740-045050	IPUPAJMKAA	MX2000-PSM-DC-S-A
PSM 10	REV 03	740-045050	IPUPAJMKAA	MX2000-PSM-DC-S-A
PSM 11	REV 03	740-045050	IPUPAJMKAA	MX2000-PSM-DC-S-A
PSM 12	REV 03	740-045050	IPUPAJMKAA	MX2000-PSM-DC-S-A
PSM 13	REV 03	740-045050	IPUPAJMKAA	MX2000-PSM-DC-S-A
PSM 15	REV 03	740-045050	IPUPAJMKAA	MX2000-PSM-DC-S-A
PDM 0	REV 01	740-045234		
PDM 1	REV 01	740-045234		
PDM 2	REV 01	740-045234	IPUPAJSKAA	MX2000-PDM-DC-S-A
Routing Engine 0	REV 02	740-041821		RE-S-1800X4-16G-S
Routing Engine 1	REV 02	740-041821		RE-S-1800X4-16G-S
CB 0	REV 08	750-040257	PROTOXCLEI	750-040257
CB 1	REV 04	750-040257	PROTOXCLEI	750-040257
SFB 0	REV 05	711-044466	IPUCBA6CAA	MX2000-SFB-S
SFB 1	REV 05	711-044466	IPUCBA6CAA	MX2000-SFB-S
SFB 2	REV 05	711-044466	IPUCBA6CAA	MX2000-SFB-S
SFB 4	REV 05	711-044466	IPUCBA6CAA	MX2000-SFB-S
SFB 5	REV 05	711-044466	IPUCBA6CAA	MX2000-SFB-S
SFB 7	REV 05	711-044466	IPUCBA6CAA	MX2000-SFB-S
FPC 0	REV 30	750-028467		MPC-3D-16XGE-SFPP
FPC 1	REV 30	750-028467		MPC-3D-16XGE-SFPP
FPC 2	REV 30	750-028467		MPC-3D-16XGE-SFPP
FPC 3	REV 32	750-028467		MPC-3D-16XGE-SFPP
FPC 4	REV 32	750-028467		MPC-3D-16XGE-SFPP
FPC 5	REV 32	750-028467		MPC-3D-16XGE-SFPP
FPC 6	REV 30	750-028467		MPC-3D-16XGE-SFPP
FPC 7	REV 32	750-028467		MPC-3D-16XGE-SFPP
FPC 8	REV 30	750-028467		MPC-3D-16XGE-SFPP
FPC 9	REV 32	750-028467		MPC-3D-16XGE-SFPP
FPC 10	REV 30	750-028467		MPC-3D-16XGE-SFPP
FPC 11	REV 32	750-028467		MPC-3D-16XGE-SFPP
FPC 12	REV 30	750-028467		MPC-3D-16XGE-SFPP
FPC 13	REV 30	750-028467		MPC-3D-16XGE-SFPP
FPC 14	REV 23	750-028467		MPC-3D-16XGE-SFPP
FPC 15	REV 32	750-028467		MPC-3D-16XGE-SFPP
FPC 16	REV 30	750-028467		MPC-3D-16XGE-SFPP
FPC 17	REV 32	750-028467		MPC-3D-16XGE-SFPP

FPC 18	REV 30	750-028467		MPC-3D-16XGE-SFPP
FPC 19	REV 32	750-028467		MPC-3D-16XGE-SFPP
ADC 0	REV 13	750-043596	PROTOXCLEI	PROTO-ASSEMBLY
ADC 1	REV 13	750-043596	PROTOXCLEI	PROTO-ASSEMBLY
ADC 2	REV 13	750-043596	IPUCBA8CAA	MX2000-LC-ADAPTER
ADC 3	REV 13	750-043596	IPUCBA8CAA	MX2000-LC-ADAPTER
ADC 4	REV 13	750-043596	IPUCBA8CAA	MX2000-LC-ADAPTER
ADC 5	REV 13	750-043596	PROTOXCLEI	PROTO-ASSEMBLY
ADC 6	REV 13	750-043596	PROTOXCLEI	PROTO-ASSEMBLY
ADC 7	REV 07	750-043596	PROTOXCLEI	MX2000-LC-ADAPTER
ADC 8	REV 07	750-043596	PROTOXCLEI	MX2000-LC-ADAPTER
ADC 9	REV 07	750-043596	PROTOXCLEI	MX2000-LC-ADAPTER
ADC 10	REV 13	750-043596	IPUCBA8CAA	MX2000-LC-ADAPTER
ADC 12	REV 13	750-043596	IPUCBA8CAA	MX2000-LC-ADAPTER
ADC 13	REV 13	750-043596	PROTOXCLEI	PROTO-ASSEMBLY
ADC 14	REV 13	750-043596	PROTOXCLEI	PROTO-ASSEMBLY
ADC 15	REV 13	750-043596	IPUCBA8CAA	MX2000-LC-ADAPTER
ADC 16	REV 13	750-043596	PROTOXCLEI	PROTO-ASSEMBLY
ADC 17	REV 13	750-043596	PROTOXCLEI	PROTO-ASSEMBLY
ADC 18	REV 13	750-043596	PROTOXCLEI	PROTO-ASSEMBLY
ADC 19	REV 11	750-043596	PROTOXCLEI	PROTO-ASSEMBLY
Fan Tray 0	REV 04	760-046960		
Fan Tray 1	REV 04	760-046960		
Fan Tray 2	REV 04	760-046960		
Fan Tray 3	REV 04	760-046960		

## show chassis hardware (MX Series routers with ATM MIC)

user@host&gt; show chassis hardware

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN115736EAF	MX240
Midplane	REV 07	760-021404	ABAA5038	MX240 Backplane
FPM Board	REV 03	760-021392	ABBA2758	Front Panel Display
PEM 0	Rev 01	740-022697	QCS0937C07K	PS 1.2-1.7kW; 100-240V
AC in				
PEM 1	Rev 01	740-022697	QCS0939C04X	PS 1.2-1.7kW; 100-240V
AC in				
PEM 2	Rev 01	740-022697	QCS0937C06B	PS 1.2-1.7kW; 100-240V
AC in				
PEM 3	Rev 01	740-022697	QCS0937C07U	PS 1.2-1.7kW; 100-240V
AC in				
Routing Engine 0	REV 12	740-013063	9009042291	RE-S-2000
Routing Engine 1	REV 12	740-013063	9009042266	RE-S-2000
CB 0	REV 06	710-021523	ABBC1435	MX SCB
CB 1	REV 06	710-021523	ABBC1497	MX SCB
FPC 2	REV 14	750-031088	YH8446	MPC Type 2 3D Q
CPU	REV 06	711-030884	YH9612	MPC PMB 2G
MIC 0				
MIC 1	REV 10	750-036132	ZP7062	2x0C12/8x0C3 CC-CE
PIC 2		BUILTIN	BUILTIN	2x0C12/8x0C3 CC-CE
Xcvr 0		NON-JNPR	23393-00492	UNKNOWN
Xcvr 1		NON-JNPR	23393-00500	UNKNOWN
Xcvr 2		NON-JNPR	23393-00912	UNKNOWN
Xcvr 3	REV 01	740-015638	22216-00575	Load SFP
Xcvr 4	REV 01	740-015638	24145-00110	Load SFP
Xcvr 5	REV 01	740-015638	24145-00016	Load SFP
Xcvr 6	REV 01	740-015638	24145-00175	Load SFP
Xcvr 7		NON-JNPR	23393-00627	UNKNOWN
QXM 0	REV 05	711-028408	YF4681	MPC QXM

QXM 1	REV 05	711-028408	YF4817	MPC QXM
Fan Tray 0	REV 01	710-021113	XL3645	MX240 Fan Tray

### show chassis hardware (MX240, MX480, MX960 routers with Application Services Modular Line Card)

```

user@host>show chassis hardware
Hardware inventory:
Item              Version  Part number  Serial number  Description
Chassis                               JN11D969BAFA  MX960
Midplane          REV 03   710-013698   ACAA2362      MX960 Backplane
FPM Board         REV 03   710-014974   ZR0639        Front Panel Display
PDM              Rev 03   740-013110   QCS152250SX   Power Distribution Module
PEM 0            Rev 10   740-013683   QCS1512718W   DC Power Entry Module
PEM 1            Rev 10   740-013683   QCS1512702Y   DC Power Entry Module
Routing Engine 0 REV 15   740-013063   9012024667    RE-S-2000
Routing Engine 1 REV 15   740-013063   9012024649    RE-S-2000
CB 0             REV 14   750-031391   ZJ7749        Enhanced MX SCB
CB 1             REV 14   750-031391   ZJ7750        Enhanced MX SCB
CB 2             REV 14   750-031391   ZY9233        Enhanced MX SCB
FPC 0            REV 17   750-031089   YR7434        MPC Type 2 3D
  CPU
FPC 1            REV 11   750-037207   ZW9727        AS-MCC
  CPU            REV 04   711-038173   ZW4817        AS-MCC-PMB
  MIC 0          REV 01   750-037214   ZH3764        AS-MSC
    PIC 0        BUILTIN  BUILTIN      AS-MSC
  MIC 1          REV 01   711-028408   JZ9200        AS-MXC
    PIC 2        BUILTIN  BUILTIN      AS-MXC
FPC 4            REV 30   750-028467   ABBN0232      MPC 3D 16x 10GE
  CPU
FPC 5            REV 04   750-037207   ZK9074        AS-MCC
  CPU
Fan Tray 0       REV 05   740-014971   VT5683        Fan Tray
Fan Tray 1       REV 05   740-014971   VT5684        Fan Tray

```

### show chassis hardware extensive (MX240, MX480, MX960 routers with Application Services Modular Line Card)

```

user@host> show chassis hardware extensive

ID: AS-MCC                                FRU Model Number: 750-037207
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 0b 37 01 0b 52 45 56 20 31 31 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 33 37 32 30 37 00 00
Address 0x20: 53 2f 4e 20 5a 57 39 37 32 37 00 00 00 11 02 07
Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 50 52 4f 54 4f 58 43 4c 45 49 37
Address 0x50: 35 30 2d 30 33 37 32 30 37 00 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 31 31 00 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 5e ff ff ff ff ff ff ff ff ff ff ff ff
CPU              REV 04   711-038173   ZW4817        AS-MCC-PMB
Jedec Code:     0x7fb0          EEPROM Version: 0x02
P/N:            711-038173      S/N:          S/N ZW4817
Assembly ID:    0x0b38          Assembly Version: 01.04
Date:          12-30-2011      Assembly Flags: 0x00
Version:        REV 04
ID: AS-MCC-PMB
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 0b 38 01 04 52 45 56 20 30 34 00 00

```

```

Address 0x10: 00 00 00 00 37 31 31 2d 30 33 38 31 37 33 00 00
Address 0x20: 53 2f 4e 20 5a 57 34 38 31 37 00 00 00 1e 0c 07
Address 0x30: db ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 00 50 52 4f 54 4f 58 43 4c 45 49 37
Address 0x50: 31 31 2d 30 33 38 31 37 33 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 30 34 00 ff ff ff ff ff ff
Address 0x70: ff ff ff 60 00 00 00 00 00 00 00 00 00 00 00
MIC 0          REV 01    750-037214    ZH3764          AS-MS
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           750-037214      S/N:              S/N ZH3764
Assembly ID:   0x0a44          Assembly Version: 01.01
Date:          07-04-2011      Assembly Flags:   0x00
Version:       REV 01
ID: AS-MS
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff I2C Hex Data:
Address 0x00: 7f b0 02 ff 0a 44 01 01 52 45 56 20 30 31 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 33 37 32 31 34 00 00
Address 0x20: 53 2f 4e 20 5a 48 33 37 36 34 00 00 00 04 07 07
Address 0x30: db ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 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 ff ff ff ff ff ff ff
Address 0x70: ff ff ff f6 c0 03 e1 bc 00 00 00 00 00 00 00 00
PIC 0          BUILTIN      BUILTIN          AS-MS
FPC 4          REV 30    750-028467    ABBN0232          MPC 3D 16x 10GE
Jedec Code:    0x7fb0          EEPROM Version:    0x01

```

#### show chassis hardware (MX480 Router with MPC4E)

```

user@host> show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               JN10FF57BAFB  MX480
Midplane      REV 05    750-047849    Good           MX480 Midplane
FPM Board     REV 02    710-017254    KG2066         Front Panel Display
PEM 0         Rev 03    740-017330    QCS081590BJ    PS 1.2-1.7kW; 100-240V
AC in
PEM 1         Rev 03    740-017330    QCS0815908Z    PS 1.2-1.7kW; 100-240V
AC in
PEM 2         Rev 03    740-029970    QCS1001U001    PS 1.4-2.52kW; 90-264V
AC in
Routing Engine 0 REV 05    740-031116    9009089502     RE-S-1800x4
Routing Engine 1 REV 05    740-031116    9009089624     RE-S-1800x4
CB 0          REV 02    750-031391    YE8506         Enhanced MX SCB
CB 1          REV 14    750-031391    ZK8265         Enhanced MX SCB
FPC 2         REV 05    750-037358    ZT0638         MPC4E 3D 32XGE
CPU           REV 07    711-035209    ZK3187         H MPC PMB 2G
PIC 0         BUILTIN      BUILTIN        8X10GE SFPP
PIC 1         BUILTIN      BUILTIN        8X10GE SFPP
PIC 2         BUILTIN      BUILTIN        8X10GE SFPP
PIC 3         BUILTIN      BUILTIN        8X10GE SFPP
FPC 3         REV 06    750-037355    CAAB1144       MPC4E 3D 2CGE+8XGE
CPU           REV 08    711-035209    CAAB1278       H MPC PMB 2G
PIC 0         BUILTIN      BUILTIN        4x10GE SFPP
Xcvr 0        REV 01    740-031980    B11E01439     SFP+-10G-SR
Xcvr 1        REV 01    740-031980    B11D05809     SFP+-10G-SR
PIC 1         BUILTIN      BUILTIN        1X100GE CFP
Xcvr 0        NON-JNPR     D5418          UNKNOWN
PIC 2         BUILTIN      BUILTIN        4x10GE SFPP
PIC 3         BUILTIN      BUILTIN        1X100GE CFP

```



```

Xcvr 0          NON-JNPR      X12J00362      CFP-100G-SR10
FPC 4           REV 12.3.10 750-033205 YR9445      MPC Type 3 3D
CPU
Fan Tray                               Enhanced Left Fan Tray

```

### show chassis hardware (MX2020 Router with MPC4E)

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

```
Hardware inventory:
```

Item	Version	Part number	Serial number	Description
Chassis			JN11E188CAFJ	MX2020
Midplane	REV 04	711-032387	ABAC7474	Lower Backplane
Midplane 1	REV 04	711-032386	ABAC7408	Upper Backplane
PMP 1	REV 03	711-032428	ACAJ1137	Upper Power Midplane
PMP 0	REV 03	711-032426	ACAJ1016	Lower Power Midplane
FPM Board	REV 06	760-040242	ABBT8832	Front Panel Display
PSM 3	REV 0C	740-033727	VK00255	DC 52V Power Supply
Module				
PSM 4	REV 0C	740-033727	VJ00148	DC 52V Power Supply
Module				
PSM 5	REV 0C	740-033727	VK00207	DC 52V Power Supply
Module				
PSM 6	REV 0C	740-033727	VK00319	DC 52V Power Supply
Module				
PSM 7	REV 0C	740-033727	VK00264	DC 52V Power Supply
Module				
PSM 8	REV 0B	740-033727	VG00025	DC 52V Power Supply
Module				
PSM 13	REV 0C	740-033727	VK00274	DC 52V Power Supply
Module				
PSM 14	REV 0C	740-033727	VJ00167	DC 52V Power Supply
Module				
PSM 15	REV 0C	740-033727	VK00299	DC 52V Power Supply
Module				
PSM 16	REV 0C	740-033727	VK00213	DC 52V Power Supply
Module				
PSM 17	REV 0C	740-033727	VK00253	DC 52V Power Supply
Module				
PDM 0	REV 0B	740-038109	VJ00040	DC Power Dist Module
PDM 2	REV 0B	740-038109	VJ00025	DC Power Dist Module
Routing Engine 0	REV 02	740-041821	9009089735	RE-S-1800x4
Routing Engine 1	REV 02	740-041821	9009089731	RE-S-1800x4
CB 0	REV 04	750-040257	ZT2846	Control Board
CB 1	REV 04	750-040257	ZT2877	Control Board
SPMB 0	REV 01	711-041855	ZS2282	PMB Board
SPMB 1	REV 01	711-041855	ZS2261	PMB Board
SFB 0	REV 07	711-032385	ZZ2582	Switch Fabric Board
SFB 1	REV 04	711-032385	ZV4229	Switch Fabric Board
SFB 2	REV 07	711-032385	CAAB4902	Switch Fabric Board
SFB 3	REV 07	711-032385	CAAB4891	Switch Fabric Board
SFB 4	REV 07	711-032385	CAAB4883	Switch Fabric Board
SFB 5	REV 07	711-032385	CAAB4889	Switch Fabric Board
SFB 6	REV 06	711-032385	ZV1818	Switch Fabric Board
SFB 7	REV 07	711-032385	CAAB4897	Switch Fabric Board
FPC 0	REV 34	750-031090	ZT9799	MPC Type 2 3D EQ
CPU	REV 06	711-030884	ZS1122	MPC PMB 2G
MIC 0	REV 11	750-033535	CAAD7674	MIC-3D-10C192-XFP
PIC 0		BUILTIN	BUILTIN	MIC-3D-10C192-XFP
Xcvr 0	REV 01	740-014279	753019A00404	XFP-0C192-SR
MIC 1	REV 14	750-031967	ZM6103	MIC-3D-80C30C12-40C48
PIC 2		BUILTIN	BUILTIN	MIC-3D-80C30C12-40C48

Xcvr 0	REV 01	740-011615	PEF1AZP	SFP-IR
Xcvr 1	REV 01	740-011615	PEF1AZN	SFP-IR
Xcvr 2	REV 01	740-021308	ANA0N8S	SFP+-10G-SR
QXM 0	REV 06	711-028408	ZT9339	MPC QXM
QXM 1	REV 06	711-028408	ZT9237	MPC QXM
FPC 9	REV 34	750-031090	ZT9770	MPC Type 2 3D EQ
CPU	REV 06	711-030884	ZS1302	MPC PMB 2G
MIC 0	REV 24	750-028387	YJ3950	3D 4x 10GE XFP
PIC 0		BUILTIN	BUILTIN	2x 10GE XFP
Xcvr 0		NON-JNPR	T09M52516	XFP-10G-SR
Xcvr 1		NON-JNPR	CA49BK095	XFP-10G-SR
PIC 1		BUILTIN	BUILTIN	2x 10GE XFP
Xcvr 0	REV 02	740-014289	C834XU01T	XFP-10G-SR
Xcvr 1		NON-JNPR	T09M52515	XFP-10G-SR
MIC 1	REV 11	750-033535	CAAD7681	MIC-3D-10C192-XFP
PIC 2		BUILTIN	BUILTIN	MIC-3D-10C192-XFP
Xcvr 0	REV 01	740-014279	KBQ02BE	XFP-OC192-SR
QXM 0	REV 06	711-028408	ZT9151	MPC QXM
QXM 1	REV 06	711-028408	ZT9116	MPC QXM
FPC 10	REV 27	750-033205	ZL6215	MPCE Type 3 3D
CPU	REV 07	711-035209	ZK9038	HMPC PMB 2G
MIC 0	REV 18	750-028380	YG6885	3D 2x 10GE XFP
PIC 0		BUILTIN	BUILTIN	1x 10GE XFP
Xcvr 0	REV 01	740-014289	C706XU0AG	XFP-10G-SR
PIC 1		BUILTIN	BUILTIN	1x 10GE XFP
Xcvr 0	REV 02	740-014289	T08L84366	XFP-10G-SR
FPC 14	REV 09	750-037355	CAAF1534	MPC4E 3D 2CGE+8XGE
CPU	REV 08	711-035209	CAAB9879	HMPC PMB 2G
PIC 0		BUILTIN	BUILTIN	4x10GE SFPP
Xcvr 0	REV 01	740-021308	21T511100436	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AHPOGPM	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	123363A00032	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	19T511100477	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0		NON-JNPR	X12J00260	CFP-100G-SR10
PIC 2		BUILTIN	BUILTIN	4x10GE SFPP
Xcvr 0	REV 01	740-021308	21T511104086	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	21T511104627	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	21T511104644	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	1X100GE CFP
FPC 19	REV 32	750-028467	ZR2008	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ZT6933	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	19T511100291	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AMH02VE	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	23T511102128	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	AMS15PP	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	123363A00716	SFP+-10G-SR
ADC 0	REV 05	750-043596	CAAC2072	Adapter Card
ADC 9	REV 01	750-043596	ZV4111	Adapter Card
ADC 10	REV 05	750-043596	CAAC2058	Adapter Card
ADC 14	REV 02	750-043596	ZW1561	Adapter Card
ADC 19	REV 01	750-043596	ZV4127	Adapter Card
Fan Tray 0	REV 03	760-046960	ACAY0124	172mm FanTray - 6 Fans
Fan Tray 1	REV 2A	760-046960	ACAY0022	172mm FanTray - 6 Fans

Fan Tray 2	REV 2A	760-046960	ACAY0023	172mm FanTray - 6 Fans
Fan Tray 3	REV 2A	760-046960	ACAY0025	172mm FanTray - 6 Fans

### 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
CB 0               REV 13   710-002728   BC1577        unknown
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
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
...				

### show chassis hardware (T640 Router)

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

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
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
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
Address 0x10: 00 00 00 00 37 31 30 2d 30 30 32 37 32 36 00 00
Address 0x20: 53 2f 4e 20 41 58 35 36 33 33 00 00 00 1b 06 07
Address 0x30: d1 ff ff ff ad 01 08 00 00 90 69 0e f8 00 ff ff
Address 0x40: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
FPM GBUS          REV 02      710-002901  HE3245
...
FPM Display       REV 02      710-002897  HA4873
...
CIP               REV 05      710-002895  HA4729
...
PEM 1             RevX02     740-002595  MD21815      Power Entry Module
...
SCG 0             REV 04      710-003423  HF6023
...
SCG 1             REV 04      710-003423  HF6061
...
Routing Engine 0 REV 01      740-005022  210865700292 RE-3.0

```

```

...
CB 0          REV 06  710-002728  HE3614
...
FPC 1          REV 01  710-002385  HE3009          FPC Type 1
...
              REV 06  710-001726  HC0010

```

### show chassis hardware (T4000 Router)

```

user@host> show chassis hardware
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
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
    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

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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 (T4000 Router with 16 GB line card chassis (LCC) Routing Engine)

```
user@host> show chassis hardware
Hardware inventory:
Item              Version  Part number  Serial number  Description
Chassis           REV 01   710-027486   JN11BDF2CAHA   T1600
Midplane          REV 01   710-027486   ACAJ0774       T640 Backplane
FPM GBUS          REV 13   710-002901   BBAL6812       T640 FPM Board
FPM Display       REV 04   710-021387   BBAP2679       T1600 FPM Display
CIP               REV 06   710-002895   BBAP4758       T-series CIP
PEM 0             Rev 03   740-026384   XF86421        Power Entry Module 3x80
PEM 1             Rev 03   740-026384   XF86429        Power Entry Module 3x80
SCG 0             REV 18   710-003423   BBAP1896       T640 Sonet Clock Gen.
SCG 1             REV 18   710-003423   BBAN8659       T640 Sonet Clock Gen.
Routing Engine 0  REV 01   740-042243   737F-002238    RE-DUO-1800-16G
Routing Engine 1  REV 01   740-042243   737F-002403    RE-DUO-1800-16G
CB 1              REV 11   710-022597   EK4526         LCC Control Board
CB 1              REV 11   710-022597   EK4527         LCC Control Board
FPC 0             REV 05   710-033871   EK5644         FPC Type 4-ES
CPU               REV 11   710-016744   EK3428         ST-PMB2
PIC 0             REV 20   750-017405   EJ3041         4x 10GE (LAN/WAN) XFP
PIC 1             REV 17   750-026962   EH7536         10x10GE(LAN/WAN) SFPP
MMB 0             REV 07   710-025563   EK6039         ST-MMB2
MMB 1             REV 07   710-025563   EK6086         ST-MMB2
FPC 1             REV 05   710-033871   EK6583         FPC Type 4-ES
CPU               REV 11   710-016744   EK3401         ST-PMB2
PIC 0             REV 17   750-026962   EJ8948         10x10GE(LAN/WAN) SFPP
MMB 0             REV 07   710-025563   EK6202         ST-MMB2
MMB 1             REV 07   710-025563   EK6112         ST-MMB2
SPMB 1            REV 05   710-023321   EK4900         LCC Switch CPU
SIB 0             REV 11   710-013074   EK5958         SIB-I8-SF
SIB 1             REV 11   710-013074   EK4606         SIB-I8-SF
SIB 2             REV 11   710-013074   EK5971         SIB-I8-SF
SIB 3             REV 11   710-013074   EK4609         SIB-I8-SF
SIB 4             REV 11   710-013074   EK4602         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
```

### show chassis hardware (T4000 Router with LSR FPC)

```
user@switch> show chassis hardware
Hardware inventory:
Item              Version  Part number  Serial number  Description
Chassis           REV 01   710-027486   JN1173A24AHA   T4000
FPC 3             REV 01   750-048373   AN7797         FPC Type 5-LSR
CPU               REV 10   711-030686   AN6649         SNG PMB
PIC 0             REV 07   750-034624   EF6830         12x10GE (LAN/WAN) SFPP
```

### 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   710-021387     CRAFT-T1600-S
CIP               REV 06   710-002895   710-002895     CIP-L-T640-S
PEM 0             REV 01   740-036442   IPUPAG6KAA     PWR-T-6-60-DC
SCG 0             REV 18   710-003423   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)

```
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
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 lcc (TX Matrix Router)

```
user@host> show chassis hardware lcc 0
```

```
lcc0-re0:
```

```
-----
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis
Midplane      REV 03    710-005608   RA1408         T640 Backplane
FPM GBUS      REV 09    710-002901   RA2784         T640 FPM Board
FPM Display   REV 05    710-002897   RA2825         FPM Display
CIP           REV 06    710-002895   HT0684         T Series CIP
PEM 0         Rev 11    740-002595   PM18483        Power Entry Module
PEM 1         Rev 11    740-002595   qb13984        Power Entry Module
SCG 0         REV 11    710-003423   HT0022         T640 Sonet Clock Gen.
Routing Engine 0 REV 13    740-005022   210865700363   RE-3.0 (RE-600)
CB 0          REV 03    710-007655   HW1195         Control Board (CB-T)
```

FPC 1	REV 05	710-007527	HM3245	FPC Type 2
CPU	REV 14	710-001726	HM1084	FPC CPU
PIC 0	REV 02	750-007218	AZ1112	2x OC-12 ATM2 IQ, SMIR
PIC 1	REV 02	750-007745	HG3462	4x OC-3 SONET, SMIR
PIC 2	REV 14	750-001901	BA5390	4x OC-12 SONET, SMIR
PIC 3	REV 09	750-008155	HS3012	2x G/E IQ, 1000 BASE
SFP 0		NON-JNPR	P1186TY	SFP-S
SFP 1	REV 01	740-007326	P11WLTf	SFP-SX
MMB 1	REV 02	710-005555	HL7514	MMB-288mbit
PPB 0	REV 04	710-003758	HM4405	PPB Type 2
PPB 1	REV 04	710-003758	AV1960	PPB Type 2
FPC 2	REV 08	710-010154	HZ3578	E-FPC Type 3
CPU	REV 05	710-010169	HZ3219	FPC CPU-Enhanced
PIC 0	REV 02	750-009567	HX2882	1x 10GE(LAN), XENPAK
SFP 0	REV 01	740-009898	USC202U709	XENPAK-LR
PIC 1	REV 03	750-003336	HJ9954	4x OC-48 SONET, SMSR
PIC 2	REV 01	750-004535	HC0235	1x OC-192 SM SR1
PIC 3	REV 07	750-007141	HX1699	10x 1GE(LAN), 1000 BASE
SFP 0	REV 01	740-007326	2441042	SFP-SX
SFP 1	REV 01	740-007326	2441027	SFP-SX
MMB 0	REV 03	710-010171	HV2365	MMB-5M3-288mbit
MMB 1	REV 03	710-010171	HZ3888	MMB-5M3-288mbit
SPMB 0	REV 09	710-003229	HW5245	T Series Switch CPU
SIB 3	REV 07	710-005781	HR5927	SIB-L8-F16
B Board	REV 06	710-005782	HR5971	SIB-L8-F16 (B)
SIB 4	REV 07	710-005781	HR5903	SIB-L8-F16
B Board	REV 06	710-005782	HZ5275	SIB-L8-F16 (B)

#### show chassis hardware scc (TX Matrix Router)

```
user@host> show chassis hardware scc
scc-re0:
```

##### Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis				TX Matrix
Midplane	REV 04	710-004396	RB0014	SCC Midplane
FPM GBUS	REV 04	710-004617	HW9141	SCC FPM Board
FPM Display	REV 04	710-004619	HS5950	SCC FPM
CIP 0	REV 01	710-010218	HV9151	SCC CIP
CIP 1	REV 01	710-010218	HV9152	SCC CIP
PEM 1	Rev 11	740-002595	QB13977	Power Entry Module
Routing Engine 0	REV 05	740-008883	P11123900153	RE-4.0 (RE-1600)
CB 0	REV 01	710-011709	HR5964	Control Board (CB-TX)
SPMB 0	REV 09	710-003229	HW5293	T Series Switch CPU
SIB 3				
SIB 4	REV 01	710-005839	HW1177	SIB-S8-F16
B Board	REV 01	710-005840	HW1202	SIB-S8-F16 (B)

#### show chassis hardware (T1600 Router)

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

##### Hardware inventory:

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	P8P0A3T	SFP-SX
Xcvr 1	REV 01	740-013111	5090002	SFP-T
Xcvr 2	REV 01	740-011613	AM0814S93BQ	SFP-SX
Xcvr 4		NON-JNPR	PDE0FAN	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	P9POXV4	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

### show chassis hardware (TX Matrix Plus Router)

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sfc0-re0:
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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
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

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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

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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  
Fan Tray 2

Front Bottom Fan Tray  
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

Midplane	REV 05	710-022574	TS4027	SFC Midplane
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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
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 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

```

### show chassis hardware clei-models (TX Matrix Plus Router)

```

user@host> show chassis hardware clei-models
sfc0-re0:
-----
Hardware inventory:
Item          Version  Part number  CLEI code      FRU model number
Midplane      REV 05   710-022574
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      IPUPAFGKTA     PWR-TXP-7-60-DC
PEM 1         Rev 04   740-027463      IPUPAFGKTA     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
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

1cc0-re0:

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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:

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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
Fan Tray 0				FANTRAY-T-S
Fan Tray 1				FANTRAY-T-S
Fan Tray 2				FANTRAY-TXP-R-S

## show chassis hardware detail (TX Matrix Plus Router)

user@host&gt; show chassis hardware detail



sfc0-re0:

-----  
Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN111B023AHB	TXP
Midplane	REV 01	710-022574	TR7990	SFC Midplane
FPM Display	REV 03	710-024027	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

lcc0-re0:

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Hardware inventory:

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	yyyyyyyyyyyyyyyyyyyyyyyyyyyyyy
Routing Engine 0	REV 01	740-026942	737A-1064	RE-TXP-SFC-DUO-2600-16G
Routing Engine 1	REV 01	740-026942	737A-1082	RE-TXP-SFC-DUO-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

lcc0-re0:

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Hardware inventory:

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:

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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

## 1cc2-re0:

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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

## 1cc3-re0:

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Hardware inventory:

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 (TX Matrix Plus router with 3D SIBs)

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user@host> show chassis hardware
sfc0-re0:
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Hardware inventory:				
Item	Version	Part number	Serial number	Description
Chassis			JN11CAAA4AHB	TXP
Midplane	REV 05	710-022574	ABAC4696	SFC Midplane
FPM Display	REV 09	710-024027	EH3138	TXP FPM Display
CIP 0	REV 12	710-023792	EF6349	TXP CIP
CIP 1	REV 12	710-023792	EG5294	TXP CIP
PEM 0	Rev 06	740-027463	XH04595	Power Entry Module
PEM 1	Rev 06	740-027463	XH04592	Power Entry Module
Routing Engine 0	REV 07	740-026942	P737A-002541	RE-DUO-2600
Routing Engine 1	REV 07	740-026942	P737A-002602	RE-DUO-2600
CB 0	REV 15	710-022606	EH4376	SFC Control Board
CB 1	REV 15	710-022606	EH4379	SFC Control Board
SPMB 0		BUILTIN		SFC Switch CPU
SPMB 1		BUILTIN		SFC Switch CPU
SIB F13 0	REV 10	750-035002	EM9305	F13 SIB 3D
B Board	REV 06	711-035082	EM9667	F13 SIB 3D Mezz
P Board	REV 05	711-043544	EM9708	F13 SIB 3D Power
Xcvr 0	REV 01	740-047547	XB34FB00S	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB01H	CXP Module
Xcvr 4	REV 01	740-047547	XB34FB02W	CXP Module
Xcvr 6	REV 01	740-047547	XB34FB01T	CXP Module

Xcvr 8	REV 01	740-047547	XB48FB00W	CXP Module
Xcvr 10	REV 01	740-047547	XB34FB01S	CXP Module
Xcvr 12	REV 01	740-047547	XB34FB03H	CXP Module
Xcvr 14	REV 01	740-047547	XB34FB023	CXP Module
SIB F13 3	REV 01	710-035001	EJ2612	F13 SIB 3D
B Board	REV 01	711-035082	EJ3815	F13 SIB 3D Mezz
P Board	REV 01	711-043544	EJ2678	F13 SIB 3D Power
Xcvr 0	REV 01	740-047547	XB48FB04C	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB00Z	CXP Module
Xcvr 4	REV 01	740-047547	XB47FB036	CXP Module
Xcvr 6	REV 01	740-047547	XB47FB029	CXP Module
Xcvr 8	REV 01	740-047547	XB48FB02N	CXP Module
Xcvr 10	REV 01	740-047547	XB42FB0CS	CXP Module
Xcvr 12	REV 01	740-047547	XB47FB01X	CXP Module
Xcvr 14	REV 01	740-047547	XB48FB02F	CXP Module
SIB F13 6	REV 05	750-035002	EK2675	F13 SIB 3D
B Board	REV 03	711-035082	EK2612	F13 SIB 3D Mezz
P Board	REV 04	711-043544	EK1179	F13 SIB 3D Power
Xcvr 0	REV 01	740-047547	XB48FB01T	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB02M	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB031	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB04P	CXP Module
Xcvr 8	REV 01	740-047547	XB48FB02T	CXP Module
Xcvr 10	REV 01	740-047547	XB34FB01V	CXP Module
Xcvr 12	REV 01	740-047547	XB48FB02C	CXP Module
Xcvr 14		NON-JNPR		No Module
SIB F13 12	REV 01	710-035001	EJ2631	F13 SIB 3D
B Board	REV 01	711-035082	EJ3808	F13 SIB 3D Mezz
P Board	REV 01	711-043544	EJ2676	F13 SIB 3D Power
SIB F2S 0/0	REV 01	711-034977	EH9829	F2S SIB 3D
B Board	REV 01	711-034979	EH9927	F2S SIB 3D Mezz
SIB F2S 0/2	REV 01	711-034977	EH9791	F2S SIB 3D
B Board	REV 01	711-034979	EH9852	F2S SIB 3D Mezz
SIB F2S 0/4	REV 01	711-034977	EH9803	F2S SIB 3D
B Board	REV 01	711-034979	EH9915	F2S SIB 3D Mezz
SIB F2S 0/6	REV 01	711-034977	EH9763	F2S SIB 3D
B Board	REV 01	711-034979	EH9880	F2S SIB 3D Mezz
SIB F2S 1/0	REV 01	711-034977	EH9757	F2S SIB 3D
B Board	REV 01	711-034979	EH9889	F2S SIB 3D Mezz
SIB F2S 1/2	REV 01	711-034977	EH9815	F2S SIB 3D
B Board	REV 01	711-034979	EH9890	F2S SIB 3D Mezz
SIB F2S 1/4	REV 08	750-034978	EN1954	F2S SIB 3D
B Board	REV 02	711-034979	EN1436	F2S SIB 3D Mezz
SIB F2S 1/6	REV 01	711-034977	EJ7054	F2S SIB 3D
B Board	REV 01	711-034979	EJ8238	F2S SIB 3D Mezz
SIB F2S 2/0	REV 01	711-034977	EH9830	F2S SIB 3D
B Board	REV 01	711-034979	EH9844	F2S SIB 3D Mezz
SIB F2S 2/2	REV 01	711-034977	EH9818	F2S SIB 3D
B Board	REV 01	711-034979	EH9888	F2S SIB 3D Mezz
SIB F2S 2/4	REV 01	711-034977	EH9795	F2S SIB 3D
B Board	REV 01	711-034979	EH9869	F2S SIB 3D Mezz
SIB F2S 2/6	REV 01	711-034977	EJ7026	F2S SIB 3D
B Board	REV 01	711-034979	EJ8273	F2S SIB 3D Mezz
SIB F2S 3/0	REV 01	711-034977	EH9811	F2S SIB 3D
B Board	REV 01	711-034979	EH9892	F2S SIB 3D Mezz
SIB F2S 3/2	REV 01	711-034977	EH9812	F2S SIB 3D
B Board	REV 01	711-034979	EH9877	F2S SIB 3D Mezz
SIB F2S 3/4	REV 08	750-034978	EN1947	F2S SIB 3D
B Board	REV 02	711-034979	EN1471	F2S SIB 3D Mezz
Fan Tray 0	REV 10	760-024497	EH3313	Front Fan Tray
Fan Tray 1	REV 10	760-024497	EH3290	Front Fan Tray

Fan Tray 2	REV 10	760-024502	EH3292	Rear Fan Tray
Fan Tray 3	REV 10	760-024502	EH3287	Rear Fan Tray
Fan Tray 4	REV 10	760-024502	EH3286	Rear Fan Tray
Fan Tray 5	REV 10	760-024502	EH3285	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			JN11B23FEAHA	T1600
Midplane	REV 01	710-027486	RC9787	T-series Backplane
FPM GBUS	REV 13	710-002901	BBAG5132	T640 FPM Board
FPM Display	REV 04	710-021387	BBAL9612	T1600 FPM Display
CIP	REV 06	710-002895	BBAN0605	T-series CIP
PEM 0	REV 05	740-036442	1G022060143	Power Entry Module 6x60
PEM 1	REV 05	740-036442	1G022060011	Power Entry Module 6x60
SCG 0	REV 18	710-003423	BBAL7318	T640 Sonet Clock Gen.
SCG 1	REV 18	710-003423	BBAL7255	T640 Sonet Clock Gen.
Routing Engine 0	REV 07	740-026941	P737F-002933	RE-DUO-1800
Routing Engine 1	REV 06	740-026941	P737F-002749	RE-DUO-1800
CB 0	REV 11	710-022597	EH3611	LCC Control Board
CB 1	REV 11	710-022597	EH4798	LCC Control Board
FPC 5	REV 17	710-013037	BBAC5333	FPC Type 4-ES
CPU	REV 10	710-016744	BBAB7619	ST-PMB2
PIC 0	REV 18	750-017405	BBAE3420	4x 10GE (LAN/WAN) XFP
Xcvr 0	REV 03	740-014289	T10C90659	XFP-10G-SR
MMB 0	REV 05	710-025563	BBAB9538	ST-MMB2
MMB 1	REV 05	710-025563	BBAB9502	ST-MMB2
FPC 7	REV 01	750-045173	BBAV0032	FPC Type 5-3D
CPU				
SPMB 0	REV 05	710-023321	EG9434	LCC Switch CPU
SPMB 1	REV 05	710-023321	EH3878	LCC Switch CPU
SIB 0	REV 01	750-041657	EH7997	LCC SIB 3D
B Board	REV 01	711-042424	EH7674	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB48FB014	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB05A	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB052	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB01B	CXP Module
SIB 1	REV 01	750-041657	EH8023	LCC SIB 3D
B Board	REV 01	711-042424	EH7659	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB48FB05J	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB01E	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB01J	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB02S	CXP Module
SIB 2	REV 03	750-041657	EJ6554	LCC SIB 3D
B Board	REV 02	711-042424	EJ5756	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB34FB01Z	CXP Module
Xcvr 2	REV 01	740-047547	XB34FB013	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB04Z	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB05N	CXP Module
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray -- Rev 4

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lcc2-re0:
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Hardware inventory:
```

Item	Version	Part number	Serial number	Description
Chassis			JN11B3975AHA	T1600
Midplane	REV 01	710-027486	RC9826	T-series Backplane
FPM GBUS	REV 13	710-002901	BBAG5124	T640 FPM Board

FPM Display	REV 03	710-021387	BBAJ1112	T1600 FPM Display
CIP	REV 06	710-002895	BBAL3744	T-series CIP
PEM 0	REV 05	740-036442	1G022060081	Power Entry Module 6x60
PEM 1	REV 05	740-036442	1G022060188	Power Entry Module 6x60
SCG 0	REV 18	710-003423	BBAH8775	T640 Sonet Clock Gen.
SCG 1	REV 18	710-003423	BBAL7272	T640 Sonet Clock Gen.
Routing Engine 0	REV 07	740-026941	P737F-002992	RE-DUO-1800
Routing Engine 1	REV 07	740-026941	P737F-002938	RE-DUO-1800
CB 0	REV 11	710-022597	EH4805	LCC Control Board
CB 1	REV 11	710-022597	EH4786	LCC Control Board
FPC 1	REV 01	710-033873	BBAH0320	FPC Type 3-ES
CPU	REV 11	710-016744	BBAF3281	ST-PMB2
MMB 0	REV 06	710-025563	BBAF5061	ST-MMB2
FPC 5	REV 04	710-033871	BBAM5070	FPC Type 4-ES
CPU	REV 11	710-016744	BBAM6653	ST-PMB2
PIC 1	REV 20	750-017405	BBAM1296	4x 10GE (LAN/WAN) XFP
Xcvr 0	REV 03	740-014289	T10B42981	XFP-10G-SR
MMB 0	REV 07	710-025563	BBAN2631	ST-MMB2
MMB 1	REV 07	710-025563	BBAN2538	ST-MMB2
SPMB 0	REV 05	710-023321	EH3903	LCC Switch CPU
SPMB 1	REV 05	710-023321	EH3902	LCC Switch CPU
SIB 0	REV 01	750-041657	EH8019	LCC SIB 3D
B Board	REV 01	711-042424	EH7680	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB48FB04F	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB04S	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB04B	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB043	CXP Module
SIB 1	REV 01	750-041657	EH8012	LCC SIB 3D
B Board	REV 01	711-042424	EH7658	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB48FB05E	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB01Z	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB018	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB054	CXP Module
SIB 2	REV 01	750-041657	EH7993	LCC SIB 3D
B Board	REV 01	711-042424	EH7678	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB48FB05C	CXP Module
Xcvr 2	REV 01	740-047547	XB47FB00N	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB05U	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB05L	CXP Module
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray -- Rev 4

### show chassis hardware clei-models (TX Matrix Plus router with 3D SIBs)

```
user@host> show chassis hardware clei-models
sfc0-re0:
```

```
-----
Hardware inventory:
```

Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 05	710-022574		CHAS-BP-TXP-S
FPM Display	REV 09	710-024027		CRAFT-TXP-S
CIP 0	REV 12	710-023792		CIP-TXP-S
CIP 1	REV 12	710-023792		CIP-TXP-S
PEM 0	Rev 06	740-027463	IPUPAFGKTA	PWR-TXP-7-60-DC-S
Routing Engine 0	REV 07	740-026942		RE-DUO-C2600-16G-S
Routing Engine 1	REV 07	740-026942		RE-DUO-C2600-16G-S
CB 0	REV 13	710-022606		CB-TXP-S
CB 1	REV 14	710-022606		CB-TXP-S
SIB F13 0	REV 10	750-035002	PROTOXCLEI	SIB-TXP-3D-F13-S
Xcvr 0	REV 01	740-048813		



Xcvr 1	REV 01	740-048813		
Xcvr 2	REV 01	740-048813		
Xcvr 3	REV 01	740-048813		
Xcvr 4	REV 01	740-048813		
Xcvr 5	REV 01	740-048813		
Xcvr 6	REV 01	740-048813		
Xcvr 7	REV 01	740-048813		
Xcvr 8	REV 01	740-047547		CXP-TXP-3D
Xcvr 10	REV 01	740-047547		CXP-TXP-3D
Xcvr 12	REV 01	740-047547		CXP-TXP-3D
Xcvr 14	REV 01	740-047547		CXP-TXP-3D
SIB F13 1	REV 10	750-035002	PROTOXCLEI	SIB-TXP-3D-F13-S
Xcvr 0	REV 01	740-047547		CXP-TXP-3D
Xcvr 1	REV 01	740-047547		CXP-TXP-3D
Xcvr 2	REV 01	740-047547		CXP-TXP-3D
Xcvr 3	REV 01	740-047547		CXP-TXP-3D
Xcvr 4	REV 01	740-047547		CXP-TXP-3D
Xcvr 5	REV 01	740-047547		CXP-TXP-3D
Xcvr 6	REV 01	740-047547		CXP-TXP-3D
Xcvr 7	REV 01	740-047547		CXP-TXP-3D
Xcvr 8	REV 01	740-047547		CXP-TXP-3D
Xcvr 10	REV 01	740-047547		CXP-TXP-3D
Xcvr 12	REV 01	740-047547		CXP-TXP-3D
Xcvr 14	REV 01	740-047547		CXP-TXP-3D
Xcvr 0	REV 01	740-048813		
Xcvr 1	REV 01	740-048813		
Xcvr 2	REV 01	740-048813		
Xcvr 3	REV 01	740-048813		
Xcvr 4	REV 01	740-048813		
Xcvr 5	REV 01	740-048813		
Xcvr 6	REV 01	740-048813		
Xcvr 7	REV 01	740-048813		
Xcvr 8	REV 01	740-048813		
Xcvr 10	REV 01	740-048813		
Xcvr 12	REV 01	740-048813		
Xcvr 14	REV 01	740-048813		
Xcvr 0	REV 01	740-047547		CXP-TXP-3D
Xcvr 1	REV 01	740-047547		CXP-TXP-3D
Xcvr 2	REV 01	740-047547		CXP-TXP-3D
Xcvr 3	REV 01	740-047547		CXP-TXP-3D
Xcvr 4	REV 01	740-047547		CXP-TXP-3D
Xcvr 5	REV 01	740-047547		CXP-TXP-3D
Xcvr 6	REV 01	740-047547		CXP-TXP-3D
Xcvr 7	REV 01	740-047547		CXP-TXP-3D
Xcvr 8	REV 01	740-047547		CXP-TXP-3D
Xcvr 10	REV 01	740-047547		CXP-TXP-3D
Xcvr 12	REV 01	740-047547		CXP-TXP-3D
Xcvr 14	REV 01	740-047547		CXP-TXP-3D
SIB F13 6	REV 16	750-035002	PROTOXCLEI	SIB-TXP-3D-F13
Xcvr 0	REV 01	740-048813		
Xcvr 1	REV 01	740-048813		
Xcvr 2	REV 01	740-048813		
Xcvr 3	REV 01	740-048813		
Xcvr 4	REV 01	740-048813		
Xcvr 5	REV 01	740-048813		
Xcvr 6	REV 01	740-048813		
Xcvr 7	REV 01	740-048813		
Xcvr 8	REV 01	740-047547		CXP-TXP-3D
Xcvr 10	REV 01	740-047547		CXP-TXP-3D
Xcvr 12	REV 01	740-047547		CXP-TXP-3D
Xcvr 14	REV 01	740-047547		CXP-TXP-3D

SIB F13 7	REV 10	750-035002	PROTOXCLEI	SIB-TXP-3D-F13-S
Xcvr 0	REV 01	740-047547		CXP-TXP-3D
Xcvr 1	REV 01	740-047547		CXP-TXP-3D
Xcvr 2	REV 01	740-047547		CXP-TXP-3D
Xcvr 3	REV 01	740-047547		CXP-TXP-3D
Xcvr 4	REV 01	740-047547		CXP-TXP-3D
Xcvr 5	REV 01	740-047547		CXP-TXP-3D
Xcvr 6	REV 01	740-047547		CXP-TXP-3D
Xcvr 7	REV 01	740-047547		CXP-TXP-3D
Xcvr 8	REV 01	740-047547		CXP-TXP-3D
Xcvr 10	REV 01	740-047547		CXP-TXP-3D
Xcvr 12	REV 01	740-047547		CXP-TXP-3D
Xcvr 14	REV 01	740-047547		CXP-TXP-3D
Xcvr 0	REV 01	740-048813		
Xcvr 1	REV 01	740-048813		
Xcvr 2	REV 01	740-048813		
Xcvr 3	REV 01	740-048813		
Xcvr 4	REV 01	740-048813		
Xcvr 5	REV 01	740-047547		CXP-TXP-3D
Xcvr 6	REV 01	740-047547		CXP-TXP-3D
Xcvr 7	REV 01	740-047547		CXP-TXP-3D
Xcvr 8	REV 01	740-047547		CXP-TXP-3D
Xcvr 10	REV 01	740-047547		CXP-TXP-3D
Xcvr 12	REV 01	740-047547		CXP-TXP-3D
Xcvr 14	REV 01	740-047547		CXP-TXP-3D
SIB F13 9	REV 16	750-035002	PROTOXCLEI	SIB-TXP-3D-F13
Xcvr 0	REV 01	740-047547		CXP-TXP-3D
Xcvr 1	REV 01	740-047547		CXP-TXP-3D
Xcvr 2	REV 01	740-047547		CXP-TXP-3D
Xcvr 3	REV 01	740-047547		CXP-TXP-3D
Xcvr 4	REV 01	740-047547		CXP-TXP-3D
Xcvr 5	REV 01	740-047547		CXP-TXP-3D
Xcvr 6	REV 01	740-047547		CXP-TXP-3D
Xcvr 7	REV 01	740-047547		CXP-TXP-3D
Xcvr 8	REV 01	740-047547		CXP-TXP-3D
Xcvr 10	REV 01	740-047547		CXP-TXP-3D
Xcvr 12	REV 01	740-047547		CXP-TXP-3D
Xcvr 14	REV 01	740-047547		CXP-TXP-3D
SIB F13 11	REV 10	750-035002	PROTOXCLEI	750-035002
Xcvr 0	REV 01	740-048813		
Xcvr 1	REV 01	740-048813		
Xcvr 2	REV 01	740-048813		
Xcvr 3	REV 01	740-048813		
Xcvr 4	REV 01	740-048813		
Xcvr 5	REV 01	740-048813		
Xcvr 6	REV 01	740-047547		CXP-TXP-3D
Xcvr 7	REV 01	740-048813		
Xcvr 8	REV 01	740-047547		CXP-TXP-3D
Xcvr 12	REV 01	740-047547		CXP-TXP-3D
Xcvr 14	REV 01	740-047547		CXP-TXP-3D
SIB F13 12	REV 16	750-035002	PROTOXCLEI	SIB-TXP-3D-F13
Xcvr 0	REV 01	740-047547		CXP-TXP-3D
Xcvr 1	REV 01	740-047547		CXP-TXP-3D
Xcvr 2	REV 01	740-047547		CXP-TXP-3D
Xcvr 3	REV 01	740-047547		CXP-TXP-3D
Xcvr 4	REV 01	740-047547		CXP-TXP-3D
Xcvr 5	REV 01	740-047547		CXP-TXP-3D
Xcvr 6	REV 01	740-047547		CXP-TXP-3D
Xcvr 7	REV 01	740-047547		CXP-TXP-3D
Xcvr 8	REV 01	740-047547		CXP-TXP-3D
Xcvr 10	REV 01	740-047547		CXP-TXP-3D

Xcvr 12	REV 01	740-047547		CXP-TXP-3D
Xcvr 14	REV 01	740-047547		CXP-TXP-3D
SIB F2S 0/0	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 0/2	REV 07	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 0/4	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 0/6	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 1/0	REV 07	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 1/2	REV 07	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 1/4	REV 07	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 1/6	REV 08	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 2/0	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 2/2	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 2/4	REV 07	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 2/6	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 3/0	REV 07	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 3/2	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 3/4	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 3/6	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 4/0	REV 07	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 4/2	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 4/4	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 4/6	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
Fan Tray 0	REV 10	760-024497		FANTRAY-TXP-H-S
Fan Tray 1	REV 10	760-024497		FANTRAY-TXP-H-S
Fan Tray 2	REV 10	760-024502		FANTRAY-TXP-V-S
Fan Tray 3	REV 10	760-024502		FANTRAY-TXP-V-S
Fan Tray 4	REV 10	760-024502		FANTRAY-TXP-V-S
Fan Tray 5	REV 10	760-024502		FANTRAY-TXP-V-S

lcc0-re0:

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Hardware inventory:

Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 01	710-027486	IPMJ700DRD	CHAS-BP-T1600-S
FPM Display	REV 04	710-021387		CRAFT-T1600-S
CIP	REV 06	710-002895		CIP-L-T640-S
PEM 0	REV 05	740-036442	IPUPAG6KAA	PWR-T-6-60-DC-S
PEM 1	REV 05	740-036442	IPUPAG6KAA	PWR-T-6-60-DC-S
SCG 0	REV 18	710-003423		SCG-T-S
SCG 1	REV 18	710-003423		SCG-T-S
Routing Engine 0	REV 10	740-026941		RE-DUO-C1800-8G-S
Routing Engine 1	REV 07	740-026941		RE-DUO-C1800-8G-S
CB 0	REV 11	710-022597		CB-LCC-S
CB 1	REV 11	710-022597		CB-LCC-S
FPC 0	REV 01	750-045173	IP9IAL4DAB	T4000-FPC5-3D
PIC 0	REV 17	750-034624	IP9IAL2DAA	PF-12XGE-SFPP
PIC 1	REV 17	750-034624	IP9IAL2DAA	PF-12XGE-SFPP
FPC 3	REV 01	750-045173	IP9IAL4DAB	T4000-FPC5-3D
PIC 0	REV 13	750-033423	XXXXXXXXDD	PF-12-24XGE-SFPP
FPC 4	REV 02	750-045173	IP9IAL4DAC	T4000-FPC5-3D
PIC 0	REV 17	750-034624	IP9IAL2DAA	PF-12XGE-SFPP
PIC 1	REV 17	750-034624	IP9IAL2DAA	PF-12XGE-SFPP
FPC 5	REV 01	750-045173	IP9IAL4DAB	T4000-FPC5-3D
PIC 0	REV 17	750-034624	IP9IAL2DAA	PF-12XGE-SFPP
PIC 1	REV 17	750-034624	IP9IAL2DAA	PF-12XGE-SFPP
FPC 6	REV 01	750-045173	IP9IAL4DAB	T4000-FPC5-3D
PIC 0	REV 17	750-034624	IP9IAL2DAA	PF-12XGE-SFPP
PIC 1	REV 10	750-035293	IP9IAL3DAA	PF-1CGE-CFP
SIB 0	REV 06	750-041657	PROTOXCLEI	SIB-TXP-3D-LCC
Xcvr 0	REV 01	740-048813		
Xcvr 1	REV 01	740-048813		

Xcvr 2	REV 01	740-048813		
Xcvr 3	REV 01	740-048813		
Xcvr 4	REV 01	740-048813		
Xcvr 5	REV 01	740-048813		
Xcvr 6	REV 01	740-048813		
Xcvr 7	REV 01	740-048813		
SIB 1	REV 06	750-041657	PROTOXCLEI	SIB-TXP-3D-LCC
Xcvr 0	REV 01	740-048813		
Xcvr 1	REV 01	740-048813		
Xcvr 2	REV 01	740-048813		
Xcvr 3	REV 01	740-048813		
Xcvr 4	REV 01	740-048813		
Xcvr 5	REV 01	740-048813		
Xcvr 6	REV 01	740-048813		
Xcvr 7	REV 01	740-048813		
SIB 2	REV 06	750-041657	PROTOXCLEI	SIB-TXP-3D-LCC
Xcvr 0	REV 01	740-048813		
Xcvr 1	REV 01	740-048813		
Xcvr 2	REV 01	740-048813		
Xcvr 3	REV 01	740-048813		
Xcvr 4	REV 01	740-048813		
Xcvr 5	REV 01	740-048813		
Xcvr 6	REV 01	740-048813		
Xcvr 7	REV 01	740-048813		
SIB 3	REV 07	750-041657	PROTOXCLEI	SIB-TXP-3D-LCC
Xcvr 0	REV 01	740-048813		
Xcvr 1	REV 01	740-048813		
Xcvr 2	REV 01	740-048813		
Xcvr 3	REV 01	740-048813		
Xcvr 4	REV 01	740-048813		
Xcvr 5	REV 01	740-048813		
Xcvr 6	REV 01	740-048813		
Xcvr 7	REV 01	740-048813		
SIB 4	REV 06	750-041657	PROTOXCLEI	SIB-TXP-3D-LCC
Xcvr 0	REV 01	740-048813		
Xcvr 1	REV 01	740-048813		
Xcvr 2	REV 01	740-048813		
Xcvr 3	REV 01	740-048813		
Xcvr 4	REV 01	740-048813		
Xcvr 5	REV 01	740-048813		
Xcvr 6	REV 01	740-048813		
Xcvr 7	REV 01	740-048813		
Fan Tray 0				FANTRAY-T-S
Fan Tray 1				FANTRAY-T-S
Fan Tray 2				FANTRAY-TXP3D-LCC-R-S
[Output Truncated]				

### show chassis hardware detail (TX Matrix Plus router with 3D SIBs)

```
user@host> show chassis hardware detail
sfc0-re0:
```

#### Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN11CAAA4AHB	TXP
Midplane	REV 05	710-022574	ABAC4696	SFC Midplane
FPM Display	REV 09	710-024027	EH3138	TXP FPM Display
CIP 0	REV 12	710-023792	EF6349	TXP CIP
CIP 1	REV 12	710-023792	EG5294	TXP CIP
PEM 0	Rev 06	740-027463	XH04595	Power Entry Module
PEM 1	Rev 06	740-027463	XH04592	Power Entry Module

Routing Engine 0	REV 07	740-026942	P737A-002541	RE-DUO-2600
ad0 3823 MB	SMART CF		2011030400062C132C13	Compact Flash
ad1 62720 MB	SMART	Lite SATA Drive	201105100009A452A452	Disk 1
Routing Engine 1	REV 07	740-026942	P737A-002602	RE-DUO-2600
ad0 3823 MB	SMART CF		20110508085EE471E471	Compact Flash
ad1 62720 MB	SMART	Lite SATA Drive	201110210089DF39DF39	Disk 1
CB 0	REV 15	710-022606	EH4376	SFC Control Board
CB 1	REV 15	710-022606	EH4379	SFC Control Board
SPMB 0		BUILTIN		SFC Switch CPU
SPMB 1		BUILTIN		SFC Switch CPU
SIB F13 0	REV 10	750-035002	EM9305	F13 SIB 3D
B Board	REV 06	711-035082	EM9667	F13 SIB 3D Mezz
P Board	REV 05	711-043544	EM9708	F13 SIB 3D Power
Xcvr 0	REV 01	740-047547	XB34FB00S	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB01H	CXP Module
Xcvr 4	REV 01	740-047547	XB34FB02W	CXP Module
Xcvr 6	REV 01	740-047547	XB34FB01T	CXP Module
Xcvr 8	REV 01	740-047547	XB48FB00W	CXP Module
Xcvr 10	REV 01	740-047547	XB34FB01S	CXP Module
Xcvr 12	REV 01	740-047547	XB34FB03H	CXP Module
Xcvr 14	REV 01	740-047547	XB34FB023	CXP Module
SIB F13 3	REV 01	710-035001	EJ2612	F13 SIB 3D
B Board	REV 01	711-035082	EJ3815	F13 SIB 3D Mezz
P Board	REV 01	711-043544	EJ2678	F13 SIB 3D Power
Xcvr 0	REV 01	740-047547	XB48FB04C	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB00Z	CXP Module
Xcvr 4	REV 01	740-047547	XB47FB036	CXP Module
Xcvr 6	REV 01	740-047547	XB47FB029	CXP Module
Xcvr 8	REV 01	740-047547	XB48FB02N	CXP Module
Xcvr 10	REV 01	740-047547	XB42FB0CS	CXP Module
Xcvr 12	REV 01	740-047547	XB47FB01X	CXP Module
Xcvr 14	REV 01	740-047547	XB48FB02F	CXP Module
SIB F13 6	REV 05	750-035002	EK2675	F13 SIB 3D
B Board	REV 03	711-035082	EK2612	F13 SIB 3D Mezz
P Board	REV 04	711-043544	EK1179	F13 SIB 3D Power
Xcvr 0	REV 01	740-047547	XB48FB01T	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB02M	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB031	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB04P	CXP Module
Xcvr 8	REV 01	740-047547	XB48FB02T	CXP Module
Xcvr 10	REV 01	740-047547	XB34FB01V	CXP Module
Xcvr 12	REV 01	740-047547	XB48FB02C	CXP Module
Xcvr 14		NON-JNPR		No Module
SIB F13 12	REV 01	710-035001	EJ2631	F13 SIB 3D
B Board	REV 01	711-035082	EJ3808	F13 SIB 3D Mezz
P Board	REV 01	711-043544	EJ2676	F13 SIB 3D Power
SIB F2S 0/0	REV 01	711-034977	EH9829	F2S SIB 3D
B Board	REV 01	711-034979	EH9927	F2S SIB 3D Mezz
SIB F2S 0/2	REV 01	711-034977	EH9791	F2S SIB 3D
B Board	REV 01	711-034979	EH9852	F2S SIB 3D Mezz
SIB F2S 0/4	REV 01	711-034977	EH9803	F2S SIB 3D
B Board	REV 01	711-034979	EH9915	F2S SIB 3D Mezz
SIB F2S 0/6	REV 01	711-034977	EH9763	F2S SIB 3D
B Board	REV 01	711-034979	EH9880	F2S SIB 3D Mezz
SIB F2S 1/0	REV 01	711-034977	EH9757	F2S SIB 3D
B Board	REV 01	711-034979	EH9889	F2S SIB 3D Mezz
SIB F2S 1/2	REV 01	711-034977	EH9815	F2S SIB 3D
B Board	REV 01	711-034979	EH9890	F2S SIB 3D Mezz
SIB F2S 1/4	REV 08	750-034978	EN1954	F2S SIB 3D
B Board	REV 02	711-034979	EN1436	F2S SIB 3D Mezz
SIB F2S 1/6	REV 01	711-034977	EJ7054	F2S SIB 3D

B Board	REV 01	711-034979	EJ8238	F2S SIB 3D Mezz
SIB F2S 2/0	REV 01	711-034977	EH9830	F2S SIB 3D
B Board	REV 01	711-034979	EH9844	F2S SIB 3D Mezz
SIB F2S 2/2	REV 01	711-034977	EH9818	F2S SIB 3D
B Board	REV 01	711-034979	EH9888	F2S SIB 3D Mezz
SIB F2S 2/4	REV 01	711-034977	EH9795	F2S SIB 3D
B Board	REV 01	711-034979	EH9869	F2S SIB 3D Mezz
SIB F2S 2/6	REV 01	711-034977	EJ7026	F2S SIB 3D
B Board	REV 01	711-034979	EJ8273	F2S SIB 3D Mezz
SIB F2S 3/0	REV 01	711-034977	EH9811	F2S SIB 3D
B Board	REV 01	711-034979	EH9892	F2S SIB 3D Mezz
SIB F2S 3/2	REV 01	711-034977	EH9812	F2S SIB 3D
B Board	REV 01	711-034979	EH9877	F2S SIB 3D Mezz
SIB F2S 3/4	REV 08	750-034978	EN1947	F2S SIB 3D
B Board	REV 02	711-034979	EN1471	F2S SIB 3D Mezz
Fan Tray 0	REV 10	760-024497	EH3313	Front Fan Tray
Fan Tray 1	REV 10	760-024497	EH3290	Front Fan Tray
Fan Tray 2	REV 10	760-024502	EH3292	Rear Fan Tray
Fan Tray 3	REV 10	760-024502	EH3287	Rear Fan Tray
Fan Tray 4	REV 10	760-024502	EH3286	Rear Fan Tray
Fan Tray 5	REV 10	760-024502	EH3285	Rear Fan Tray

1cc0-re0:

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Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN11B23FEAHA	T1600
Midplane	REV 01	710-027486	RC9787	T-series Backplane
FPM GBUS	REV 13	710-002901	BBAG5132	T640 FPM Board
FPM Display	REV 04	710-021387	BBAL9612	T1600 FPM Display
CIP	REV 06	710-002895	BBAN0605	T-series CIP
PEM 0	REV 05	740-036442	1G022060143	Power Entry Module 6x60
PEM 1	REV 05	740-036442	1G022060011	Power Entry Module 6x60
SCG 0	REV 18	710-003423	BBAL7318	T640 Sonet Clock Gen.
SCG 1	REV 18	710-003423	BBAL7255	T640 Sonet Clock Gen.
Routing Engine 0	REV 07	740-026941	P737F-002933	RE-DUO-1800
ad0 3823 MB	SMART CF		201103030490604E604E	Compact Flash
ad1 62720 MB	SMART Lite SATA Drive		20110729028B11D411D4	Disk 1
Routing Engine 1	REV 06	740-026941	P737F-002749	RE-DUO-1800
ad0 3823 MB	SMART CF		2011010504EB99649964	Compact Flash
ad1 62720 MB	SMART Lite SATA Drive		201102140058934A934A	Disk 1
CB 0	REV 11	710-022597	EH3611	LCC Control Board
CB 1	REV 11	710-022597	EH4798	LCC Control Board
FPC 5	REV 17	710-013037	BBAC5333	FPC Type 4-ES
CPU	REV 10	710-016744	BBAB7619	ST-PMB2
PIC 0	REV 18	750-017405	BBAE3420	4x 10GE (LAN/WAN) XFP
Xcvr 0	REV 03	740-014289	T10C90659	XFP-10G-SR
MMB 0	REV 05	710-025563	BBAB9538	ST-MMB2
MMB 1	REV 05	710-025563	BBAB9502	ST-MMB2
FPC 7	REV 01	750-045173	BBAV0032	FPC Type 5-3D
CPU				
SPMB 0	REV 05	710-023321	EG9434	LCC Switch CPU
SPMB 1	REV 05	710-023321	EH3878	LCC Switch CPU
SIB 0	REV 01	750-041657	EH7997	LCC SIB 3D
B Board	REV 01	711-042424	EH7674	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB48FB014	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB05A	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB052	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB01B	CXP Module
SIB 1	REV 01	750-041657	EH8023	LCC SIB 3D
B Board	REV 01	711-042424	EH7659	LCC SIB 3D Mezz

Xcvr 0	REV 01	740-047547	XB48FB05J	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB01E	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB01J	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB02S	CXP Module
SIB 2	REV 03	750-041657	EJ6554	LCC SIB 3D
B Board	REV 02	711-042424	EJ5756	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB34FB01Z	CXP Module
Xcvr 2	REV 01	740-047547	XB34FB013	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB04Z	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB05N	CXP Module
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray -- Rev 4

lcc2-re0:

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Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN11B3975AHA	T1600
Midplane	REV 01	710-027486	RC9826	T-series Backplane
FPM GBUS	REV 13	710-002901	BBAG5124	T640 FPM Board
FPM Display	REV 03	710-021387	BBAJ1112	T1600 FPM Display
CIP	REV 06	710-002895	BBAL3744	T-series CIP
PEM 0	REV 05	740-036442	1G022060081	Power Entry Module 6x60
PEM 1	REV 05	740-036442	1G022060188	Power Entry Module 6x60
SCG 0	REV 18	710-003423	BBAH8775	T640 Sonet Clock Gen.
SCG 1	REV 18	710-003423	BBAL7272	T640 Sonet Clock Gen.
Routing Engine 0	REV 07	740-026941	P737F-002992	RE-DUO-1800
ad0 3823 MB SMART CF			201103030356329E329E	Compact Flash
ad1 62720 MB SMART Lite SATA Drive			2011051000488D8B8D8B	Disk 1
Routing Engine 1	REV 07	740-026941	P737F-002938	RE-DUO-1800
ad0 3823 MB SMART CF			20110304000F02680268	Compact Flash
ad1 62720 MB SMART Lite SATA Drive			201105300A70F325F325	Disk 1
CB 0	REV 11	710-022597	EH4805	LCC Control Board
CB 1	REV 11	710-022597	EH4786	LCC Control Board
FPC 1	REV 01	710-033873	BBAH0320	FPC Type 3-ES
CPU	REV 11	710-016744	BBAF3281	ST-PMB2
MMB 0	REV 06	710-025563	BBAF5061	ST-MMB2
FPC 5	REV 04	710-033871	BBAM5070	FPC Type 4-ES
CPU	REV 11	710-016744	BBAM6653	ST-PMB2
PIC 1	REV 20	750-017405	BBAM1296	4x 10GE (LAN/WAN) XFP
Xcvr 0	REV 03	740-014289	T10B42981	XFP-10G-SR
MMB 0	REV 07	710-025563	BBAN2631	ST-MMB2
MMB 1	REV 07	710-025563	BBAN2538	ST-MMB2
SPMB 0	REV 05	710-023321	EH3903	LCC Switch CPU
SPMB 1	REV 05	710-023321	EH3902	LCC Switch CPU
SIB 0	REV 01	750-041657	EH8019	LCC SIB 3D
B Board	REV 01	711-042424	EH7680	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB48FB04F	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB04S	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB04B	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB043	CXP Module
SIB 1	REV 01	750-041657	EH8012	LCC SIB 3D
B Board	REV 01	711-042424	EH7658	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB48FB05E	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB01Z	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB018	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB054	CXP Module
SIB 2	REV 01	750-041657	EH7993	LCC SIB 3D
B Board	REV 01	711-042424	EH7678	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB48FB05C	CXP Module

Xcvr 2	REV 01	740-047547	XB47FB00N	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB05U	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB05L	CXP Module
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray -- Rev 4

### show chassis hardware lcc (TX Matrix Plus router with 3D SIBs)

```
user@host> show chassis hardware lcc 0
lcc0-re0:
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#### ----- Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN11B23FEAHA	T1600
Midplane	REV 01	710-027486	RC9787	T-series Backplane
FPM GBUS	REV 13	710-002901	BBAG5132	T640 FPM Board
FPM Display	REV 04	710-021387	BBAL9612	T1600 FPM Display
CIP	REV 06	710-002895	BBAN0605	T-series CIP
PEM 0	REV 05	740-036442	1G022060143	Power Entry Module 6x60
PEM 1	REV 05	740-036442	1G022060011	Power Entry Module 6x60
SCG 0	REV 18	710-003423	BBAL7318	T640 Sonet Clock Gen.
SCG 1	REV 18	710-003423	BBAL7255	T640 Sonet Clock Gen.
Routing Engine 0	REV 07	740-026941	P737F-002933	RE-DUO-1800
Routing Engine 1	REV 06	740-026941	P737F-002749	RE-DUO-1800
CB 0	REV 11	710-022597	EH3611	LCC Control Board
CB 1	REV 11	710-022597	EH4798	LCC Control Board
FPC 5	REV 17	710-013037	BBAC5333	FPC Type 4-ES
CPU	REV 10	710-016744	BBAB7619	ST-PMB2
PIC 0	REV 18	750-017405	BBAE3420	4x 10GE (LAN/WAN) XFP
Xcvr 0	REV 03	740-014289	T10C90659	XFP-10G-SR
MMB 0	REV 05	710-025563	BBAB9538	ST-MMB2
MMB 1	REV 05	710-025563	BBAB9502	ST-MMB2
FPC 7	REV 01	750-045173	BBAV0032	FPC Type 5-3D
CPU				
SPMB 0	REV 05	710-023321	EG9434	LCC Switch CPU
SPMB 1	REV 05	710-023321	EH3878	LCC Switch CPU
SIB 0	REV 01	750-041657	EH7997	LCC SIB 3D
B Board	REV 01	711-042424	EH7674	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB48FB014	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB05A	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB052	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB01B	CXP Module
SIB 1	REV 01	750-041657	EH8023	LCC SIB 3D
B Board	REV 01	711-042424	EH7659	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB48FB05J	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB01E	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB01J	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB02S	CXP Module
SIB 2	REV 03	750-041657	EJ6554	LCC SIB 3D
B Board	REV 02	711-042424	EJ5756	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB34FB01Z	CXP Module
Xcvr 2	REV 01	740-047547	XB34FB013	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB04Z	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB05N	CXP Module
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray -- Rev 4



## show chassis hardware sfc (TX Matrix Plus router with 3D SIBs)

```
user@host> show chassis hardware sfc 0
sfc0-re0:
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Hardware inventory:
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Item	Version	Part number	Serial number	Description
Chassis			JN11CAAA4AHB	TXP
Midplane	REV 05	710-022574	ABAC4696	SFC Midplane
FPM Display	REV 09	710-024027	EH3138	TXP FPM Display
CIP 0	REV 12	710-023792	EF6349	TXP CIP
CIP 1	REV 12	710-023792	EG5294	TXP CIP
PEM 0	Rev 06	740-027463	XH04595	Power Entry Module
PEM 1	Rev 06	740-027463	XH04592	Power Entry Module
Routing Engine 0	REV 07	740-026942	P737A-002541	RE-DUO-2600
Routing Engine 1	REV 07	740-026942	P737A-002602	RE-DUO-2600
CB 0	REV 15	710-022606	EH4376	SFC Control Board
CB 1	REV 15	710-022606	EH4379	SFC Control Board
SPMB 0		BUILTIN		SFC Switch CPU
SPMB 1		BUILTIN		SFC Switch CPU
SIB F13 0	REV 10	750-035002	EM9305	F13 SIB 3D
B Board	REV 06	711-035082	EM9667	F13 SIB 3D Mezz
P Board	REV 05	711-043544	EM9708	F13 SIB 3D Power
Xcvr 0	REV 01	740-047547	XB34FB00S	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB01H	CXP Module
Xcvr 4	REV 01	740-047547	XB34FB02W	CXP Module
Xcvr 6	REV 01	740-047547	XB34FB01T	CXP Module
Xcvr 8	REV 01	740-047547	XB48FB00W	CXP Module
Xcvr 10	REV 01	740-047547	XB34FB01S	CXP Module
Xcvr 12	REV 01	740-047547	XB34FB03H	CXP Module
Xcvr 14	REV 01	740-047547	XB34FB023	CXP Module
SIB F13 3	REV 01	710-035001	EJ2612	F13 SIB 3D
B Board	REV 01	711-035082	EJ3815	F13 SIB 3D Mezz
P Board	REV 01	711-043544	EJ2678	F13 SIB 3D Power
Xcvr 0	REV 01	740-047547	XB48FB04C	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB00Z	CXP Module
Xcvr 4	REV 01	740-047547	XB47FB036	CXP Module
Xcvr 6	REV 01	740-047547	XB47FB029	CXP Module
Xcvr 8	REV 01	740-047547	XB48FB02N	CXP Module
Xcvr 10	REV 01	740-047547	XB42FB0CS	CXP Module
Xcvr 12	REV 01	740-047547	XB47FB01X	CXP Module
Xcvr 14	REV 01	740-047547	XB48FB02F	CXP Module
SIB F13 6	REV 05	750-035002	EK2675	F13 SIB 3D
B Board	REV 03	711-035082	EK2612	F13 SIB 3D Mezz
P Board	REV 04	711-043544	EK1179	F13 SIB 3D Power
Xcvr 0	REV 01	740-047547	XB48FB01T	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB02M	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB031	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB04P	CXP Module
Xcvr 8	REV 01	740-047547	XB48FB02T	CXP Module
Xcvr 10	REV 01	740-047547	XB34FB01V	CXP Module
Xcvr 12	REV 01	740-047547	XB48FB02C	CXP Module
Xcvr 14		NON-JNPR		No Module
SIB F13 12	REV 01	710-035001	EJ2631	F13 SIB 3D
B Board	REV 01	711-035082	EJ3808	F13 SIB 3D Mezz
P Board	REV 01	711-043544	EJ2676	F13 SIB 3D Power
SIB F2S 0/0	REV 01	711-034977	EH9829	F2S SIB 3D
B Board	REV 01	711-034979	EH9927	F2S SIB 3D Mezz
SIB F2S 0/2	REV 01	711-034977	EH9791	F2S SIB 3D
B Board	REV 01	711-034979	EH9852	F2S SIB 3D Mezz
SIB F2S 0/4	REV 01	711-034977	EH9803	F2S SIB 3D

B Board	REV 01	711-034979	EH9915	F2S SIB 3D Mezz
SIB F2S 0/6	REV 01	711-034977	EH9763	F2S SIB 3D
B Board	REV 01	711-034979	EH9880	F2S SIB 3D Mezz
SIB F2S 1/0	REV 01	711-034977	EH9757	F2S SIB 3D
B Board	REV 01	711-034979	EH9889	F2S SIB 3D Mezz
SIB F2S 1/2	REV 01	711-034977	EH9815	F2S SIB 3D
B Board	REV 01	711-034979	EH9890	F2S SIB 3D Mezz
SIB F2S 1/4	REV 08	750-034978	EN1954	F2S SIB 3D
B Board	REV 02	711-034979	EN1436	F2S SIB 3D Mezz
SIB F2S 1/6	REV 01	711-034977	EJ7054	F2S SIB 3D
B Board	REV 01	711-034979	EJ8238	F2S SIB 3D Mezz
SIB F2S 2/0	REV 01	711-034977	EH9830	F2S SIB 3D
B Board	REV 01	711-034979	EH9844	F2S SIB 3D Mezz
SIB F2S 2/2	REV 01	711-034977	EH9818	F2S SIB 3D
B Board	REV 01	711-034979	EH9888	F2S SIB 3D Mezz
SIB F2S 2/4	REV 01	711-034977	EH9795	F2S SIB 3D
B Board	REV 01	711-034979	EH9869	F2S SIB 3D Mezz
SIB F2S 2/6	REV 01	711-034977	EJ7026	F2S SIB 3D
B Board	REV 01	711-034979	EJ8273	F2S SIB 3D Mezz
SIB F2S 3/0	REV 01	711-034977	EH9811	F2S SIB 3D
B Board	REV 01	711-034979	EH9892	F2S SIB 3D Mezz
SIB F2S 3/2	REV 01	711-034977	EH9812	F2S SIB 3D
B Board	REV 01	711-034979	EH9877	F2S SIB 3D Mezz
SIB F2S 3/4	REV 08	750-034978	EN1947	F2S SIB 3D
B Board	REV 02	711-034979	EN1471	F2S SIB 3D Mezz
Fan Tray 0	REV 10	760-024497	EH3313	Front Fan Tray
Fan Tray 1	REV 10	760-024497	EH3290	Front Fan Tray
Fan Tray 2	REV 10	760-024502	EH3292	Rear Fan Tray
Fan Tray 3	REV 10	760-024502	EH3287	Rear Fan Tray
Fan Tray 4	REV 10	760-024502	EH3286	Rear Fan Tray
Fan Tray 5	REV 10	760-024502	EH3285	Rear Fan Tray

## show chassis hardware (16-Port 10-Gigabit Ethernet MPC with SFP+ Optics [MX Series Routers])

user@host&gt; show chassis hardware

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
Routing Engine 0
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
Front Airflow
Fan Tray 1
Front Airflow
Fan Tray 2
Front Airflow
```

### show chassis hardware detail (QFX3500 Switches)

```
user@switch> show chassis hardware detail
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis
Routing Engine 0
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 models (QFX3500 Switches)

```

user@switch> show chassis hardware models
Hardware inventory:
Item          Version  Part number  Serial number  FRU model number
Routing Engine 0      BUILTIN
FPC 0          REV 02    711-032234   EC4074
Power Supply 0  PSMI 2C  11-d65800   --

```

### show chassis hardware clei-models (QFX3500 Switches)

```

user@switch> show chassis hardware clei-models
Hardware inventory:
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

```

### show chassis hardware interconnect-device (QFabric Systems)

```

user@switch> show chassis hardware interconnect-device interconnect1
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis       REV 07                BH0208188289  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 Systems)

```

user@switch> show chassis hardware node-device node1
Routing Engine 0      BUILTIN      BUILTIN      QFX Routing Engine
node1                REV 05  711-032234  ED3694        QFX3500-48S4Q-AFI

CPU                  BUILTIN      BUILTIN      FPC CPU
PIC 0               BUILTIN      BUILTIN      48x 10G-SFP+
Xcvr 8              REV 01  740-030658  AD0946A028B  SFP+-10G-USR
...

```

### show chassis hardware (PTX5000 Packet Transport Router)

```

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        Midplane-8S
FPM           REV 05  740-032019  ZE00006       Front Panel Display
PDU 0         Rev 05  740-032022  ZJ00018       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
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	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 clei-models (PTX5000 Packet Transport Router)

```
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 Router)

```

user@switch> show chassis hardware detail
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis
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 models (PTX5000 Packet Transport Router)

```

user@switch> show chassis hardware models
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 Router)

```
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
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 hardware (MX Routers with Media Services Blade [MSB])

```

user@switch> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number  Description
Chassis                               JN1100FB1AFB  MX480
Midplane         REV 05   710-017414   TR3310         MX480 Midplane
FPM Board        REV 02   710-017254   KG1872         Front Panel Display
PEM 2            Rev 02   740-017343   QCS0812A00N    DC Power Entry Module
PEM 3            Rev 02   740-017343   QCS0812A00U    DC Power Entry Module
Routing Engine 0 REV 07   740-015113   1000740938     RE-S-1300
CB 0             REV 03   710-021523   KF4630         MX SCB
FPC 1            REV 11   750-037207   ZW9726         AS-MCC
CPU              REV 04   711-038173   ZW4819         AS-MCC PMB
MIC 0            REV 06   750-037214   ZW3574         AS-MSC
PIC 0            BUILTIN BUILTIN      AS-MSC
MIC 1            REV 00   750-037211   BUILTIN        AS-MXC
PIC 2            BUILTIN BUILTIN      AS-MXC

```

### show chassis hardware extensive (MX Routers with Media Services Blade [MSB])

```

user@switch> show chassis hardware extensive
FPC 1            REV 11   750-037207   ZW9726         AS-MCC
Jedec Code:      0x7fb0          EEPROM Version: 0x02
P/N:             750-037207       S/N:           S/N ZW9726
Assembly ID:     0x0b37          Assembly Version: 01.11
Date:            02-17-2012      Assembly Flags: 0x00
Version:         REV 11          CLEI Code:     PROTOXCLEI
ID: AS-MCC       FRU Model Number: 750-037207
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 0b 37 01 0b 52 45 56 20 31 31 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 33 37 32 30 37 00 00
Address 0x20: 53 2f 4e 20 5a 57 39 37 32 36 00 00 00 11 02 07
Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 50 52 4f 54 4f 58 43 4c 45 49 37
Address 0x50: 35 30 2d 30 33 37 32 30 37 00 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 31 31 00 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 5e ff ff ff ff ff ff ff ff ff ff ff ff
CPU              REV 04   711-038173   ZW4819         AS-MCC-PMB
Jedec Code:      0x7fb0          EEPROM Version: 0x02
P/N:             711-038173       S/N:           S/N ZW4819
Assembly ID:     0x0b38          Assembly Version: 01.04
Date:            12-30-2011      Assembly Flags: 0x00
Version:         REV 04
ID: AS-MCC PMB
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 0b 38 01 04 52 45 56 20 30 34 00 00

```

```

Address 0x10: 00 00 00 00 37 31 31 2d 30 33 38 31 37 33 00 00
Address 0x20: 53 2f 4e 20 5a 57 34 38 31 39 00 00 00 1e 0c 07
Address 0x30: db ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 00 50 52 4f 54 4f 58 43 4c 45 49 37
Address 0x50: 31 31 2d 30 33 38 31 37 33 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 30 34 00 ff ff ff ff ff ff
Address 0x70: ff ff ff 60 00 00 00 00 00 00 00 00 00 00 00
MIC 0          REV 06    750-037214    ZW3574          AS-MS
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           750-037214      S/N:           S/N ZW3574
Assembly ID:   0x0a44          Assembly Version: 01.06
Date:          02-19-2012      Assembly Flags: 0x00
Version:       REV 06          CLEI Code:     PROTOXCLEI
ID: AS-MS      FRU Model Number: 750-037214
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 0a 44 01 06 52 45 56 20 30 36 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 33 37 32 31 34 00 00
Address 0x20: 53 2f 4e 20 5a 57 33 35 37 34 00 00 00 13 02 07
Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 50 52 4f 54 4f 58 43 4c 45 49 37
Address 0x50: 35 30 2d 30 33 37 32 31 34 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 30 36 00 ff ff ff ff ff ff
Address 0x70: ff ff ff 60 c0 03 e5 f4 00 00 00 00 00 00 00
PIC 0          BUILTIN      BUILTIN          AS-MS
MIC 1          REV 00    750-037211          AS-MX
Jedec Code:    0x7fb0          EEPROM Version:    0x01
P/N:           750-037211
Assembly ID:   0x0a43          Assembly Version: 01.00
Date:          255-255-65535   Assembly Flags:    0x00
Version:       REV 00
ID: AS-MX
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 01 ff 0a 43 01 00 52 45 56 20 30 30 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 33 37 32 31 31 00 00
Address 0x20: 00 00 00 00 00 00 00 00 00 00 00 00 00 ff ff ff
Address 0x30: ff ff ff ff ff ff ff ff ff ff ff ff ff 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 c0 02 e6 6c 7f b0 02 ff 0a 44 01 06
PIC 2          BUILTIN      BUILTIN          AS-MX

```

## show chassis lccs

<b>Syntax</b>	show chassis lccs
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(TX Matrix and TX Matrix Plus routers only ) On a TX Matrix router, display the status of all T640 LCC connected to the TX Matrix router. On a TX Matrix Plus router, display the status of all LCC connected to the TX Matrix Plus router.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">request chassis lcc on page 207</a></li> <li>• <i>Configuring Line-Card Upgrade Groups for Nonstop Software Upgrade (CLI Procedure)</i></li> <li>• <i>fpc</i></li> </ul>
<b>List of Sample Output</b>	<a href="#">show chassis lccs on page 753</a> <a href="#">show chassis lccs (TX Matrix Plus router with 3D SIBs) on page 754</a>
<b>Output Fields</b>	<a href="#">Table 33 on page 753</a> lists the output fields for the <b>show chassis lccs</b> command. Output fields are listed in the approximate order in which they appear.

**Table 33: show chassis lccs Output Fields**

Field Name	Field Description
<b>Slot</b>	LCC slot number.
<b>State</b>	LCC status: <ul style="list-style-type: none"> <li>• <b>Online</b>—LCC is online and running.</li> <li>• <b>Offline</b>—LCC is powered down.</li> <li>• <b>Empty</b>—No LCC is present.</li> </ul>
<b>Uptime</b>	How long the LCC has been up and running.

## Sample Output

### show chassis lccs

```

user@host> show chassis lccs
Slot  State                Uptime
0     Online                  3 minutes, 17 seconds
1     Empty
2     Online                  3 minutes, 23 seconds
3     Empty

```

**show chassis lccs (TX Matrix Plus router with 3D SIBs)**

```
user@host> show chassis lccs
```

Slot	State	Uptime
0	Offline	
1	Empty	
2	Online	1 day, 4 hours, 57 minutes, 7 seconds
3	Empty	
4	Online	1 day, 4 hours, 56 minutes, 58 seconds
5	Empty	
6	Empty	
7	Online	3 hours, 45 minutes, 41 seconds

## show chassis lcc-mode

**Syntax** show chassis lcc-mode

**Release Information** Command introduced in Junos OS Release 13.1.

**Description** (TX Matrix Plus routers only) Display the mode in which LCCs are connected to a TX Matrix Plus router.



**NOTE:** This command is supported only on TX Matrix Plus routers with 3D SIBs.

**Options** This command has no options.

**Required Privilege Level** view

**Related Documentation**

- [lcc-mode on page 103](#)
- [Overview of a Routing Matrix with TXP-Mixed-LCC-3D Configuration on page 11](#)

**List of Sample Output** [show chassis lcc-mode \(TX Matrix Plus Router with 3D SIBs\) on page 755](#)

**Output Fields** [Table 34 on page 755](#) lists the output fields for the **show chassis lcc-mode** command. Output fields are listed in the approximate order in which they appear.

**Table 34: show chassis lcc-mode Output Fields**

Field Name	Field Description
Slot	The LCC number.
LCC-mode	Displays the mode of the LCC: <ul style="list-style-type: none"> <li>• <b>T1600</b>—LCC functions as a T1600 router.</li> <li>• <b>T4000</b>—LCC functions as a T4000 router.</li> <li>• <b>EMPTY</b>—LCC is not configured as either a T1600 or a T4000 router.</li> </ul>

## Sample Output

**show chassis lcc-mode (TX Matrix Plus Router with 3D SIBs)**

```
user@host> show chassis lcc-mode
```

```
Slot      LCC-mode
0         T4000
1         EMPTY
2         T4000
3         EMPTY
```

4	T4000
5	EMPTY
6	T1600
7	EMPTY



## show chassis location

<b>Syntax</b>	show chassis location
<b>Syntax (TX Matrix Router)</b>	show chassis location <fpc   interface (by-name <i>name</i>   by-slot fpc number lcc number)   lcc number   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show chassis location <fpc   interface (by-name <i>name</i>   by-slot fpc number lcc number)   lcc number   sfc number>
<b>Syntax (MX Series Router)</b>	show chassis location <all-members> <local> <member <i>member-id</i> >
<b>Syntax (QFX Series)</b>	show chassis location <interconnect-device <i>name</i> > <node-device <i>name</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> 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.
<b>Description</b>	Display the physical location of the chassis. This command can only be used on the master Routing Engine.
<b>Options</b>	<p><b>none</b>—Display all information about the physical location of the chassis. On a TX Matrix router, display all information about the physical location of the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display all information about the physical location of the TX Matrix Plus router and its attached routers.</p> <p><b>all-members</b>—(MX Series routers only) (Optional) Display the physical location of the chassis for all the member routers in the Virtual Chassis configuration.</p> <p><b>fpc</b>—(TX Matrix router and TX Matrix Plus router only) (Optional) Display the physical location of all Flexible PIC Concentrators (FPCs).</p> <p><b>interconnect-device <i>name</i></b>—(QFabric systems only) (Optional) Display the physical location of the Interconnect device.</p> <p><b>interface by-name <i>name</i></b>—(TX Matrix and TX Matrix Plus routers only) (Optional) Display the physical location of a specified interface name. On a TX Matrix router, this option displays the FPC number and T640 router (line-card chassis) number associated with the specified interface. On a TX Matrix Plus router, this option displays the FPC number and router (line-card chassis) number associated with the specified interface.</p> <p><b>interface by-slot fpc number lcc number</b>—(TX Matrix and TX Matrix Plus router only) (Optional) On a TX Matrix router, display the global FPC number of an interface by specifying its local FPC number and T640 router (line-card chassis) number. On a</p>

TX Matrix Plus router, display the global FPC number of an interface by specifying its local FPC number and router (line-card chassis) number.

- The global FPC number is the FPC slot number when all the FPC slots in the routing matrix are considered: **0** through **31**. On TX Matrix Plus router with 3D SIBs, the value is **0** through **63**. The local FPC number is the FPC slot number on a particular T640 router.
- For **fpc**, replace *number* with a value from **0** through **7**.
- For **lcc**, replace *number* with a value from **0** through **7**.

**lcc number**—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display the physical location of a specified T640 router (line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display the physical location of a specified router (line-card chassis) that is connected to a TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(MX Series routers only) (Optional) Display the physical location of the chassis for the local Virtual Chassis member.

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

**node-device name**—(QFabric systems only) (Optional) Display the physical location of the Node device.

**scc**—(TX Matrix routers only) (Optional) Display the physical location of the TX Matrix router (switch-card chassis).

**sfc**—(TX Matrix Plus routers only) (Optional) Display the physical location of the TX Matrix Plus router (or switch-fabric chassis).

**Required Privilege Level** view

**List of Sample Output** [show chassis location on page 759](#)  
[show chassis location fpc \(TX Matrix Router\) on page 759](#)  
[show chassis location interface by-slot \(TX Matrix Router\) on page 759](#)

[show chassis location fpc \(TX Matrix Plus Router\) on page 760](#)  
[show chassis location interface by-slot \(TX Matrix Plus Router\) on page 760](#)  
[show chassis location \(QFX3500 Switches\) on page 760](#)  
[show chassis location \(QFabric Systems\) on page 760](#)

**Output Fields** Table 35 on page 759 lists the output fields for the **show chassis location** command. Output fields are listed in the approximate order in which they appear.

**Table 35: show chassis location Output Fields**

Field Name	Field Description
country-code	Country code information.
postal-code	Postal code information.
Building	Building information.
Floor	Floor information.
Global FPC	Global FPC number. The FPC slot number, when all FPC slots in the routing matrix are considered. The range of values is 0 through 31. On TX Matrix Plus router with 3D SIBs the value is 0 through 63.
LCC	Line-card chassis number. On a TX Matrix router, the number of a particular T640 router connected to the TX Matrix router. On a TX Matrix Plus router, the number of a particular router connected to the TX Matrix Plus router.
Local FPC	Local FPC number. On a TX Matrix router, the FPC slot number on a particular T640 router. On a TX Matrix Plus router, the FPC slot number on a particular router.

## Sample Output

### show chassis location

```

user@host> show chassis location
country-code: US
postal-code: 94404
Building: Building 2, Floor: 2

```

### show chassis location fpc (TX Matrix Router)

```

user@host> show chassis location fpc
Global FPC    LCC    Local FPC
    17         2         1
    21         2         5

```

### show chassis location interface by-slot (TX Matrix Router)

```

user@host> show chassis location interface by-slot fpc 1 lcc 1
Global FPC: 9

```

**show chassis location fpc (TX Matrix Plus Router)**

```
user@host> show chassis location fpc
Global FPC    LCC    Local FPC
      0         0         0
      1         0         1
```

**show chassis location interface by-slot (TX Matrix Plus Router)**

```
user@host> show chassis location interface by-slot fpc 2 lcc 1
Global FPC: 10
```

**show chassis location (QFX3500 Switches)**

```
user@switch> show chassis location
country-code: US
postal-code: 94404
Building: Building 2, Floor: 2
```

**show chassis location (QFabric Systems)**

```
user@switch> show chassis location interconnect-device interconnect1
country-code: US
postal-code: 94404
Building: Building 2, Floor: 2
```

## show chassis mac-addresses

<b>Syntax</b>	show chassis mac-addresses
<b>Syntax (TX Matrix Router)</b>	show chassis mac-addresses <lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show chassis mac-addresses <lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (MX Series Router)</b>	show chassis mac-addresses <all-members> <local> <member <i>member-id</i> >
<b>Syntax (MX104, MX2010, and MX2020 3D Universal Edge Routers)</b>	show chassis mac-addresses
<b>Syntax (QFX Series)</b>	show chassis mac-addresses <interconnect-device <i>name</i> > <node-group <i>name</i> >
<b>Syntax (ACX Series Universal Access Routers)</b>	show chassis mac-addresses
<b>Release Information</b>	<p>Command introduced before JUNOS Release 7.4.</p> <p>Command introduced in JUNOS Release 9.0 for EX Series switches.</p> <p><b>sfc</b> option introduced for the TX Matrix Plus router in JUNOS Release 9.6.</p> <p>Command introduced in Junos OS Release 11.1 for QFX Series.</p> <p>Command introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 13.2 for MX104 3D Universal Edge Routers.</p>
<b>Description</b>	Display the media access control (MAC) addresses for the router, switch chassis, or switch.
<b>Options</b>	<p><b>none</b>—(TX Matrix, TX Matrix Plus routers, and the QFX Series) Display the MAC addresses for the router chassis or switch. On a TX Matrix router, display MAC addresses on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display MAC addresses on the TX Matrix Plus router and its attached routers.</p> <p><b>all-members</b>—(MX Series routers only) (Optional) Display the MAC addresses for all the member routers of the Virtual Chassis configuration.</p> <p><b>interconnect-device <i>name</i></b>—(QFabric systems only) (Optional) Display the MAC addresses for the Interconnect device.</p>

**lcc number**—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display MAC addresses for a specified T640 router (line-card chassis) that is connected to the TX Matrix Plus router. On a TX Matrix Plus router, display MAC addresses for a specified router (line-card chassis) that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(MX Series routers only) (Optional) Display the MAC addresses for the local Virtual Chassis member.

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

**node-group name**—(QFabric systems only) (Optional) Display the MAC addresses for the specified Node group.

**scc**—(TX Matrix routers only) (Optional) Display MAC addresses for the TX Matrix router (switch-card chassis).

**sfc number**—(TX Matrix Plus routers only) (Optional) Display MAC addresses for the TX Matrix Plus router (or switch-fabric chassis).

**Required Privilege Level**

view

**Related Documentation**

- *ACX2000 and ACX2100 Routers Hardware and CLI Terminology Mapping*

**List of Sample Output**

[show chassis mac-addresses on page 763](#)  
[show chassis mac-addresses \(MX104 Router\) on page 763](#)  
[show chassis mac-addresses \(MX2010 Router\) on page 763](#)  
[show chassis mac-addresses \(MX2020 Router\) on page 763](#)  
[show chassis mac-addresses \(TX Matrix Router\) on page 764](#)  
[show chassis mac-addresses \(TX Matrix Plus Router\) on page 764](#)  
[show chassis mac-addresses \(QFX3500 Switches\) on page 765](#)  
[show chassis mac-addresses interconnect-device \(QFabric Systems\) on page 765](#)  
[show chassis mac-addresses node-group \(QFabric Systems\) on page 765](#)  
[show chassis mac-addresses \(ACX2000 Universal Access Router\) on page 765](#)

**Output Fields** Table 36 on page 763 lists the output fields for the **show chassis mac-addresses** command. Output fields are listed in the approximate order in which they appear.

**Table 36: show chassis mac-addresses Output Fields**

Field Name	Field Description
<b>MAC address information</b>	
<b>Public base address</b>	Base address of the MAC addresses allocated to this router or switch.
<b>Public count</b>	Number of allocated public addresses.
<b>Private base address</b>	Base address of the private MAC addresses allocated to this router or switch.
<b>Private count</b>	Number of allocated private addresses.

## Sample Output

### show chassis mac-addresses

```
user@host> show chassis mac-addresses
MAC address information
  Public base address  0:90:69:0:4:0
  Public count         1008
  Private base address 0:90:69:0:7:f0
  Private count        16
```

### show chassis mac-addresses (MX104 Router)

```
user@host > show chassis mac-addresses
MAC address information:
  Public base address  b0:a8:6e:a1:e8:58
  Public count         2032
  Private base address b0:a8:6e:a1:f0:48
  Private count        16
```

### show chassis mac-addresses (MX2010 Router)

```
user@host> show chassis mac-addresses
MAC address information:
  Public base address  64:87:88:04:50:00
  Public count         1984
  Private base address 64:87:88:04:57:c0
  Private count        64
```

### show chassis mac-addresses (MX2020 Router)

```
user@host> show chassis mac-addresses
MAC address information:
  Public base address  2c:21:72:70:20:00
  Public count         4032
  Private base address 2c:21:72:70:2f:c0
  Private count        64
```

### show chassis mac-addresses (TX Matrix Router)

```
user@host> show chassis mac-addresses
scc-re0:
-----
MAC address information:
  Public base address    00:05:85:9e:cc:00
  Public count           8064
  Private base address   00:05:85:9e:eb:80
  Private count          128
lcc0-re0:
-----
MAC address information:
  Public base address    00:05:85:68:98:00
  Public count           2032
  Private base address   00:05:85:68:9f:f0
  Private count          16
lcc2-re0:
-----
MAC address information:
  Public base address    00:05:85:68:78:00
  Public count           2032
  Private base address   00:05:85:68:7f:f0
  Private count          16
```

### show chassis mac-addresses (TX Matrix Plus Router)

```
user@host> show chassis mac-addresses
sfc0-re0:
-----
MAC address information:
  Public base address    00:1d:b5:14:00:00
  Public count           65023
  Private base address   00:1d:b5:14:fd:ff
  Private count          512
lcc0-re0:
-----
MAC address information:
  Public base address    00:1f:12:7a:84:00
  Public count           2032
  Private base address   00:1f:12:7a:8b:f0
  Private count          16
lcc1-re0:
-----
MAC address information:
  Public base address    00:22:83:42:48:00
  Public count           2032
  Private base address   00:22:83:42:4f:f0
  Private count          16
lcc2-re0:
-----
MAC address information:
  Public base address    00:1f:12:c3:58:00
  Public count           2032
  Private base address   00:1f:12:c3:5f:f0
  Private count          16
lcc3-re0:
```



```

-----
MAC address information:
  Public base address    00:21:59:ef:b8:00
  Public count           2032
  Private base address   00:21:59:ef:bf:f0
  Private count          16

```

#### show chassis mac-addresses (QFX3500 Switches)

```

user@switch> show chassis mac-addresses
MAC address information:
  Public base address 02:00:08:00:00:00
  Public count 512
  Private base address 02:00:00:00:00:00
  Private count 64

```

#### show chassis mac-addresses interconnect-device (QFabric Systems)

```

user@switch> show chassis mac-addresses interconnect-device interconnect1
MAC address information:
  Public base address    00:1f:12:30:9c:c0
  Public count           58
  Private base address   00:1f:12:30:9c:fa
  Private count           6

```

#### show chassis mac-addresses node-group (QFabric Systems)

```

user@switch> show chassis mac-addresses node-group NW-NG-0
MAC address information:
-----
RE:
  FC MAC base    00:11:00:00:00:00
  FC MAC count   2
  VLAN MAC       00:11:00:00:00:09
EC6007
  Base address   00:00:01:76:00:00
  Count          64
EC6008
  Base address   00:22:83:22:52:ae
  Count         260

```

#### show chassis mac-addresses (ACX2000 Universal Access Router)

```

user@switch> show chassis mac-addresses
MAC address information:
  Public base address    84:18:88:c0:2b:00
  Public count           112
  Private base address   84:18:88:c0:2b:70
  Private count          16

```

## show chassis psd

**Syntax** `show chassis psd`

**Release Information** Command introduced in Junos OS Release 9.1.

**Description** (Root System Domain [RSD] only) Display information about Protected System Domains (PSDs). A PSD is initially created by the RSD configuration. An RSD and PSDs are supported on a T320 or T640 router, or a T1600 routing node, or a TX Matrix Plus Platform that is interconnected with the JCS1200 platform.



**NOTE:** RSD configuration is not supported on a routing matrix based on TX Matrix Plus router with 3D SIBs.

**Options** This command has no options.

**Additional Information** For more information about PSDs, RSDs, and the JCS1200 platform, see the *Junos OS Protected System Domain Feature Guide for Routing Devices*.

**Required Privilege Level** view

**List of Sample Output** [show chassis psd on page 766](#)

**Output Fields** [Table 37 on page 766](#) lists the output fields for the `show chassis psd` command. Output fields are listed in the approximate order in which they appear.

**Table 37: show chassis psd Output Fields**

Field Name	Field Description
Slot Description	PSD identification.
State	PSD status: <ul style="list-style-type: none"> <li>• <b>Online</b>—PSD is online and running.</li> <li>• <b>Offline</b>—PSD is powered down.</li> </ul>
Uptime	Length of time that the PSD has been up and running.

## Sample Output

### show chassis psd

```
{master}
user@host> show chassis psd
Slot Description      State      Uptime
1                    Online    12 hours, 19 minutes, 51 seconds
```

2	Online	2 hours, 18 minutes, 17 seconds
3	Online	12 hours, 19 minutes, 51 seconds

## show chassis pic

---

Syntax	show chassis pic fpc-slot <i>slot-number</i> pic-slot <i>slot-number</i>
Syntax (TX Matrix and TX Matrix Plus Routers)	show chassis pic fpc-slot <i>slot-number</i> pic-slot <i>slot-number</i> <lcc <i>number</i> >
Syntax (MX Series Routers)	show chassis pic fpc-slot <i>slot-number</i> pic-slot <i>slot-number</i> <all-members> <local> <member <i>member-id</i> >
Syntax (MX104, MX2010, and MX2020 3D Universal Edge Routers)	show chassis pic fpc-slot <i>slot-number</i> pic-slot <i>slot-number</i>
Syntax (PTX Series Packet Transport Router)	show chassis pic transport fpc-slot <i>slot-number</i> pic-slot <i>slot-number</i>
Syntax (QFX Series)	show chassis pic <interconnect-device <i>name</i> (fpc-slot <i>slot-number</i>   pic-slot <i>slot-number</i> )> <node-device <i>name</i> pic-slot <i>slot-number</i> >
Syntax (ACX Series Universal Access Routers)	show chassis pic fpc-slot <i>slot-number</i> pic-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 Release 11.1 for QFX Series. Command introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers. Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers. Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers. Command introduced in Junos OS Release 13.2 for PTX Series Packet Transport Routers. Command introduced in Junos OS Release 13.2 for MX104 3D Universal Edge Routers.
Description	Display status information about the PIC installed in the specified Flexible PIC Concentrator (FPC) and PIC slot.
Options	<b>fpc-slot <i>slot-number</i></b> —Display information about the PIC in this particular FPC slot: <ul style="list-style-type: none"><li>On a TX Matrix router, if you specify the number of the T640 router by using the <b>lcc <i>number</i></b> option (the recommended method), replace <b><i>slot-number</i></b> with a value from 0 through 7. Otherwise, replace <b><i>slot-number</i></b> with a value from 0 through 31.</li></ul> Likewise, on a TX Matrix Plus router, if you specify the number of the T1600 router by using the <b>lcc <i>number</i></b> option (the recommended method), replace <b><i>slot-number</i></b> with a value from 0 through 7. Otherwise, replace <b><i>slot-number</i></b> with a value from 0 through 31. For example, the following commands have the same result:

```
user@host> show chassis pic fpc-slot 1 lcc 1 pic-slot 1
user@host> show chassis pic fpc-slot 9 pic-slot 1
```

- M120 routers only—Replace **slot-number** with a value from 0 through 5.
- MX80 routers only—Replace **slot-number** with a value from 0 through 1.
- MX104 routers only—Replace **slot-number** with a value from 0 through 2.
- MX240 routers only—Replace **slot-number** with a value from 0 through 2.
- MX480 routers only—Replace **slot-number** with a value from 0 through 5.
- MX960 routers only—Replace **slot-number** with a value from 0 through 11.
- MX2010 routers only—Replace **slot-number** with a value from 0 through 9.
- MX2020 routers only—Replace **slot-number** with a value from 0 through 19.
- Other routers—Replace **slot-number** with a value from 0 through 7.
- EX Series switches:
  - EX3200 switches and EX4200 standalone switches—Replace **slot-number** with 0.
  - EX4200 switches in a Virtual Chassis configuration—Replace **slot-number** with a value from 0 through 9 (switch's member ID).
  - EX8208 switches—Replace **slot-number** with a value from 0 through 7 (line card).
  - EX8216 switches—Replace **slot-number** with a value from 0 through 15 (line card).
- QFX Series:
  - QFX3500 switches—Replace **slot-number** with 0. In the command output, FPC refers to a line card. The FPC number equals the slot number for the line card.
  - QFabric systems—Replace **slot-number** with any number between 0 and 15. In the command output, FPC refers to a line card. The FPC number equals the slot number for the line card.

**all-members**—(MX Series routers and EX Series switches only) (Optional) Display PIC information for all member routers in the Virtual Chassis configuration.

**interconnect-device name**—(QFabric systems only) (Optional) Display PIC information for a specified Interconnect device.

**lcc number**—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display PIC information for a specified T640 router (line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display PIC information for a specified router (line-card chassis) that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(MX Series routers and EX Series switches only) (Optional) Display PIC information for the local Virtual Chassis member.

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

**node-device *name***—(QFabric systems only) (Optional) Display PIC information for a specified Node device.

**pic-slot *slot-number***—Display information about the PIC in this particular PIC slot. For routers, replace *slot-number* with a value from 0 through 3. For EX3200 and EX4200 switches, replace *slot-number* with 0 for built-in network interfaces and 1 for interfaces on uplink modules. For EX8208 and EX8216 switches, replace *slot-number* with 0. For the QFX3500 standalone switch and the QFabric system, replace *slot-number* with 0 or 1.

**transport**—Display PIC information for optical transport network.

**Required Privilege Level**

view

**Related Documentation**

- [request chassis pic on page 209](#)
- [show chassis hardware on page 629](#)
- *Configuring the PIC Type*
- *100-Gigabit Ethernet Type 4 PIC with CFP Overview*

**List of Sample Output**

[show chassis pic fpc-slot pic-slot on page 773](#)  
[show chassis pic fpc-slot pic-slot \(PIC Offline\) on page 773](#)  
[show chassis pic fpc-slot pic-slot \(FPC Offline\) on page 774](#)  
[show chassis pic fpc-slot pic-slot \(FPC Not Present\) on page 774](#)  
[show chassis pic fpc-slot pic-slot \(PIC Not Present\) on page 774](#)  
[show chassis pic fpc-slot pic-slot \(M120 Router\) on page 774](#)  
[show chassis pic fpc-slot pic-slot \(MX104 Router\) on page 774](#)  
[show chassis pic fpc-slot pic-slot \(MX960 Router Bidirectional Optics\) on page 774](#)

[show chassis pic fpc-slot pic-slot \(MX480 Router with 100-Gigabit Ethernet MIC\) on page 775](#)  
[show chassis pic fpc-slot pic-slot \(MX240, MX480, MX960 Routers with Application Services Modular Line Card\) on page 775](#)  
[show chassis pic fpc-slot pic-slot \(MX480 Router with MPC4E\) on page 775](#)  
[show chassis pic fpc-slot pic-slot \(MX2010 Router\) on page 776](#)  
[show chassis pic fpc-slot pic-slot \(MX2020 Router\) on page 776](#)  
[show chassis pic fpc-slot pic-slot \(MX2020 Routers with MPC4E\) on page 776](#)  
[show chassis pic fpc-slot pic-slot \(T1600 Router with 100-Gigabit Ethernet PIC\) on page 776](#)  
[show chassis pic fpc-slot pic-slot lcc \(TX Matrix Router\) on page 777](#)  
[show chassis pic fpc-slot pic-slot lcc \(TX Matrix Plus Router\) on page 777](#)  
[show chassis pic fpc-slot pic-slot \(Next-Generation SONET/SDH SFP\) on page 777](#)  
[show chassis pic fpc-slot pic-slot \(12-Port T1/E1\) on page 778](#)  
[show chassis pic fpc-slot pic-slot \(4x CHOC3 SONET CE SFP\) on page 778](#)  
[show chassis pic fpc-slot pic-slot \(SONET/SDH OC3/STM1 \[Multi-Rate\] MIC with SFP\) on page 778](#)  
[show chassis pic fpc-slot pic-slot \(8-port Channelized SONET/SDH OC3/STM1 \[Multi-Rate\] MIC with SFP\) on page 778](#)  
[show chassis pic fpc-slot pic-slot \(4-port Channelized SONET/SDH OC3/STM1 \[Multi-Rate\] MIC with SFP\) on page 779](#)  
[show chassis pic fpc-slot pic-slot \(1-port OC192/STM64 MIC with XFP\) on page 779](#)  
[show chassis pic fpc-slot 1 pic-slot 2 \(8-port DS3/E3 MIC\) on page 779](#)  
[show chassis pic fpc-slot pic-slot \(OTN\) on page 779](#)  
[show chassis pic fpc-slot pic-slot \(QFX3500 Switch\) on page 780](#)  
[show chassis pic interconnect-device fpc-slot pic-slot \(QFabric Systems\) on page 780](#)  
[show chassis pic node-device fpc-slot pic-slot \(QFabric System\) on page 780](#)  
[show chassis pic fpc-slot pic-slot \(ACX2000 Universal Access Router\) on page 781](#)  
[show chassis pic fpc-slot pic-slot \(MX Routers with Media Services Blade \[MSB\]\) on page 781](#)  
[show chassis pic FPC slot PIC slot \(MX Routers with Media Services Blade \[MSB\]\) on page 781](#)  
[show chassis pic transport fpc-slot pic-slot \(PTX Series Packet Transport Routers\) on page 781](#)

**Output Fields** [Table 38 on page 771](#) lists the output fields for the **show chassis pic** command. Output fields are listed in the approximate order in which they appear.

**Table 38: show chassis pic Output Fields**

Field Name	Field Description
Type	<p>PIC type.</p> <p><b>NOTE:</b> On the 1-port OC192/STM64 MICs with the SDH framing mode, the type is displayed as <b>MIC-3D-1STM64-XFP</b> and with the SONET framing mode, the type is displayed as <b>MIC-3D-1OC192-XFP</b>. By default, the 1-port OC192/STM64 MICs displays the type as <b>MIC-3D-1OC192-XFP</b>.</p>

Table 38: show chassis pic Output Fields (*continued*)

Field Name	Field Description
<b>Account Layer2 Overhead</b>	(MX Series routers) Indicates whether functionality to count the Layer 2 overhead bytes in the interface statistics at the PIC level is enabled or disabled.
<b>ASIC type</b>	Type of ASIC on the PIC.
<b>State</b>	Status of the PIC. State is displayed only when a PIC is in the slot. <ul style="list-style-type: none"> <li>• <b>Online</b>— PIC is online and running.</li> <li>• <b>Offline</b>—PIC is powered down.</li> </ul>
<b>PIC version</b>	PIC hardware version.
<b>Uptime</b>	How long the PIC has been online.
<b>Package</b>	(Multiservices PICs only) Services package supported: <b>Layer-2</b> or <b>Layer-3</b> .
<b>Port Number</b>	Port number for the PIC.
<b>Cable Type</b>	Type of cable connected to the port: <b>LH</b> , <b>LX</b> , or <b>SX</b> .
<b>PIC Port Information (MX480 Router 100-Gigabit Ethernet CFP)</b>	Port-level information for the PIC. <ul style="list-style-type: none"> <li>• Port—Port number</li> <li>• Cable type—Type of optical transceiver installed.</li> <li>• Fiber type—Type of fiber. SM is single-mode.</li> <li>• Xcvr vendor—Transceiver vendor name.</li> <li>• Xcvr vendor part number—Transceiver vendor part number.</li> <li>• Wavelength—Wavelength of the transmitted signal. Uplinks and downlinks are always 1550 nm. There is a separate fiber for each direction</li> </ul>
<b>PIC Port Information (MX960 Router Bidirectional Optics )</b>	Port-level information for the PIC. <ul style="list-style-type: none"> <li>• Port—Port number</li> <li>• Cable type—Type of small form-factor pluggable (SFP) optical transceiver installed. Uplink interfaces display -U. Down link interfaces display -D.</li> <li>• Fiber type—Type of fiber. SM is single-mode.</li> <li>• Xcvr vendor—Transceiver vendor name.</li> <li>• Xcvr vendor part number—Transceiver vendor part number. <ul style="list-style-type: none"> <li>• BX10-10-km bidirectional optics.</li> <li>• BX40-40-km bidirectional optics.</li> <li>• SFP-LX-40-km SFP optics.</li> </ul> </li> <li>• Wavelength—Wavelength of the transmitted signal. Uplinks are always 1310 nm. Downlinks are either 1490 nm or 1550 nm.</li> </ul>



Table 38: show chassis pic Output Fields (*continued*)

Field Name	Field Description
<b>PIC Port Information (Next-Generation SONET/SDH SFP)</b>	Port-level information for the next-generation SONET/SDH SFP PIC. <ul style="list-style-type: none"> <li>• Port—Port number.</li> <li>• Cable type—Type of small form-factor pluggable (SFP) optical transceiver installed.</li> <li>• Fiber type—Type of fiber: <b>SM</b> (single-mode) or <b>MM</b> (multimode).</li> <li>• Xcvr vendor—Transceiver vendor name.</li> <li>• Xcvr vendor part number—Transceiver vendor part number.</li> <li>• Wavelength—Wavelength of the transmitted signal. Next-generation SONET/SDH SFPs use 1310 nm.</li> </ul>
<b>Pic port information (MX104 router)</b>	Port-level information for the PIC. <ul style="list-style-type: none"> <li>• Port—Port number</li> <li>• Cable type—Type of optical transceiver installed.</li> <li>• Fiber type—Type of fiber. SM is single-mode.</li> <li>• Xcvr vendor—Transceiver vendor name.</li> <li>• Xcvr vendor part number—Transceiver vendor part number.</li> <li>• Wavelength—Wavelength of the transmitted signal.</li> <li>• Xcvr Firmware—Firmware version of the transceiver.</li> </ul>
<b>Multirate Mode</b>	Rate-selectability status for the MIC: <b>Enabled</b> or <b>Disabled</b> .
<b>Channelization</b>	Indicates whether channelization is enabled or disabled on the DS3/E3 MIC.

## Sample Output

### show chassis pic fpc-slot pic-slot

```

user@host> show chassis pic fpc-slot 2 pic-slot 0
PIC fpc slot 2 pic slot 0 information:
  Type                10x 1GE(LAN), 1000 BASE
  ASIC type            H chip
  State                Online
  PIC version          1.1
  Uptime               1 day, 50 minutes, 58 seconds
PIC Port Information:
  Port      Cable      Xcvr      Xcvr Vendor
  Number    Type        Vendor Name  Part Number
  0          GIGE 1000EX  FINISAR CORP.  FTRJ8519P1BNL-J3
  1          GIGE 1000EX  FINISAR CORP.  FTRJ-8519-7D-JUN

```

### show chassis pic fpc-slot pic-slot (PIC Offline)

```

user@host> show chassis pic fpc-slot 1 pic-slot 0
PIC fpc slot 1 pic slot 0 information:
  State                Offline

```

**show chassis pic fpc-slot pic-slot (FPC Offline)**

```
user@host> show chassis pic fpc-slot 1 pic-slot 0
FPC 1 is not online
```

**show chassis pic fpc-slot pic-slot (FPC Not Present)**

```
user@host> show chassis pic fpc-slot 4 pic-slot 0
FPC slot 4 is empty
```

**show chassis pic fpc-slot pic-slot (PIC Not Present)**

```
user@host> show chassis pic fpc-slot 5 pic-slot 2
FPC 5, PIC 2 is empty
```

**show chassis pic fpc-slot pic-slot (M120 Router)**

```
user@host> show chassis pic fpc-slot 3 pic-slot 0
PC slot 3, PIC slot 0 information:
  Type                2x G/E IQ, 1000 BASE
  ASIC type           IQ GE 2 VLAN-TAG FPGA
  State               Online
  PIC version         1.16
  Uptime              3 hours, 3 minutes

PIC Port Information:
  Port      Cable      Xcvr      Xcvr Vendor
  Number    Type        Vendor Name Part Number
  0         GIGE 1000SX  FINISAR CORP.  FTRJ8519P1BNL-J3
  1         GIGE 1000SX  FINISAR CORP.  FTRJ-8519-7D-JUN
```

**show chassis pic fpc-slot pic-slot (MX104 Router)**

```
user@host> show chassis pic fpc-slot 1 pic-slot 1
FPC slot 1, PIC slot 1 information:
  Type                10x 1GE(LAN) -E SFP
  State               Online
  PIC version         1.1
  Uptime              1 hour, 30 minutes, 59 seconds

PIC port information:
  Fiber              Xcvr vendor      Wave-      Xcvr
  Port Cable type    type Xcvr vendor      part number length
  Firmware
  3   GIGE 1000T      n/a  Methode Elec.      SP7041-M1-JN  n/a      0.0
  6   GIGE 1000LX10   SM   FINISAR CORP.      FTLF1318P2BTL-J1 1310 nm 0.0
  8   GIGE 1000T      n/a  Methode Elec.      SP7041-M1-JN  n/a      0.0
  9   GIGE 1000T      n/a  Methode Elec.      SP7041-M1-JN  n/a      0.0
```

**show chassis pic fpc-slot pic-slot (MX960 Router Bidirectional Optics)**

```
user@host> show chassis pic fpc-slot 4 pic-slot 1
FPC slot 4, PIC slot 1 information:
  Type                10x 1GE(LAN)
  Account Layer2 Overhead Enabled
  State               Online
```

```

PIC version          0.0
Uptime              18 days, 5 hours, 41 minutes, 54 seconds

```

PIC port information:

Port	Cable type	Fiber type	Xcvr vendor	Xcvr vendor part number	Wavelength
0	SFP-1000BASE-BX10-D	SM	SumitomoElectric	SBP6H44-J3-BW-49	1490 nm
1	SFP-1000BASE-BX10-D	SM	SumitomoElectric	SBP6H44-J3-BW-49	1490 nm
2	SFP-1000BASE-BX10-D	SM	SumitomoElectric	SBP6H44-J3-BW-49	1490 nm
3	SFP-1000BASE-BX10-D	SM	OCP	TRXBG1LXDBVM2-JW	1490 nm
4	SFP-1000BASE-BX10-D	SM	OCP	TRXBG1LXDBVM2-JW	1490 nm
5	SFP-1000BASE-BX10-U	SM	SumitomoElectric	SBP6H44-J3-BW-31	1310 nm
6	SFP-1000BASE-BX10-U	SM	SumitomoElectric	SBP6H44-J3-BW-31	1310 nm
7	SFP-1000BASE-BX10-U	SM	OCP	TRXBG1LXDBBMH-J1	1310 nm
8	SFP-1000BASE-BX10-U	SM	OCP	TRXBG1LXDBBMH-J1	1310 nm
9	SFP-1000BASE-BX10-U	SM	SumitomoElectric	SBP6H44-J3-BW-31	1310 nm

### show chassis pic fpc-slot pic-slot (MX480 Router with 100-Gigabit Ethernet MIC)

```

user@host> show chassis pic fpc-slot 1 pic-slot 2
FPC slot 1, PIC slot 2 information:
Type                1X100GE CFP
State               Online
PIC version         2.10
Uptime              4 minutes, 48 seconds

```

PIC port information:

Port	Cable type	Fiber type	Xcvr vendor	Xcvr vendor part number	Wavelength
0	100GBASE LR4	SM	FINISAR CORP.	FTLC1181RDN5-J3	1310 nm

Xcvr vendor  
firmware version  
1.8

### show chassis pic fpc-slot pic-slot (MX240, MX480, MX960 Routers with Application Services Modular Line Card)

```

user@host> show chassis pic fpc-slot 1 pic-slot 2
FPC slot 1, PIC slot 2 information:
Type                AS-MXC
State               Online
PIC version         1.0
Uptime              11 hours, 18 minutes, 3 seconds

```

### show chassis pic fpc-slot pic-slot (MX480 Router with MPC4E)

```

user@host> show chassis pic fpc-slot 3 pic-slot 0
FPC slot 3, PIC slot 0 information:
Type                4x10GE SFPP
State               Online
PIC version         0.0
Uptime              41 seconds

```

PIC port information:

Port	Cable type	Fiber type	Xcvr vendor	Xcvr vendor part number	Wave-length	Xcvr Firmware
0	10GBASE SR	MM	OPNEXT, INC.	TRS2001EM-0014	850 nm	0.0

```
1 10GBASE SR MM OPNEXT, INC. TRS2001EM-0014 850 nm 0.0
```

#### show chassis pic fpc-slot pic-slot (MX2010 Router)

```
user@host> show chassis pic fpc-slot 9 pic-slot 3
FPC slot 9, PIC slot 3 information:
Type                1X100GE CFP
Account Layer2 Overhead Enabled
State               Online
PIC version         0.0
Uptime              14 hours, 51 seconds
```

#### show chassis pic fpc-slot pic-slot (MX2020 Router)

```
user@host> show chassis pic fpc-slot 19 pic-slot 3
FPC slot 19, PIC slot 3 information:
Type                4x 10GE(LAN) SFP+
Account Layer2 Overhead Enabled
State               Online
PIC version         0.0
Uptime              1 day, 11 hours, 26 minutes, 36 seconds

PIC port information:
Fiber                Xcvr vendor      Wave-   Xcvr
Port Cable type     type Xcvr vendor      part number   length
Firmware
0 10GBASE SR        MM SumitomoElectric SPP5200SR-J6-M 850 nm 0.0
1 10GBASE SR        MM SumitomoElectric SPP5200SR-J6-M 850 nm 0.0
2 10GBASE SR        MM SumitomoElectric SPP5200SR-J6-M 850 nm 0.0
3 10GBASE SR        MM SumitomoElectric SPP5200SR-J6-M 850 nm 0.0
```

#### show chassis pic fpc-slot pic-slot (MX2020 Routers with MPC4E)

```
user@host> show chassis pic fpc-slot 14 pic-slot 0
FPC slot 14, PIC slot 2 information:
Type                4x10GE SFPP
State               Online
PIC version         0.0
Uptime              1 day, 14 hours, 49 minutes, 9 seconds

PIC port information:
Fiber                Xcvr vendor      Wave-   Xcvr
Port Cable type     type Xcvr vendor      part number   length
Firmware
0 10GBASE SR        MM SumitomoElectric SPP5100SR-J3 850 nm 0.0
1 10GBASE SR        MM SumitomoElectric SPP5100SR-J3 850 nm 0.0
3 10GBASE SR        MM SumitomoElectric SPP5100SR-J3 850 nm 0.0
```

#### show chassis pic fpc-slot pic-slot (T1600 Router with 100-Gigabit Ethernet PIC)

```
user@host> run show chassis pic fpc-slot 3 pic-slot 1
```

FPC slot 3, PIC slot 1 information:

```
Type                100GE SLOT1
ASIC type            Brooklyn 100GE FPGA
State                Online
PIC version          1.3
Uptime               10 minutes, 44 seconds
```

PIC port information:

Port	Cable type	Fiber type	Xcvr vendor	Xcvr vendor part number	Wavelength
0	100GBASE LR4	SM	Opnext Inc.	TRC5E20ENFSF000F	1310 nm

#### show chassis pic fpc-slot pic-slot lcc (TX Matrix Router)

```
user@host> show chassis pic fpc-slot 1 pic-slot 1 lcc 0
```

lcc0-re0:

-----

PIC fpc slot 1 pic slot 1 information:

```
Type                4x OC-3 SONET, SMIR
ASIC type            D chip
State                Online
PIC version          1.2
Uptime               5 days, 2 hours, 12 minutes, 8 seconds
```

#### show chassis pic fpc-slot pic-slot lcc (TX Matrix Plus Router)

```
user@host> show chassis pic pic-slot 0 fpc-slot 8
```

lcc0-re0:

-----

FPC slot 8, PIC slot 0 information:

```
Type                1x 10GE(LAN/WAN)
State                Online
Uptime               2 hours, 46 minutes, 23 seconds
```

PIC port information:

Port	Cable type	Fiber type	Xcvr vendor	part number	Wavelength
0	10GBASE ZR	SM	Opnext Inc.	TRF7061BN-LF150	1550 nm
0	10GBASE ZR	SM	FINISAR CORP.	FTRX-1811-3-J2	1550 nm

#### show chassis pic fpc-slot pic-slot (Next-Generation SONET/SDH SFP)

```
user@host> show chassis pic fpc-slot 4 pic-slot 0
```

FPC slot 4, PIC slot 0 information:

```
Type                4x OC-3 1x OC-12 SFP
ASIC type            D FPGA
State                Online
PIC version          1.3
Uptime               1 day, 50 minutes, 4 seconds
```

PIC port information:

Port	Cable type	Fiber type	Xcvr vendor	Xcvr vendor part number	Wavelength
0	OC48 short reach	SM	FINISAR CORP.	FTRJ1321P1BTL-J2	1310 nm
1	OC3 short reach	MM	OCF	TRPA03MM3BAS-JE	1310 nm
2	OC3 short reach	MM	OCF	TRXA03MM3BAS-JW	1310 nm
3	OC12 inter reach	SM	FINISAR CORP.	FTLF1322P1BTR	1310 nm

**show chassis pic fpc-slot pic-slot (12-Port T1/E1)**

```

user@host> show chassis pic fpc-slot 0 pic-slot 3
FPC slot 0, PIC slot 3 information:
  Type                12x T1/E1 CE
  State                Online
  PIC version          1.1
  CPU load average     1 percent
  Interrupt load average 0 percent
  Total DRAM size      128 MB
  Memory buffer utilization 100 percent
  Memory heap utilization 4 percent
  Uptime               1 day, 22 hours, 28 minutes, 12 seconds
  Internal Clock Synchronization Normal

```

**show chassis pic fpc-slot pic-slot (4x CHOC3 SONET CE SFP)**

```

user@host> show chassis pic fpc-slot 0 pic-slot 1
FPC slot 0, PIC slot 1 information:
  Type                4x CHOC3 SONET CE SFP
  State                Online
  PIC version          1.3
  CPU load average     1 percent
  Interrupt load average 0 percent
  Total DRAM size      128 MB
  Memory buffer utilization 99 percent
  Memory heap utilization 4 percent
  Uptime               1 day, 22 hours, 55 minutes, 37 seconds
  Internal Clock Synchronization Normal

```

**PIC port information:**

Port	Cable type	Fiber type	Xcvr vendor	Xcvr vendor part number	Wavelength
0	OC3 short reach	MM	AVAGO	HFBR-57E0P-JU2	n/a
1	OC3 short reach	MM	AVAGO	HFBR-57E0P-JU2	n/a
3	OC3 long reach	SM	OPNEX INC	TRF5456AVLB314	1310 nm

**show chassis pic fpc-slot pic-slot (SONET/SDH OC3/STM1 [Multi-Rate] MIC with SFP)**

```

user@host> show chassis pic fpc-slot 0 pic-slot 0
FPC slot 0, PIC slot 0 information:
  Type                MIC-3D-80C30C12-40C48
  State                Online
  PIC version          1.8
  Uptime               3 days, 22 hours, 3 minutes, 50 seconds

```

**PIC port information:**

Port	Cable type	Fiber type	Xcvr vendor	Xcvr vendor part number	Wavelength
1	OC12 inter reach	SM	FINISAR CORP	FTRJ1322P1BTR-J3	1310 nm
7	OC12 inter reach	SM	FINISAR CORP	FTRJ1322P1BTR-J3	1310 nm

Multirate Mode Enabled

**show chassis pic fpc-slot pic-slot (8-port Channelized SONET/SDH OC3/STM1 [Multi-Rate] MIC with SFP)**

```

user@host> show chassis pic fpc-slot 3 pic-slot 0
FPC slot 3, PIC slot 0 information:
  Type                MIC-3D-8CHOC3-4CHOC12
  State                Online
  PIC version          1.9
  Uptime               1 hour, 21 minutes, 24 seconds

```

## PIC port information:

Port	Cable type	Fiber type	Xcvr vendor	Xcvr vendor part number	Wavelength
0	OC12 short reach	SM	FINISAR CORP.	FTRJ1322P1BTR-J3	1310 nm
1	OC12 short reach	SM	FINISAR CORP.	FTRJ1322P1BTR-J3	1310 nm
2	OC12 inter reach	SM	FINISAR CORP.	FTRJ1322P1BTR-J2	1310 nm
4	OC12 short reach	SM	FINISAR CORP.	FTRJ1322P1BTR-J3	1310 nm
5	OC12 short reach	SM	FINISAR CORP.	FTRJ1322P1BTR-J3	1310 nm
6	OC12 short reach	SM	FINISAR CORP.	FTRJ1322P1BTR-J3	1310 nm
7	OC12 short reach	SM	FINISAR CORP.	FTRJ1322P1BTR-J3	1310 nm

## show chassis pic fpc-slot pic-slot (4-port Channelized SONET/SDH OC3/STM1 [Multi-Rate] MIC with SFP)

```
user@host> show chassis pic fpc-slot 5 pic-slot 0
```

FPC slot 5, PIC slot 0 information:

Type	MIC-3D-4CHOC3-2CHOC12
State	Online
PIC version	1.9
Uptime	1 hour, 21 minutes

## PIC port information:

Port	Cable type	Fiber type	Xcvr vendor	Xcvr vendor part number	Wavelength
1	OC12 inter reach	SM	FINISAR CORP.	FTRJ1322P1BTR-J3	1310 nm
2	OC12 inter reach	SM	FINISAR CORP.	FTRJ1322P1BTR-J3	1310 nm
3	OC12 short reach	SM	FINISAR CORP.	FTRJ1322P1BTR-J3	1310 nm

## show chassis pic fpc-slot pic-slot (1-port OC192/STM64 MIC with XFP)

```
user@host> show chassis pic fpc-slot 1 pic-slot 0
```

FPC slot 1, PIC slot 0 information:

Type	MIC-3D-10C192-XFP
State	Online
PIC version	1.2
Uptime	1 day, 11 hours, 4 minutes, 6 seconds

## PIC port information:

Port	Cable type	Fiber type	Xcvr vendor	Xcvr vendor part number	Wavelength
0	OC192 short reach	n/a	FINISAR CORP.	FTLX1412M3BCL-J3	1310 nm

## show chassis pic fpc-slot 1 pic-slot 2 (8-port DS3/E3 MIC)

```
user@host> show chassis pic fpc-slot 1 pic-slot 2
```

FPC slot 1, PIC slot 2 information:

Type	MIC-3D-8DS3-E3
State	Online
PIC version	1.10
Uptime	4 days, 1 hour, 29 minutes, 19 seconds
Channelization Mode	Disabled

## show chassis pic fpc-slot pic-slot (OTN)

```
user@host> show chassis pic fpc-slot 5 pic-slot 0
```

PIC fpc slot 5 pic slot 0 information:

Type	1x10GE(LAN),OTN
ASIC type	H chip
State	Online

```

PIC version          1.0
Uptime              5 minutes, 50 seconds

```

#### show chassis pic fpc-slot pic-slot (QFX3500 Switch)

```

user@switch> show chassis pic fpc-slot 0 pic-slot 0
FPC slot 0, PIC slot 0 information:
Type 48x 10G-SFP+ Builtin
State Online
Uptime 3 days, 3 hours, 5 minutes, 20 seconds

```

#### show chassis pic interconnect-device fpc-slot pic-slot (QFabric Systems)

```

user@switch> show chassis pic interconnect-device interconnect1 fpc-slot 9 pic-slot 0
FPC slot 9, PIC slot 0 information:
Type 16x 40G-GE Builtin
State Online
Uptime 2 hours, 47 minutes, 40 seconds

```

#### show chassis pic node-device fpc-slot pic-slot (QFabric System)

```

user@switch> show chassis pic node-device node1 pic-slot 0
FPC slot node1, PIC slot 0 information:
Type 48x 10G-SFP+ Builtin
State Online
Uptime 2 hours, 52 minutes, 37 seconds

```

#### PIC port information:

Port	Cable type	Fiber type	Xcvr vendor	Xcvr vendor part number	Wavelength
0	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
1	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
2	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
3	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
4	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
5	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
6	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
7	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
8	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
9	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
10	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
11	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
12	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
13	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
14	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
15	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
16	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
17	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
18	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
19	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
20	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
21	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
22	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
23	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
24	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
25	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
26	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
27	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
28	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
29	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
30	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
31	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm



32	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
33	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
34	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
35	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
36	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
37	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
38	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
39	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
40	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
41	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
42	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
43	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
44	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
45	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
46	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm
47	10GBASE SR	MM	SumitomoElectric	SPP5101SR-J3	850 nm

#### show chassis pic fpc-slot pic-slot (ACX2000 Universal Access Router)

```

user@host> show chassis pic fpc-slot 0 pic-slot 1
FPC slot 0, PIC slot 1 information:
Type                               8x 1GE(LAN) RJ45 Built-in
State                               Online
Uptime                             6 days, 2 hours, 51 minutes, 11 seconds

```

#### show chassis pic fpc-slot pic-slot (MX Routers with Media Services Blade [MSB])

```

user@switch> show chassis pic fpc-slot 1 pic-slot 0
FPC slot 1, PIC slot 0 information:
Type                               AS-MSC
State                               Online
PIC version                         1.6
Uptime                             11 hours, 17 minutes, 56 seconds

```

#### show chassis pic FPC slot PIC slot (MX Routers with Media Services Blade [MSB])

```

user@switch> show chassis pic fpc-slot 1 pic-slot 2
Type                               AS-MXC
State                               Online
PIC version                         1.0
Uptime                             11 hours, 18 minutes, 3 seconds

```

#### show chassis pic transport fpc-slot pic-slot (PTX Series Packet Transport Routers)

```

user@host> show chassis pic transport fpc-slot 2 pic-slot 0
Administrative State:               In Service
Operational State:                 Normal

```

## show chassis routing-engine

---

<b>Syntax</b>	show chassis routing-engine <bios   <i>slot</i> >
<b>Syntax (EX Series Switches)</b>	show chassis routing-engine < <i>slot</i> >
<b>Syntax (T Series routers)</b>	show chassis routing-engine <bios   <i>slot</i> >
<b>Syntax (TX Matrix Routers)</b>	show chassis routing-engine <bios   <i>slot</i> > <lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Routers)</b>	show chassis routing-engine <bios   <i>slot</i> > <lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (QFX Series)</b>	show chassis routing-engine <interconnect-device <i>name</i> > <node-device <i>name</i> >
<b>Syntax (MX Series Routers)</b>	show chassis routing-engine <bios   <i>slot</i> > <all-members> <local> <member <i>member-id</i> >
<b>Syntax (MX2010 and MX2020 3D Universal Edge Routers)</b>	show chassis routing-engine <bios   <i>slot</i> >
<b>Syntax (MX104 3D Universal Edge Routers)</b>	show chassis routing-engine
<b>Syntax (ACX Series Universal Access Routers)</b>	show chassis routing-engine
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release in 9.6. Command introduced in Junos OS Release 11.1 for QFX Series. Command introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers. Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers. Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers. Command introduced in Junos OS Release 13.2 for MX104 3D Universal Edge Routers.
<b>Description</b>	Display the status of the Routing Engine.

**Options** **none**—Display information about one or more Routing Engines. On a TX Matrix router, display information about all Routing Engines on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display information about all Routing Engines on the TX Matrix Plus router and its attached routers.

**all-members**—(MX Series routers only) (Optional) Display Routing Engine information for all members of the Virtual Chassis configuration.

**bios**—(Optional) Display the (BIOS) firmware version.

**interconnect-device *number***—(QFabric systems only) (Optional) Display Routing Engine information for a specified Interconnect device.

**lcc *number***—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display Routing Engine information for a specified T640 router (line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display Routing Engine information for a specified router (line-card chassis) that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(MX Series routers only) (Optional) Display Routing Engine information for the local Virtual Chassis member.

**member *member-id***—(MX Series routers only) (Optional) Display Routing Engine information for the specified member of the Virtual Chassis configuration. For an MX Series Virtual Chassis, replace *member-id* with a value of 0 or 1.

**node-device *number***—(QFabric systems only) (Optional) Display Routing Engine information for a specified Node device.

**scc**—(TX Matrix routers only) (Optional) Display Routing Engine information for the TX Matrix router (switch-card chassis).

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

**slot**—(Systems with multiple Routing Engines) (Optional) Display information for an individual Routing Engine. Replace *slot* with 0 or 1. For QFX3500 switches, there is only one Routing Engine, so you do not need to specify the slot number.

**Required Privilege Level** view

- Related Documentation**
- [request chassis routing-engine master on page 213](#)
  - [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 786](#)  
[show chassis routing-engine \(M10 Router\) on page 787](#)  
[show chassis routing-engine \(M20 Router\) on page 787](#)  
[show chassis routing-engine \(M40 Router\) on page 788](#)  
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[show chassis routing-engine \(ACX2000 Universal Access Router\) on page 801](#)  
[show chassis routing-engine \(ACX1000 Universal Access Router\) on page 801](#)

**Output Fields** [Table 39 on page 784](#) lists the output fields for the **show chassis routing-engine** command. Output fields are listed in the approximate order in which they appear.

**Table 39: 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: <b>Master</b> , <b>Backup</b> , or <b>Disabled</b> .
Election priority	(Systems with multiple Routing Engines) Election priority for the Routing Engine: <b>Master</b> or <b>Backup</b> .
Temperature	Temperature of the air flowing past the Routing Engine.

Table 39: show chassis routing-engine Output Fields (*continued*)

Field Name	Field Description
<b>CPU Temperature</b>	Temperature of the CPU.
<b>DRAM</b>	Total DRAM available to the Routing Engine's processor.  Starting with Junos OS Release 12.3R1, the DRAM field displays both available memory and installed memory.
<b>Memory utilization</b>	Percentage of Routing Engine memory being used.
<b>CPU utilization</b>	Information about the Routing Engine's CPU utilization: <ul style="list-style-type: none"> <li>• <b>User</b>—Percentage of CPU time being used by user processes.</li> <li>• <b>Background</b>—Percentage of CPU time being used by background processes.</li> <li>• <b>Kernel</b>—Percentage of CPU time being used by kernel processes.</li> <li>• <b>Interrupt</b>—Percentage of CPU time being used by interrupts.</li> <li>• <b>Idle</b>—Percentage of CPU time that is idle.</li> </ul>
<b>Model</b>	Routing Engine model number.
<b>Serial ID</b>	(Systems with multiple Routing Engines) Identification number of the Routing Engine in this slot.
<b>Start time</b>	Time at which the Routing Engine started running.
<b>Uptime</b>	How long the Routing Engine has been running.
Routing Engine BIOS Version	BIOS version being run by the Routing Engine.

Table 39: show chassis routing-engine Output Fields (*continued*)

Field Name	Field Description
Last reboot reason	<p>Reason for last reboot, including:</p> <ul style="list-style-type: none"> <li><b>power cycle/failure</b>—Halt of the Routing Engine using the <b>halt</b> command, powering down using the power button on the chassis or any other method (such as removal of the control board or Routing Engine), and then powering back the Routing Engine. A halt of the operating system also occurs if you enter the <b>request system halt</b> command. You can enter this command to halt the system operations on the chassis or specific Routing Engines. To restart the software, press any key on the keyboard.</li> <li><b>watchdog</b>—Reboot due to a hardware watchdog. A watchdog is a hardware monitoring process that examines the health and performance of the router to enable the device to recover from failures. A watchdog checks for problems at certain intervals, and reboots the routing engine if a problem is encountered.</li> <li><b>reset-button reset</b>—(Not available on the J Series router or EX Series switch) Reboot due to pressing of the reset button on the Routing Engine.</li> <li><b>power-button hard power off</b>—Reboot due to pressing of the power button on the chassis. A powering down of the software also occurs if you enter the <b>request system power-off</b> command. You can enter this command to power down the chassis or specific Routing Engines; you can then restart the software.</li> <li><b>misc hardware reason</b>—Reboot due to miscellaneous hardware reasons.</li> <li><b>thermal shutdown</b>—Reboot due to the router or switch reaching a critical temperature at which point it is unsafe to continue operations.</li> <li><b>hard disk failure</b>—Reboot due to a hard disk or solid-state drive (SSD) failure.</li> <li><b>reset from debugger</b>—Reboot due to reset from the debugger.</li> <li><b>chassis control reset</b>—Restart the chassis process that manages PICs, FPCs, and other hardware components. The chassis control module that runs the Routing Engine performs management and monitoring functions, and it provides a single access point for operational and maintenance functions. A reset of the chassis management process occurs when you enter the <b>restart chassis-control</b> command.</li> <li><b>bios auto recovery reset</b>—Reboot due to a BIOS auto-recovery reset.</li> <li><b>could not be determined</b>—Reboot due to an undetermined reason.</li> <li><b>Router rebooted after a normal shutdown</b>—Reboot due to a normal shutdown. This reason is displayed if the Routing Engine is powered down by pushing and holding the online/offline button on the Routing Engine faceplate for 30 seconds, and then powered back. A reboot of the software also occurs if you enter the <b>request system reboot</b> command. You can enter this command to reboot the chassis or specific Routing Engines.</li> </ul>
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 routing-engine (M20 Router)

```

user@host> show chassis routing-engine
Routing Engine status:
  Slot 0:
    Current state Master
    Election priority Master (default)
    Temperature 29 degrees C / 84 degrees F
    DRAM 768 MB
    Memory utilization 20 percent
    CPU utilization:
      User 1 percent
      Background 0 percent
      Kernel 2 percent
      Interrupt 0 percent
      Idle 97 percent
    Model RE-2.0
    Serial ID 58000007348d9a01
    Start time 2003-12-30 07:05:47 PST
    Uptime 3 hours, 41 minutes, 14 seconds
    Last reboot reason Router rebooted after a normal shutdown
    Load averages: 1 minute 5 minute 15 minute
                    0.00 0.02 0.00

  Routing Engine status:
    Slot 1:
      Current state Backup
      Election priority Backup (default)
      Temperature 29 degrees C / 84 degrees F
      DRAM 768 MB
      Memory utilization 0 percent
      CPU utilization:

```

```

User                0 percent
Background          0 percent
Kernel              1 percent
Interrupt           0 percent
Idle                99 percent
Model               RE-2.0
Serial ID           d800000734745701
Start time          2003-06-17 16:37:33 PDT
Uptime              195 days, 18 hours, 47 minutes, 9 seconds
Last reboot reason   Router rebooted after a normal shutdown

```

### show chassis routing-engine (M40 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 (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 (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 (MX104 Router)

```

user@host> show chassis routing-engine

```

```

Routing Engine status:
Slot 0:
  Current state           Master
  Election priority       Master (default)
  Temperature             32 degrees C / 89 degrees F
  CPU temperature         42 degrees C / 107 degrees F
  DRAM                   3840 MB (3840 MB installed)
  Memory utilization      18 percent
  CPU utilization:
    User                  0 percent
    Background            0 percent
    Kernel                3 percent
    Interrupt             2 percent
    Idle                  94 percent
  Model                   RE-MX-104
  Serial ID               CAAR5925
  Start time              2013-06-05 13:17:08 IST
  Uptime                  1 hour, 15 minutes, 8 seconds
  Last reboot reason      0x200:normal shutdown
  Load averages:         1 minute   5 minute   15 minute
                        0.87       0.90       0.41

Routing Engine status:
Slot 1:
  Current state           Backup
  Election priority       Backup (default)
  Temperature             32 degrees C / 89 degrees F
  CPU temperature         38 degrees C / 100 degrees F
  DRAM                   3840 MB (3840 MB installed)
  Memory utilization      13 percent
  CPU utilization:
    User                  0 percent
    Background            0 percent
    Kernel                1 percent
    Interrupt             2 percent
    Idle                  97 percent
  Model                   RE-MX-104
  Serial ID               CAAM6369
  Start time              2013-06-05 13:07:37 IST
  Uptime                  1 hour, 24 minutes, 34 seconds
  Last reboot reason      0x200:normal shutdown
  Load averages:         1 minute   5 minute   15 minute
                        0.19       0.15       0.06

```

### show chassis routing-engine (MX240 Router)

```

user@host> show chassis routing-engine
Routing Engine status:
Slot 0:
  Current state           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 (MX480 Router)

```

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 (MX2010 Router)

```

user@host> show chassis routing-engine

Routing Engine status:
Slot 0:
  Current state      Master
  Election priority  Master (default)
  Temperature        3 degrees C / 37 degrees F

```

```

CPU temperature      3 degrees C / 37 degrees F
DRAM                17152 MB
Memory utilization   13 percent
CPU utilization:
  User              0 percent
  Background        0 percent
  Kernel            4 percent
  Interrupt          2 percent
  Idle              95 percent
Model               RE-S-1800x4
Serial ID           9009099704
Start time          2012-10-02 14:33:32 PDT
Uptime              14 hours, 39 minutes, 39 seconds
Last reboot reason   Router rebooted after a normal shutdown.
Load averages:      1 minute  5 minute  15 minute
                    0.06      0.05      0.01

Routing Engine status:
Slot 1:
  Current state      Backup
  Election priority   Backup (default)
  Temperature        1 degrees C / 33 degrees F
  CPU temperature     2 degrees C / 35 degrees F
  DRAM               17152 MB
  Memory utilization  11 percent
  CPU utilization:
    User              0 percent
    Background        0 percent
    Kernel            0 percent
    Interrupt          0 percent
    Idle              100 percent
  Model              RE-S-1800x4
  Serial ID           9009099706
  Start time          2012-10-02 10:36:06 PDT
  Uptime              18 hours, 36 minutes, 57 seconds
  Last reboot reason   Router rebooted after a normal shutdown.
  Load averages:      1 minute  5 minute  15 minute
                    0.01      0.00      0.00

```

### show chassis routing-engine (MX2020 Router)

```

user@host> show chassis routing-engine
Routing Engine status:
Slot 0:
  Current state      Master
  Election priority   Master (default)
  Temperature        6 degrees C / 42 degrees F
  CPU temperature     6 degrees C / 42 degrees F
  DRAM               17152 MB
  Memory utilization  14 percent
  CPU utilization:
    User              1 percent
    Background        0 percent
    Kernel            7 percent
    Interrupt          2 percent
    Idle              91 percent
  Model              RE-S-1800x4
  Serial ID           9009089704
  Start time          2012-10-02 11:05:24 PDT
  Uptime              2 days, 15 hours, 49 minutes, 13 seconds
  Last reboot reason   Router rebooted after a normal shutdown.
  Load averages:      1 minute  5 minute  15 minute

```

```

                                0.10      0.05      0.01
Routing Engine status:
Slot 1:
  Current state                Backup
  Election priority            Backup (default)
  Temperature                   7 degrees C / 44 degrees F
  CPU temperature               5 degrees C / 41 degrees F
  DRAM                          17152 MB
  Memory utilization            12 percent
  CPU utilization:
    User                        0 percent
    Background                  0 percent
    Kernel                      0 percent
    Interrupt                   0 percent
    Idle                        99 percent
  Model                         RE-S-1800x4
  Serial ID                     9009094138
  Start time                    2012-10-02 11:09:57 PDT
  Uptime                        2 days, 15 hours, 44 minutes, 27 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 (T320 router)

```

user@host> show chassis routing-engine
Slot 0:
  Current state                Master
  Election priority            Master (default)
  Temperature                   51 degrees C / 123 degrees F
  CPU temperature               55 degrees C / 131 degrees F
  DRAM                          3584 MB
  Memory utilization            11 percent
  CPU utilization:
    User                        0 percent
    Background                  0 percent
    Kernel                      2 percent
    Interrupt                   0 percent
    Idle                        97 percent
  Model                         RE-A-2000
  Serial ID                     9009010618
  Start time                    2012-10-10 01:24:05 PDT
  Uptime                        5 days, 10 hours, 49 minutes, 23 seconds
  Last reboot reason            0x1:power cycle/failure
  Load averages:               1 minute   5 minute   15 minute
                                0.00      0.05      0.04

Routing Engine status:
Slot 1:
  Current state                Backup
  Election priority            Backup (default)
  Temperature                   45 degrees C / 113 degrees F
  CPU temperature               48 degrees C / 118 degrees F
  DRAM                          3584 MB
  Memory utilization            9 percent
  CPU utilization:
    User                        0 percent
    Background                  0 percent
    Kernel                      0 percent
    Interrupt                   0 percent
    Idle                        100 percent
  Model                         RE-A-2000

```

```
Serial ID          9009003642
Start time        2012-10-10 01:24:04 PDT
Uptime           5 days, 10 hours, 49 minutes, 28 seconds
Last reboot reason 0x1:power cycle/failure
```

#### show chassis routing-engine (T640 router)

```
user@host> show chassis routing-engine
```

```
Routing Engine status:
```

```
Slot 0:
```

```
Current state      Master
Election priority  Master (default)
Temperature        50 degrees C / 122 degrees F
CPU temperature    58 degrees C / 136 degrees F
DRAM              3584 MB
Memory utilization 14 percent
CPU utilization:
  User            1 percent
  Background      0 percent
  Kernel          4 percent
  Interrupt       1 percent
  Idle            95 percent
Model             RE-A-2000
Serial ID         1000686556
Start time        2012-10-10 01:24:02 PDT
Uptime           5 days, 10 hours, 50 minutes, 27 seconds
Last reboot reason 0x1:power cycle/failure
Load averages:    1 minute   5 minute   15 minute
                  1.24       0.33       0.12
```

```
Routing Engine status:
```

```
Slot 1:
```

```
Current state      Backup
Election priority  Backup (default)
Temperature        44 degrees C / 111 degrees F
CPU temperature    49 degrees C / 120 degrees F
DRAM              3584 MB
Memory utilization 12 percent
CPU utilization:
  User            0 percent
  Background      0 percent
  Kernel          0 percent
  Interrupt       1 percent
  Idle            99 percent
Model             RE-A-2000
Serial ID         1000702739
Start time        2012-10-10 01:24:02 PDT
Uptime           5 days, 10 hours, 50 minutes, 26 seconds
Last reboot reason 0x1:power cycle/failure
```

#### show chassis routing-engine (T1600 router)

```
user@host> show chassis routing-engine
```

```
Routing Engine status:
```

```
Slot 0:
```

```
Current state      Master
Election priority  Master (default)
Temperature        48 degrees C / 118 degrees F
CPU temperature    58 degrees C / 136 degrees F
DRAM              3584 MB
Memory utilization 13 percent
CPU utilization:
```

```

User 0 percent
Background 0 percent
Kernel 3 percent
Interrupt 1 percent
Idle 96 percent
Model RE-A-2000
Serial ID 1000704521
Start time 2012-10-10 01:23:41 PDT
Uptime 5 days, 10 hours, 46 minutes, 56 seconds
Last reboot reason 0x1:power cycle/failure
Load averages: 1 minute 5 minute 15 minute
                0.05      0.03      0.01

Routing Engine status:
Slot 1:
  Current state Backup
  Election priority Backup (default)
  Temperature 44 degrees C / 111 degrees F
  CPU temperature 48 degrees C / 118 degrees F
  DRAM 3584 MB
  Memory utilization 12 percent
  CPU utilization:
    User 0 percent
    Background 0 percent
    Kernel 0 percent
    Interrupt 0 percent
    Idle 100 percent
  Model RE-A-2000
  Serial ID 9009006579
  Start time 2012-10-10 01:23:42 PDT
  Uptime 5 days, 10 hours, 46 minutes, 54 seconds
  Last reboot reason 0x1:power cycle/failure

```

#### show chassis routing-engine (T4000 router)

```

user@host> show chassis routing-engine
Routing Engine status:
Slot 0:
  Current state Master
  Election priority Master (default)
  Temperature 33 degrees C / 91 degrees F
  CPU temperature 50 degrees C / 122 degrees F
  DRAM 8960 MB
  Memory utilization 18 percent
  CPU utilization:
    User 0 percent
    Background 0 percent
    Kernel 4 percent
    Interrupt 1 percent
    Idle 95 percent
  Model RE-DUO-1800
  Serial ID P737F-002248
  Start time 2012-02-09 22:49:53 PST
  Uptime 2 hours, 21 minutes, 35 seconds
  Last reboot reason Router rebooted after a normal shutdown.
  Load averages: 1 minute 5 minute 15 minute
                  0.00      0.04      0.00

Routing Engine status:
Slot 1:
  Current state Backup
  Election priority Backup (default)
  Temperature 32 degrees C / 89 degrees F

```

```

CPU temperature      46 degrees C / 114 degrees F
DRAM                8960 MB
Memory utilization   24 percent
CPU utilization:
  User              0 percent
  Background        0 percent
  Kernel            0 percent
  Interrupt         0 percent
  Idle              99 percent
Model               RE-DU0-1800
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

```

```

1cc0-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
1cc0-re0:
```

```
-----
Routing Engine BIOS Version: V1.0.17
1cc2-re0:
```

```
-----
Routing Engine BIOS Version: V1.0.0
```

### show chassis routing-engine (TX Matrix Plus Router)

```
user@host> show chassis routing-engine
sfc0-re0:
```

```
-----
Routing Engine status:
```

Slot 0:

Current state	Master
Election priority	Master (default)
Temperature	27 degrees C / 80 degrees F
CPU temperature	42 degrees C / 107 degrees F
DRAM	3327 MB
Memory utilization	12 percent
CPU utilization:	
User	0 percent
Background	0 percent
Kernel	2 percent
Interrupt	0 percent
Idle	98 percent
Model	RE-TXP-SFC
Serial ID	737A-1024
Start time	2009-05-11 17:39:49 PDT
Uptime	3 hours, 45 minutes, 25 seconds
Last reboot reason	Router rebooted after a normal shutdown.
Load averages:	1 minute    5 minute    15 minute
	0.00        0.00        0.00

Routing Engine status:

Slot 1:

Current state	Backup
Election priority	Backup (default)
Temperature	29 degrees C / 84 degrees F
CPU temperature	43 degrees C / 109 degrees F
DRAM	3327 MB
Memory utilization	11 percent
CPU utilization:	
User	0 percent
Background	0 percent
Kernel	0 percent
Interrupt	0 percent
Idle	100 percent
Model	RE-TXP-SFC
Serial ID	737A-1024
Start time	2009-05-11 17:08:54 PDT
Uptime	4 hours, 16 minutes, 52 seconds
Last reboot reason	0x1:power cycle/failure

```
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
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, 45 minutes, 26 seconds
  Last reboot reason      Router rebooted after a normal shutdown.
  Load averages:         1 minute   5 minute  15 minute

```

```
0.00      0.00      0.00
Routing Engine status:
Slot 1:
  Current state      Backup
  Election priority  Backup (default)
  Temperature        30 degrees C / 86 degrees F
  CPU temperature    43 degrees C / 109 degrees F
  DRAM               3327 MB
  Memory utilization 9 percent
  CPU utilization:
    User             0 percent
    Background       0 percent
    Kernel           0 percent
    Interrupt        0 percent
    Idle             100 percent
  Model              RE-TXP-LCC
  Serial ID          737F-1024
  Start time         2009-05-06 17:31:32 PDT
  Uptime             5 days, 3 hours, 54 minutes, 59 seconds
  Last reboot reason Router rebooted after a normal shutdown.
```

#### show chassis routing-engine bios (TX Matrix Plus Router)

```
user@host> show chassis routing-engine bios
sfc0-re0:
```

```
-----
Routing Engine BIOS Version: V0.0.Z
```

```
lcc0-re0:
```

```
-----
Routing Engine BIOS Version: V0.0.N
```

#### show chassis routing-engine (QFX Series)

```
user@switch> show chassis routing-engine
Routing Engine status:
Slot 0:
  Current state Master
  Election priority Master (default)
  DRAM 2820 MB
  Memory utilization 49 percent
  CPU utilization:
    User 1 percent
    Background 0 percent
    Kernel 1 percent
    Interrupt 0 percent
    Idle 97 percent
  Model QFX3500-48S4Q
  Serial ID S/N ED3709
  Uptime 3 days, 4 hours, 29 minutes, 42 seconds
  Last reboot reason 0x200:chassis control reset
  Load averages: 1 minute 5 minute 15 minute
0.37 0.26 0.19
```

#### show chassis routing-engine (PTX Series Packet Transport Router)

```
user@switch> show chassis routing-engine
Routing Engine status:
Slot 0:
  Current state      Master
  Election priority  Master (default)
  Temperature        60 degrees C / 140 degrees F
```

```

CPU temperature          76 degrees C / 168 degrees F
DRAM                    17152 MB
Memory utilization      11 percent
CPU utilization:
  User                  0 percent
  Background            0 percent
  Kernel                4 percent
  Interrupt             0 percent
  Idle                  95 percent
Model                   RE-DUO-2600
Serial ID               P737A-002231
Start time              2011-12-21 16:54:37 PST
Uptime                  25 minutes, 44 seconds
Last reboot reason      Router rebooted after a normal shutdown.
Load averages:          1 minute   5 minute   15 minute
                        0.01       0.02       0.06

Routing Engine status:
Slot 1:
  Current state          Backup
  Election priority      Backup (default)
  Temperature            50 degrees C / 122 degrees F
  CPU temperature        64 degrees C / 147 degrees F
  DRAM                   17152 MB
  Memory utilization     10 percent
  CPU utilization:
    User                 0 percent
    Background           0 percent
    Kernel                0 percent
    Interrupt            0 percent
    Idle                 99 percent
  Model                  RE-DUO-2600
  Serial ID              P737A-002438
  Start time             2011-12-21 16:52:26 PST
  Uptime                 27 minutes, 49 seconds
  Last reboot reason     Router rebooted after a normal shutdown.

```

#### show chassis routing-engine (ACX2000 Universal Access Router)

```

user@host> show chassis routing-engine
Routing Engine status:
  Temperature            53 degrees C / 127 degrees F
  DRAM                   1536 MB
  Memory utilization     25 percent
  CPU utilization:
    User                 0 percent
    Background           0 percent
    Kernel                0 percent
    Interrupt            1 percent
    Idle                 99 percent
  Model                  RE-ACX-2000
  Start time             2012-05-09 00:57:07 PDT
  Uptime                 5 days, 3 hours, 16 minutes, 15 seconds
  Last reboot reason     Router rebooted after a normal shutdown.
  Load averages:        1 minute   5 minute   15 minute
                        0.00       0.03       0.05

```

#### show chassis routing-engine (ACX1000 Universal Access Router)

```

user@host> show chassis routing-engine
Routing Engine status:
  Temperature            36 degrees C / 96 degrees F

```

DRAM	768 MB
Memory utilization	50 percent
CPU utilization:	
User	3 percent
Background	0 percent
Kernel	6 percent
Interrupt	0 percent
Idle	91 percent
Model	RE-ACX-1000
Start time	2012-05-10 07:12:23 PDT
Uptime	4 days, 10 hours, 46 minutes, 53 seconds
Last reboot reason	Router rebooted after a normal shutdown.
Load averages:	1 minute    5 minute    15 minute
	0.00        0.00        0.00

## show chassis sibs

<b>Syntax</b>	show chassis sibs
<b>Syntax (TX Matrix Router)</b>	show chassis sibs <lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show chassis sibs <lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (PTX Series Packet Transport Routers)</b>	show chassis sibs <detail> <slot>
<b>Release Information</b>	<p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 12.1 for the PTX Series Packet Transport Routers.</p> <p><b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6.</p> <p><b>detail</b> and <b>sib-slot</b> options introduced for the PTX Packet Transport Router in Junos OS Release 12.1</p>
<b>Description</b>	(M320,T Series routers, TX Matrix routers, TX Matrix Plus routers, and PTX Series routers only) Display Switch Interface Boards (SIBs) status information.
<b>Options</b>	<p><b>none</b>—(TX Matrix routers and TX Matrix Plus routers only) On a TX Matrix router, display the SIB status for the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display the SIB status for the TX Matrix Plus router and its attached routers.</p> <p><b>detail</b>—(PTX Series) (Optional) Display detailed SIB status information.</p> <p><b>lcc <i>number</i></b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display SIB status information for a specified T640 router (line-card chassis or LCC) that is connected to the TX Matrix router. On a TX Matrix Plus router, display SIB status information for a specified T1600 or T4000 router (LCC) that is connected to the TX Matrix Plus router.</p> <p>Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"> <li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li> <li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li> <li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> <li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> </ul>

**scc**—(TX Matrix routers only) (Optional) Display SIB status information for the TX Matrix router (switch-card chassis).

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

**slot**—(PTX Series) (Optional) Display status information about the SIB in the specified slot only. The range of values is 0 through 8.

**Required Privilege Level**

view

**Related Documentation**

- [request chassis sib on page 220](#)
- [show chassis spmb sibs on page 824](#)
- [show chassis environment sib on page 393](#)
- [Monitoring the SIBs](#)
- [M320 SIB Description](#)
- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output**

[show chassis sibs \(T640 Router\) on page 807](#)  
[show chassis sibs \(T4000 Router\) on page 807](#)  
[show chassis sibs \(TX Matrix Router\) on page 807](#)  
[show chassis sibs \(T1600 Router\) on page 808](#)  
[show chassis sibs \(TX Matrix Plus Router\) on page 808](#)  
[show chassis sibs \(TX Matrix Plus Router with 3D SIBs\) on page 809](#)  
[show chassis sibs sfc \(TX Matrix Plus Router\) on page 811](#)  
[show chassis sibs lcc \(TX Matrix Plus Router\) on page 812](#)  
[show chassis sibs lcc \(TX Matrix Plus Router with 3D SIBs\) on page 812](#)  
[show chassis sibs \(M320 Router\) on page 813](#)  
[show chassis sibs \(PTX Series\) on page 813](#)  
[show chassis sibs \(PTX Series\) on page 813](#)

**Output Fields**

Table 40 on page 804 lists the output fields for the **show chassis sibs** command. Output fields are listed in the approximate order in which they appear.

**Table 40: show chassis sibs Output Fields**

Field Name	Field Description
Slot	SIB slot number.
Type	(TX Matrix Plus router only) SIB type.
Uptime	How long the SIB has been up and running.
State	SIB status: <ul style="list-style-type: none"> <li>• <b>Activating</b>—SIB is coming online; this is a transitional state.</li> <li>• <b>Deactivating</b>—SIB is going offline; this is a transitional state.</li> </ul>



Table 40: show chassis sibs Output Fields (*continued*)

Field Name	Field Description
	<ul style="list-style-type: none"> <li>• <b>Connected</b>—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.</li> <li>• <b>Disconnected</b>—SIBs on all T640 routers on the TX Matrix router (switch-card chassis) are in the <b>Disconnected</b> 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 <b>Disconnected</b> state, because a SIB on the SFC has gone offline. On the TX Matrix Plus router with 3D SIBs, the LCC SIB is also disconnected if the F13 SIB is online, but none of the cables are connected or trained.</li> <li>• <b>Online</b>—SIB is operational and running.</li> <li>• <b>Offline</b>—SIB is powered down.</li> </ul> <p><b>NOTE:</b> If a SIB transitions to the <b>Offline</b> state, the command displays an appropriate reason in the output. For instance, if the SIB is taken offline using the <b>request chassis sib</b> command, the <b>show chassis sibs</b> command displays <b>--- Offlined by cli command ---</b> in the output.</p> <ul style="list-style-type: none"> <li>• <b>Spare</b>—SIB is redundant and will move to active state if one of the working SIBs fails to pass traffic.</li> </ul> <p><b>NOTE:</b> <b>Spare</b> does not apply to PTX Series Packet Transport Routers, as there are no spare SIBs.</p> <ul style="list-style-type: none"> <li>• <b>Empty</b>—No SIB is present.</li> <li>• <b>Fault</b>—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"> <li>• Onboard fabric ASIC is not operational.</li> <li>• Fiber-optic connector faults.</li> <li>• FPC connector faults.</li> <li>• SIB midplane connector faults.</li> </ul> </li> <li>• <b>Check</b>—SIB is in an alarmed state due to link errors or destination errors. A SIB can transition to the <b>Check</b> state from the online or spare state. The <b>Check</b> state can be caused by the following reasons: <ul style="list-style-type: none"> <li>• Unsupported FPC installed on a router.</li> <li>• SIB not inserted properly (such as bent pins).</li> <li>• 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.</li> </ul> </li> </ul> <p><b>NOTE:</b> For SIBs in the <b>Check</b> state, the output displays some additional information:</p> <ul style="list-style-type: none"> <li>• In Junos OS Release 9.6 and later, the <b>Check</b> state message shows the number of Packet Forwarding Engines in the plane having destination errors. For example, <b>Check (10 destination errors)</b> indicates 10 Packet Forwarding Engines cannot be reached on</li> </ul>

Table 40: show chassis sibs Output Fields (*continued*)

Field Name	Field Description
	<p>that particular SIB. If there are no destination errors, and if the SIB transitions to the <b>Check</b> state because of link errors only, the <b>Check</b> state message shows <b>Check (0 destination errors)</b>.</p> <ul style="list-style-type: none"> <li>In Junos OS Release 9.5 and earlier, the <b>Check</b> state message shows <b>Check (destination errors)</b> 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 <b>Check</b> state because of link errors only, the <b>Check</b> state message shows <b>Check (no destination errors)</b>.</li> </ul> <p>If the SIB is in a <b>Check</b> state, because of destination errors, the CLI displays an additional line in the output, use "<b>show chassis fabric fpcs</b>" and "<b>show chassis fabric sibs</b>" for more details.</p> <ul style="list-style-type: none"> <li>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"> <li>Link errors caused by a link training failure at initialization time—The Packet Forwarding Engine does not use the SIB to send traffic. The <b>show chassis fabric fpcs</b> command shows <b>Plane disabled</b> as status for this link.</li> <li>Link errors caused by CRC errors detected at runtime—The Packet Forwarding Engine continues to use the SIB to send traffic. The <b>show chassis fabric fpcs</b> command shows <b>Link error</b> as the status for this link.</li> </ul> </li> </ul> <p><b>NOTE:</b> The <b>Check</b> state does not apply to PTX Series Packet Transport Routers.</p> <ul style="list-style-type: none"> <li><b>SFC Error</b>—If an F13 SIB on the TX Matrix Plus router (SFC) transitions to the <b>Fault</b> 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 <b>SFC Error</b> state. This state indicates that the F13 SIB to which the LCC SIB is connected has errors.</li> </ul> <p><b>NOTE:</b> The <b>Connected</b>, <b>Disconnected</b>, and <b>SFC Error</b> states are only applicable to the SIBs on an LCC.</p> <ul style="list-style-type: none"> <li><b>Invalid</b>—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.</li> </ul> <p><b>NOTE:</b> The <b>Invalid</b> state is applicable to TX Matrix Plus routers only.</p>
<b>Fabric links</b>	<p>Indicates status of fabric links on the SIB.</p> <ul style="list-style-type: none"> <li><b>Active</b>—All fabric links on SIB are active. Errors detected on the SIB's fabric links, if any, are reported in the Errors column.</li> <li><b>Unused</b>—All fabric links on the SIB are not used for fabric traffic.</li> </ul>
<b>Errors</b>	<p>Indicates if there is any error on the SIB.</p> <ul style="list-style-type: none"> <li><b>None</b>—No errors</li> <li><b>Link Errors</b>—Fabric link errors were found on SIB RX link.</li> </ul>

Table 40: show chassis sibs Output Fields (*continued*)

Field Name	Field Description
	<ul style="list-style-type: none"> <li>• <b>Cell drops</b>—Fabric cell drops were found on the SIB ASIC.</li> <li>• <b>Link Errors, Cell drops</b>—Both link errors and cell drops were detected on at least one of the SIB's fabric links.</li> </ul>
<b>Link Errors</b>	indicate the number of links which are marked faulty because the errors on them have crossed threshold.
<b>Cable Errors</b>	Indicate the number of mandatory cables that are not connected, or in up state for that plane
<b>Destination Errors</b>	Indicate the number of destinations that are not reachable on this plane.

## Sample Output

### show chassis sibs (T640 Router)

```

user@host> show chassis sibs
Slot  State                      Uptime
0     Empty
1     Offline                    --- Offlined by cli command ---
2     Check (21 destination errors) 1 day, 1 hour, 32 minutes, 55 seconds
3     Check (0 destination errors)  1 day, 1 hour, 32 minutes, 45 seconds
4     Empty

use "show chassis fabric fpcs" and "show chassis fabric sibs" for more details

```

### show chassis sibs (T4000 Router)

```

user@host> show chassis sibs
Slot  State                      Uptime
0     Spare
1     Online                    3 hours, 48 minutes, 38 seconds
2     Online                    3 hours, 48 minutes, 22 seconds
3     Online                    3 hours, 48 minutes, 5 seconds
4     Online                    3 hours, 47 minutes, 49 seconds

```

### show chassis sibs (TX Matrix Router)

```

user@host> show chassis sibs
scc-re0:
-----
Slot  State                      Uptime
0     Empty
1     Empty
2     Offline                    --- Offlined by cli command ---
3     Offline
4     Online                    7 days, 21 hours, 50 minutes, 4 seconds
lcc0-re0:
-----
Slot  State                      Uptime
0     Offline                    --- Offlined by cli command ---
1     Empty
2     Check (21 destination errors) 1 day, 1 hour, 32 minutes, 55 seconds

```

```

3    Check (0 destination errors)    1 day, 1 hour, 32 minutes, 45 seconds
4    Empty

```

use "show chassis fabric fpcs" and "show chassis fabric sibs" for more details

### show chassis sibs (T1600 Router)

```
user@host> show chassis sibs
```

```

Slot
Slot  State                      Uptime
0     Check (destination errors)  2 hours, 23 minutes, 2 seconds
1     Offline                    --- Offlined by cli command ---
2     Check (destination errors)  2 hours, 23 minutes, 3 seconds
3     Check (destination errors)  2 hours, 23 minutes, 3 seconds
4     Check (destination errors)  2 hours, 23 minutes, 3 seconds

```

use "show chassis fabric fpcs" and "show chassis fabric sibs" for more details

### show chassis sibs (TX Matrix Plus Router)

```
user@host> show chassis sibs
```

```
sfc0-re0:
```

```

-----
Slot  State          Type          Link errors  Destination errors  Uptime
0     Spare          SIB F13      NONE         NONE
1     Empty
2     Invalid
3     Online          SIB F13      NONE         NONE          1 hour,
53 minutes, 19 seconds
4     Empty
5     Invalid
6     Online          SIB F13      NONE         NONE          1 hour,
53 minutes, 8 seconds
7     Empty
8     Online          SIB F13      NONE         NONE          1 hour,
52 minutes, 57 seconds
9     Empty
10    Invalid
11    Online          SIB F13      NONE         NONE          1 hour,
52 minutes, 46 seconds
12    Empty
13    Invalid
14    Invalid
15    Invalid
0/0   Spare          SIB F2S      NONE         NONE
0/2   Spare          SIB F2S      NONE         NONE
0/4   Spare          SIB F2S      NONE         NONE
0/6   Spare          SIB F2S      NONE         NONE
1/0   Online          SIB F2S      NONE         NONE          1 hour,
53 minutes, 29 seconds
1/2   Online          SIB F2S      NONE         NONE          1 hour,
53 minutes, 28 seconds
1/4   Online          SIB F2S      NONE         NONE          1 hour,
53 minutes, 27 seconds
1/6   Online          SIB F2S      NONE         NONE          1 hour,
53 minutes, 26 seconds
2/0   Online          SIB F2S      NONE         NONE          1 hour,
53 minutes, 18 seconds
2/2   Online          SIB F2S      NONE         NONE          1 hour,
53 minutes, 17 seconds

```

```

2/4  Online          SIB F2S          NONE          NONE          1 hour,
53 minutes, 16 seconds
2/6  Online          SIB F2S          NONE          NONE          1 hour,
53 minutes, 14 seconds
3/0  Online          SIB F2S          NONE          NONE          1 hour,
53 minutes, 7 seconds
3/2  Online          SIB F2S          NONE          NONE          1 hour,
53 minutes, 5 seconds
3/4  Online          SIB F2S          NONE          NONE          1 hour,
53 minutes, 4 seconds
3/6  Online          SIB F2S          NONE          NONE          1 hour,
53 minutes, 3 seconds
4/0  Online          SIB F2S          NONE          NONE          1 hour,
52 minutes, 56 seconds
4/2  Online          SIB F2S          NONE          NONE          1 hour,
52 minutes, 54 seconds
4/4  Online          SIB F2S          NONE          NONE          1 hour,
52 minutes, 53 seconds
4/6  Online          SIB F2S          NONE          NONE          1 hour,
52 minutes, 52 seconds

```

```
lcc0-re0:
```

```

-----
Slot State          Link errors Destination errors Uptime
0  Spare            NONE          NONE
1  Online            NONE          NONE          1 hour, 53 minutes, 31
seconds
2  Online            NONE          NONE          1 hour, 53 minutes, 27
seconds
3  Online            NONE          NONE          1 hour, 53 minutes, 23
seconds
4  Online            NONE          NONE          1 hour, 53 minutes, 19
seconds

```

#### show chassis sibs (TX Matrix Plus Router with 3D SIBs)

```
user@host> show chassis sibs
```

```
sfc0-re0:
```

```

-----
Slot State          Type          Cable errors Link errors Destination
errors Uptime
0  Online            SIB F13          6          NONE          NONE
21 hours, 54 minutes, 28 seconds
1  Online            SIB F13          8          NONE          NONE
21 hours, 54 minutes, 12 seconds
2  Invalid
3  Online            SIB F13          6          NONE          NONE
21 hours, 57 minutes, 6 seconds
4  Online            SIB F13          8          1          NONE
21 hours, 56 minutes, 49 seconds
5  Invalid
6  Online            SIB F13          6          NONE          NONE
21 hours, 56 minutes, 25 seconds
7  Online            SIB F13          8          NONE          NONE
21 hours, 56 minutes, 8 seconds
8  Online            SIB F13          6          NONE          NONE
21 hours, 55 minutes, 43 seconds
9  Online            SIB F13          8          NONE          NONE
21 hours, 55 minutes, 26 seconds
10 Invalid
11 Empty            NONE          NONE          NONE

```

12	Empty	NONE	NONE	NONE
13	Invalid	NONE	NONE	NONE
14	Invalid	NONE	NONE	NONE
15	Invalid	NONE	NONE	NONE
0/0	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 55 minutes, 16 seconds			
0/2	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 54 minutes, 49 seconds			
0/4	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 54 minutes, 47 seconds			
0/6	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 54 minutes, 45 seconds			
1/0	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 57 minutes, 29 seconds			
1/2	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 57 minutes, 27 seconds			
1/4	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 57 minutes, 25 seconds			
1/6	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 57 minutes, 23 seconds			
2/0	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 56 minutes, 48 seconds			
2/2	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 56 minutes, 46 seconds			
2/4	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 56 minutes, 43 seconds			
2/6	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 56 minutes, 41 seconds			
3/0	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 56 minutes, 6 seconds			
3/2	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 56 minutes, 4 seconds			
3/4	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 56 minutes, 2 seconds			
3/6	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 56 minutes			
4/0	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 55 minutes, 24 seconds			
4/2	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 55 minutes, 22 seconds			
4/4	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 55 minutes, 20 seconds			
4/6	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 55 minutes, 18 seconds			

lcc0-re0:

Slot	State	Cable errors	Link errors	Destination errors	Uptime
0	Online	6	NONE	NONE	21 hours, 47 minutes, 29 seconds
1	Online	6	NONE	NONE	21 hours, 47 minutes, 50 seconds
2	Online	6	NONE	NONE	21 hours, 47 minutes, 43 seconds
3	Online	6	NONE	NONE	21 hours, 47 minutes, 36 seconds
4	Empty	NONE	NONE	NONE	

use "show chassis fabric fpcs" and "show chassis fabric sibs" for more details

lcc4-re0:

```

Slot  State          Cable errors  Link errors  Destination errors  Uptime
0      Online          6            NONE         NONE                21 hours,
57 minutes, 1 second
1      Online          6            NONE         NONE                21 hours,
57 minutes, 21 seconds
2      Online          6            NONE         NONE                21 hours,
57 minutes, 14 seconds
3      Online          6            NONE         NONE                21 hours,
57 minutes, 7 seconds
4      Empty          NONE         NONE         NONE
use "show chassis fabric fpcs" and "show chassis fabric sibs" for more details

```

lcc7-re0:

```

-----
Slot  State          Cable errors  Link errors  Destination errors  Uptime
0      Online          2            NONE         NONE                21 hours,
56 minutes, 54 seconds
1      Online          2            NONE         NONE                21 hours,
57 minutes, 21 seconds
2      Online          2            NONE         NONE                21 hours,
57 minutes, 12 seconds
3      Online          2            NONE         NONE                21 hours,
57 minutes, 3 seconds
4      Empty          NONE         NONE         NONE
use "show chassis fabric fpcs" and "show chassis fabric sibs" for more details

```

#### show chassis sibs sfc (TX Matrix Plus Router)

```

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

```

```

-----
Slot  State          Type          Link errors  Destination errors  Uptime
0      Spare          SIB F13       NONE         NONE
1      Empty
2      Invalid
3      Online          SIB F13       NONE         NONE                12 hours,
6 minutes, 22 seconds
4      Empty
5      Invalid
6      Online          SIB F13       NONE         NONE                12 hours,
6 minutes, 11 seconds
7      Empty
8      Online          SIB F13       NONE         NONE                12 hours,
6 minutes
9      Empty
10     Invalid
11     Online          SIB F13       NONE         NONE                12 hours,
5 minutes, 49 seconds
12     Empty
13     Invalid
14     Invalid
15     Invalid
0/0    Spare          SIB F2S       NONE         NONE
0/2    Spare          SIB F2S       NONE         NONE
0/4    Spare          SIB F2S       NONE         NONE
0/6    Spare          SIB F2S       NONE         NONE
1/0    Online          SIB F2S       NONE         NONE                12 hours,
6 minutes, 32 seconds
1/2    Online          SIB F2S       NONE         NONE                12 hours,
6 minutes, 31 seconds
1/4    Online          SIB F2S       NONE         NONE                12 hours,

```

6 minutes, 30 seconds				
1/6 Online	SIB F2S	NONE	NONE	12 hours,
6 minutes, 29 seconds				
2/0 Online	SIB F2S	NONE	NONE	12 hours,
6 minutes, 21 seconds				
2/2 Online	SIB F2S	NONE	NONE	12 hours,
6 minutes, 20 seconds				
2/4 Online	SIB F2S	NONE	NONE	12 hours,
6 minutes, 19 seconds				
2/6 Online	SIB F2S	NONE	NONE	12 hours,
6 minutes, 17 seconds				
3/0 Online	SIB F2S	NONE	NONE	12 hours,
6 minutes, 10 seconds				
3/2 Online	SIB F2S	NONE	NONE	12 hours,
6 minutes, 9 seconds				
3/4 Online	SIB F2S	NONE	NONE	12 hours,
6 minutes, 7 seconds				
3/6 Online	SIB F2S	NONE	NONE	12 hours,
6 minutes, 6 seconds				
4/0 Online	SIB F2S	NONE	NONE	12 hours,
5 minutes, 59 seconds				
4/2 Online	SIB F2S	NONE	NONE	12 hours,
5 minutes, 57 seconds				
4/4 Online	SIB F2S	NONE	NONE	12 hours,
5 minutes, 56 seconds				
4/6 Online	SIB F2S	NONE	NONE	12 hours,
5 minutes, 55 seconds				

**show chassis sibs lcc (TX Matrix Plus Router)**

```
user@host> show chassis sibs lcc 0
lcc0-re0:
```

Slot	State	Link errors	Destination errors	Uptime
0	Online	NONE	NONE	20 hours, 14 minutes,
	50 seconds			
1	Fault	NONE	NONE	
2	Online	NONE	NONE	20 hours, 15 minutes,
	2 seconds			
3	Online	NONE	NONE	20 hours, 14 minutes,
	58 seconds			
4	Online	NONE	NONE	20 hours, 14 minutes,
	54 seconds			

**show chassis sibs lcc (TX Matrix Plus Router with 3D SIBs)**

```
user@host> show chassis sibs lcc 0
lcc0-re0:
```

Slot	State	Cable errors	Link errors	Destination errors	Uptime
0	Disconnected	NONE	NONE	NONE	17 hours,
	2 minutes, 37 seconds				
1	Online	NONE	NONE	NONE	17 hours,
	3 minutes, 6 seconds				
2	Online	NONE	NONE	NONE	17 hours,
	2 minutes, 59 seconds				
3	Online	NONE	NONE	NONE	17 hours,
	2 minutes, 52 seconds				
4	Online	NONE	NONE	NONE	17 hours,
	2 minutes, 44 seconds				



### show chassis sibs (M320 Router)

```
user@host> show chassis sibs
```

0	Online	1 hour, 18 minutes, 3 seconds
1	Offline	--- Offlined by cli command ---
2	Online	1 hour, 18 minutes, 18 seconds
3	Online	1 hour, 18 minutes, 3 seconds

### show chassis sibs (PTX Series)

```
user@host> show chassis sibs
```

Slot	State	Fabric links	Errors
0	Online	Active	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 spmb

---

<b>Syntax</b>	show chassis spmb
<b>Syntax (T4000 Routers)</b>	show chassis spmb <sibs>
<b>Syntax (TX Matrix Routers)</b>	show chassis spmb <sibs> <lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Routers)</b>	show chassis spmb <sibs> <lcc <i>number</i>   sfc <i>number</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. <b>sibs</b> option introduced for the T1600 and TX Matrix Plus routers in Junos OS Release 9.6. Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers. Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.
<b>Description</b>	(T Series routers, MX2010 and MX2020 routers only) Display Switch Processor Mezzanine Board (SPMB) status information.
<b>Options</b>	<p><b>none</b>—(TX Matrix, TX Matrix Plus router , MX2010, and MX2020 routers only) On a TX Matrix router, display SPMB status for the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display SPMB status for the TX Matrix Plus router and its attached routers. On MX2010 and MX2020 routers, display the SPMB status for the routers.</p> <p><b>lcc <i>number</i></b>—(TX Matrix and TX Matrix Plus router only) (Optional) On a TX Matrix router, display information about the SPMB on a specified T640 router (line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display information about the SPMB on a specified router (line-card chassis) that is connected to the TX Matrix Plus router.</p> <p>Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"><li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li><li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li><li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li><li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li></ul> <p><b>scc</b>—(TX Matrix routers only) (Optional) Display information about the SPMB on the TX Matrix router (switch-card chassis).</p>

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

**sibs**—(TX Matrix and TX Matrix Plus router only) (Optional) On a TX Matrix Plus router, display information about the SIBs on the TX Matrix router (switch-card chassis). On a TX Matrix Plus router, display information about the SIBs on The TX Matrix Plus router (switch-fabric chassis). The **sibs** option has the following sub-options:

**lcc number** (TX Matrix, TX Matrix Plus router only) (Optional) On a TX Matrix router, display information about the SIBs on a specified T640 router (line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display information about the SIBs on a specified router (line-card chassis) that is connected to the TX Matrix Plus router.

Replace **number** with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**scc number**—(TX Matrix routers only) (Optional) Display information about the SIBs on the TX Matrix router (switch-card chassis). Replace **number** variable with **0**.

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

Required Privilege  
Level

view

Related  
Documentation

- [request chassis sib on page 220](#)
- [request chassis spmb restart on page 226](#)
- [show chassis spmb sibs on page 824](#)

List of Sample Output

[show chassis spmb on page 816](#)  
[show chassis spmb \(MX2010 Router\) on page 816](#)  
[show chassis spmb \(MX2020 Router\) on page 817](#)  
[show chassis spmb \(T4000 Router\) on page 817](#)  
[show chassis spmb lcc \(TX Matrix Router\) on page 817](#)  
[show chassis spmb scc \(TX Matrix Router\) on page 818](#)  
[show chassis spmb \(T1600 Router\) on page 818](#)  
[show chassis spmb sibs \(T1600 Router\) on page 818](#)  
[show chassis spmb \(TX Matrix Plus Router\) on page 818](#)

[show chassis spmb lcc \(TX Matrix Plus Router\) on page 820](#)  
[show chassis spmb scc \(TX Matrix Plus Router\) on page 820](#)  
[show chassis spmb sibs \(TX Matrix Plus Router\) on page 821](#)  
[show chassis spmb lcc \(TX Matrix Plus router with 3D SIBs\) on page 822](#)  
[show chassis spmb sfc \(TX Matrix Plus router with 3D SIBs\) on page 822](#)

**Output Fields** Table 41 on page 816 lists the output fields for the **show chassis spmb** command. Output fields are listed in the approximate order in which they appear.

**Table 41: show chassis spmb Output Fields**

Field Name	Field Description
Slot	SPMB slot number: 0 or 1.
State	SPMB status: <ul style="list-style-type: none"> <li>• <b>Online</b>—SPMB is operational and running.</li> <li>• <b>Offline</b>—SPMB is powered down.</li> </ul>
Total CPU Utilization (%)	Total percentage of CPU being used by the SPMB processor.
Interrupt CPU Utilization (%)	Of the total CPU being used by the SPMB processor, the percentage being used for interrupts.
Memory Heap Utilization (%)	Percentage of heap space (dynamic memory) being used by the FPC processor. If this number exceeds 80 percent, there may be a software problem (memory leak).
Buffer Utilization (%)	Percentage of buffer space being used by the SPMB processor for buffering internal messages.
Start time	Time at which the SPMB last came online.
Uptime	How long the SPMB has been up and running.

## Sample Output

### show chassis spmb

```

user@host> show chassis spmb
Slot 0 information:
  State                Online
  Total CPU Utilization 1%
  Interrupt CPU Utilization 0%
  Memory Heap Utilization 0%
  Buffer Utilization     40%
  Start time:           2001-08-27 14:05:04 PDT
  Uptime:               46 minutes, 36 seconds

```

### show chassis spmb (MX2010 Router)

```

user@host> show chassis spmb
Slot 0 information:
  State                Online
  Total CPU Utilization 12%

```

```

Interrupt CPU Utilization    0%
Memory Heap Utilization     1%
Buffer Utilization          22%
Start time:                 2012-10-04 15:34:29 PDT
Uptime:                     7 hours, 10 minutes, 15 seconds

Slot 1 information:
State                       Online - Standby
Total CPU Utilization       1%
Interrupt CPU Utilization   0%
Memory Heap Utilization     0%
Buffer Utilization          22%
Start time:                 2012-10-02 14:34:54 PDT
Uptime:                     2 days, 8 hours, 9 minutes, 50 seconds

```

#### show chassis spmb (MX2020 Router)

```

user@host> show chassis spmb
Slot 0 information:
State                       Online
Total CPU Utilization       100%
Interrupt CPU Utilization   0%
Memory Heap Utilization     3%
Buffer Utilization          22%
Start time:                 2012-10-03 14:58:26 PDT
Uptime:                     1 day, 12 hours, 16 minutes, 14 seconds

Slot 1 information:
State                       Online - Standby
Total CPU Utilization       0%
Interrupt CPU Utilization   0%
Memory Heap Utilization     0%
Buffer Utilization          22%
Start time:                 2012-10-03 14:58:27 PDT
Uptime:                     1 day, 12 hours, 16 minutes, 13 seconds

```

#### show chassis spmb (T4000 Router)

```

user@host> show chassis spmb

Slot 0 information:
State                       Online
Total CPU Utilization       18%
Interrupt CPU Utilization   0%
Memory Heap Utilization     0%
Buffer Utilization          22%
Start time:                 2012-02-09 22:51:09 PST
Uptime:                     2 hours, 25 minutes, 45 seconds

Slot 1 information:
State                       Online - Standby
Total CPU Utilization       0%
Interrupt CPU Utilization   0%
Memory Heap Utilization     0%
Buffer Utilization          22%
Start time:                 2012-02-09 22:51:10 PST
Uptime:                     2 hours, 25 minutes, 44 seconds

```

#### show chassis spmb lcc (TX Matrix Router)

```

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

```

```

-----
Slot 0 information:
State                       Online

```

```
Total CPU Utilization      0%
Interrupt CPU Utilization   0%
Memory Heap Utilization    0%
Buffer Utilization         42%
Start time:                2004-08-05 18:43:38 PDT
Uptime:                    8 days, 55 minutes, 52 seconds
```

#### show chassis spmb scc (TX Matrix Router)

```
user@host> show chassis spmb scc
scc-re0:
-----
Slot 0 information:
  State                Online
  Total CPU Utilization 1%
  Interrupt CPU Utilization 0%
  Memory Heap Utilization 0%
  Buffer Utilization    42%
  Start time:          2004-08-05 18:43:37 PDT
  Uptime:              8 days, 1 hour, 6 minutes, 51 seconds
```

#### show chassis spmb (T1600 Router)

```
user@host> show chassis spmb
Slot 0 information:
  State                Online
  Total CPU Utilization 2%
  Interrupt CPU Utilization 0%
  Memory Heap Utilization 0%
  Buffer Utilization    24%
  Start time:          2009-05-07 22:34:03 PDT
  Uptime:              3 days, 4 hours, 14 minutes, 33 seconds
Slot 1 information:
  State                Online - Standby
  Total CPU Utilization 0%
  Interrupt CPU Utilization 0%
  Memory Heap Utilization 0%
  Buffer Utilization    24%
  Start time:          2009-05-07 22:34:02 PDT
  Uptime:              3 days, 4 hours, 14 minutes, 34 seconds
```

#### show chassis spmb sibs (T1600 Router)

```
user@host> show chassis spmb sibs
Slot  State                Uptime
0      Check                3 days, 4 hours, 11 minutes, 59 seconds
1      Disconnected         3 days, 4 hours, 12 minutes, 36 seconds
2      Disconnected         3 days, 4 hours, 12 minutes, 26 seconds
3      Disconnected         3 days, 4 hours, 12 minutes, 17 seconds
4      Disconnected         3 days, 4 hours, 12 minutes, 8 seconds
```

#### show chassis spmb (TX Matrix Plus Router)

```
user@host> show chassis spmb
sfc0-re0:
-----
Slot 0 information:
  State                Online
  Total CPU Utilization 84%
  Interrupt CPU Utilization 0%
  Memory Heap Utilization 0%
  Buffer Utilization    24%
```

```

Start time:                2009-05-11 01:25:20 PDT
Uptime:                    46 minutes, 6 seconds
Slot 1 information:
State                      Online - Standby
Total CPU Utilization      0%
Interrupt CPU Utilization  0%
Memory Heap Utilization    0%
Buffer Utilization         24%
Start time:                2009-05-11 01:25:20 PDT
Uptime:                    46 minutes, 6 seconds

```

```
lcc0-re1:
```

```

-----
Slot 0 information:
State                      Online - Standby
Total CPU Utilization      0%
Interrupt CPU Utilization  0%
Memory Heap Utilization    0%
Buffer Utilization         24%
Start time:                2009-05-11 01:25:09 PDT
Uptime:                    46 minutes, 24 seconds
Slot 1 information:
State                      Online
Total CPU Utilization      5%
Interrupt CPU Utilization  0%
Memory Heap Utilization    0%
Buffer Utilization         24%
Start time:                2009-05-11 01:25:08 PDT
Uptime:                    46 minutes, 25 seconds

```

```
lcc1-re1:
```

```

-----
Slot 0 information:
State                      Online - Standby
Total CPU Utilization      1%
Interrupt CPU Utilization  0%
Memory Heap Utilization    0%
Buffer Utilization         24%
Start time:                2009-05-11 01:25:09 PDT
Uptime:                    46 minutes, 24 seconds
Slot 1 information:
State                      Online
Total CPU Utilization      5%
Interrupt CPU Utilization  0%
Memory Heap Utilization    0%
Buffer Utilization         24%
Start time:                2009-05-11 01:25:10 PDT
Uptime:                    46 minutes, 23 seconds

```

```
lcc2-re1:
```

```

-----
Slot 0 information:
State                      Online - Standby
Total CPU Utilization      0%
Interrupt CPU Utilization  0%
Memory Heap Utilization    0%
Buffer Utilization         24%
Start time:                2009-05-11 01:25:08 PDT
Uptime:                    46 minutes, 25 seconds
Slot 1 information:
State                      Online

```

```
Total CPU Utilization      5%
Interrupt CPU Utilization   0%
Memory Heap Utilization    0%
Buffer Utilization         24%
Start time:                2009-05-11 01:25:10 PDT
Uptime:                    46 minutes, 23 seconds
```

lcc3-re1:

-----

Slot 0 information:

```
State                      Online - Standby
Total CPU Utilization      1%
Interrupt CPU Utilization   0%
Memory Heap Utilization    0%
Buffer Utilization         24%
Start time:                2009-05-11 01:25:10 PDT
Uptime:                    46 minutes, 23 seconds
```

Slot 1 information:

```
State                      Online
Total CPU Utilization      5%
Interrupt CPU Utilization   0%
Memory Heap Utilization    0%
Buffer Utilization         24%
Start time:                2009-05-11 01:25:09 PDT
Uptime:                    46 minutes, 24 seconds
```

#### show chassis spmb lcc (TX Matrix Plus Router)

```
user@host> show chassis spmb lcc 2
```

lcc2-re1:

-----

Slot 0 information:

```
State                      Online - Standby
Total CPU Utilization      0%
Interrupt CPU Utilization   0%
Memory Heap Utilization    0%
Buffer Utilization         24%
Start time:                2009-05-11 01:25:08 PDT
Uptime:                    45 minutes, 18 seconds
```

Slot 1 information:

```
State                      Online
Total CPU Utilization      6%
Interrupt CPU Utilization   0%
Memory Heap Utilization    0%
Buffer Utilization         24%
Start time:                2009-05-11 01:25:10 PDT
Uptime:                    45 minutes, 16 seconds
```

#### show chassis spmb scc (TX Matrix Plus Router)

```
user@host> show chassis spmb sfc 0
```

sfc0-re0:

-----

Slot 0 information:

```
State                      Online
Total CPU Utilization      87%
Interrupt CPU Utilization   0%
Memory Heap Utilization    0%
Buffer Utilization         24%
Start time:                2009-05-11 01:25:20 PDT
Uptime:                    43 minutes, 32 seconds
```



```

Slot 1 information:
  State                      Online - Standby
  Total CPU Utilization      0%
  Interrupt CPU Utilization  0%
  Memory Heap Utilization    0%
  Buffer Utilization          24%
  Start time:                2009-05-11 01:25:20 PDT
  Uptime:                    43 minutes, 32 seconds

```

### show chassis spmb sibs (TX Matrix Plus Router)

```

user@host> show chassis spmb sibs
sfc0-re0:

```

Slot	State	Type	Uptime
0	Online	SIB F13	1 hour, 18 minutes, 54 seconds
1	Online	SIB F13	1 hour, 18 minutes, 45 seconds
2	Invalid		
3	Online	SIB F13	1 hour, 20 minutes, 21 seconds
4	Online	SIB F13	1 hour, 20 minutes, 18 seconds
5	Invalid		
6	Online	SIB F13	1 hour, 19 minutes, 51 seconds
7	Fault	SIB F13	
8	Online	SIB F13	1 hour, 19 minutes, 17 seconds
9	Online	SIB F13	1 hour, 19 minutes, 13 seconds
10	Invalid		
11	Online	SIB F13	1 hour, 17 minutes, 54 seconds
12	Online	SIB F13	1 hour, 17 minutes, 51 seconds
13	Invalid		
14	Invalid		
15	Invalid		
0/0	Online	SIB F2S	1 hour, 18 minutes, 52 seconds
0/2	Online	SIB F2S	1 hour, 18 minutes, 51 seconds
0/4	Online	SIB F2S	1 hour, 18 minutes, 49 seconds
0/6	Online	SIB F2S	1 hour, 18 minutes, 48 seconds
1/0	Online	SIB F2S	1 hour, 20 minutes, 16 seconds
1/2	Online	SIB F2S	1 hour, 20 minutes, 15 seconds
1/4	Online	SIB F2S	1 hour, 20 minutes, 14 seconds
1/6	Online	SIB F2S	1 hour, 20 minutes, 13 seconds
2/0	Online	SIB F2S	1 hour, 19 minutes, 48 seconds
2/2	Online	SIB F2S	1 hour, 19 minutes, 47 seconds
2/4	Online	SIB F2S	1 hour, 19 minutes, 46 seconds
2/6	Online	SIB F2S	1 hour, 19 minutes, 44 seconds
3/0	Online	SIB F2S	1 hour, 19 minutes, 24 seconds
3/2	Online	SIB F2S	1 hour, 19 minutes, 22 seconds
3/4	Online	SIB F2S	1 hour, 19 minutes, 21 seconds
3/6	Online	SIB F2S	1 hour, 19 minutes, 20 seconds
4/0	Online	SIB F2S	1 hour, 18 minutes, 2 seconds
4/2	Online	SIB F2S	1 hour, 18 minutes
4/4	Online	SIB F2S	1 hour, 17 minutes, 58 seconds
4/6	Online	SIB F2S	1 hour, 17 minutes, 58 seconds

```

lcc0-re1:

```

Slot	State	Uptime
0	Online	1 hour, 18 minutes, 58 seconds
1	Online	1 hour, 20 minutes, 25 seconds
2	Fault	
3	Online	1 hour, 18 minutes, 30 seconds
4	Online	1 hour, 18 minutes, 28 seconds

```
lcc1-re1:
```

```
-----
Slot  State                Uptime
0      Online              1 hour, 18 minutes, 58 seconds
1      Online              1 hour, 20 minutes, 26 seconds
2      Fault
3      Online              1 hour, 18 minutes, 22 seconds
4      Online              1 hour, 18 minutes, 20 seconds
```

```
lcc2-re1:
```

```
-----
Slot  State                Uptime
0      Online              1 hour, 18 minutes, 19 seconds
1      Online              1 hour, 20 minutes, 25 seconds
2      Fault
3      Online              1 hour, 18 minutes, 17 seconds
4      Online              1 hour, 18 minutes, 15 seconds
```

```
lcc3-re1:
```

```
-----
Slot  State                Uptime
0      Online              1 hour, 18 minutes, 27 seconds
1      Online              1 hour, 20 minutes, 24 seconds
2      Fault
3      Online              1 hour, 18 minutes, 25 seconds
4      Online              1 hour, 18 minutes, 23 seconds
```

#### show chassis spmb lcc (TX Matrix Plus router with 3D SIBs)

```
user@host > show chassis spmb lcc 0
```

```
lcc0-re1:
```

```
-----
Slot 0 information:
  State                Online - Standby
  Total CPU Utilization 0%
  Interrupt CPU Utilization 0%
  Memory Heap Utilization 0%
  Buffer Utilization    0%
  Start time:          2013-02-08 00:57:20 PST
  Uptime:               19 minutes, 43 seconds
Slot 1 information:
  State                Online
  Total CPU Utilization 0%
  Interrupt CPU Utilization 0%
  Memory Heap Utilization 0%
  Buffer Utilization    22%
  Start time:          2013-02-08 00:56:59 PST
  Uptime:               20 minutes, 4 seconds
```

#### show chassis spmb sfc (TX Matrix Plus router with 3D SIBs)

```
user@host> show chassis spmb sfc 0
```

```
sfc0-re0:
```

```
-----
Slot 0 information:
  State                Online
  Total CPU Utilization 0%
  Interrupt CPU Utilization 0%
  Memory Heap Utilization 0%
  Buffer Utilization    0%
  Start time:          2013-02-06 19:16:55 PST
```

```
Uptime: 1 day, 6 hours, 2 minutes, 59 seconds
Slot 1 information:
State Online - Standby
Total CPU Utilization 0%
Interrupt CPU Utilization 0%
Memory Heap Utilization 0%
Buffer Utilization 0%
Start time: 2013-02-06 19:16:53 PST
Uptime: 1 day, 6 hours, 3 minutes, 1 second
```

## show chassis spmb sibs

---

<b>Syntax</b>	show chassis spmb sibs
<b>Syntax (TX Matrix Router)</b>	show chassis spmb sibs <lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show chassis spmb sibs <lcc <i>number</i>   sfc <i>number</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
<b>Description</b>	(T Series routers only) Display Switch Processor Mezzanine Board (SPMB) Switch Interface Board (SIB) status information.
<b>Options</b>	<p><b>none</b>—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, display the SIB status for the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display the SIB status for the TX Matrix Plus router and its attached routers.</p> <p><b>lcc <i>number</i></b>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display SIB status information for a specified T640 router (line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display SIB status information for a specified router (line-card chassis) that is connected to a TX Matrix Plus router.</p> <p>Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"><li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li><li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li><li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li><li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li></ul> <p><b>scc</b>—(TX Matrix router only) (Optional) Display SIB status information for the TX Matrix router (switch-card chassis).</p> <p><b>sfc</b>—(TX Matrix Plus router only) (Optional) Display SIB status information for the TX Matrix Plus router (or switch-fabric chassis).</p>
<b>Additional Information</b>	On a T Series router, you can use either this command or the <b>show chassis sibs</b> command to produce the same output. The <b>show chassis sibs</b> command is supported on the M320 router and on the T Series routers.

**Required Privilege Level** view

**Related Documentation**

- [show chassis sibs on page 803](#)
- [request chassis sib on page 220](#)
- [request chassis spmb restart on page 226](#)

**List of Sample Output**

- [show chassis spmb sibs \(T320 Router\) on page 826](#)
- [show chassis-spmb-sibs \(T1600 Router\) on page 826](#)
- [show chassis spmb sibs \(T4000 Router\) on page 826](#)
- [show chassis spmb sibs \(TX Matrix Router\) on page 827](#)
- [show chassis spmb sibs lcc \(TX Matrix Router\) on page 827](#)
- [show chassis spmb sibs scc \(TX Matrix Router\) on page 827](#)
- [show chassis spmb sibs \(TX Matrix Plus Router\) on page 827](#)
- [show chassis spmb sibs sfc \(TX Matrix Plus Router\) on page 828](#)

**Output Fields** [Table 42 on page 825](#) lists the output fields for the **show chassis spmb sibs** command. Output fields are listed in the approximate order in which they appear.

**Table 42: show chassis spmb sibs Output Fields**

Field Name	Field Description
Slot	<p>SIB slot number:</p> <ul style="list-style-type: none"> <li>• T640 router, T1600 router or TX Matrix router—0 through 4</li> <li>• TX Matrix Plus router: <ul style="list-style-type: none"> <li>• TXP-F13 SIB Slots—0 through 16</li> <li>• TXP-F2S SIB Slots —0 – 4/[0 2 4 6]</li> </ul> </li> <li>• T320 router—0 through 2</li> </ul>

Table 42: show chassis spmb sibs Output Fields (*continued*)

Field Name	Field Description
<b>State</b>	<p>SIB status:</p> <ul style="list-style-type: none"> <li>• <b>Disconnected</b>—SIBs on all T640 routers on the TX Matrix router (switch-card chassis) are in the <b>Disconnected</b> state, because a SIB on the SCC has gone offline. Likewise, SIBs on all T1600 or T4000 routers on the TX Matrix Plus router (or switch-fabric chassis) are in the <b>Disconnected</b> state, because a SIB on the SFC has gone offline.</li> <li>• <b>Online</b>—SPMB is operational and running.</li> <li>• <b>Offline</b>—SPMB is powered down.</li> <li>• <b>Spare</b>—SIB is redundant and will move to active state if one of the working SIBs fail to pass traffic.</li> <li>• <b>Empty</b>—No SPMB is present.</li> <li>• <b>Fault</b>—SIB is in alarmed state where the SIB's plane is not operational for the following reasons: <ul style="list-style-type: none"> <li>• On-board F-chip is not operational.</li> <li>• Fiber optic connector faults.</li> <li>• FPC connector faults.</li> <li>• SIB midplane connector faults.</li> </ul> </li> <li>• <b>Check</b>—SIB is in alarmed state where the SIB's plane is partially operational for the following reasons: <ul style="list-style-type: none"> <li>• SIB is not inserted properly.</li> <li>• Two or more links between the SIB and PFE fails.</li> </ul> </li> </ul>
<b>Uptime</b>	How long the SIB has been up and running.

## Sample Output

### show chassis spmb sibs (T320 Router)

```
user@host> show chassis spmb sibs
Slot  State
0      Spare
1      Online
2      Online
```

### show chassis-spmb-sibs (T1600 Router)

```
user@host> show chassis spmb sibs
Slot  State
0      Spare
1      Online
2      Empty
3      Online
4      Offline
```

### show chassis spmb sibs (T4000 Router)

```
user@host> show chassis spmb sibs

Slot  State                                Uptime
```

0	Spare	
1	Online	2 hours, 28 minutes, 13 seconds
2	Online	2 hours, 27 minutes, 57 seconds
3	Online	2 hours, 27 minutes, 40 seconds
4	Online	2 hours, 27 minutes, 24 seconds

#### show chassis spmb sibs (TX Matrix Router)

```
user@host> show chassis spmb sibs
Slot  State
0      Online
1      Online
2      Empty
3      Online
4      Offline
```

#### show chassis spmb sibs lcc (TX Matrix Router)

```
user@host> show chassis spmb sibs lcc 0
lcc0-re0:
-----
Slot  State          Uptime
0      Empty
1      Empty
2      Empty
3      Disconnected  8 days, 48 minutes, 58 seconds
4      Online         8 days, 48 minutes, 57 seconds
```

#### show chassis spmb sibs scc (TX Matrix Router)

```
user@host> show chassis spmb sibs scc
scc-re0:
-----
Slot  State          Uptime
0      Empty
1      Empty
2      Empty
3      Offline
4      Online         8 days, 54 minutes, 1 second
```

#### show chassis spmb sibs (TX Matrix Plus Router)

```
user@host> show chassis spmb sibs
sfc0-re0:
-----
Slot  State          Type          Uptime
0      Online         SIB F13       1 hour, 52 minutes, 55 seconds
1      Empty
2      Invalid
3      Online         SIB F13       1 hour, 53 minutes, 3 seconds
4      Empty
5      Invalid
6      Empty
7      Empty
8      Empty
9      Empty
10     Invalid
11     Empty
12     Empty
13     Invalid
14     Invalid
15     Invalid
```

0/0	Online	SIB F2S	1 hour, 53 minutes, 2 seconds
0/2	Online	SIB F2S	1 hour, 53 minutes, 1 second
0/4	Online	SIB F2S	1 hour, 52 minutes, 59 seconds
0/6	Online	SIB F2S	1 hour, 52 minutes, 58 seconds
1/0	Online	SIB F2S	1 hour, 53 minutes, 10 seconds
1/2	Online	SIB F2S	1 hour, 53 minutes, 8 seconds
1/4	Online	SIB F2S	1 hour, 53 minutes, 7 seconds
1/6	Online	SIB F2S	1 hour, 53 minutes, 6 seconds
2/0	Empty		
2/2	Empty		
2/4	Empty		
2/6	Empty		
3/0	Empty		
3/2	Empty		
3/4	Empty		
3/6	Empty		
4/0	Empty		
4/2	Empty		
4/4	Empty		
4/6	Empty		

lcc0-re0:

Slot	State	Uptime
0	Online	1 hour, 53 minutes, 1 second
1	Online	1 hour, 53 minutes, 3 seconds
2	Empty	
3	Empty	
4	Empty	

lcc1-re1:

Slot	State	Uptime
0	Online	1 hour, 47 minutes, 13 seconds
1	Online	1 hour, 47 minutes, 15 seconds
2	Empty	
3	Empty	
4	Empty	

#### show chassis spmb sibs sfc (TX Matrix Plus Router)

user@host> show chassis spmb sibs sfc 0

sfc0-re0:

Slot 0 information:

State	Online
Total CPU Utilization	16%
Interrupt CPU Utilization	0%
Memory Heap Utilization	0%
Buffer Utilization	24%
Start time:	2009-06-17 20:59:47 PDT
Uptime:	1 hour, 56 minutes, 30 seconds

Slot 1 information:

State	Online - Standby
Total CPU Utilization	0%
Interrupt CPU Utilization	0%
Memory Heap Utilization	0%
Buffer Utilization	24%
Start time:	2009-06-17 20:59:48 PDT
Uptime:	1 hour, 56 minutes, 29 seconds







## CHAPTER 18

# System Software Commands

## request routing-engine login

<b>Syntax</b>	request routing-engine login (backup   master   other-routing-engine   re0   re1)
<b>Syntax (Root System Domain)</b>	request routing-engine login (backup (psd <i>n</i>   rsd)   master (psd <i>n</i>   rsd)   other-routing-engine   re0 (psd <i>n</i>   rsd)   re1 (psd <i>n</i>   rsd))
<b>Syntax (TX Matrix Router)</b>	request routing-engine login (backup   master   other-routing-engine   re0   re1) <lcc <i>number</i> > <scc <i>number</i> >
<b>Syntax (TX Matrix Plus Router)</b>	request routing-engine login (backup   master   other-routing-engine   re0   re1) <lcc <i>number</i> > <sfc <i>number</i> >
<b>Syntax (MX Series Router)</b>	request routing-engine login (backup   master   other-routing-engine   re0   re1) <all-members> <local> <member <i>member-id</i> >
<b>Release Information</b>	<p>Command introduced before Junos OS Release 7.4.</p> <p><b>psd</b> and <b>rsd</b> options added in Junos OS Release 9.1. These options are available from the Root System Domain (RSD). An RSD is supported on a T320 router or T640 or T1600 router that is interconnected with the JCS1200 platform.</p> <p><b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6.</p>
<b>Description</b>	On a router with two Routing Engines, specify a tty connection for login.
<b>Options</b>	<p><b>backup</b>—Log in to the backup Routing Engine.</p> <p><b>lcc <i>number</i></b>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, log in to a specific T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, log in to a specific router (or line-card chassis) that is connected to the TX Matrix router.</p> <p>Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"> <li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li> <li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li> <li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> <li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> </ul> <p><b>master</b>—Log in to the master Routing Engine.</p> <p><b>other-routing-engine</b>—Log in to the other Routing Engine.</p>

**psd *n***—(RSD only) Log in to the specified Protected System Domain (PSD). Replace *n* with a value from 1 to 31. A PSD is accessible from a T320 router or a T640 or T1600 router that is interconnected with the JCS1200 platform. When you log in to a PSD, you are required to provide user authentication.

**re0**—Log in to the Routing Engine in slot 0.

**re1**—Log in to the Routing Engine in slot 1.

**all-members**—(MX Series routers only) (Optional) Log in to all members of the Virtual Chassis configuration.

**local**—(MX Series routers only) (Optional) Log in to the local Virtual Chassis member.

**member *member-id***—(MX Series routers only) (Optional) Log in to the specified member of the Virtual Chassis configuration. Replace *member-id* with a value of 0 or 1.

**rsd**—(RSD only) Log in to the RSD (as opposed to a PSD). A T320 router or a T640 or T1600 router that is interconnected with the JCS1200 platform can be configured as an RSD.

**sfc *number***—(TX Matrix Plus routers only) Log in to the specified Routing Engine on the TX Matrix Plus router (or switch-fabric chassis):

- **backup**—Log in to the backup Routing Engine.
- **master**—Log in to the master Routing Engine.
- **re0**—Log in to the Routing Engine in slot 0.
- **re1**—Log in to the Routing Engine in slot 1.

**Additional Information** For more information about PSDs, RSDs, and the JCS1200 platform, see the *Junos OS Protected System Domain Feature Guide for Routing Devices*.

**Required Privilege Level** maintenance

**List of Sample Output** [request routing-engine login other-routing-engine on page 833](#)  
[request routing-engine login psd on page 833](#)

**Output Fields** When you enter this command, you are provided feedback on the status of your request.

## Sample Output

[request routing-engine login other-routing-engine](#)

```
user@host> request routing-engine login other-routing-engine

--- JUNOS 7.2-20050217.0 built 2005-02-17 08:12:50 UTC
```

[request routing-engine login psd](#)

```
{master}
user@host> request routing-engine login psd 1 re0
```

```
login: regress  
Password:
```

```
--- JUNOS 9.1-20080321.0 built 2008-03-21 05:43:06 UTC  
% cli  
user@psd1>
```

## request system logout

<b>Syntax</b>	<code>request system logout (pid <i>pid</i>   terminal <i>terminal</i>   user <i>username</i>)</code> <code>&lt;all&gt;</code>
<b>Release Information</b>	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.
<b>Description</b>	Log out users from the router or switch and the configuration database. If a user held the <b>configure exclusive</b> lock, this command clears the exclusive lock.
<b>Options</b>	<p><b>all</b>—(Optional) Log out all sessions owned by a particular PID, terminal session, or user. (On a TX Matrix or TX Matrix Plus router, this command is broadcast to all chassis.)</p> <p><b>pid <i>pid</i></b>—Log out the user session using the specified management process identifier (PID). The PID type must be management process.</p> <p><b>terminal <i>terminal</i></b>—Log out the user for the specified terminal session.</p> <p><b>user <i>username</i></b>—Log out the specified user.</p>
<b>Required Privilege Level</b>	configure
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <i>Junos OS Administration Library for Routing Devices</i></li> </ul>
<b>List of Sample Output</b>	<a href="#">request system logout on page 835</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### request system logout

```
user@host> request system logout user tammy all
Connection closed by foreign host.
```

## request system partition hard-disk

---

<b>Syntax</b>	request system partition hard-disk
<b>Syntax (TX Matrix Router)</b>	request system partition hard-disk <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	request system partition hard-disk <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (MX Series Router)</b>	request system partition hard-disk <all-members> <local> <member <i>member-id</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. <b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
<b>Description</b>	Set up the hard disk for partitioning. After this command is issued, the hard disk is partitioned the next time the system is rebooted. When the hard disk is partitioned, the contents of <b>/altroot</b> and <b>/altconfig</b> are saved and restored. All other data on the hard disk is at risk of being lost.
<b>Options</b>	<p><b>all-chassis</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Schedule a partition of the hard disk for all routers in the chassis at its next reboot.</p> <p><b>all-lcc</b>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, schedule a partition of the hard disk on all T640 routers connected to the TX Matrix router at their next reboot. On a TX Matrix Plus router, schedule a partition of the hard disk on all connected LCCs.</p> <p><b>all-members</b>—(MX Series routers only) (Optional) Schedule a partition of the hard disk for all members of the Virtual Chassis configuration.</p> <p><b>lcc <i>number</i></b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix Plus router, schedule a partition of the hard disk on a specific T640 router connected to the TX Matrix router. On a TX Matrix Plus router, schedule a partition of the hard disk on a specific router that is connected to the TX Matrix Plus router. Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"><li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li><li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li><li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li><li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li></ul>



**local**—(MX Series routers only) (Optional) Schedule a partition of the hard disk for the local member of the Virtual Chassis.

**member *member-id***—(MX Series routers only) (Optional) Schedule a partition of the hard disk for the specified member of the Virtual Chassis configuration. Replace *member-id* with a value of 0 or 1.

**scc**—(TX Matrix routers only) (Optional) Schedule a partition of the hard disk on the T640 router connected to the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Schedule a partition of the hard disk on the connected T1600 or T4000 LCCs connected to the TX Matrix Plus router. Replace *number* with 0.

**Additional Information** To immediately partition the hard disk, use the **request system reboot** command. To cancel the partition request, use the **request system partition abort** command.

**Required Privilege Level** maintenance

**Related Documentation**

- *request system partition abort*
- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output** [request system partition hard-disk on page 837](#)

**Output Fields** When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### [request system partition hard-disk](#)

```
user@host> request system partition hard-disk
WARNING: The hard disk is about to be partitioned. The contents
WARNING: of /altroot and /altconfig will be saved and restored.
WARNING: All other data is at risk. This is the setup stage, the
WARNING: partition happens during the next reboot.

Setting up to partition the hard disk ...

WARNING: A REBOOT IS REQUIRED TO PARTITION THE HARD DISK. Use the
WARNING: 'request system reboot' command when you are ready to proceed
WARNING: with the partitioning. To abort the partition of the hard disk
WARNING: use the 'request system partition abort' command.
```

## request system reboot

---

<b>Syntax</b>	request system reboot <at <i>time</i> > <both-routing-engines> <in <i>minutes</i> > <media (compact-flash   disk   removable-compact-flash   usb)> <message " <i>text</i> "> <other-routing-engine>
<b>Syntax (EX Series Switches)</b>	request system reboot <all-members> <at <i>time</i> > <both-routing-engines> <in <i>minutes</i> > <local> <media (external   internal)> <member <i>member-id</i> > <message " <i>text</i> "> <other-routing-engine> <slice <i>slice</i> >
<b>Syntax (TX Matrix Router)</b>	request system reboot <all-chassis   all-lcc   lcc <i>number</i>   scc> <at <i>time</i> > <both-routing-engines> <in <i>minutes</i> > <media (compact-flash   disk)> <message " <i>text</i> "> <other-routing-engine>
<b>Syntax (TX Matrix Plus Router)</b>	request system reboot <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> > <at <i>time</i> > <both-routing-engines> <in <i>minutes</i> > <media (compact-flash   disk)> <message " <i>text</i> "> <other-routing-engine> <partition (1   2   alternate)>
<b>Syntax (MX Series Router)</b>	request system reboot <all-members> <at <i>time</i> > <both-routing-engines> <in <i>minutes</i> > <local> <media (external   internal)> <member <i>member-id</i> > <message " <i>text</i> "> <other-routing-engine>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.

Option **other-routing-engine** introduced in Junos OS Release 8.0.  
 Command introduced in Junos OS Release 9.0 for EX Series switches.  
 Option **sfc** introduced for the TX Matrix Plus router in Junos OS Release 9.6.  
 Option **both-routing-engines** introduced in Junos OS Release 12.1.

**Description** Reboot the software.

**Options** **none**—Reboot the software immediately.

**all-chassis**—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router or TX Matrix Plus router, reboot all routers connected to the TX Matrix or TX Matrix Plus router, respectively.

**all-lcc**—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router or TX Matrix Plus router, reboot all line card chassis connected to the TX Matrix or TX Matrix Plus router, respectively.

**all-members**—(EX4200 switches and MX Series routers only) (Optional) Reboot the software on all members of the Virtual Chassis configuration.

**at time**—(Optional) Time at which to reboot the software, specified in one of the following ways:

- **now**—Stop or reboot the software immediately. This is the default.
- **+minutes**—Number of minutes from now to reboot the software.
- **yymmddhhmm**—Absolute time at which to reboot the software, specified as year, month, day, hour, and minute.
- **hh:mm**—Absolute time on the current day at which to stop the software, specified in 24-hour time.

**both-routing-engines**—(Optional) Reboot both Routing Engines at the same time.

**in minutes**—(Optional) Number of minutes from now to reboot the software. This option is an alias for the **at +minutes** option.

**lcc number**—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(EX4200 switches and MX Series routers only) (Optional) Reboot the software on the local Virtual Chassis member.

**media (compact-flash | disk | removable-compact-flash | usb)**—(Optional) Boot medium for next boot. (The options **removable-compact-flash** and **usb** pertain to the J Series routers only.)

**media (external | internal)**—(EX Series switches and MX Series routers only) (Optional) Reboot the boot media:

- **external**—Reboot the external mass storage device.
- **internal**—Reboot the internal flash device.

**member *member-id***—(EX4200 switches and MX Series routers only) (Optional) Reboot the software on the specified member of the Virtual Chassis configuration. For EX4200 switches, replace ***member-id*** with a value from 0 through 9. For an MX Series Virtual Chassis, replace ***member-id*** with a value of 0 or 1.

**message "*text*"**—(Optional) Message to display to all system users before stopping or rebooting the software.

**other-routing-engine**—(Optional) Reboot the other Routing Engine from which the command is issued. For example, if you issue the command from the master Routing Engine, the backup Routing Engine is rebooted. Similarly, if you issue the command from the backup Routing Engine, the master Routing Engine is rebooted.

**partition**—(TX Matrix Plus routers only) (Optional) Reboot using the specified partition on the boot media. This option has the following suboptions:

- **1**—Reboot from partition 1.
- **2**—Reboot from partition 2.
- **alternate**—Reboot from the alternate partition.

**scc**—(TX Matrix routers only) (Optional) Reboot the Routing Engine on the TX Matrix switch-card chassis. If you issue the command from re0, re0 is rebooted. If you issue the command from re1, re1 is rebooted.

**sfc *number***—(TX Matrix Plus routers only) (Optional) Reboot the Routing Engine on the TX Matrix Plus switch-fabric chassis. If you issue the command from re0, re0 is rebooted. If you issue the command from re1, re1 is rebooted. Replace ***number*** with 0.

**slice *slice***—(EX Series switches only) (Optional) Reboot a partition on the boot media. This option has the following suboptions:

- **1**—Power off partition 1.
- **2**—Power off partition 2.
- **alternate**—Reboot from the alternate partition.

**Additional Information** Reboot requests are recorded in the system log files, which you can view with the **show log** command (see *show log*). Also, the names of any running processes that are scheduled to be shut down are changed. You can view the process names with the **show system processes** command (see *show system processes*).

On a TX Matrix or TX Matrix Plus router, if you issue the **request system reboot** command on the master Routing Engine, all the master Routing Engines connected to the routing matrix are rebooted. If you issue this command on the backup Routing Engine, all the backup Routing Engines connected to the routing matrix are rebooted.



**NOTE:** Before issuing the **request system reboot** command on a TX Matrix Plus router with no options or the **all-chassis**, **all-lcc**, **lcc number**, or **sfc** options, verify that master Routing Engine for all routers in the routing matrix are in the same slot number. If the master Routing Engine for a line-card chassis is in a different slot number than the master Routing Engine for a TX Matrix Plus router, the line-card chassis might become logically disconnected from the routing matrix after the **request system reboot** command.



**NOTE:** To reboot a router that has two Routing Engines, reboot the backup Routing Engine (if you have upgraded it) first, and then reboot the master Routing Engine.

**Required Privilege Level** maintenance

**Related Documentation**

- [clear system reboot on page 193](#)
- [request system halt on page 1106](#)
- *request system reboot*
- *Rebooting and Halting a QFX Series Product*
- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output**

- [request system reboot on page 842](#)
- [request system reboot \(at 2300\) on page 842](#)
- [request system reboot \(in 2 Hours\) on page 842](#)
- [request system reboot \(Immediately\) on page 842](#)
- [request system reboot \(at 1:20 AM\) on page 842](#)

**Output Fields** When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### request system reboot

```
user@host> request system reboot
Reboot the system ? [yes,no] (no)
```

### request system reboot (at 2300)

```
user@host> request system reboot at 2300 message ?Maintenance time!?
Reboot the system ? [yes,no] (no) yes
```

```
shutdown: [pid 186]
*** System shutdown message from root@berry.network.net ***
System going down at 23:00
```

### request system reboot (in 2 Hours)

The following example, which assumes that the time is 5 PM (17:00), illustrates three different ways to request the system to reboot in two hours:

```
user@host> request system reboot at +120
user@host> request system reboot in 120
user@host> request system reboot at 19:00
```

### request system reboot (Immediately)

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

### request system reboot (at 1:20 AM)

To reboot the system at 1:20 AM, enter the following command. Because 1:20 AM is the next day, you must specify the absolute time.

```
user@host> request system reboot at 06060120
request system reboot at 120
Reboot the system at 120? [yes,no] (no) yes
```

## request system snapshot

<b>Syntax</b>	request system snapshot <partition>
<b>Syntax (ACX Series Routers)</b>	request system snapshot <media <i>type</i> > <partition>
<b>Syntax (EX Series Switches)</b>	request system snapshot <all-members   local   member <i>member-id</i> > <media <i>type</i> > <partition> <re0   re1   routing-engine <i>routing-engine-id</i> > <slice <i>alternate</i> >
<b>Syntax (J Series Routers)</b>	request system snapshot <as-primary> <config-size <i>size</i> > <data-size <i>size</i> > <factory> <media <i>type</i> > <partition> <root-size <i>size</i> > <swap-size <i>size</i> >
<b>Syntax (MX Series Routers)</b>	request system snapshot <all-members> <config-partition> <local> <member <i>member-id</i> > <media <i>usb-port-number</i> > <partition> <root-partition>
<b>Syntax (TX Matrix Routers)</b>	request system snapshot <all-chassis   all-lcc   lcc <i>number</i>   scc> <config-partition> <partition> <root-partition>
<b>Syntax (TX Matrix Plus Routers)</b>	request system snapshot <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> > <config-partition> <partition> <root-partition>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 10.0 for EX Series switches. Command introduced in Junos OS Release 12.2 for ACX Series switches. Options <config-partition> and <root-partition> introduced in Junos OS Release 13.1 for M, MX, T, TX Series switches.

Option `<media usb-port-number>` introduced in Junos OS Release 13.2 for MX104 routers.

- Description**
- On the router, back up the currently running and active file system partitions to standby partitions that are not running. Specifically, the root file system (`/`) is backed up to `/altroot`, and `/config` is backed up to `/altconfig`. The root and `/config` file systems are on the router's flash drive, and the `/altroot` and `/altconfig` file systems are on the router's hard drive.
  - On the switch, take a snapshot of the files currently used to run the switch—the complete contents of the root (`/`), `/altroot`, `/config`, `/var`, and `/var-tmp` directories, which include the running Junos OS, the active configuration, and log files.



**CAUTION:** After you run the `request system snapshot` command, you cannot return to the previous version of the software, because the running and backup copies of the software are identical.

**Options** The specific options available depend upon the router or switch:

**none**—Back up the currently running software as follows:

- On the router, back up the currently running and active file system partitions to standby partitions that are not running. Specifically, the root file system (`/`) is backed up to `/altroot`, and `/config` is backed up to `/altconfig`. The root and `/config` file systems are on the router's flash drive, and the `/altroot` and `/altconfig` file systems are on the router's hard drive.
- On the switch, take a snapshot of the files currently used to run the switch and copy them to the media that the switch did not boot from. If the switch is booted from internal media, the snapshot is copied to external (USB) media. If the switch is booted from external (USB) media, the snapshot is copied to internal media.
  - If the snapshot destination is external media but a USB flash drive is not connected, an error message is displayed.
  - If the automatic snapshot procedure is already in progress, the command returns the following error: **Snapshot already in progress. Cannot start manual snapshot.** For additional information about the automatic snapshot feature, see *Understanding Resilient Dual-Root Partitions on Switches*.

**all-chassis | all-lcc | lcc number** —(TX Matrix and TX Matrix Plus router only) (Optional)

- **all-chassis**—On a TX Matrix router, archive data and executable areas for all Routing Engines in the chassis. On a TX Matrix Plus router, archive data and executable areas for all Routing Engines in the chassis.
- **all-lcc**—On a TX Matrix router, archive data and executable areas for all T640 routers (or line-card chassis) connected to a TX Matrix router. On a TX Matrix Plus router, archive data and executable areas for all routers (or line-card chassis) connected to a TX Matrix Plus router.



- **lcc *number***—On a TX Matrix router, archive data and executable areas for a specific T640 router (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, archive data and executable areas for a specific router (line-card chassis) that is connected to a TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**all-members | local | member *member-id***—(EX Series switch Virtual Chassis and MX Series routers only) (Optional) Specify where to place the snapshot (archive data and executable areas) in a Virtual Chassis:

- **all-members**—Create a snapshot (archive data and executable areas) for all members of the Virtual Chassis.
- **local**—Create a snapshot (archive data and executable areas) on the member of the Virtual Chassis that you are currently logged into.
- **member *member-id***—Create a snapshot (archive data and executable areas) for the specified member of the Virtual Chassis.

**as-primary**—(J Series routers only) (Optional) Create a snapshot that can be used to replace the medium in the primary compact flash drive. This option can be used on the removable compact flash only. The option copies the default files that were loaded on the primary compact flash drive when it was shipped from the factory, plus the rescue configuration if one has been set. This option is useful if you have multiple routers and want to use the same software and configuration on each router. After a boot device is created as a primary compact flash drive, it can operate in only a primary compact flash drive slot. This option causes the boot medium to be partitioned.

**config-partition**—(M, MX, T, TX Series routers only) Create a snapshot of the configuration partition only and store it onto the default **/altconfig** on the hard disk device or an **/altconfig** on a USB device.

**config-size *size***—(J Series routers only) (Optional) Specify the size of the config partition, in megabytes. The default value is 10 percent of physical memory on the boot partition. The config partition is mounted on **/config**, and the configuration files are stored in this partition. This option causes the boot medium to be partitioned.

**data-size *size***—(J Series routers only) (Optional) Specify the size of the data partition, in megabytes. The default value is 0 MB. The data partition is mounted on **/data**. This

space is not used by the router, and can be used for extra storage. This option causes the boot medium to be partitioned.

**factory**—(J Series routers only) (Optional) Copy only default files that were loaded on the primary compact flash drive when it was shipped from the factory, plus the rescue configuration if one has been set. After the boot medium is created with the factory option, it can operate in only the primary compact flash drive.

**media type**—(J Series routers and EX Series switches only)(Optional) Specify the boot device the software is copied to:

- **compact-flash**—Copy software to the primary compact flash drive.
- **external**—(Switches only) Copy software to an external mass storage device, such as a USB flash drive. If a USB drive is not connected, the switch displays an error message.
- **internal**—(Switches only) Copy software to an internal flash drive.
- **removable-compact-flash**—Copy software to the removable compact flash drive.
- **usb**—(ACX Series, M320, T640, MX960, and J Series routers only) Copy software to the device connected to the USB port.
- **usb0**—(MX104 routers only) Copy software to the device connected to the USB0 port.
- **usb1**—(MX104 routers only) Copy software to the device connected to the USB1 port.

**partition**—(Optional) Repartition the flash drive before a snapshot occurs. If the partition table on the flash drive is corrupted, the **request system snapshot** command fails and reports errors. The partition option is only supported for restoring the software image from the hard drive to the flash drive.

(Routers only) You cannot issue the request system snapshot command when you enable flash disk mirroring. We recommend that you disable flash disk mirroring when you upgrade or downgrade the software. For more information, see the *Junos OS Administration Library for Routing Devices*.

(EX Series switches only) If the snapshot destination is the media that the switch did not boot from, you must use the **partition** option.

**re0 | re1 | routing-engine routing-engine-id**—(EX6200 and EX8200 switches only) Specify where to place the snapshot in a redundant Routing Engine configuration.

- **re0**—Create a snapshot on Routing Engine 0.
- **re1**—Create a snapshot on Routing Engine 1.
- **routing-engine routing-engine-id**—Create a snapshot on the specified Routing Engine.

**root-partition**—(M, MX, T, TX Series routers only) Create a snapshot of the root partition only and store it onto the default **/altroot** on the hard disk device or an **/altroot** on a USB device.

**root-size size**—(J Series routers only) (Optional) Specify the size of the root partition, in megabytes. The default value is one-third of the physical memory minus the config, data, and swap partitions. The root partition is mounted on / and does not include configuration files. This option causes the boot medium to be partitioned.

**slice alternate**—(EX Series switches only) (Optional) Take a snapshot of the active root partition and copy it to the alternate slice on the boot media.

**scc**—(TX Matrix router only) (Optional) Archive data and executable areas for a TX Matrix router (or switch-card chassis).

**sfc number**—(TX Matrix Plus router only) (Optional) Archive data and executable areas for a TX Matrix Plus router (or switch-fabric chassis). Replace *number* with 0.

**swap-size size**—(J Series router only) (Optional) Specify the size of the swap partition, in megabytes. The default value is one-third of the physical memory on a boot medium larger than 128 MB, or 0 MB on a smaller boot device. The swap partition is used for swap files and software failure memory snapshots. Software failure memory snapshots are saved to the boot medium only if it is specified as the dump device in the system dump-device configuration hierarchy. This option causes the boot medium to be partitioned.

- Additional Information**
- (Routers only) Before upgrading the software on the router, when you have a known stable system, issue the **request system snapshot** command to back up the software, including the configuration, to the **/altroot** and **/altconfig** file systems. After you have upgraded the software on the router and are satisfied that the new packages are successfully installed and running, issue the **request system snapshot** command again to back up the new software to the **/altroot** and **/altconfig** file systems.
  - (Routers only) You cannot issue the **request system snapshot** command when you enable flash disk mirroring. We recommend that you disable flash disk mirroring when you upgrade or downgrade the software. For more information, see the *Junos OS Administration Library for Routing Devices*.
  - (TX Matrix and TX Matrix Plus router only) On a routing matrix, if you issue the **request system snapshot** command on the master Routing Engine, all the master Routing Engines connected to the routing matrix are backed up. If you issue this command on the backup Routing Engine, all the backup Routing Engines connected to the routing matrix are backed up.

**Required Privilege Level** maintenance

**Related Documentation**

- [show system snapshot on page 1143](#)
- [show system auto-snapshot](#)

**List of Sample Output**

- [request system snapshot \(Routers\) on page 848](#)
- [request system snapshot \(EX Series Switches\) on page 848](#)
- [request system snapshot \(When the Partition Flag Is On\) on page 848](#)
- [request system snapshot \(MX104 routers when media device is missing\) on page 848](#)

[request system snapshot \(When Mirroring Is Enabled\) on page 848](#)  
[request system snapshot all-lcc \(Routing Matrix\) on page 848](#)  
[request system snapshot all-members \(Virtual Chassis\) on page 849](#)

**Output Fields** When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### [request system snapshot \(Routers\)](#)

```
user@host> request system snapshot
umount: /altroot: not currently mounted
Copying / to /altroot.. (this may take a few minutes)
umount: /altconfig: not currently mounted
Copying /config to /altconfig.. (this may take a few minutes)

The following filesystems were archived: / /config
```

### [request system snapshot \(EX Series Switches\)](#)

```
user@switch> request system snapshot partition
Clearing current label...
Partitioning external media (/dev/da1) ...
Partitions on snapshot:

    Partition Mountpoint Size Snapshot argument
    s1a      /altroot    179M none
    s2a      /           180M none
    s3d      /var/tmp     361M none
    s3e      /var        121M none
    s4d      /config      60M  none
Copying '/dev/da0s1a' to '/dev/da1s1a' .. (this may take a few minutes)
Copying '/dev/da0s2a' to '/dev/da1s2a' .. (this may take a few minutes)
Copying '/dev/da0s3d' to '/dev/da1s3d' .. (this may take a few minutes)
Copying '/dev/da0s3e' to '/dev/da1s3e' .. (this may take a few minutes)
Copying '/dev/da0s4d' to '/dev/da1s4d' .. (this may take a few minutes)
The following filesystems were archived: /altroot / /var/tmp /var /config
```

### [request system snapshot \(When the Partition Flag Is On\)](#)

```
user@host> request system snapshot partition
Performing preliminary partition checks ...
Partitioning ad0 ...
umount: /altroot: not currently mounted
Copying / to /altroot.. (this may take a few minutes)

The following filesystems were archived: / /config
```

### [request system snapshot \(MX104 routers when media device is missing\)](#)

```
user@host > request system snapshot media usb0
error: usb0 media missing or invalid
```

### [request system snapshot \(When Mirroring Is Enabled\)](#)

```
user@host> request system snapshot
Snapshot is not possible since mirror-flash-on-disk is configured.
```

### [request system snapshot all-lcc \(Routing Matrix\)](#)

```
user@host> request system snapshot all-lcc
```

lcc0-re0:

```
-----
Copying '/' to '/altroot' .. (this may take a few minutes)
Copying '/config' to '/altconfig' .. (this may take a few minutes)
The following filesystems were archived: / /config
```

lcc2-re0:

```
-----
Copying '/' to '/altroot' .. (this may take a few minutes)
Copying '/config' to '/altconfig' .. (this may take a few minutes)
The following filesystems were archived: / /config
```

### request system snapshot all-members (Virtual Chassis)

user@switch> request system snapshot all-members media internal

fpc0:

```
-----
Copying '/dev/da0s2a' to '/dev/da0s1a' .. (this may take a few minutes)
The following filesystems were archived: /
```

fpc1:

```
-----
Copying '/dev/da0s2a' to '/dev/da0s1a' .. (this may take a few minutes)
The following filesystems were archived: /
```

fpc2:

```
-----
Copying '/dev/da0s2a' to '/dev/da0s1a' .. (this may take a few minutes)
The following filesystems were archived: /
```

fpc3:

```
-----
Copying '/dev/da0s2a' to '/dev/da0s1a' .. (this may take a few minutes)
The following filesystems were archived: /
```

fpc4:

```
-----
Copying '/dev/da0s2a' to '/dev/da0s1a' .. (this may take a few minutes)
The following filesystems were archived: /
```

fpc5:

```
-----
Copying '/dev/da0s2a' to '/dev/da0s1a' .. (this may take a few minutes)
The following filesystems were archived: /
```

## request system software add

---

**Syntax** request system software add *package-name*  
<best-effort-load>  
<delay-restart>  
<force>  
<no-copy>  
<no-validate>  
<re0 | re1>  
<reboot>  
<set [*package-name package-name*]>  
<unlink>  
<upgrade-with-config>  
<upgrade-with-config-format *format*>  
<validate>

**Syntax (EX Series Switches)** request system software add *package-name*  
<best-effort-load>  
<delay-restart>  
<force>  
<no-copy>  
<no-validate>  
<re0 | re1>  
<reboot>  
<set [*package-name package-name*]>  
<upgrade-with-config>  
<upgrade-with-config-format *format*>  
<validate>

**Syntax (TX Matrix Router)** request system software add *package-name*  
<best-effort-load>  
<delay-restart>  
<force>  
<lcc *number* | scc>  
<no-copy>  
<no-validate>  
<re0 | re1>  
<reboot>  
<set [*package-name package-name*]>  
<unlink>  
<upgrade-with-config>  
<upgrade-with-config-format *format*>  
<validate>

**Syntax (TX Matrix Plus Router)** request system software add *package-name*  
<best-effort-load>  
<delay-restart>  
<force>  
<lcc *number* | sfc *number*>  
<no-copy>  
<no-validate>  
<re0 | re1>  
<reboot>  
<set [*package-name package-name*]>

	<pre> &lt;unlink&gt; &lt;upgrade-with-config&gt; &lt;upgrade-with-config-format <i>format</i>&gt; &lt;validate&gt; </pre>
Syntax (MX Series Router)	<pre> request system software add <i>package-name</i> &lt;best-effort-load&gt; &lt;delay-restart&gt; &lt;force&gt; &lt;member <i>member-id</i>&gt; &lt;no-copy&gt; &lt;no-validate&gt; &lt;re0   re1&gt; &lt;reboot&gt; &lt;set [<i>package-name package-name</i>]&gt; &lt;unlink&gt; &lt;upgrade-with-config&gt; &lt;upgrade-with-config-format <i>format</i>&gt; &lt;validate&gt; </pre>
Syntax (QFX Series)	<pre> request system software add <i>package-name</i> &lt;best-effort-load&gt; &lt;component all&gt; &lt;delay-restart&gt; &lt;force&gt; &lt;no-copy&gt; &lt;no-validate&gt; &lt;partition&gt; &lt;reboot&gt; &lt;unlink&gt; &lt;upgrade-with-config&gt; &lt;upgrade-with-config-format <i>format</i>&gt; &lt;validate&gt; </pre>
Release Information	<p>Command introduced before Junos OS Release 7.4.</p> <p><b>best-effort-load</b> and <b>unlink</b> options added in Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p><b>sfc</b> option 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><b>set [<i>package-name package-name</i>]</b> option added in Junos OS Release 11.1 for EX Series switches.</p> <p><b>set [<i>package-name package-name</i>]</b> option added in Junos OS Release 12.2 for M Series, MX Series, T Series routers, and Branch SRX Series Services Gateways.</p>



**NOTE:** On EX Series switches, the **set [*package-name package-name*]** option allows you to install only two software packages on a mixed EX4200 and EX4500 Virtual Chassis, whereas, on M Series, MX Series, T Series routers, and Branch SRX Series Services Gateways, the **set [*package-name package-name*]** option allows you to install multiple software packages and software add-on packages at the same time.

**upgrade-with-config** and **upgrade-with-config-format** *format* options added in Junos OS Release 12.3 for M Series routers, MX Series routers, T Series routers, EX Series Ethernet switches, and QFX Series devices.

Description



.....  
**NOTE:** We recommend that you always download the software image to **/var/tmp** only. On EX Series and QFX Series switches, you must use the **/var/tmp** directory. Other directories are not supported.  
.....

Install a software package or bundle on the router or switch.

Options

**package-name**—Location from which the software package or bundle is to be installed.

For example:

- **/var/tmp/package-name**—For a software package or bundle that is being installed from a local directory on the router or switch.
- **protocol://hostname/pathname/package-name**—For a software package or bundle that is to be downloaded and installed from a remote location. Replace **protocol** with one of the following:
  - **ftp**—File Transfer Protocol.  
Use **ftp://hostname/pathname/package-name**. To specify authentication credentials, use **ftp://<username>:<password>@hostname/pathname/package-name**. To have the system prompt you for the password, specify **prompt** in place of the password. If a password is required, and you do not specify the password or **prompt**, an error message is displayed.
  - **http**—Hypertext Transfer Protocol.  
Use **http://hostname/pathname/package-name**. To specify authentication credentials, use **http://<username>:<password>@hostname/pathname/package-name**. If a password is required and you omit it, you are prompted for it.
  - **scp**—Secure copy (available only for Canada and U.S. version).  
Use **scp://hostname/pathname/package-name**. To specify authentication credentials, use **scp://<username>:<password>@hostname/pathname/package-name**.





## NOTE:

- The *pathname* in the protocol is the relative path to the user's home directory on the remote system and not the root directory.
- Do not use the `scp` protocol in the `request system software add` command to download and install a software package or bundle from a remote location. The previous statement does not apply to the QFabric switch. The software upgrade is handled by the MGD process which does not support `scp`.  
Use the `file copy` command to copy the software package or bundle from the remote location to the `/var/tmp` directory on the hard disk:  
`file copy scp://source/package-name /var/tmp`  
Then install the software package or bundle using the `request system software add` command:  
`request system software add /var/tmp/package-name`
- On a J Series Services Router, when you install the software from a remote location, the package is removed at the earliest opportunity in order to make room for the installation to be completed. If you copy the software to a local directory on the router and then install the new package, use the `unlink` option to achieve the same effect and allow the installation to be completed.

**best-effort-load**—(Optional) Activate a partial load and treat parsing errors as warnings instead of errors.

**component all**—(QFabric systems only) (Optional) Install software package on all of the QFabric components.

**delay-restart**—(Optional) Install a software package or bundle, but do not restart software processes.

**force**—(Optional) Force the addition of the software package or bundle (ignore warnings).

**lcc number**—(TX Matrix routers and TX Matrix Plus routers only) (Optional) In a routing matrix based on the TX Matrix router, install a software package or bundle on a T640 router that is connected to the TX Matrix router. In a routing matrix based on the TX Matrix Plus router, install a software package or bundle on a router that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.

- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**member *member-id***—(MX Series routers only) (Optional) Install a software package on the specified Virtual Chassis member. Replace ***member-id*** with a value of 0 or 1.

**partition**—(QFX3500 switches only) (Optional) Format and repartition the media before installation.

**scc**—(TX Matrix routers only) (Optional) Install a software package or bundle on a Routing Engine on a TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Install a software package or bundle on a Routing Engine on a TX Matrix Plus router. Replace ***number*** with 0.

**no-copy**—(Optional) Install a software package or bundle, but do not save copies of the package or bundle files.

**no-validate**—(Optional) When loading a software package or bundle with a different release, suppress the default behavior of the **validate** option.

**re0 | re1**—(Optional) On routers or switches that support dual or redundant Routing Engines, load a software package or bundle on the Routing Engine in slot 0 (re0) or the Routing Engine in slot 1 (re1).

**reboot**—(Optional) After adding the software package or bundle, reboot the system. On a QFabric switch, the software installation is not complete until you reboot the component for which you have installed the software.

**set [*package-name package-name*]**—(Mixed EX4200 and EX4500 Virtual Chassis only) (Optional) Install two software packages—a package for an EX4200 switch and the same release of the package for an EX4500 switch—to upgrade all member switches in a mixed EX4200 and EX4500 Virtual Chassis.

**set [*package-name package-name*]**—(M Series, MX Series, T Series routers, and Branch SRX Series Services Gateways only) (Optional) Install multiple software packages and software add-on packages at the same time.

**unlink**—(Optional) On J Series Services Routers, this option ensures that the software package is removed at the earliest opportunity in order to make room for the installation to be completed. On M Series, T Series, and MX Series routers, use the **unlink** option to remove the software package from this directory after a successful upgrade is completed.

**upgrade-with-config**—(Optional) Install one or more configuration files.

**upgrade-with-config-format *format***—(Optional) Specify the configuration file format, **text** or **xml**. The default format is **text**.



**NOTE:** The `upgrade-with-config` and `upgrade-with-config-format` options are only available locally on the router or switch. In a routing matrix, the configuration is applied only to the local router and is not propagated to other routers.

The options are validated during the validation process and applied to the router or switch during the upgrade process. If the upgrade process is successful, the options are removed from the configuration. If the upgrade process fails, the configuration file is renamed with the `.failed` suffix.

**validate**—(Optional) Validate the software package or bundle against the current configuration as a prerequisite to adding the software package or bundle. This is the default behavior when the software package or bundle being added is a different release.



**NOTE:** The `validate` option only works on systems that do not have `graceful-switchover` (GRES) enabled. To use the `validate` option on a system with GRES, either disable GRES for the duration of the installation, or install using the command `request system software in-service-upgrade`, which requires nonstop active routing (NSR) to be enabled when using GRES.

#### Additional Information

Before upgrading the software on the router or switch, when you have a known stable system, issue the `request system snapshot` command to back up the software, including the configuration, to the `/altroot` and `/altconfig` file systems. After you have upgraded the software on the router or switch and are satisfied that the new package or bundle is successfully installed and running, issue the `request system snapshot` command again to back up the new software to the `/altroot` and `/altconfig` file systems.



**NOTE:** The `request system snapshot` command is currently not supported on the QFabric system. Also, you cannot add or install multiple packages on a QFabric system.

After you run the `request system snapshot` command, you cannot return to the previous version of the software, because the running and backup copies of the software are identical.

If you are upgrading more than one package at the same time, delete the operating system package, `jkernel`, last. Add the operating system package, `jkernel`, first and the routing software package, `jroute`, last. If you are upgrading all packages at once, delete and add them in the following order:

```
user@host> request system software add /var/tmp/jbase
user@host> request system software add /var/tmp/jkernel
user@host> request system software add /var/tmp/jpfe
user@host> request system software add /var/tmp/jdocs
user@host> request system software add /var/tmp/jroute
user@host> request system software add /var/tmp/jcrypto
```

By default, when you issue the **request system software add *package-name*** command on a TX Matrix master Routing Engine, all the T640 master Routing Engines that are connected to it are upgraded to the same version of software. If you issue the same command on the TX Matrix backup Routing Engine, all the T640 backup Routing Engines that are connected to it are upgraded to the same version of software.

Likewise, when you issue the **request system software add *package-name*** command on a TX Matrix Plus master Routing Engine, all the T1600 or T4000 master Routing Engines that are connected to it are upgraded to the same version of software. If you issue the same command on the TX Matrix Plus backup Routing Engine, all the T1600 or T4000 backup Routing Engines that are connected to it are upgraded to the same version of software.

Required Privilege Level	maintenance
Related Documentation	<ul style="list-style-type: none"><li>• <a href="#">request system software delete on page 858</a></li><li>• <a href="#">request system software rollback on page 862</a></li><li>• <a href="#">request system storage cleanup on page 1112</a></li><li>• <i>Upgrading Software on QFX3500 and QFX3600 Standalone Switches</i></li><li>• <i>Upgrading Software on a QFabric System</i></li><li>• <i>Routing Matrix with a TX Matrix Plus Router Solutions Page</i></li></ul>
List of Sample Output	<a href="#">request system software add validate on page 856</a> <a href="#">request system software add (Mixed EX4200 and EX4500 Virtual Chassis) on page 857</a> <a href="#">request system software add component all (QFabric Systems) on page 857</a>
Output Fields	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### request system software add validate

```
user@host> request system software add validate /var/tmp/jinstall-7.2R1.7-domestic-signed.tgz
Checking compatibility with configuration
Initializing...
Using jbase-7.1R2.2
Using /var/tmp/jinstall-7.2R1.7-domestic-signed.tgz
Verified jinstall-7.2R1.7-domestic.tgz signed by PackageProduction_7_2_0
Using /var/validate/tmp/jinstall-signed/jinstall-7.2R1.7-domestic.tgz
Using /var/validate/tmp/jinstall/jbundle-7.2R1.7-domestic.tgz
Checking jbundle requirements on /
Using /var/validate/tmp/jbundle/jbase-7.2R1.7.tgz
Using /var/validate/tmp/jbundle/jkernel-7.2R1.7.tgz
```

```

Using /var/validate/tmp/jbundle/jcrypto-7.2R1.7.tgz
Using /var/validate/tmp/jbundle/jpfe-7.2R1.7.tgz
Using /var/validate/tmp/jbundle/jdocs-7.2R1.7.tgz
Using /var/validate/tmp/jbundle/jroute-7.2R1.7.tgz
Validating against /config/juniper.conf.gz
mgd: commit complete
Validation succeeded
Validating against /config/rescue.conf.gz
mgd: commit complete
Validation succeeded
Installing package '/var/tmp/jinstall-7.2R1.7-domestic-signed.tgz' ...
Verified jinstall-7.2R1.7-domestic.tgz signed by PackageProduction_7_2_0
Adding jinstall...

WARNING: This package will load JUNOS 7.2R1.7 software.
WARNING: It will save JUNOS configuration files, and SSH keys
WARNING: (if configured), but erase all other files and information
WARNING: stored on this machine. It will attempt to preserve dumps
WARNING: and log files, but this can not be guaranteed. This is the
WARNING: pre-installation stage and all the software is loaded when
WARNING: you reboot the system.

Saving the config files ...
Installing the bootstrap installer ...

WARNING: A REBOOT IS REQUIRED TO LOAD THIS SOFTWARE CORRECTLY. Use the
WARNING: 'request system reboot' command when software installation is
WARNING: complete. To abort the installation, do not reboot your system,
WARNING: instead use the 'request system software delete jinstall'
WARNING: command as soon as this operation completes.

Saving package file in /var/sw/pkg/jinstall-7.2R1.7-domestic-signed.tgz ...
Saving state for rollback ...

```

## Sample Output

### request system software add (Mixed EX4200 and EX4500 Virtual Chassis)

```

user@switch> request system software add set
[/var/tmp/jinstall-ex-4200-11.1R1.1-domestic-signed.tgz
/var/tmp/jinstall-ex-4500-11.1R1.1-domestic-signed.tgz]
...

```

### request system software add component all (QFabric Systems)


```

user@switch> request system software add /pbdata/packages/jinstall-qfabric-12.2X50-D1.3.rpm
component all
...

```

## request system software delete

---

<b>Syntax</b>	<code>request system software delete <i>software-package</i></code> <code>&lt;force&gt;</code> <code>&lt;reboot&gt;</code> <code>&lt;set [<i>package-name package-name</i>]&gt;</code>
<b>Syntax (TX Matrix Router)</b>	<code>request system software delete <i>software-package</i></code> <code>&lt;force&gt;</code> <code>&lt;lcc <i>number</i>   scc&gt;</code> <code>&lt;reboot&gt;</code> <code>&lt;set [<i>package-name package-name</i>]&gt;</code>
<b>Syntax (TX Matrix Plus Router)</b>	<code>request system software delete <i>software-package</i></code> <code>&lt;force&gt;</code> <code>&lt;lcc <i>number</i>   sfc <i>number</i>&gt;</code> <code>&lt;reboot&gt;</code> <code>&lt;set [<i>package-name package-name</i>]&gt;</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. Option <b>sfc</b> 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. Option <b>set [<i>package-name package-name</i>]</b> added in Junos OS Release 12.2 for M Series, MX Series, T Series routers, and Branch SRX Services Gateways. Option <b>reboot</b> introduced in Junos OS Release 12.3.
<b>Description</b>	Remove a software package or bundle from the router or switch.
<div><div><b>CAUTION:</b> Before removing a software package or bundle, make sure that you have already placed the new software package or bundle that you intend to load onto the router or switch.</div></div>	
<b>Options</b>	<b><i>software-package</i></b> —Software package or bundle name. You can delete any or all of the following software bundles or packages: <ul style="list-style-type: none"><li>• <b>jbase</b>—(Optional) Junos base software suite</li><li>• <b>jcrypto</b>—(Optional, in domestic version only) Junos security software</li><li>• <b>jdocs</b>—(Optional) Junos online documentation file</li><li>• <b>jkernel</b>—(Optional) Junos kernel software suite</li><li>• <b>jpfe</b>—(Optional) Junos Packet Forwarding Engine support</li><li>• <b>jroute</b>—(Optional) Junos routing software suite</li><li>• <b>junos</b>—(Optional) Junos base software</li></ul>



**NOTE:** On EX Series switches, some of the package names are different than those listed. To see the list of packages that you can delete on an EX Series switch, enter the command **show system software**.

**force**—(Optional) Ignore warnings and force removal of the software.

**lcc number**—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, remove an extension or upgrade package from a specific T640 router (line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, remove an extension or upgrade package from a specific router that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**reboot**—As of Junos OS 12.3 and greater, automatically reboot upon completing the **request system software delete** command.

**scc**—(TX Matrix routers only) (Optional) Remove an extension or upgrade package from the TX Matrix router (or switch-card chassis).

**set [package-name package-name]**—(M Series, MX Series, T Series routers, and Branch SRX Series Services Gateways only) (Optional) Install multiple software packages or software add-on packages at the same time.

**sfc number**—(TX Matrix Plus routers only) (Optional) Remove an extension or upgrade package from the TX Matrix Plus router. Replace *number* with 0.

#### Additional Information

Before upgrading the software on the router or switch, when you have a known stable system, issue the **request system snapshot** command to back up the software, including the configuration, to the `/altroot` and `/altconfig` file systems (on routers) or the `/`, `/altroot`, `/config`, `/var`, and `/var/tmp` file systems (on switches). After you have upgraded the software on the router or switch and are satisfied that the new packages are successfully installed and running, issue the **request system snapshot** command again to back up the new software to the `/altroot` and `/altconfig` file systems (on routers) or the `/`, `/altroot`, `/config`, `/var`, and `/var/tmp` file systems (on switches). After you run the **request system snapshot** command, you cannot return to the previous version of the software, because the running and backup copies of the software are identical.

**Required Privilege Level** maintenance

**Related Documentation**

- [request system software add on page 850](#)
- [request system software rollback on page 862](#)
- [request system software validate on page 866](#)
- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output** [request system software delete jdocs on page 860](#)

**Output Fields** When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### [request system software delete jdocs](#)

The following example displays the system software packages before and after the **jdocs** package is deleted through the **request system software delete** command:

```
user@host> show system software
Information for jbase:
```

```
Comment:
JUNOS Base OS Software Suite [7.2R1.7]
```

```
Information for jcrypto:
```

```
Comment:
JUNOS Crypto Software Suite [7.2R1.7]
```

```
Information for jdocs:
```

```
Comment:
JUNOS Online Documentation [7.2R1.7]
```

```
Information for jkernel:
```

```
Comment:
JUNOS Kernel Software Suite [7.2R1.7]
```

```
...
```

```
user@host> request system software delete jdocs
Removing package 'jdocs' ...
```

```
user@host> show system software
Information for jbase:
```

```
Comment:
JUNOS Base OS Software Suite [7.2R1.7]
```



Information for jcrypto:

Comment:

JUNOS Crypto Software Suite [7.2R1.7]

Information for jkernel:

Comment:

JUNOS Kernel Software Suite [7.2R1.7]

...

## request system software rollback

---

<b>Syntax</b>	request system software rollback
<b>Syntax (EX Series Switches)</b>	request system software rollback <all-members> <local> <member <i>member-id</i> > <reboot>
<b>Syntax (TX Matrix Router)</b>	request system software rollback <lcc <i>number</i>   scc> <reboot>
<b>Syntax (TX Matrix Plus Router)</b>	request system software rollback <lcc <i>number</i>   sfc <i>number</i> > <reboot>
<b>Syntax (MX Series Router)</b>	request system software rollback <all-members> <local> <member <i>member-id</i> > <reboot>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. Option <b>sfc</b> 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 behavior changed in Junos OS Release 12.1. Option <b>reboot</b> introduced in Junos OS Release 12.3.
<b>Description</b>	<p>For all versions of Junos OS up to and including Junos OS 11.4, revert to the software that was loaded at the last successful <b>request system software add</b> command.</p> <p>As of Junos OS 12.1 and greater, revert to the last known good state before the most recent <b>request system software (add   delete)</b> command. For example, using rollback in Junos OS 12.1 after using <b>request system software add</b> restores the system to a known good state prior to using the <b>add</b> command. Similarly, using rollback in Junos OS 12.1 after using <b>request system software delete</b> restores the system to a known good state prior to using the <b>delete</b> command.</p> <p>A software rollback fails if any required package (or a <b>jbundle</b> package containing the required package) cannot be found in /var/sw/pkg.</p> <p><i>Additional Information</i></p> <ul style="list-style-type: none"><li>On M Series and T Series routers, if <b>request system software add &lt;jinstall&gt; reboot</b> was used for the previous installation, then <b>request system software rollback</b> has no effect. In this case, use <b>jinstall</b> to reinstall the required package.</li></ul>

- On M Series and T Series routers, if **request system software add <sdk1>** was used for the previous installation, then **request system software rollback** removes the last installed SDK package (**sdk1** in this example).
- On SRX Series devices with dual root systems, when **request system software rollback** is run, the system switches to the alternate root. Each root can have a different version of Junos OS. Rollback takes each root back to the previously installed image.

**Options** **all-members**—(EX4200 switches and MX Series routers only) (Optional) Attempt to roll back to the previous set of packages on all members of the Virtual Chassis configuration.

**lcc number**—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, attempt to roll back to the previous set of packages on a T640 router connected to the TX Matrix router. On a TX Matrix Plus router, attempt to roll back to the previous set of packages on a connected router connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(EX4200 switches and MX Series routers only) (Optional) Attempt to roll back to the previous set of packages on the local Virtual Chassis member.

**member member-id**—(EX4200 switches and MX Series routers only) (Optional) Attempt to roll back to the previous set of packages on the specified member of the Virtual Chassis configuration. For EX4200 switches, replace *member-id* with a value from 0 through 9. For an MX Series Virtual Chassis, replace *member-id* with a value of 0 or 1.

**none**—For all versions of Junos OS up to and including Junos OS 11.4, revert to the set of software as of the last successful **request system software add**. As of Junos OS 12.1 and greater, revert to the last known good state before the most recent **request system software (add | delete)** command.

**reboot**—As of Junos OS 12.3 and greater, automatically reboot upon completing the **request system software rollback** command.

**scc**—(TX Matrix routers only) (Optional) Attempt to roll back to the previous set of packages on the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Attempt to roll back to the previous set of packages on the TX Matrix Plus router. Replace *number* with 0.

**Required Privilege Level** maintenance

**Related Documentation**

- *request system software abort*
- [request system software add on page 850](#)
- [request system software delete on page 858](#)
- [request system software validate on page 866](#)
- *request system configuration rescue delete*
- *request system configuration rescue save*
- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output** [request system software rollback on page 865](#)

**Output Fields** When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### request system software rollback

```

user@host> request system software rollback
Verified SHA1 checksum of ./jbase-7.2R1.7.tgz
Verified SHA1 checksum of ./jdocs-7.2R1.7.tgz
Verified SHA1 checksum of ./jroute-7.2R1.7.tgz
Installing package './jbase-7.2R1.7.tgz' ...
Available space: 35495 require: 7335
Installing package './jdocs-7.2R1.7.tgz' ...
Available space: 35339 require: 3497
Installing package './jroute-7.2R1.7.tgz' ...
Available space: 35238 require: 6976
NOTICE: uncommitted changes have been saved in
/var/db/config/juniper.conf.pre-install
Reloading /config/juniper.conf.gz ...
Activating /config/juniper.conf.gz ...
mgd: commit complete
Restarting mgd ...
Restarting aprobed ...
Restarting apsd ...
Restarting cosd ...
Restarting fsad ...
Restarting fud ...
Restarting gcdrd ...
Restarting ilmid ...
Restarting irsd ...
Restarting l2tpd ...
Restarting mib2d ...
Restarting nasd ...
Restarting pppoed ...
Restarting rdd ...
Restarting rmopd ...
Restarting rtspd ...
Restarting sampled ...
Restarting serviced ...
Restarting snmpd ...
Restarting spd ...
Restarting vrrpd ...

WARNING: cli has been replaced by an updated version:
CLI release 7.2R1.7 built by builder on 2005-04-22 02:03:44 UTC
Restart cli using the new version ? [yes,no] (yes) yes

Restarting cli ...
user@host

```

## request system software validate

---

<b>Syntax</b>	request system software validate <i>package-name</i> <set [ <i>package-name package-name</i> ]> <upgrade-with-config> <upgrade-with-config-format <i>format</i> >
<b>Syntax (TX Matrix Router)</b>	request system software validate <i>package-name</i> <lcc <i>number</i>   scc> <set [ <i>package-name package-name</i> ]> <upgrade-with-config> <upgrade-with-config-format <i>format</i> >
<b>Syntax (TX Matrix Plus Router)</b>	request system software validate <i>package-name</i> <lcc <i>number</i>   sfc <i>number</i> > <set [ <i>package-name package-name</i> ]> <upgrade-with-config> <upgrade-with-config-format <i>format</i> >
<b>Syntax (MX Series Router)</b>	request system software validate <i>package-name</i> <member <i>member-id</i> > <set [ <i>package-name package-name</i> ]> <upgrade-with-config> <upgrade-with-config-format <i>format</i> >
<b>Release Information</b>	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 11.1 for the QFX Series. set [ <i>package-name package-name</i> ] option added in Junos OS Release 12.2 for M Series, MX Series, T Series routers, and Branch SRX Series Services Gateways. upgrade-with-config and upgrade-with-config-format <i>format</i> options added in Junos OS Release 12.3 for M Series routers, MX Series routers, and T Series routers.
<b>Description</b>	Validate candidate software against the current configuration of the router.
<b>Options</b>	<b>lcc <i>number</i></b> —(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, validate the software bundle or package on a specific T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, validate the software bundle or package for a specific router that is connected to the TX Matrix Plus router. Replace <i>number</i> with the following values depending on the LCC configuration: <ul style="list-style-type: none"><li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li><li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li></ul>

- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**member *member-id***—(MX Series routers only) (Optional) Validate the software bundle or package on the specified member of the Virtual Chassis configuration. For an MX Series Virtual Chassis, replace ***member-id*** with a value of 0 or 1.

***package-name***—Name of the software bundle or package to test.

**scc**—(TX Matrix routers only) (Optional) Validate the software bundle or package for the TX Matrix router (or switch-card chassis).

**set [*package-name package-name*]**—(M Series, MX Series, T Series routers, and Branch SRX Series Services Gateways only) (Optional) Install multiple software packages or software add-on packages at the same time.

**sfc *number***—(TX Matrix Plus routers only) (Optional) Validate the software bundle or package for the TX Matrix Plus router.

**upgrade-with-config**—(Optional) Install one or more configuration files.

**upgrade-with-config-format *format***—(Optional) Specify the configuration file format, **text** or **xml**. The default format is **text**.



**NOTE:** The **upgrade-with-config** and **upgrade-with-config-format** options are only available locally on the router or switch. In a routing matrix, the configuration is applied only to the local router and is not propagated to other routers.

The options are validated during the validation process and applied to the router or switch during the upgrade process. If the upgrade process is successful, the options are removed from the configuration. If the upgrade process fails, the configuration file is renamed with the **.failed** suffix.

**Additional Information** By default, when you issue the **request system software validate** command on a TX Matrix master Routing Engine, all the T640 master Routing Engines that are connected to it are validated. If you issue the same command on the TX Matrix backup Routing Engine, all the T640 backup Routing Engines that are connected to it are upgraded to the same version of software.

Likewise, if you issue the **request system software validate** command on a TX Matrix Plus master Routing Engine, all the T1600 or T4000 master Routing Engines that are connected to it are validated. If you issue the same command on a TX Matrix Plus backup Routing Engine, all the T1600 or T4000 backup Routing Engines that are connected to it are upgraded to the same version of software.

Required Privilege Level	maintenance
Related Documentation	<ul style="list-style-type: none"><li>• <i>request system software abort</i></li><li>• <a href="#">request system software add on page 850</a></li><li>• <a href="#">request system software delete on page 858</a></li><li>• <a href="#">request system software rollback on page 862</a></li><li>• <i>Routing Matrix with a TX Matrix Plus Router Solutions Page</i></li></ul>
List of Sample Output	<a href="#">request system software validate (Successful Case) on page 868</a> <a href="#">request system software validate (Failure Case) on page 868</a>
Output Fields	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### request system software validate (Successful Case)

```
user@host> request system software validate /var/sw/pkg/jbundle-5.3I20020124_0520_sjg.tgz
Checking compatibility with configuration
Initializing...
Using /packages/jbase-5.3I20020122_1901_sjg
Using /var/sw/pkg/jbundle-5.3I20020124_0520_sjg.tgz
Using /var/chroot/var/tmp/jbundle/jbase-5.3I20020124_0520_sjg.tgz
Using /var/chroot/var/tmp/jbundle/jkernel-5.3I20020124_0520_sjg.tgz
Using /var/chroot/var/tmp/jbundle/jcrypto-5.3I20020124_0520_sjg.tgz
Using /var/chroot/var/tmp/jbundle/jpfe-5.3I20020124_0520_sjg.tgz
Using /var/chroot/var/tmp/jbundle/jdocs-5.3I20020124_0520_sjg.tgz
Using /var/chroot/var/tmp/jbundle/jroute-5.3I20020124_0520_sjg.tgz
Validating against /config/juniper.conf.gz
mgd: commit complete

WARNING: cli has been replaced by an updated version:
CLI release 5.3I0 built by sjg on 2002-01-24 05:23:53 UTC
Restart cli using the new version ? [yes,no] (yes)
```

### request system software validate (Failure Case)

```
user@host> request system software validate 6.3/
Pushing bundle to lcc0-re0
error: Failed to transfer package to lcc0-re0

user@host> request system software validate test
Pushing bundle to lcc0-re0
Pushing bundle to lcc2-re0

lcc0-re0:
gzip: stdin: not in gzip format
tar: child returned status 1
ERROR: Not a valid package: /var/tmp/test
```



## show pfe lcc

<b>Syntax (TX Matrix and TX Matrix Plus Routers)</b>	<code>show pfe lcc <i>number</i></code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(TX Matrix and TX Matrix Plus router only) On a TX Matrix router, display Packet Forwarding Engine status and statistics for the T640 router (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display Packet Forwarding Engine status and statistics for the T1600 or T4000 router (or line-card chassis) that is connected to a TX Matrix Plus router.
<b>Options</b>	<p><b>lcc <i>number</i></b>—On a TX Matrix router, display Packet Forwarding Engine status and statistics for the specified T640 router (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display Packet Forwarding Engine status and statistics for the specified router (or line-card chassis) that is connected to a TX Matrix Plus router.</p> <p>Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"> <li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li> <li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li> <li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> <li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> </ul>
<b>Required Privilege Level</b>	admin
<b>List of Sample Output</b>	<a href="#">show pfe lcc on page 869</a>

## Sample Output

### show pfe lcc

```

user@host> show pfe lcc 0
LCC 0 status:
  Slot:                Present
  State:                Online
  Last State Change:    2005-03-10 19:31:50 PST
  Uptime (total):       1d 14:20
  Failures:             23
  Pending:              0

Peer message type receive qualifiers:
Message Type           Receive Qualifier
-----

```

```

TTP All detail
IFD All detail
IFL All detail
Nexthop All
COS All
Route All
SW Firewall All
HW Firewall All
PFE Statistics All
PIC Statistics All
Sampling All detail
Monitoring All detail
ASP All detail
L2TP All detail
Collector All detail

```

## PFE listener statistics:

```

Open: 25
Close: 23
Sleep: 0
Wakeup: 0
Resync Request: 0
Resync Done: 2
Resync Fail: 0
Resync Time: 0

```

## PFE IPC statistics:

type	TX Messages	RX messages
Header	0	0
Test	0	0
Interface	163	2923
Chassis	0	0
Boot	0	0
Next-hop	15	0
Jtree	0	0
Cprod	0	0
Route	100	0
Pfe	5369	3072
Dfw	11	0
Mastership	0	0
Sampling	0	0
GUCP	0	0
CoS	20	0
GCCP	0	0
GHCP	0	0
IRSD	0	0
Monitoring	0	0
RE	3	6930
PIC	0	0
ASP cfg	0	0
ASP cmd	0	0
L2TP cfg	0	0
Collector	0	0
PIC state	4	0

## PFE socket-buffer mbuf depth:

bucket	count
0	0
1	0

2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0

PFE socket-buffer bytes pending transmit:

bucket	count
-----	-----
0	0
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0

## show pfe next-hop

---

<b>Syntax</b>	<code>show pfe next-hop</code> <code>&lt;interface <i>interface-name</i>&gt;</code>
<b>Syntax (TX Matrix and TX Matrix Plus Routers)</b>	<code>show pfe next-hop</code> <code>&lt;fpc <i>slot</i>&gt;</code> <code>&lt;interface <i>interface-name</i>&gt;</code> <code>&lt;lcc <i>number</i>&gt;</code>
<b>Release Information</b>	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.
<b>Description</b>	Display Packet Forwarding Engine next-hop information.
<b>Options</b>	<p><b>none</b>—Display all Packet Forwarding Engine next-hop information.</p> <p><b>fpc <i>slot</i></b>—(TX Matrix and TX Matrix Plus routers only) (Optional) Show the next hops for a Flexible PIC Concentrator (FPC) slot.</p> <ul style="list-style-type: none"><li>On a TX Matrix router, if you specify the number of a T640 router by using the <b>lcc <i>number</i></b> option (the recommended method), replace <b><i>slot</i></b> with a value from <b>0</b> through <b>7</b>. Otherwise, replace <b><i>slot</i></b> with a value from <b>0</b> through <b>31</b>.</li><li>On a TX Matrix Plus router, if you specify the number of a T1600 router by using the <b>lcc <i>number</i></b> option (the recommended method), replace <b><i>slot</i></b> with a value from <b>0</b> through <b>7</b>. Otherwise, replace <b><i>slot</i></b> with a value from <b>0</b> through <b>31</b>.</li><li>On a TX Matrix Plus router in the TXP-T1600-3D, TXP-T4000-3D, or TXP-Mixed-LCC-3D configuration, if you specify the number of a T1600 or T4000 router by using the <b>lcc <i>number</i></b> option (the recommended method), replace <b><i>slot</i></b> with a value from <b>0</b> through <b>7</b>. Otherwise, replace <b><i>slot</i></b> with a value from <b>0</b> through <b>63</b>.</li></ul> <p>For example, the following commands have the same result:</p> <pre>user@host&gt; show pfe next-hop fpc 1 lcc 1 user@host&gt; show pfe next-hop fpc 9</pre> <p><b>interface <i>interface-name</i></b>—(Optional) Display the Packet Forwarding Engine next-hop interface.</p> <p><b>lcc <i>number</i></b>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display Packet Forwarding Engine next-hop interface for a specific T640 router (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display Packet Forwarding Engine next-hop interface for the router (or line-card chassis) that is connected to a TX Matrix Plus router.</p>

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**Required Privilege Level**    admin

**Related Documentation**

- [Routing Matrix with TXP-T1600 Configuration on page 5](#)
- [Routing Matrix with TXP-T1600-3D Configuration on page 7](#)
- [Routing Matrix with TXP-T4000-3D Configuration on page 8](#)
- [Overview of a Routing Matrix with TXP-Mixed-LCC-3D Configuration on page 11](#)

**List of Sample Output**

- [show pfe next-hop on page 874](#)
- [show pfe next-hop fpc \(TX Matrix Router\) on page 874](#)
- [show pfe next-hop fpc \(TX Matrix Plus Router\) on page 874](#)

## Sample Output

## show pfe next-hop

```
user@host> show pfe next-hop
```

```
NextHop Info:
```

ID	Type	Interface	Protocol	Encap	Next Hop Addr	MTU
4	Mcast	-	IPv4	-	0.0.0.0	0
5	Bcast	-	IPv4	-	-	0
7	Discard	-	IPv4	-	-	0
8	MDiscard	-	IPv4	-	-	0
9	Reject	-	IPv4	-	-	0
13	Local	-	IPv4	-	192.168.4.60	0
14	Resolve	fxp0.0	IPv4	Unspecified	-	0
17	Local	-	IPv4	-	127.0.0.1	0
18	Unicast	fxp0.0	IPv4	Unspecified	192.168.4.254	0
21	Local	-	IPv4	-	11.1.0.1	0
22	Unicast	at-0/1/0.0	IPv4	ATM SNAP	11.1.0.2	4482
...						

## show pfe next-hop fpc (TX Matrix Router)

```
user@host> show pfe next-hop fpc 1
```

```
Slot 1
```

```
NextHop Info:
```

ID	Type	Interface	Next Hop Addr	Protocol	Encap	MTU
5	Mcast	-	default	IPv4	-	0
6	Bcast	-	-	IPv4	-	0
8	Discard	-	-	IPv4	-	0
9	MDiscard	-	-	IPv4	-	0
13	Mcast	-	default	IPv6	-	0
17	MDiscard	-	-	IPv6	-	0
18	Reject	-	-	IPv6	-	0
24	Discard	-	-	None	-	0
68	Local	-	192.168.66.113	IPv4	-	0
69	Resolve	fxp0.0	-	IPv4	Unspecified	0
70	Unicast	fxp0.0	192.168.71.254	IPv4	Unspecified	0
256	Local	-	10.71.71.1	IPv4	-	0
257	Local	-	127.0.0.1	IPv4	-	0
258	Mcast.local..1	default	-	IPv4	Unspecified	0
259	Bcast.local..1	-	-	IPv4	Unspecified	0
261	Discard.local..1	-	-	IPv4	Unspecified	0
262	MDiscard.local..1	-	-	IPv4	Unspecified	0
269	Mcast.local..1	default	-	IPv6	Unspecified	0
271	Discard.local..1	-	-	IPv6	Unspecified	0
...						

## show pfe next-hop fpc (TX Matrix Plus Router)

```
user@host> show pfe next-hop fpc 0
```

```
Slot 0
```

ID	Type	Interface	Next Hop Addr	Protocol	Encap	MTU
31	Mcast	-	default	IPv4	-	0
32	Bcast	-	-	IPv4	-	0
34	Discard	-	-	IPv4	-	0
35	MDiscard	-	-	IPv4	-	0

36	Reject	-	-	IPv4	-	0
39	Mcast	-	default	IPv6	-	0
42	Discard	-	-	IPv6	-	0
43	MDiscard	-	-	IPv6	-	0
44	Reject	-	-	IPv6	-	0
49	Receive	-	-	MPLS	-	0
50	Discard	-	-	MPLS	-	0
111	Mcast	.local..1	default	IPv4	Unspecified	0
112	Bcast	.local..1	-	IPv4	Unspecified	0
114	Discard	.local..1	-	IPv4	Unspecified	0
115	MDiscard	.local..1	-	IPv4	Unspecified	0
116	Reject	.local..1	-	IPv4	Unspecified	0
119	Mcast	.local..1	default	IPv6	Unspecified	0
122	Discard	.local..1	-	IPv6	Unspecified	0
123	MDiscard	.local..1	-	IPv6	Unspecified	0
124	Reject	.local..1	-	IPv6	Unspecified	0
191	Mcast	.local..2	default	IPv4	Unspecified	0
192	Bcast	.local..2	-	IPv4	Unspecified	0
194	Discard	.local..2	-	IPv4	Unspecified	0
195	MDiscard	.local..2	-	IPv4	Unspecified	0
196	Reject	.local..2	-	IPv4	Unspecified	0
322	Local	-	10.1.0.5	IPv4	-	0
323	Resolve	bcm0.0	-	IPv4	Unspecified	0
326	Local	-	129.0.0.5	IPv4	-	0
327	Resolve	bcm0.0	-	IPv4	Unspecified	0
328	Local	-	fe80::201:ff:fe01:5	IPv6	-	0
329	Receive	bcm0.0	ff02::1:ff01:5	IPv6	Unspecified	0
330	Receive	bcm0.0	fe80::	IPv6	Unspecified	0
331	Resolve	bcm0.0	-	IPv6	Unspecified	0
332	Local	-	fec0::a:1:0:5	IPv6	-	0
333	Receive	bcm0.0	ff02::1:ff00:5	IPv6	Unspecified	0
334	Receive	bcm0.0	fec0::	IPv6	Unspecified	0
335	Resolve	bcm0.0	-	IPv6	Unspecified	0
348	Local	-	192.168.178.4	IPv4	-	0
349	Resolve	em0.0	-	IPv4	Unspecified	0
350	Unicast	em0.0	192.168.178.126	IPv4	Unspecified	0
357	Local	-	fe80::201:1ff:fe01:5	IPv6	-	0
512	Local	-	10.255.178.11	IPv4	-	0
513	Local	-	127.0.0.1	IPv4	-	0
515	Local	-	abcd::10:255:178:11	IPv6	-	0
516	Local	-	fe80::200:ff:fe00:0	IPv6	-	0
517	Local	-	127.0.0.1	IPv4	-	0
518	Mcast	.local..3	default	IPv4	Unspecified	0
519	Bcast	.local..3	-	IPv4	Unspecified	0
521	Discard	.local..3	-	IPv4	Unspecified	0
522	MDiscard	.local..3	-	IPv4	Unspecified	0
523	Reject	.local..3	-	IPv4	Unspecified	0
531	Mcast	.local..3	default	IPv6	Unspecified	0
533	Discard	.local..3	-	IPv6	Unspecified	0
534	MDiscard	.local..3	-	IPv6	Unspecified	0
535	Reject	.local..3	-	IPv6	Unspecified	0
539	Mgroup	-	-	IPv4	-	0
540	Bcast	ge-15/0/3.0	-	IPv4	Ethernet	0
541	Receive	ge-15/0/3.0	14.2.1.0	IPv4	Ethernet	0
542	Local	-	14.2.1.1	IPv4	-	0
543	Resolve	ge-15/0/3.0	-	IPv4	Ethernet	0
544	Bcast	ge-31/0/4.0	-	IPv4	Ethernet	0

545	Receive	ge-31/0/4.0	14.1.1.0	IPv4	Ethernet	0
546	Local	-	14.1.1.1	IPv4	-	0
547	Resolve	ge-31/0/4.0	-	IPv4	Ethernet	0
548	Unicast	ge-31/0/4.0	14.1.1.2	IPv4	Ethernet	0
549	Unicast	ge-15/0/3.0	14.2.1.2	IPv4	Ethernet	0
550	Bcast	ae1.0	-	IPv4	Ethernet	0
551	Receive	ae1.0	11.1.1.0	IPv4	Ethernet	0
552	Local	-	11.1.1.1	IPv4	-	0
553	Resolve	ae1.0	-	IPv4	Ethernet	0
554	Aggreg.	ae1.0	-	IPv4	Ethernet	0
555	Unicast	ge-23/0/8.0	11.1.1.2	IPv4	Ethernet	0
556	Unicast	ge-7/0/9.0	11.1.1.2	IPv4	Ethernet	0
557	Aggreg.	ae1.0	-	MPLS	Ethernet	0
558	Unicast	ge-23/0/8.0	-	MPLS	Ethernet	0
559	Unicast	ge-7/0/9.0	-	MPLS	Ethernet	0
560	Aggreg.	ae1.0	-	MPLS	Ethernet	0
561	Unicast	ge-23/0/8.0	-	MPLS	Ethernet	0
562	Unicast	ge-7/0/9.0	-	MPLS	Ethernet	0



## show pfe route

<b>Syntax</b>	show pfe route <<inet6   ip   iso> <prefix <i>prefix</i> >   <table < <i>table-name</i> > <index <i>index</i> > <prefix <i>prefix</i> >>> <mpls> <summary>
<b>Syntax (EX Series Switch and QFX Series)</b>	show pfe route <<inet6   ip> <prefix <i>prefix</i> >   <table < <i>table-name</i> > <index <i>index</i> > <prefix <i>prefix</i> >>> <mpls> <summary>
<b>Syntax (TX Matrix and TX Matrix Plus Routers)</b>	show pfe route <fpc <i>slot</i> > <<inet6   ip   iso> <prefix <i>prefix</i> >   <table < <i>table-name</i> > <index <i>index</i> > <prefix <i>prefix</i> >>> <lcc <i>number</i> > <mpls> <summary>

**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.

**Description** Display the routes in the Packet Forwarding Engine forwarding table. The Packet Forwarding Engine forwards packets between input and output interfaces.



**NOTE:** The Routing Engine maintains a master copy of the forwarding table. It copies the forwarding table to the Packet Forwarding Engine, which is the part of the router or switch responsible for forwarding packets. To display the routes in the Routing Engine forwarding table, use the `show route forwarding table` command. For more information, see the *Junos OS Operational Mode Commands*.

**Options** **none**—Display all Packet Forwarding Engine forwarding table information.

**fpc *slot***—(TX Matrix and TX Matrix Plus routers only) (Optional) Show the next hops for a Flexible PIC Concentrator (FPC) slot.

- On a TX Matrix router, if you specify the number of a T640 router by using 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**.
- On a TX Matrix Plus router, if you specify the number of a T1600 router by using 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**.
- On a TX Matrix Plus router in the TXP-T1600-3D, TXP-T4000-3D, or TXP-Mixed-LCC-3D configuration, if you specify the number of a T1600 or T4000 router by using 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 **63**.

For example, the following commands have the same result:

```
user@host> show pfe route fpc 1 lcc 1
user@host> show pfe route fpc 9
```

**index *index***—(Optional) Display table index.

**inet6**—(Optional) Display Packet Forwarding Engine IPv6 routes.

**ip**—(Optional) Display Packet Forwarding Engine IPv4 routes.

**iso**—(Optional) Display ISO version routing tables.

**lcc *number***—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, the slot number of the T640 router (or line-card chassis) that houses the FPC. On a TX Matrix Plus router, the slot number of the router (line-card chassis) that houses the FPC.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**mpls**—(Optional) Display Packet Forwarding Engine MPLS information.

**prefix *prefix***—(Optional) IPv4 or IPv6 prefix for which to show table entries.

**summary**—(Optional) Display summary of Packet Forwarding Engine information.

**table <*table-name*>**—(Optional) Display table information.

**Required Privilege  
Level**

admin

**Related  
Documentation**

- [Routing Matrix with TXP-T1600 Configuration on page 5](#)
- [Routing Matrix with TXP-T1600-3D Configuration on page 7](#)
- [Routing Matrix with TXP-T4000-3D Configuration on page 8](#)
- [Overview of a Routing Matrix with TXP-Mixed-LCC-3D Configuration on page 11](#)

**List of Sample Output**    [show pfe route ip on page 879](#)

[show pfe route iso on page 879](#)

[show pfe route lcc summary \(TX Matrix Router\) on page 879](#)

[show pfe route lcc summary \(TX Matrix Plus Router\) on page 881](#)

## Sample Output

### show pfe route ip

```
user@host> show pfe route ip
```

```
IPv4 Route Table 0, default.0, 0x0:
Destination                NH IP Addr      Type      NH ID Interface
-----
default                    127.0.0.1      Discard    8
127.0.0.1                  127.0.0.1      Local      256
172.16/12                  192.168.71.254 Unicast    68 fxp0.0
192.168.0/18               192.168.71.254 Unicast    68 fxp0.0
192.168.40/22              192.168.71.254 Unicast    68 fxp0.0
192.168.64/18              192.168.71.254 Unicast    68 fxp0.0
192.168.64/21              192.168.71.254 Resolve    67 fxp0.0
192.168.71.249             192.168.71.249 Local      66
192.168.220.0/30           192.168.71.249 Resolve    303 fe-0/0/0.0
192.168.220.0              192.168.220.0 Receive    301 fe-0/0/0.0
224.0.0.1                  Mcast          5
255.255.255.255           Bcast          6

...
```

### show pfe route iso

```
user@host# show pfe route iso
```

```
CLNS Route Table 0, CLNP.0, 0x0:
Destination                Type      NH ID Interface
-----
default                    Reject    60
47.0005.80ff.f800.0000.0108.0001.0102.5508.2159/152 Local      514
49.0001.00a0.c96b.c491/72 Local      536
```

### show pfe route lcc summary (TX Matrix Router)

```
user@host> show pfe route lcc 2 summary
```

```
Slot 0
```

```
IPv4 Route Tables:
Index      Routes      Size(b)
-----
Default    43           3081
1          4            281
```

```
MPLS Route Tables:
Index      Routes      Size(b)
-----
Default    1           68
```

```
IPv6 Route Tables:
Index      Routes      Size(b)
-----
Default    9           717
1          5           389
```

## Slot 1

## IPv4 Route Tables:

Index	Routes	Size(b)
-----	-----	-----
Default	43	3081
1	4	281

## MPLS Route Tables:

Index	Routes	Size(b)
-----	-----	-----
Default	1	68

## IPv6 Route Tables:

Index	Routes	Size(b)
-----	-----	-----
Default	9	717
1	5	389

## Slot 16

## IPv4 Route Tables:

Index	Routes	Size(b)
-----	-----	-----
Default	41	2938
1	4	281

## MPLS Route Tables:

Index	Routes	Size(b)
-----	-----	-----
Default	1	68

## IPv6 Route Tables:

Index	Routes	Size(b)
-----	-----	-----
Default	9	717
1	5	389

## Slot 17

## IPv4 Route Tables:

Index	Routes	Size(b)
-----	-----	-----
Default	41	2938
1	4	281

## MPLS Route Tables:

Index	Routes	Size(b)
-----	-----	-----
Default	1	68

## IPv6 Route Tables:

Index	Routes	Size(b)
-----	-----	-----

Default	9	717
1	5	389

### show pfe route lcc summary (TX Matrix Plus Router)

```
user@host> show pfe route lcc 2 summary
```

Slot 0

IPv4 Route Tables:

Index	Routes	Size(b)
-----	-----	-----
Default	25	2266
1	9	815
2	6	545
3	5	453
4	15	1371
5	5	453
6	13	1187

MPLS Route Tables:

Index	Routes	Size(b)
-----	-----	-----
Default	1	88
4	5	452

IPv6 Route Tables:

Index	Routes	Size(b)
-----	-----	-----
Default	7	697
1	13	1305
3	4	385
4	4	385
5	4	385
6	18	1833

Slot 6

IPv4 Route Tables:

Index	Routes	Size(b)
-----	-----	-----
Default	25	2266
1	9	815
2	6	545
3	5	453
4	15	1371
5	5	453
6	13	1187

MPLS Route Tables:

Index	Routes	Size(b)
-----	-----	-----
Default	1	88
4	5	452

IPv6 Route Tables:

Index	Routes	Size(b)
-----	-----	-----
Default	7	697

1	13	1305
3	4	385
4	4	385
5	4	385
6	18	1833
...		

## show pfe statistics dma

<b>Syntax</b>	show pfe statistics dma
<b>Syntax (TX Matrix and TX Matrix Plus Routers)</b>	show pfe statistics dma <fpc slot> <lcc number>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Display Packet Forwarding Engine direct memory access (DMA) statistics.
<b>Options</b>	<p><b>none</b>—Display all Packet Forwarding Engine direct memory access statistics.</p> <p><b>fpc slot</b>—(TX Matrix and TX Matrix Plus routers only) (Optional) Display statistics for a Flexible PIC Concentrator (FPC) slot.</p> <ul style="list-style-type: none"> <li>On a TX Matrix router, if you specify the number of a T640 router by using the <b>lcc number</b> option (the recommended method), replace <b>slot</b> with a value from 0 through 7. Otherwise, replace <b>slot</b> with a value from 0 through 31.</li> <li>On a TX Matrix Plus router, if you specify the number of a T1600 router by using the <b>lcc number</b> option (the recommended method), replace <b>slot</b> with a value from 0 through 7. Otherwise, replace <b>slot</b> with a value from 0 through 31.</li> <li>On a TX Matrix Plus router in the TXP-T1600-3D, TXP-T4000-3D, or TXP-Mixed-LCC-3D configuration, if you specify the number of a T1600 or T4000 router by using the <b>lcc number</b> option (the recommended method), replace <b>slot</b> with a value from 0 through 7. Otherwise, replace <b>slot</b> with a value from 0 through 63.</li> </ul> <p>For example, the following commands have the same result:</p> <pre>user@host&gt; show pfe statistics dma fpc 1 lcc 1 user@host&gt; show pfe statistics dma fpc 9</pre> <p><b>lcc number</b>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display statistics for a specific T640 router (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display statistics for a specific router (or line-card chassis) that is connected to a TX Matrix router.</p> <p>Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"> <li>0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li> <li>0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li> <li>0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> <li>0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> </ul>

**Required Privilege Level** admin

- Related Documentation**
- [Routing Matrix with TXP-T1600 Configuration on page 5](#)
  - [Routing Matrix with TXP-T1600-3D Configuration on page 7](#)
  - [Routing Matrix with TXP-T4000-3D Configuration on page 8](#)
  - [Overview of a Routing Matrix with TXP-Mixed-LCC-3D Configuration on page 11](#)

**List of Sample Output** [show pfe statistics dma on page 884](#)  
[show pfe statistics dma lcc on page 884](#)

## Sample Output

### show pfe statistics dma

```
user@host> show pfe statistics dma
DMA Statistics:
      Name      Requests    Completed      Failed
-----
  Packet Read    905119      905119          0
  Packet Write   943761      943761          0
  Physical Read      0          0          0
  Physical Write      0          0          0

DMA Errors:
      Name      Write 0      Write 1      Read 0      Read 1
-----
  Illegal Bank      0          0          0          0
  Address Range      0          0          0          0
  ECC Error          0          0          0          0
  PCI Retries        0          0          0          0
  PCI Error          0          0          0          0

DMA Requests:
Requests available: 256, Requests used: 0
```

### show pfe statistics dma lcc

```
user@host> show pfe statistics dma lcc 2

Slot 0

DMA Statistics:
      Name      Requests    Completed      Failed
-----
  Packet Read    10718      10718          0
  Packet Write   9935      9935          0

DMA Errors:
      Name      Write 0      Write 1      Read 0      Read 1
-----
  Illegal Bank      0          0
  Address Range      0          0
  ECC Error          0          0

DMA Requests:
```



Requests available: 768, Requests used: 0

DMA Statistics:

Name	Requests	Completed	Failed
-----	-----	-----	-----
Packet Read	0	0	0
Packet Write	0	0	0

DMA Errors:

Name	Write 0	Write 1	Read 0	Read 1
-----	-----	-----	-----	-----
Illegal Bank	0	0		
Address Range	0	0		
ECC Error	0	0		

DMA Requests:

Requests available: 768, Requests used: 0

Slot 1

DMA Statistics:

Name	Requests	Completed	Failed
-----	-----	-----	-----
Packet Read	2	2	0
Packet Write	10154	10154	0

DMA Errors:

Name	Write 0	Write 1	Read 0	Read 1
-----	-----	-----	-----	-----
Illegal Bank	0	0		
Address Range	0	0		
ECC Error	0	0		

DMA Requests:

Requests available: 768, Requests used: 0

Slot 16

DMA Statistics:

Name	Requests	Completed	Failed
-----	-----	-----	-----
Packet Read	0	0	0
Packet Write	0	0	0

DMA Errors:

Name	Write 0	Write 1	Read 0	Read 1
-----	-----	-----	-----	-----
Illegal Bank	0	0		
Address Range	0	0		
ECC Error	0	0		

DMA Requests:

Requests available: 768, Requests used: 0

DMA Statistics:

Name	Requests	Completed	Failed
-----	-----	-----	-----
Packet Read	0	0	0
Packet Write	0	0	0

## DMA Errors:

Name	Write 0	Write 1	Read 0	Read 1
-----	-----	-----	-----	-----
Illegal Bank	0	0		
Address Range	0	0		
ECC Error	0	0		

## DMA Requests:

Requests available: 768, Requests used: 0

## Slot 17

## DMA Statistics:

Name	Requests	Completed	Failed
-----	-----	-----	-----
Packet Read	0	0	0
Packet Write	0	0	0

## DMA Errors:

Name	Write 0	Write 1	Read 0	Read 1
-----	-----	-----	-----	-----
Illegal Bank	0	0		
Address Range	0	0		
ECC Error	0	0		

## DMA Requests:

Requests available: 768, Requests used: 0

## show pfe statistics ip

<b>Syntax</b>	show pfe statistics ip <icmp   options>
<b>Syntax (TX Matrix and TX Matrix Plus Routers)</b>	show pfe statistics ip <fpc slot> <icmp   options> <lcc number>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Display IPv4 Packet Forwarding Engine statistics.
<b>Options</b>	<p><b>none</b>—Display all IPv4 Packet Forward Engine statistics.</p> <p><b>fpc slot</b>—(TX Matrix and TX Matrix Plus routers only) (Optional) Display statistics for a Flexible PIC Concentrator (FPC) slot.</p> <ul style="list-style-type: none"> <li>On a TX Matrix router, if you specify the number of a T640 router by using the <b>lcc number</b> option (the recommended method), replace <b>slot</b> with a value from <b>0</b> through <b>7</b>. Otherwise, replace <b>slot</b> with a value from <b>0</b> through <b>31</b>.</li> <li>On a TX Matrix Plus router, if you specify the number of a T1600 router by using the <b>lcc number</b> option (the recommended method), replace <b>slot</b> with a value from <b>0</b> through <b>7</b>. Otherwise, replace <b>slot</b> with a value from <b>0</b> through <b>31</b>.</li> <li>On a TX Matrix Plus router in the TXP-T1600-3D, TXP-T4000-3D, or TXP-Mixed-LCC-3D configuration, if you specify the number of a T1600 or T4000 router by using the <b>lcc number</b> option (the recommended method), replace <b>slot</b> with a value from <b>0</b> through <b>7</b>. Otherwise, replace <b>slot</b> with a value from <b>0</b> through <b>63</b>.</li> </ul> <p>For example, the following commands have the same result:</p> <pre>user@host&gt; show pfe statistics ip fpc 1 lcc 1 user@host&gt; show pfe statistics ip fpc 9</pre> <p><b>icmp</b>—(Optional) Display Packet Forwarding Engine IP ICMP statistics.</p> <p><b>lcc number</b>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display error statistics for a specific T640 router (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display error statistics for a specified router (or line-card chassis) that is connected to a TX Matrix Plus router.</p> <p>Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"> <li>0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li> <li>0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li> </ul>

- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**options**—(Optional) Display Packet Forwarding Engine IP options statistics.



**NOTE:** On M and T series routers, firewall filters cannot count **ip-options** packets on a per option type and per interface basis. A limited work around for this limitation is to use this **show pfe statistics ip options** command.

**Required Privilege Level** admin

- Related Documentation**
- [Routing Matrix with TXP-T1600 Configuration on page 5](#)
  - [Routing Matrix with TXP-T1600-3D Configuration on page 7](#)
  - [Routing Matrix with TXP-T4000-3D Configuration on page 8](#)
  - [Overview of a Routing Matrix with TXP-Mixed-LCC-3D Configuration on page 11](#)

**List of Sample Output** [show pfe statistics ip icmp on page 889](#)  
[show pfe statistics ip options on page 890](#)

**Output Fields** [Table 43 on page 888](#) lists the output fields for the **show pfe statistics ip** command. Output fields are listed in the approximate order in which they appear.

**Table 43: show pfe statistics ip Output Fields**

Field Name	Field Description
ICMP Statistics	<p>ICMP statistics, including the following:</p> <ul style="list-style-type: none"> <li>• <b>requests</b>—Number of ICMP notifications sent to the PFE. If a throttler is configured, the number of notifications might not reflect all requests made. (See the <b>throttled icmps</b> field description.)</li> <li>• <b>network unreachable</b>—When route lookups fail, ICMP packets are sent to the source. These packets are ICMP TypeDestination Unreachable (3) and ICMP Code=Network Unreachable (0).</li> <li>• <b>ttl expired</b>—Number of notifications processed as a result of time-to-live (TTL) expiration packets.</li> <li>• <b>ttl captured</b>—Number of TTL expired packets sent by PFE interfaces to the Routing Engine.</li> <li>• <b>redirects</b>—Number of ICMP errors sent with Type=Redirect (5).</li> <li>• <b>mtu exceeded</b>—Number of ICMP errors sent with Type=Source Quench (4).</li> <li>• <b>icmp/option handoffs</b>—Number of packets that the PFE hardware requests the PFE software to process.</li> </ul>

Table 43: show pfe statistics ip Output Fields (*continued*)

Field Name	Field Description
ICMP errors	<p>ICMP errors, including the following:</p> <ul style="list-style-type: none"> <li>• <b>unknown unreachable</b>—Unknown code (greater than 16) found for an unknown unreachable type ICMP error.</li> <li>• <b>unsupported ICMP type</b>—Any ICMP type other than UNREACH, REDIRECT, TIME_EXCEED, and PARAM_PROB.</li> <li>• <b>unprocessed redirects</b>—When trying to find the neighbor to send redirects to, the PFE could not find the next-hop information.</li> <li>• <b>invalid ICMP type</b>—Any ICMP type other than UNREACH, REDIRECT, TIME_EXCEED, and PARAM_PROB.</li> <li>• <b>invalid protocol</b>—An incorrect protocol was detected by the ICMP processor.</li> <li>• <b>bad input interface if1</b>—The PFE software cannot map the interface index supplied by the chips to a proper data structure in the microkernel.</li> <li>• <b>throttled icmps</b>—Number of requests dropped because of rate limiting by the PFE.</li> <li>• <b>runts</b>—Number of packets for which the IP header length is less than the minimum length that is supported.</li> </ul>
ICMP Discards	<p>ICMP discard statistics, including the following:</p> <ul style="list-style-type: none"> <li>• <b>multicasts</b>—ICMP packets are not sent for link-layer multicast packets. These are counted as invalid source addresses (not a unicast address or all zeros).</li> <li>• <b>bad source addresses</b>—ICMP packets were received from an invalid source address (not a unicast address or all zeros).</li> <li>• <b>bad dest addresses</b>—ICMP packets were sent to an invalid destination address (not a unicast address or all zeros).</li> <li>• <b>IP fragments</b>—ICMP responses are sent only for the first fragments. The rest do not receive a response. This is the count for ICMP requests that receive no response.</li> <li>• <b>ICMP errors</b>—Number of ICMP error packets.</li> </ul>

## Sample Output

### show pfe statistics ip icmp

```

user@host> show pfe statistics ip icmp
ICMP Statistics:
    0 requests
    0 network unreachable
    0 ttl expired
    0 ttl captured
    0 redirects
    0 mtu exceeded
    0 icmp/option handoffs
ICMP Errors:
    0 unknown unreachable
    0 unsupported ICMP type
    0 unprocessed redirects
    0 invalid ICMP type
    0 invalid protocol
    0 bad input interface
    0 throttled icmps
    0 runts
ICMP Discards:
```

```

0 multicasts
0 bad source addresses
0 bad dest addresses
0 IP fragments
0 ICMP errors

```

### show pfe statistics ip options

```

user@host> show pfe statistics ip options
IP Option Values:
  LSRR/SSRR forwarding enabled
IP Option Statistics:
  0 loose source routes
  0 strict source routes
  0 record routes
  889382 router alerts
  0 other options
IP Option Errors:
  0 runts
  2 bad versions
  0 runt header lengths
  0 giant header lengths
  0 null frames
  0 bad option lengths
  0 duplicate options
  0 bad option pointers
  0 source route frames dropped
  188 frames queued
  1126 frames dropped

```

## show pfe statistics ip6

<b>Syntax</b>	show pfe statistics ip6 <icmp>
<b>Syntax (TX Matrix and TX Matrix Plus Routers)</b>	show pfe statistics ip6 <fpc slot> <icmp> < lcc number>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Display Packet Forwarding Engine IPv6 statistics.
<b>Options</b>	<p><b>none</b>—Display all Packet Forwarding Engine IPv6 statistics.</p> <p><b>fpc slot</b>—(TX Matrix and TX Matrix Plus router only) (Optional) Display statistics for a Flexible PIC Concentrator slot.</p> <ul style="list-style-type: none"> <li>On a TX Matrix router, if you specify the number of a T640 router by using the <b>lcc number</b> option (the recommended method), replace <b>slot</b> with a value from <b>0</b> through <b>7</b>. Otherwise, replace <b>slot</b> with a value from <b>0</b> through <b>31</b>.</li> <li>On a TX Matrix Plus router, if you specify the number of a T1600 router by using the <b>lcc number</b> option (the recommended method), replace <b>slot</b> with a value from <b>0</b> through <b>7</b>. Otherwise, replace <b>slot</b> with a value from <b>0</b> through <b>31</b>.</li> <li>On a TX Matrix Plus router in the TXP-T1600-3D, TXP-T4000-3D, or TXP-Mixed-LCC-3D configuration, if you specify the number of a T1600 or T4000 router by using the <b>lcc number</b> option (the recommended method), replace <b>slot</b> with a value from <b>0</b> through <b>7</b>. Otherwise, replace <b>slot</b> with a value from <b>0</b> through <b>63</b>.</li> </ul> <p>For example, the following commands have the same result:</p> <pre>user@host&gt; show pfe statistics ip6 fpc 1 lcc 1 user@host&gt; show pfe statistics ip6 fpc 9</pre> <p><b>icmp</b>—(Optional) Display Packet Forwarding Engine IP ICMP statistics.</p> <p><b>lcc number</b>—(TX Matrix and TX Matrix Plus router only) (Optional) On a TX Matrix router, display statistics for a specific T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display statistics for a specified router (line-card chassis) that is connected to the TX Matrix Plus router. Replace <b>number</b> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"> <li>0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li> <li>0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li> </ul>

- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**Required Privilege Level** admin

**Related Documentation**

- [Routing Matrix with TXP-T1600 Configuration on page 5](#)
- [Routing Matrix with TXP-T1600-3D Configuration on page 7](#)
- [Routing Matrix with TXP-T4000-3D Configuration on page 8](#)
- [Overview of a Routing Matrix with TXP-Mixed-LCC-3D Configuration on page 11](#)

**List of Sample Output** [show pfe statistics ip6 icmp on page 893](#)  
[show pfe statistics ip6 lcc on page 894](#)

**Output Fields** [Table 44 on page 892](#) lists the output fields for the **show pfe statistics ip6** command. Output fields are listed in the approximate order in which they appear.

**Table 44: show pfe statistics ip6 Output Fields**

Field Name	Field Description
ICMP6 Statistics	<p>ICMP6 statistics, including the following:</p> <ul style="list-style-type: none"> <li>• <b>requests</b>—Number of ICMP notifications sent to the PFE. If a throttler is configured, the number of notifications might not reflect all requests made. (See the <b>throttled icmps</b> field description.)</li> <li>• <b>network unreachable</b>—When route lookups fail, ICMP packets are sent to the source. These packets are ICMP Type= Destination Unreachable (3) and ICMP Code= Network Unreachable (0).</li> <li>• <b>ttl expired</b>—Number of notifications processed as a result of time-to-live (TTL) expiration packets.</li> <li>• <b>ttl captured</b>—Number of TTL expired packets sent by PFE interfaces to the Routing Engine.</li> <li>• <b>redirects</b>—Number of ICMP errors sent with Type=Redirect (5).</li> <li>• <b>mtu exceeded</b>—Number of ICMP errors sent with Type=Source Quench (4).</li> <li>• <b>icmp/option handoffs</b>—Number of packets that the PFE hardware requests the PFE software to process.</li> </ul>



Table 44: show pfe statistics ip6 Output Fields (*continued*)

Field Name	Field Description
ICMP6 errors	<p>ICMP6 errors, including the following:</p> <ul style="list-style-type: none"> <li>• <b>unknown unreachable</b>—Unknown code (greater than 16) found for an unknown unreachable type ICMP error.</li> <li>• <b>unsupported ICMP type</b>—Any ICMP type other than UNREACH, REDIRECT, TIME_EXCEED, and PARAM_PROB.</li> <li>• <b>unprocessed redirects</b>—When trying to find the neighbor to send redirects to, the PFE could not find the next-hop information.</li> <li>• <b>invalid ICMP type</b>—Any ICMP type other than UNREACH, REDIRECT, TIME_EXCEED, and PARAM_PROB.</li> <li>• <b>invalid protocol</b>—An incorrect protocol was detected by the ICMP processor.</li> <li>• <b>bad input interface if1</b>—The PFE software cannot map the interface index supplied by the chips to a proper data structure in the microkernel.</li> <li>• <b>throttled icmps</b>—Number of requests dropped because of rate limiting by the PFE.</li> <li>• <b>runts</b>—Number of packets for which the IP header length is less than the minimum length that is supported.</li> </ul>
ICMP6 Discards	<p>ICMP6 discard statistics, including the following:</p> <ul style="list-style-type: none"> <li>• <b>multicasts</b>—ICMP packets are not sent for link-layer multicast packets. These are counted as invalid source addresses (not a unicast address or all zeros).</li> <li>• <b>bad source addresses</b>—ICMP packets were received from an invalid source address (not a unicast address or all zeros).</li> <li>• <b>bad dest addresses</b>—ICMP packets were sent to an invalid destination address (not a unicast address or all zeros).</li> <li>• <b>IP fragments</b>—ICMP responses are sent only for the first fragments. The rest do not receive a response. This is the count for ICMP requests that receive no response.</li> <li>• <b>ICMP errors</b>—Number of ICMP error packets.</li> </ul>

## Sample Output

### show pfe statistics ip6 icmp

```

user@host> show pfe statistics ip6 icmp
ICMP6 Statistics:
    0 requests
    0 network unreachable
    0 ttl expired
    0 ttl captured
    0 redirects
    0 mtu exceeded
    0 icmp/option handoffs
ICMP6 Errors:
    0 unknown unreachable
    0 unsupported ICMP type
    0 unprocessed redirects
    0 invalid ICMP type
    0 invalid protocol
    0 bad input interface
    0 throttled icmps
    0 runts
ICMP6 Discards:
```

```
0 multicasts
0 bad source addresses
0 bad dest addresses
0 IP fragments
0 ICMP errors
```

### show pfe statistics ip6 lcc

```
user@host> show pfe statistics ip6 lcc 0 fpc 0
sfc0-re0:
```

-----  
ICMP Statistics:

```
0 requests
0 network unreachable
0 ttl expired
0 ttl captured
0 redirects
0 mtu exceeded
0 icmp/option handoffs
```

ICMP Errors:

```
0 unknown unreachable
0 unsupported ICMP type
0 unprocessed redirects
0 invalid ICMP type
0 invalid protocol
0 bad input interface
0 throttled icmps
0 runts
```

ICMP Discards:

```
0 multicasts
0 bad source addresses
0 bad dest addresses
0 IP fragments
0 ICMP errors
```

## show pfe statistics notification

<b>Syntax</b>	show pfe statistics notification
<b>Syntax (TX Matrix and TX Matrix Plus Routers)</b>	show pfe statistics notification <fpc slot> < lcc number>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Display Packet Forwarding Engine notification statistics.
<b>Options</b>	<p><b>none</b>—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, display statistics about the Packet Forwarding Engine notification on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display statistics about the Packet Forwarding Engine notification on the TX Matrix Plus router and its attached routers.</p> <p><b>fpc slot</b>—(TX Matrix and TX Matrix Plus routers only) (Optional) Display notification for a Flexible PIC Concentrator (FPC) slot:</p> <ul style="list-style-type: none"> <li>On a TX Matrix router, if you specify the number of a T640 router by using the <b>lcc number</b> option (the recommended method), replace <b>slot</b> with a value from 0 through 7. Otherwise, replace <b>slot</b> with a value from 0 through 31.</li> <li>On a TX Matrix Plus router, if you specify the number of a T1600 router by using the <b>lcc number</b> option (the recommended method), replace <b>slot</b> with a value from 0 through 7. Otherwise, replace <b>slot</b> with a value from 0 through 31.</li> <li>On a TX Matrix Plus router in the TXP-T1600-3D, TXP-T4000-3D, or TXP-Mixed-LCC-3D configuration, if you specify the number of a T1600 or T4000 router by using the <b>lcc number</b> option (the recommended method), replace <b>slot</b> with a value from 0 through 7. Otherwise, replace <b>slot</b> with a value from 0 through 63.</li> </ul> <p>For example, the following commands have the same result:</p> <pre>user@host&gt; show pfe statistics notification fpc 1 lcc 1 user@host&gt; show pfe statistics notification fpc 9</pre> <p><b>lcc number</b>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display notification for a specific T640 router (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display notification for a specific router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"> <li>0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li> <li>0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li> </ul>

- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**Required Privilege Level** admin

**Related Documentation**

- [Routing Matrix with TXP-T1600 Configuration on page 5](#)
- [Routing Matrix with TXP-T1600-3D Configuration on page 7](#)
- [Routing Matrix with TXP-T4000-3D Configuration on page 8](#)
- [Overview of a Routing Matrix with TXP-Mixed-LCC-3D Configuration on page 11](#)

**List of Sample Output** [show pfe statistics notification on page 896](#)  
[show pfe statistics notification lcc on page 896](#)

## Sample Output

### [show pfe statistics notification](#)

```
user@host> show pfe statistics notification
PFE Notification statistics:
  2453 parsed
    0 aged
    0 corrupt
    0 illegal
    0 sample
    0 giants
    0 transit options/ttl-exceeded

PFE Notification Type statistics:
  Parsed      Input      Failed      Ignored
Illegal         0         0         0
Unclass      1733      1733         0
Option         0         0         0
Next-Hop       720       720         0
Discard         0         0         0
Sample         0         0         0
Redirect        0         0         0
DontFrag        0         0         0
CfDF            0         0         0
```

### [show pfe statistics notification lcc](#)

```
user@host> show pfe statistics notification lcc 0

Slot 0

PFE Notification statistics:
  1252 parsed
    0 aged
    0 corrupt
    0 illegal
    0 sample
    0 giants
```

```
0 transit options/ttl-exceeded
0 transit options/ttl-exceeded errors
0 svc options sent to ASP
0 svc options sent to RE
0 post svc options sent out
121 options or ttl expired (not RE-destined)
```

PFE Notification Type statistics:

	Parsed	Input	Failed	Ignored
Illegal	0	0	0	0
Unclass	695	695	0	0
Option	30	30	0	0
Next-Hop	527	527	0	0
Discard	0	0	0	0
Sample	0	0	0	0
Redirect	0	0	0	0
DontFrag	0	0	0	0
CfDF	0	0	0	0
Poison	0	0	0	0

Slot 1

PFE Notification statistics:

```
0 parsed
0 aged
```

...

## show pfe statistics traffic

---

<b>Syntax</b>	show pfe statistics traffic <fpc slot>
<b>Syntax (EX Series Switches)</b>	show pfe statistics traffic <voq <fpc slot>>
<b>Syntax (TX Matrix and TX Matrix Plus Router)</b>	show pfe statistics traffic <fpc slot> < lcc number>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 12.2 for EX Series switches.
<b>Description</b>	Display Packet Forwarding Engine traffic statistics.
<b>Options</b>	<p><b>none</b>—Display statistics about PFE traffic. On the TX Matrix router, display statistics about PFE traffic for all its attached T640 routers. On the TX Matrix Plus router, display statistics about PFE traffic for all its attached routers</p> <p><b>fpc slot</b>—(T Series and M320 routers only) (Optional) Display statistics for a Flexible PIC Concentrator (FPC) slot.</p> <ul style="list-style-type: none"><li>• On a TX Matrix router, if you specify the number of a T640 router by using the <b>lcc number</b> option (the recommended method), replace <b>slot</b> with a value from <b>0</b> through <b>7</b>. Otherwise, replace <b>slot</b> with a value from <b>0</b> through <b>31</b>.</li><li>• On a TX Matrix Plus router, if you specify the number of a T1600 router by using the <b>lcc number</b> option (the recommended method), replace <b>slot</b> with a value from <b>0</b> through <b>7</b>. Otherwise, replace <b>slot</b> with a value from <b>0</b> through <b>31</b></li><li>• On a TX Matrix Plus router in the TXP-T1600-3D, TXP-T4000-3D, or TXP-Mixed-LCC-3D configuration, if you specify the number of a T1600 or T4000 router by using the <b>lcc number</b> option (the recommended method), replace <b>slot</b> with a value from <b>0</b> through <b>7</b>. Otherwise, replace <b>slot</b> with a value from <b>0</b> through <b>63</b>.</li></ul> <p>For example, the following commands have the same result:</p> <pre>user@host&gt; show pfe statistics traffic fpc 1 lcc 1 user@host&gt; show pfe statistics traffic fpc 9</pre> <p><b>lcc number</b>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display statistics for a specific T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display statistics for a specific router (or line-card chassis) that is connected to the TX Matrix Plus router.</p>

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**voq <fpc slot>**—(EX8200 switches and EX8200 Virtual Chassis only) (Optional) Display statistics for virtual output queue (VOQ) drops for all FPC slots or for a particular FPC slot. See *EX8208 Switch Hardware and CLI Terminology Mapping* or *EX8216 Switch Hardware and CLI Terminology Mapping*.

**Required Privilege Level** admin

**Related Documentation**

- *show pfe statistics bridge*
- *show pfe statistics error*
- [Routing Matrix with TXP-T1600 Configuration on page 5](#)
- [Routing Matrix with TXP-T1600-3D Configuration on page 7](#)
- [Routing Matrix with TXP-T4000-3D Configuration on page 8](#)
- [Overview of a Routing Matrix with TXP-Mixed-LCC-3D Configuration on page 11](#)

**List of Sample Output**

[show pfe statistics traffic on page 901](#)  
[show pfe statistics traffic voq \(EX8200 Switch\) on page 902](#)  
[show pfe statistics traffic voq \(EX8200 Virtual Chassis\) on page 902](#)  
[show pfe statistics traffic voq fpc 2 \(EX8200 Switch and EX8200 Virtual Chassis\) on page 903](#)

**Output Fields** [Table 45 on page 899](#) lists the output fields for the **show pfe statistics traffic** command. Output fields are listed in the approximate order in which they appear.

**Table 45: show pfe statistics traffic Output Fields**

Field Name	Field Description
Packet Forwarding Engine Traffic statistics	<p>Information about Packet Forwarding Engine traffic:</p> <ul style="list-style-type: none"> <li>• <b>Input Packets</b>—Number and rate of incoming packets.</li> <li>• <b>Output Packets</b>—Number and rate of outgoing packets.</li> </ul>

Table 45: show pfe statistics traffic Output Fields (*continued*)

Field Name	Field Description
<b>Packet Forwarding Engine Local Traffic statistics</b>	<p>Information about Packet Forwarding Engine local traffic:</p> <ul style="list-style-type: none"> <li>• <b>Local packets input</b>—Number of incoming packets from the local network.</li> <li>• <b>Local packets output</b>—Number of outgoing packets dispatched to a host in the local network.</li> <li>• <b>Software input high drops</b>—Number of incoming software packets of high-priority, dropped during transmission.</li> <li>• <b>Software input medium drops</b>—Number of incoming software packets of medium-priority, dropped during transmission.</li> <li>• <b>Software input low drops</b>—Number of incoming software packets of low-priority, dropped during transmission.</li> <li>• <b>Software output drops</b>—Number of outgoing software packets that were dropped during transmission.</li> <li>• <b>Hardware input drops</b>—Number of incoming hardware packets that were dropped during transmission.</li> </ul>
<b>Packet Forwarding Engine Local Protocol statistics</b>	<p>Information about the Packet Forwarding Engine Local Protocol:</p> <ul style="list-style-type: none"> <li>• <b>HDLC keepalives</b>—Number of HDLC keepalive packets.</li> <li>• <b>ATM OAM</b>—Number of Asynchronous Transfer Mode (ATM) Operation, Administration, and Maintenance (OAM) packets.</li> <li>• <b>Frame Relay LMI</b>—Number of Frame Relay Local Management Interface (LMI) packets.</li> <li>• <b>PPP LCP/NCP</b>—Number of Point-to-Point Protocol (PPP) Link Control Protocol (LCP) or Network Control Protocol (NCP) packets.</li> <li>• <b>OSPF hello</b>—Number of Open Shortest Path First (OSPF) hello packets.</li> <li>• <b>OSPF3 hello</b>—Number of Open Shortest Path First version 3 (OSPFv3) hello packets.</li> <li>• <b>RSVP hello</b>—Number of Reservation Setup Protocol (RSVP) hello packets.</li> <li>• <b>LDP hello</b>—Number of Label Distribution Protocol (LDP) hello packets.</li> <li>• <b>BFD</b>—Number of Bidirectional Forwarding Detection Protocol (BFD) hello packets.</li> <li>• <b>IS-IS IIH</b>—Number of Intermediate System-to-Intermediate System Hello (IIH) packets.</li> <li>• <b>LACP</b>—Number of Link Aggregation Control Protocol (LACP) packets.</li> <li>• <b>ARP</b>—Number of Address Resolution Protocol (ARP) packets.</li> <li>• <b>ETHER OAM</b>—Number of Ethernet OAM packets.</li> <li>• <b>Unknown</b>—Number of unknown packets not matching any of the packet types listed above.</li> </ul>



Table 45: show pfe statistics traffic Output Fields (*continued*)

Field Name	Field Description
Packet Forwarding Engine Hardware Discard statistics	<p>Information about Packet Forwarding Engine hardware discards:</p> <ul style="list-style-type: none"> <li>• <b>Timeout</b>—Number of packets discarded because of timeouts.</li> <li>• <b>Truncated key</b>—Number of packets discarded because of truncated keys.</li> <li>• <b>Bits to test</b>—Number of bits to test.</li> <li>• <b>Data error</b>—Number of packets discarded because of data errors.</li> <li>• <b>Stack underflow</b>—Number of packets discarded because of stack underflows.</li> <li>• <b>Stack overflow</b>—Number of packets discarded because of stack overflows.</li> <li>• <b>Normal discard</b>—Number of packets discarded because of discard routes. Packets are dropped silently without being further processed by the host. Normal discards are reported when packets match a firewall filter term that has an action of discard or when the final result of the route look-up is a next hop of discard.</li> <li>• <b>Extended discard</b>—Number of packets discarded because of illegal next hops. Packets are dropped silently but are also sent to the Routing Engine for further processing. Extended discards are reported when packets match a firewall filter term that has an action of discard and an additional action that requires Routing Engine processing, such as log, count, sample, or syslog.</li> <li>• <b>Invalid interface</b>—Number of packets discarded because of invalid incoming interfaces.</li> <li>• <b>Info cell drops</b>—Number of information cell drops.</li> <li>• <b>Fabric drops</b>—Number of fabric drops.</li> </ul>
VOQ unit	(EX8200 Switch and EX8200 Virtual Chassis) Information about VOQ. A Packet Forwarding Engine supports two VOQ counter sets.
Tail drops	(EX8200 Switch and EX8200 Virtual Chassis) Number of descriptors or buffers dropped by the VOQ to avoid tail-drop congestion.
Drops due to ECC error	(EX8200 Switch and EX8200 Virtual Chassis) Number of descriptors or buffers dropped by the VOQ because of error correction code (ECC) failure.
Drops due to device disabled	(EX8200 Switch and EX8200 Virtual Chassis) Number of descriptors or buffers dropped by the VOQ because of device-enabled filtering.

## Sample Output

### show pfe statistics traffic

```

user@host> show pfe statistics traffic
Packet Forwarding Engine traffic statistics:
  Input  packets:          102682          5 pps
  Output packets:           58033          4 pps
Packet Forwarding Engine local traffic statistics:
  Local packets input      :          44628
  Local packets output     :          46146
  Software input control plane drops :           0
  Software input high drops :           0
  Software input medium drops :           0
  Software input low drops  :           0
  Software output drops     :           0
  Hardware input drops      :           0
Packet Forwarding Engine local protocol statistics:
  HDLC keepalives          :              0

```

```

ATM OAM : 0
Frame Relay LMI : 0
PPP LCP/NCP : 5597
OSPF hello : 3195
OSPF3 hello : 0
RSVP hello : 0
LDP hello : 7478
BFD : 0
IS-IS IIH : 0
LACP : 0
ARP : 0
ETHER OAM : 0
Unknown : 8
Packet Forwarding Engine hardware discard statistics:
Timeout : 0
Truncated key : 0
Bits to test : 0
Data error : 0
Stack underflow : 0
Stack overflow : 0
Normal discard : 0
Extended discard : 0
Invalid interface : 0
Info cell drops : 39
Fabric drops : 0
Packet Forwarding Engine Input IPv4 Header Checksum Error and Output MTU Error
statistics:
Input Checksum : 0
Output MTU : 0

```

#### show pfe statistics traffic voq (EX8200 Switch)

```

user@switch> show pfe statistics traffic voq
FPC: 0
  PFE: 0
    VOQ unit: 0 1
      Tail drops : 0 0
      Drops due to ECC error : 0 0
      Drops due to device disabled : 0 0
  PFE: 1
    VOQ unit: 0 1
      Tail drops : 0 0
      Drops due to ECC error : 0 0
      Drops due to device disabled : 0 0
FPC: 1
  PFE: 0
    VOQ unit: 0 1
      Tail drops : 0 0
      Drops due to ECC error : 0 0
      Drops due to device disabled : 0 0
  PFE: 1
    VOQ unit: 0 1
      Tail drops : 0 0
      Drops due to ECC error : 0 0
      Drops due to device disabled : 0 0

```

#### show pfe statistics traffic voq (EX8200 Virtual Chassis)

```

user@switch> show pfe statistics traffic voq
FPC: 1
  PFE: 0

```

```

      VOQ unit:                                0
1      Tail drops                               :    0
0      Drops due to ECC error                   :    0
0      Drops due to device disabled :          0
0
PFE: 1
      VOQ unit:                                0
1      Tail drops                               :    0
0      Drops due to ECC error                   :    0
0      Drops due to device disabled :          0
0

FPC: 3
PFE: 0
      VOQ unit:                                0
1      Tail drops                               :    0
0      Drops due to ECC error                   :    0
0      Drops due to device disabled :          0
0
PFE: 1
      VOQ unit:                                0
1      Tail drops                               :    0
0      Drops due to ECC error                   :    0
0      Drops due to device disabled :          0
0

FPC: 16
PFE: 0
      VOQ unit:                                0
1      Tail drops                               :    0
0      Drops due to ECC error                   :    0
0      Drops due to device disabled :          0
0
PFE: 1
      VOQ unit:                                0
1      Tail drops                               :    0
0      Drops due to ECC error                   :    0
0      Drops due to device disabled :          0
0

```

### show pfe statistics traffic voq fpc 2 (EX8200 Switch and EX8200 Virtual Chassis)

```
user@switch> show pfe statistics traffic voq fpc 2
```

```

FPC: 2
  PFE: 0
    VOQ unit:                                0          1
    Tail drops                               :          0
    Drops due to ECC error                   :          0
    Drops due to device disabled             :          0
  PFE: 1
    VOQ unit:                                0          1
    Tail drops                               :          0
    Drops due to ECC error                   :          0
    Drops due to device disabled             :          0

```

## show pfe statistics traffic protocol cfm

<b>Syntax</b>	show pfe statistics traffic protocol cfm <fpc slot >
<b>Syntax (TX Matrix and TX Matrix Plus Router)</b>	show pfe statistics traffic protocol cfm <fpc slot > <lcc number>
<b>Release Information</b>	Command introduced in Junos OS Release 8.5.
<b>Description</b>	Display Packet Forwarding Engine traffic protocol statistics for connectivity fault management (CFM).
<b>Options</b>	<p><b>None</b>—Display all PFE traffic protocol CFM statistics.</p> <p><b>fpc slot</b>—(M320 and MX960 routers, and T Series routers only) (Optional) Display statistics for a Flexible PIC Concentrator (FPC) slot.</p> <p>user@host&gt; show pfe statistics traffic protocol cfm fpc 1</p> <p><b>lcc number</b>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display statistics for a specific T640 router (or line-card chassis) that is connected to a TX Matrix routers. On a TX Matrix Plus router, display statistics for a specific router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"> <li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li> <li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li> <li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> <li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> </ul> <p>user@host&gt; show pfe statistics traffic protocol cfm fpc 1 lcc 1</p>
<b>Required Privilege Level</b>	admin
<b>List of Sample Output</b>	<a href="#">show pfe statistics traffic protocol cfm on page 906</a>
<b>Output Fields</b>	<a href="#">Table 46 on page 906</a> lists the output fields for the <b>show pfe statistics traffic protocol cfm</b> command. Output fields are listed in the approximate order in which they appear.

Table 46: show pfe statistics traffic protocol cfm Output Fields

Field Name	Field Description
Packets transmitted	Number of packets transmitted.
Packets failed to transmit	Number of packets that were not transmitted.
Packets received	Number of packets received.
Packets sent to RE	Number of packets sent to the Routing Engine.
Packets absorbed	Number of packets absorbed.
Packets with invalid length	Number of packets with invalid length.
Packets with sequence number	Number of packets with a sequence number.
Packets dropped (Invalid)	Number of invalid packets dropped.

## Sample Output

### show pfe statistics traffic protocol cfm

```
user@host> show pfe statistics traffic protocol cfm
```

```
CFM protocol statistics:
Packets transmitted      : 0
Packets failed to transmit : 0
Packets received         : 0
Packets send to RE       : 0
Packets absorbed         : 0
Packets with invalid length : 0
Packets with sequence number : 0
Packets dropped (Invalid) : 0
```

## show pfe statistics traffic protocol bfd

<b>Syntax</b>	show pfe statistics traffic protocol bfd <fpc slot>
<b>Syntax (TX Matrix and TX Matrix Plus Router)</b>	show pfe statistics traffic protocol bfd <fpc slot> <lcc number>
<b>Release Information</b>	Command introduced in Junos OS Release 8.4.
<b>Description</b>	Display Packet Forwarding Engine traffic protocol statistics for Bidirectional Forwarding Detection hello packets.
<b>Options</b>	<p><b>None</b>—Display all Packet Forwarding Engine traffic protocol BFD statistics.</p> <p><b>fpc slot</b>—(M320 and MX960 routers, and T Series routers only) (Optional) Display statistics for a Flexible PIC Concentrator (FPC) slot.</p> <p>user@host&gt; show pfe statistics traffic protocol bfd fpc 1</p> <p><b>lcc number</b>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display statistics for a specific T640 router (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display statistics for a specific router (or line-card chassis) that is connected to a TX Matrix Plus router.</p> <p>Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"> <li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li> <li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li> <li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> <li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> </ul> <p>user@host&gt; show pfe statistics traffic protocol bfd fpc 1 lcc 1</p>
<b>Required Privilege Level</b>	admin
<b>List of Sample Output</b>	<a href="#">show pfe statistics traffic protocol bfd on page 908</a>
<b>Output Fields</b>	<a href="#">Table 47 on page 908</a> lists the output fields for the <b>show pfe statistics traffic protocol bfd</b> command. Output fields are listed in the approximate order in which they appear.

Table 47: show pfe statistics traffic protocol bfd Output Fields

Field Name	Field Description
Packets with invalid interface	Number of packets discarded because of invalid interface.
Packets with invalid address family	Number of packets discarded because of invalid address family.
Packets with bad IP checksum	Number of packets discarded because of bad IP checksum.
Packets with bad IP options	Number of packets discarded because of bad IP options.
Packets with bad IP length	Number of packets discarded because of bad IP length.
Packets with bad udp checksum	Number of packets discarded because of bad UDP checksum.
Packets with bad udp length	Number of packets discarded because of bad UDP length.
Packets with bad udp ports	Number of packets discarded because of bad UDP ports.
Packets with no logical interface	(T640 and M20 routers only) Number of packets discarded because of nonavailability of logical interface.
Packets with prefix length mismatch	(T640 and M20 routers only) Number of packets discarded because of prefix length mismatch.
Packets received	Number of packets received.
Packets absorbed	Number of packets absorbed.
Packets failed to transmit	Number of packets discarded because of transmission failure.
Packets receive failures	Number of packet receive failures.
Packets allocation failures	Number of packet allocation failures.

## Sample Output

### show pfe statistics traffic protocol bfd

```

user@host> show pfe statistics traffic protocol bfd

BFD protocol statistics:

```



Packets with invalid interface	: 0
Packets with invalid address family	: 0
Packets with bad IP checksum	: 0
Packets with bad IP options	: 0
Packets with bad IP length	: 0
Packets with bad udp checksum	: 0
Packets with bad udp length	: 0
Packets with bad udp ports	: 0
Packets with no logical interface	: 0
Packets with prefix length mismatch	: 0
Packets received	: 0
Packets absorbed	: 0
Packets failed to transmit	: 0
Packets receive failures	: 0
Packets allocation failures	: 0

## show pfe terse

---

<b>Syntax</b>	show pfe terse
<b>Syntax (TX Matrix and TX Matrix Plus Router)</b>	show pfe terse <lcc <i>number</i>   scc> <sfc <i>number</i> >
<b>Syntax (MX Series Router)</b>	show pfe terse <all-members> <local> <member <i>member-id</i> >
<b>Release Information</b>	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.
<b>Description</b>	Display Packet Forwarding Engine status information.
<b>Options</b>	<p><b>none</b>—Display brief information about the Packet Forwarding Engine.</p> <p><b>all-members</b>—(MX Series routers only) (Optional) Display Packet Forwarding Engine status information for all members in the Virtual Chassis configuration.</p> <p><b>lcc <i>number</i></b>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display Packet Forwarding Engine information for a T640 router (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display Packet Forwarding Engine information for the router (or line-card chassis) that is connected to a TX Matrix Plus router.</p> <p>Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"><li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li><li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li><li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li><li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li></ul> <p><b>local</b>—(MX Series routers only) (Optional) Display Packet Forwarding Engine status information for the local Virtual Chassis member.</p> <p><b>member <i>member-id</i></b>—(MX Series routers only) (Optional) Display Packet Forwarding Engine status information for the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value of 0 or 1.</p> <p><b>scc</b>—(TX Matrix routers only) (Optional) Display Packet Forwarding Engine information for the TX Matrix router (or switch-card chassis).</p>

**sfc**—(TX Matrix Plus routers only) (Optional) Display Packet Forwarding Engine information for the TX Matrix Plus router (or switch-fabric chassis).

**Required Privilege Level** admin

**List of Sample Output** [show pfe terse \(TX Matrix Router\) on page 911](#)  
[show pfe terse \(TX Matrix Plus Router\) on page 911](#)  
[show pfe terse sfc \(TX Matrix Plus Router\) on page 911](#)

## Sample Output

### show pfe terse (TX Matrix Router)

```
user@host> show pfe terse
Slot Type Slot State Flags Uptime
0 SFM Present Online 0x0bf 01:25:42
2 SFM Present Online 0x0bf 01:25:40
0 FPC Present Online 0x102 01:25:57
1 FPC Present Online 0x102 01:25:55
2 FPC Present Online 0x102 01:25:53
```

### show pfe terse (TX Matrix Plus Router)

```
user@host> show pfe terse
sfc0-re0:
-----
Slot Type Slot State Uptime
0 LCC Present Online 2d 05:26

lcc0-re0:
-----
Slot Type Slot State Uptime
0 GFPC Present Online 2d 05:25
1 GFPC Present Online 2d 05:25
```

### show pfe terse sfc (TX Matrix Plus Router)

```
user@host> show pfe terse sfc 0
sfc0-re0:
-----
Slot Type Slot State Uptime
0 LCC Present Online 2d 05:25
```

## show system audit

---

<b>Syntax</b>	show system audit <root-only>
<b>Syntax (EX Series Switch and MX Series Router)</b>	show system audit <all-members> <local> <member <i>member-id</i> > <root-only>
<b>Syntax (TX Matrix Router)</b>	show system audit <all-lcc   lcc <i>number</i>   scc> <root-only>
<b>Syntax (TX Matrix Plus Router)</b>	show system audit <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> > <root-only>
<b>Syntax (QFX Series)</b>	show system audit <infrastructure <i>name</i>   interconnect-device <i>name</i>   node-group <i>name</i>   root-only>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> 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.
<b>Description</b>	Display the state and checksum values for file systems.
<b>Options</b>	<b>none</b> —Display the state and checksum values for all file systems.  <b>all-chassis</b> —(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display file system MD5 hash and permissions information for all of the chassis.  <b>all-lcc</b> —(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display file system MD5 hash and permissions information for all T640 routers connected to the TX Matrix router. On a TX Matrix Plus router, display file system MD5 hash and permissions information for all T1600 or T4000 routers connected to the TX Matrix Plus router.  <b>all-members</b> —(EX4200 switch, QFX Series, and MX Series routers only) (Optional) Display file system MD5 hash and permissions information on all members of the Virtual Chassis configuration.  <b>lcc <i>number</i></b> —(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display file system MD5 hash and permissions information for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display file system MD5 hash and permissions information for a specific router that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**infrastructure *name***—(QFabric systems only) (Optional) Display file system MD5 hash and permissions information for a fabric control Routing Engine or a fabric control Routing Engine.

**interconnect-device *name***—(QFabric systems only) (Optional) Display file system MD5 hash and permissions information for the Interconnect device.

**local**—(EX4200 switch, QFX Series, and MX Series routers only) (Optional) Display file system MD5 hash and permissions information on the local Virtual Chassis member.

**member *member-id***—(EX4200 switch, QFX Series, and MX Series routers only) (Optional) Display file system MD5 hash and permissions information on the specified member of the Virtual Chassis configuration. For EX4200 switches, replace *member-id* with a value from 0 through 9. For an MX Series Virtual Chassis, replace *member-id* with a value of 0 or 1.

**node-group *name***—(QFabric systems only) (Optional) Display file system MD5 hash and permissions information for the Node group

**root-only**—(Optional) Check only the root (/) file system. On a QFabric system, you can check the root (/) file system on the infrastructure (fabric manager Routing Engine and fabric control Routing Engine), Interconnect device, or Node group.

**scc**—(TX Matrix routers only) (Optional) Display file system MD5 hash and permissions information for the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Display file system MD5 hash and permissions information for the TX Matrix Plus router (or switch-fabric chassis). Replace *number* with 0.

**Additional Information** To redirect the output to a file, issue the following command:

```
ssh device-name 'show system audit root-only' > output-file
```

If you save the output of the **show system audit root-only** command to a file, you can compare it to subsequent output from the command to determine whether anything has changed.

By default, when you issue the **show system audit** command on the master Routing Engine of a TX Matrix router or a TX Matrix Plus router, the command is broadcast to all the master Routing Engines of the LCCs connected to it in the routing matrix. Likewise, if you issue the same command on the backup Routing Engine of a TX Matrix or a TX Matrix Plus router, the command is broadcast to all backup Routing Engines of the LCCs that are connected to it in the routing matrix.

**Required Privilege Level** admin

**List of Sample Output** [show system audit root-only on page 914](#)  
[show system audit lcc \(TX Matrix Router\) on page 914](#)  
[show system audit lcc \(TX Matrix Plus Router\) on page 916](#)  
[show system audit root-only \(QFX3500 Switch\) on page 918](#)

## Sample Output

### show system audit root-only

```
user@host> show system audit root-only
#          user: root
#          machine: my-host
#          tree: /
date: Fri Feb 11 21:21:46 2000

# .
/set type=file uid=0 gid=0 mode=0755 nlink=1
.          type=dir nlink=23 size=1024 time=950252640.0
.cshrc     uid=3 gid=7 mode=0644 size=177 time=939182975.0 \
           md5digest=f414e06fea6bd646244b98e13d6e6226
.kernel.jkernel.backup \
           mode=0744 size=1934552 time=944688902.0 \
           md5digest=2c343cf0bd9fea8f04f78604feed7aa4
.profile   uid=3 gid=7 mode=0644 nlink=2 size=173 time=939182975.0 \
           md5digest=55a1e3c6c67789c9d3a1cce1ea39f670
COPYRIGHT  uid=3 gid=7 mode=0444 size=3425 time=939182975.0 \
           md5digest=7df8bc77dcee71382ea73eb0ec6a9243
boot.config mode=0644 size=3 time=945902618.0 \
           md5digest=93d722493ed38477338a1405d7dcbb40
boot.help  uid=3 gid=7 mode=0444 size=411 time=939182876.0 \
           md5digest=9b7126385734bcae753f4179ab59d8e5
compat     type=link mode=0777 size=11 time=915149058.0 \
           link=/usr/compat
kernel     mode=0444 size=1947607 time=950230892.0 \
           md5digest=1a2a8aff2fec678a918ba0d6bf063980
kernel.avr uid=1112 size=1947642 time=950252597.0 \
           md5digest=82e1637682d58ec28964dfee7fccb62e
kernel.config \
           mode=0644 size=0 time=915149058.0 \
           md5digest=d41d8cd98f00b204e9800998ecf8427e
sys        type=link mode=0777 size=11 time=915149029.0 \
           link=usr/src/sys
```

### show system audit lcc (TX Matrix Router)

```
user@host> show system audit lcc 2
lcc2-re0:
```

```
-----
#          user: root
```

```

#      machine: rodin-lcc2
#      tree: /
#      date: Mon Sep 13 11:55:33 2004

# .
/set type=file uid=0 gid=0 mode=0555 nlink=1 flags=none
.      type=dir nlink=20 size=512 time=1094982121.0
  COPYRIGHT mode=0644 size=4735 time=986012708.0 \
    md5digest=78396df1404ad742e6eb1be28f0cd63b
    kernel type=link mode=0700 size=17 time=1090266262.0 \
      link=/packages/jkernel

# ./altconfig
altconfig type=dir nlink=2 size=512 time=1089801320.0
# ./altconfig
..

# ./altroot
altroot type=dir nlink=2 size=512 time=1089801320.0
# ./altroot
..

# ./b
b type=dir mode=0755 nlink=2 size=512 time=1093961429.0
# ./b
..

# ./bin
/set type=file uid=0 gid=0 mode=0700 nlink=1 flags=none
bin type=dir mode=0755 nlink=2 size=512 time=1089843059.0
  [ type=link size=28 time=1090266270.0 \
    link=/packages/mnt/jbase/bin/test
  cat type=link size=27 time=1090266270.0 \
    link=/packages/mnt/jbase/bin/cat
  chmod type=link size=29 time=1090266270.0 \
    link=/packages/mnt/jbase/bin/chmod
  cp type=link size=26 time=1090266270.0 \
    link=/packages/mnt/jbase/bin/cp
  csh type=link size=27 time=1090266270.0 \
    link=/packages/mnt/jbase/bin/csh
  date type=link size=28 time=1090266270.0 \
    link=/packages/mnt/jbase/bin/date
  dd type=link size=26 time=1090266270.0 \
    link=/packages/mnt/jbase/bin/dd
  df type=link size=26 time=1090266270.0 \
    link=/packages/mnt/jbase/bin/df
  echo type=link size=28 time=1090266270.0 \
    link=/packages/mnt/jbase/bin/echo
  ed type=link size=26 time=1090266270.0 \
    link=/packages/mnt/jbase/bin/ed
  expr type=link size=28 time=1090266270.0 \
    link=/packages/mnt/jbase/bin/expr
  hostname type=link size=32 time=1090266270.0 \
    link=/packages/mnt/jbase/bin/hostname
  kill type=link size=28 time=1090266270.0 \
    link=/packages/mnt/jbase/bin/kill
  ln type=link size=26 time=1090266270.0 \
    link=/packages/mnt/jbase/bin/ln
  ls type=link size=26 time=1090266270.0 \

```

```

link=/packages/mnt/jbase/bin/ls
mkdir      type=link size=29 time=1090266270.0 \
link=/packages/mnt/jbase/bin/mkdir
mv         type=link size=26 time=1090266270.0 \
link=/packages/mnt/jbase/bin/mv
ps         type=link size=26 time=1090266270.0 \
link=/packages/mnt/jbase/bin/ps
pwd        type=link size=27 time=1090266270.0 \
link=/packages/mnt/jbase/bin/pwd
rcp        type=link size=27 time=1090266270.0 \
link=/packages/mnt/jbase/bin/rcp
red        type=link size=26 time=1090266270.0 \
link=/packages/mnt/jbase/bin/red
rm         type=link size=26 time=1090266270.0 \
link=/packages/mnt/jbase/bin/rm
rmdir      type=link size=29 time=1090266270.0 \
link=/packages/mnt/jbase/bin/rmdir
sh         type=link size=26 time=1090266270.0 \
link=/packages/mnt/jbase/bin/sh
sleep      type=link size=29 time=1090266270.0 \
link=/packages/mnt/jbase/bin/sleep
stty       type=link size=28 time=1090266270.0 \
link=/packages/mnt/jbase/bin/stty
sync       type=link size=28 time=1090266270.0 \
link=/packages/mnt/jbase/bin/sync
tcsh       type=link size=27 time=1090266270.0 \
link=/packages/mnt/jbase/bin/csh
test       type=link size=28 time=1090266270.0 \
link=/packages/mnt/jbase/bin/test
# ./bin
..

# ./boot
/set type=file uid=0 gid=0 mode=0444 nlink=1 flags=none
boot      type=dir mode=0555 nlink=3 size=512 time=1095069935.0
boot0     size=512 time=1094978286.0 \
md5digest=6f780822dd4ae482a20462b66e542cca
boot1     mode=0555 size=512 time=1094978294.0 \
md5digest=8d112b09df342cd0b60fdb9bdcde8e07
boot2     mode=0555 size=7680 time=1094978294.0 \
md5digest=28eb58c4068c6b85717e1484f9e028e4
cdboot    mode=0555 size=165888 time=1094978298.0 \
md5digest=1474c6b800dfc82ba552d7c36116d07d
kgzldr.o  size=5996 time=1094982121.0 \
md5digest=c53dc948eb07e2ea4eb0413e4c4634a3
loader    mode=0555 size=163840 time=1094978298.0 \
md5digest=82d9dc2d31033476bfb61bb7264c4fed
loader.4th size=9237 time=986013631.0 \
md5digest=43144391465ad50267d31e0a320be1de
...

```

#### show system audit lcc (TX Matrix Plus Router)

```
user@host> show system audit all-chassis
```

```
sfc0-re0:
```

```

-----
#      user: root
#      machine: finalfive
#      tree: /

```



```

#           date: Mon May 18 00:13:16 2009

# .
/set type=file uid=0 gid=0 mode=0755 nlink=1 flags=none
.           type=dir nlink=23 size=512 time=1242347096.0
  COPYRIGHT mode=0644 size=6196 time=1168587741.0 \
            md5digest=bbad415e1c29bbdd9b383537100412c
  kernel    type=link size=17 time=1242347011.0 link=/packages/jkernel
  staging    type=link mode=0777 size=8 time=1242346935.0 link=/var/tmp

# ./snap
.snap      type=dir mode=0775 nlink=2 size=512 time=1242346922.0
# ./snap
..

# ./altconfig
altconfig  type=dir mode=0500 nlink=2 size=512 time=1242319843.0
# ./altconfig
..

# ./altroot
altroot    type=dir mode=0500 nlink=2 size=512 time=1242319843.0
# ./altroot
..

# ./bin
bin        type=dir nlink=2 size=512 time=1242346944.0
  \133     type=link size=28 time=1242346942.0 \
            link=/packages/mnt/jbase/bin/test
  cat      type=link size=27 time=1242346941.0 \
            link=/packages/mnt/jbase/bin/cat
  chflags  type=link size=31 time=1242346941.0 \
            link=/packages/mnt/jbase/bin/chflags
  chmod    type=link size=29 time=1242346941.0 \
            link=/packages/mnt/jbase/bin/chmod
  cp       type=link size=26 time=1242346941.0 \
            link=/packages/mnt/jbase/bin/cp
  csh      type=link size=27 time=1242346941.0 \
            link=/packages/mnt/jbase/bin/csh
  date     type=link size=28 time=1242346941.0 \
            link=/packages/mnt/jbase/bin/date
  dd       type=link size=26 time=1242346941.0 \
            link=/packages/mnt/jbase/bin/dd
  df       type=link size=26 time=1242346941.0 \
            link=/packages/mnt/jbase/bin/df
  echo     type=link size=28 time=1242346941.0 \
            link=/packages/mnt/jbase/bin/echo
  ed       type=link size=26 time=1242346941.0 \
            link=/packages/mnt/jbase/bin/ed
  expr     type=link size=28 time=1242346941.0 \
            link=/packages/mnt/jbase/bin/expr
  hostname type=link size=32 time=1242346941.0 \
            link=/packages/mnt/jbase/bin/hostname
  kill     type=link size=28 time=1242346941.0 \
            link=/packages/mnt/jbase/bin/kill
  ln       type=link size=26 time=1242346941.0 \
            link=/packages/mnt/jbase/bin/ln
  ls       type=link size=26 time=1242346941.0 \

```

```

link=/packages/mnt/jbase/bin/ls
mkdir      type=link size=29 time=1242346941.0 \
link=/packages/mnt/jbase/bin/mkdir
mv         type=link size=26 time=1242346941.0 \
link=/packages/mnt/jbase/bin/mv
pax        type=link size=27 time=1242346944.0 \
link=/packages/mnt/jbase/bin/pax
ps         type=link size=26 time=1242346941.0 \
link=/packages/mnt/jbase/bin/ps
pwd        type=link size=27 time=1242346941.0 \
link=/packages/mnt/jbase/bin/pwd
rcp        type=link size=27 time=1242346942.0 \
link=/packages/mnt/jbase/bin/rcp
red        type=link size=26 time=1242346941.0 \
link=/packages/mnt/jbase/bin/red
rm         type=link size=26 time=1242346942.0 \
link=/packages/mnt/jbase/bin/rm
rmdir      type=link size=29 time=1242346942.0 \
link=/packages/mnt/jbase/bin/rmdir
sh         type=link size=26 time=1242346942.0 \
link=/packages/mnt/jbase/bin/sh
sleep      type=link size=29 time=1242346942.0 \
link=/packages/mnt/jbase/bin/sleep
stty       type=link size=28 time=1242346942.0 \
link=/packages/mnt/jbase/bin/stty
sync       type=link size=28 time=1242346942.0 \
link=/packages/mnt/jbase/bin/sync
tcsh       type=link size=27 time=1242346941.0 \
link=/packages/mnt/jbase/bin/csh
test       type=link size=28 time=1242346942.0 \
link=/packages/mnt/jbase/bin/test
# ./bin
...

```

#### show system audit root-only (QFX3500 Switch)

```

user@switch> show system audit root-only
#          user: root
#          machine: my-host
#          tree: /
date: Fri Feb 11 21:21:46 2000

# .
/set type=file uid=0 gid=0 mode=0755 nlink=1
.          type=dir nlink=23 size=1024 time=950252640.0
.cshrc     uid=3 gid=7 mode=0644 size=177 time=939182975.0 \
md5digest=f414e06fea6bd646244b98e13d6e6226
.kernel.jkernel.backup \
mode=0744 size=1934552 time=944688902.0 \
md5digest=2c343cf0bd9fea8f04f78604feed7aa4
.profile   uid=3 gid=7 mode=0644 nlink=2 size=173 time=939182975.0 \
md5digest=55a1e3c6c67789c9d3a1cce1ea39f670
COPYRIGHT  uid=3 gid=7 mode=0444 size=3425 time=939182975.0 \
md5digest=7df8bc77dcee71382ea73eb0ec6a9243
boot.config mode=0644 size=3 time=945902618.0 \
md5digest=93d722493ed38477338a1405d7dcbb40
boot.help  uid=3 gid=7 mode=0444 size=411 time=939182876.0 \
md5digest=9b7126385734bcae753f4179ab59d8e5
compat     type=link mode=0777 size=11 time=915149058.0 \
link=/usr/compat
kernel     mode=0444 size=1947607 time=950230892.0 \

```

```
md5digest=1a2a8aff2fec678a918ba0d6bf063980
kernel.avr uid=1112 size=1947642 time=950252597.0 \
md5digest=82e1637682d58ec28964dfee7fccb62e
kernel.config \
mode=0644 size=0 time=915149058.0 \
md5digest=d41d8cd98f00b204e9800998ecf8427e
sys
type=link mode=0777 size=11 time=915149029.0 \
link=usr/src/sys
```

## show system alarms

---

<b>Syntax</b>	show system alarms
<b>Release Information</b>	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.
<b>Description</b>	Display active system alarms.
<b>Options</b>	This command has no options.
<b>Additional Information</b>	<p>System alarms are preset. They include a <b>configuration</b> alarm that appears when no rescue configuration alarm is set and a <b>license</b> alarm that appears when a software feature is configured and no valid license is configured for the feature. For more information about system alarms, see the <i>Junos OS Administration Library for Routing Devices</i>.</p> <p>In Junos OS release 11.1 and later, alarms for fans also show the slot number of the fans in the CLI output.</p> <p>Starting with Junos OS Release 13.2, you can view degraded fabric alarms on a routing matrix based on TX Matrix Plus router with 3D SIBs. The alarm indicates that the source FPC is running with a degraded fabric condition. This alarm is an early warning of a possible fabric black-hole condition. When the degraded fabric alarm is raised on the source FPC, you can take remedial action to avoid a fabric black-hole condition. The degraded fabric alarm is raised on the source FPC if both the following conditions are met:</p> <ul style="list-style-type: none"><li>• The active Packet Forwarding Engine destinations are reachable on one or no active switching planes.</li><li>• At least one of the inactive switching planes has a fault that causes the destination Packet Forwarding Engine to become unreachable.</li></ul>
<b>Required Privilege Level</b>	admin
<b>List of Sample Output</b>	<a href="#">show system alarms on page 920</a> <a href="#">show system alarms (Fan Tray) on page 921</a> <a href="#">show system alarms (QFX Series) on page 921</a> <a href="#">show system alarms (TX Matrix Plus router with 3D SIBs) on page 921</a>

### Sample Output

#### show system alarms

```
user@host> show system alarms
2 alarms currently active
Alarm time          Class    Description
2005-02-24 17:29:34 UTC  Minor    IPsec VPN tunneling usage requires a
```

```
license
2005-02-24 17:29:34 UTC      Minor      Rescue configuration is not sent
```

#### show system alarms (Fan Tray)

```
user@host> show system 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 system alarms (QFX Series)

```
user@switches> show system alarms
2 alarms currently active
Alarm time Class Description
2005-02-24 17:29:34 UTC Minor Rescue configuration is not sent
```

#### show system alarms (TX Matrix Plus router with 3D SIBs)

```
user@router> show system alarms

sfc0-re0:
-----
2 alarms currently active
Alarm time      Class  Description
2013-05-08 18:13:58 UTC Major  LCC 0 Major Errors
2013-05-08 17:48:46 UTC Major  LCC 7 Major Errors

lcc0-re1:
-----
1 alarm currently active
Alarm time      Class  Description
2013-05-08 18:19:24 UTC Major  FPC 1 degraded fabric condition detected

lcc7-re0:
-----
1 alarm currently active
Alarm time      Class  Description
2013-05-08 18:19:24 UTC Major  FPC 7 degraded fabric condition detected
```

## show system boot-messages

---

<b>Syntax</b>	show system boot-messages
<b>Syntax (EX Series Switches)</b>	show system boot-messages <all-members> <local> <member <i>member-id</i> >
<b>Syntax (TX Matrix Router)</b>	show system boot-messages <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show system boot-messages <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (MX Series Router)</b>	show system boot-messages <all-members> <local> <member <i>member-id</i> >
<b>Syntax (QFX Series)</b>	show system boot-messages infrastructure <i>name</i>   interconnect-device <i>name</i>   node-group <i>name</i>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> 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.
<b>Description</b>	Display initial messages generated by the system kernel upon startup. These messages are the contents of <code>/var/run/dmesg.boot</code> .
<b>Options</b>	<b>none</b> —Display all boot time messages.  <b>all-chassis</b> —(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display boot time messages for all of the chassis.  <b>all-lcc</b> —(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display boot time messages for all T640 routers connected to a TX Matrix router. On a TX Matrix Plus router, display boot time messages for all connected T1600 or T4000 LCCs.  <b>all-members</b> —(EX4200 switches and MX Series routers only) (Optional) Display boot time messages on all members of the Virtual Chassis configuration.  <b>infrastructure <i>name</i></b> —(QFabric systems only) (Optional) Display boot time messages on the fabric control Routing Engine or fabric manager Routing engines.  <b>interconnect-device <i>name</i></b> —(QFabric systems only) (Optional) Display boot time messages on the Interconnect device.  <b>lcc <i>number</i></b> —(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display boot time messages for a specific T640 router connected to

a TX Matrix router. On a TX Matrix Plus router, display boot time messages for a specific router connected to a TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(EX4200 switches and MX Series routers only) (Optional) Display boot time messages on the local Virtual Chassis member.

**member *member-id***—(EX4200 switches and MX Series routers only) (Optional) Display boot time messages on the specified member of the Virtual Chassis configuration. For EX4200 switches, replace *member-id* with a value from 0 through 9. For an MX Series Virtual Chassis, replace *member-id* with a value of 0 or 1.

**node-group *name***—(QFabric systems only) (Optional) Display boot time messages on the Node group.

**scc**—(TX Matrix routers only) (Optional) Display boot time messages for the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Display boot time messages for the TX Matrix Plus router. Replace *number* with 0.

**Additional Information** By default, when you issue the **show system boot-messages** command on the master Routing Engine of a TX Matrix router or a TX Matrix Plus router, the command is broadcast to all the master Routing Engines of the LCCs connected to it in the routing matrix. Likewise, if you issue the same command on the backup Routing Engine of a TX Matrix or a TX Matrix Plus router, the command is broadcast to all backup Routing Engines of the LCCs that are connected to it in the routing matrix.

**Required Privilege Level** view

**Related Documentation** [• Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output** [show system boot-messages \(TX Matrix Router\) on page 924](#)  
[show system boot-messages lcc \(TX Matrix Router\) on page 925](#)  
[show system boot-messages \(TX Matrix Plus Router\) on page 926](#)  
[show system boot-messages \(QFX3500 Switch\) on page 926](#)

## Sample Output

### show system boot-messages (TX Matrix Router)

```

user@host> show system boot-messages
Copyright (c) 1992-1998 FreeBSD Inc.
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All rights reserved.
Copyright (c) 1982, 1986, 1989, 1991, 1993
    The Regents of the University of California. All rights reserved.

JUNOS 4.1-20000216-Zf8469 #0: 2000-02-16 12:57:28 UTC
    tlim@single.juniper.net:/p/build/20000216-0905/4.1/release_kernel/sys/compile/GENERIC
CPU: Pentium Pro (332.55-MHz 686-class CPU)
    Origin = "GenuineIntel" Id = 0x66a Stepping=10
    Features=0x183f9ff<FPU,VME,DE,PSE,TSC,MSR,PAE,MCE,CX8,SEP,MTRR,PGE,MCA,CMOV,<b16>,<b17>,MMX,<b24>>
Teknor CPU Card Recognized
real memory = 805306368 (786432K bytes)
avail memory = 786280448 (767852K bytes)
Probing for devices on PCI bus 0:
chip0 <generic PCI bridge (vendor=8086 device=7192 subclass=0)> rev 3 class 6000
0 on pci0:0:0
chip1 <Intel 82371AB PCI-ISA bridge> rev 1 class 60100 on pci0:7:0
chip2 <Intel 82371AB IDE interface> rev 1 class 10180 on pci0:7:1
chip3 <Intel 82371AB USB interface> rev 1 class c0300 int d irq 11 on pci0:7:2
smb0 <Intel 82371AB SMB controller> rev 1 class 68000 on pci0:7:3
pcic0 <TI PCI-1131 PCI-CardBus Bridge> rev 1 class 60700 int a irq 15 on pci0:13:0
TI1131 PCI Config Reg: [pci only][FUNC0 pci int]
pcic1 <TI PCI-1131 PCI-CardBus Bridge> rev 1 class 60700 int b irq 12 on pci0:13:1
TI1131 PCI Config Reg: [pci only][FUNC1 pci int]
fxp0 <Intel EtherExpress Pro 10/100B Ethernet> rev 8 class 20000 int a irq 12 on
pci0:16:0
chip4 <generic PCI bridge (vendor=1011 device=0022 subclass=4)> rev 4 class 6040
0 on pci0:17:0
fxp1 <Intel EtherExpress Pro 10/100B Ethernet> rev 8 class 20000 int a irq 10 on
pci0:19:0
Probing for devices on PCI bus 1:
mcs0 <Miscellaneous Control Subsystem> rev 12 class ff0000 int a irq 12 on pci1:13:0
fxp2 <Intel EtherExpress Pro 10/100B Ethernet> rev 8 class 20000 int a irq 10 on
pci1:14:0
Probing for devices on the ISA bus:
sc0 at 0x60-0x6f irq 1 on motherboard
sc0: EGA color <16 virtual consoles, flags=0x0>
ed0 not found at 0x300
ed1 not found at 0x280
ed2 not found at 0x340
psm0 not found at 0x60
sio0 at 0x3f8-0x3ff irq 4 flags 0x20010 on isa
sio0: type 16550A, console
sio1 at 0x3e8-0x3ef irq 5 flags 0x20000 on isa
sio1: type 16550A
sio2 at 0x2f8-0x2ff irq 3 flags 0x20000 on isa
sio2: type 16550A

```



```

pcic0 at 0x3e0-0x3e1 on isa
PC-Card ctlr(0) TI PCI-1131 [CardBus bridge mode] (5 mem & 2 I/O windows)
pcic0: slot 0 controller I/O address 0x3e0
npx0 flags 0x1 on motherboard
npx0: INT 16 interface
fdc0: direction bit not set
fdc0: cmd 3 failed at out byte 1 of 3
fdc0 not found at 0x3f0
wdc0 at 0x1f0-0x1f7 irq 14 on isa
wdc0: unit 0 (wd0): <SunDisk SQFXB-80>, single-sector-i/o
wd0: 76MB (156672 sectors), 612 cyls, 8 heads, 32 S/T, 512 B/S
wdc0: unit 1 (wd1): <IBM-DCXA-210000>
wd1: 8063MB (16514064 sectors), 16383 cyls, 16 heads, 63 S/T, 512 B/S
wdc1 not found at 0x170
wdc2 not found at 0x180
ep0 not found at 0x300
fxp0: Ethernet address 00:a0:a5:12:05:5a
fxp1: Ethernet address 00:a0:a5:12:05:59
fxp2: Ethernet address 02:00:00:00:00:01
swapon: adding /dev/wd1s1b as swap device
Automatic reboot in progress...
/dev/rwd0s1a: clean, 16599 free (95 frags, 2063 blocks, 0.1% fragmentation)
/dev/rwd0s1e: clean, 9233 free (9 frags, 1153 blocks, 0.1% fragmentation)
/dev/rwd0s1a: clean, 16599 free (95 frags, 2063 blocks, 0.1% fragmentation)
/dev/rwd1s1f: clean, 4301055 free (335 frags, 537590 blocks, 0.0% fragmentation)

```

#### show system boot-messages lcc (TX Matrix Router)

```

user@host> show system boot-messages lcc 2
lcc2-re0:
-----
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JUNOS 7.0-20040912.0 #0: 2004-09-12 09:16:32 UTC

builder@benten.juniper.net:/build/benten-b/7.0/20040912.0/obj-i386/sys/compile/JUNIPER
Timecounter "i8254" frequency 1193182 Hz
Timecounter "TSC" frequency 601368936 Hz
CPU: Pentium III/Pentium III Xeon/Celeron (601.37-MHz 686-class CPU)
    Origin = "GenuineIntel" Id = 0x68a Stepping = 10

Features=0x387f9ff<FPU,VME,DE,PSE,TSC,MSR,PAE,MCE,CX8,SEP,MTRR,PGE,MCA,CMOV,PAT,PSE36,PN,MMX,FXSR,SSE>
real memory = 2147467264 (2097136K bytes)
sio0: gdb debugging port
avail memory = 2084040704 (2035196K bytes)
Preloaded elf kernel "kernel" at 0xc06d9000.
DEVFS: ready for devices
Pentium Pro MTRR support enabled
md0: Malloc disk
DRAM Data Integrity Mode: ECC Mode with h/w scrubbing
npx0: <math processor> on motherboard
npx0: INT 16 interface
pcib0: <ServerWorks NB6635 3.0LE host to PCI bridge> on motherboard
pci0: <PCI bus> on pcib0
pcic-pci0: <TI PCI-1410 PCI-CardBus Bridge> irq 15 at device 1.0 on pci0
pcic-pci0: TI12XX PCI Config Reg: [pwr save][pci only]
fxp0: <Intel Embedded 10/100 Ethernet> port 0x1000-0x103f mem
0xfb800000-0xfb81ffff,0xfb820000-0xfb820fff irq 9 at device 3.0 on pci0

```

```
fxp1: <Intel Embedded 10/100 Ethernet> port 0x1040-0x107f mem
0xfb840000-0xfb85ffff,0xfb821000-0xfb821fff irq 11 at device 4.0 on pci0
...
```

### show system boot-messages (TX Matrix Plus Router)

```
user@host> show system boot-messages
sfc0-re0:
-----
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All rights reserved.
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Copyright (c) 1979, 1980, 1983, 1986, 1988, 1989, 1991, 1992, 1993, 1994
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JUNOS 9.6B3.3 #0: 2009-06-17 19:52:08 UTC

builder@lanath.juniper.net:/volume/build/junos/9.6/release/9.6B3.3/obj-i386/bsd/sys/compile/JUNIPER
MPTable: Timecounter "i8254" frequency 1193182 Hz quality 0 CPU: Intel(R) Xeon(R)
CPU          L5238 @ 2.66GHz (2660.01-MHz 686-class CPU)   Origin =
"GenuineIntel" Id = 0x1067a Stepping = 10   Features=0xbfebfbff
...
lcc1-re0:
-----
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Copyright (c) 1979, 1980, 1983, 1986, 1988, 1989, 1991, 1992, 1993, 1994
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JUNOS 9.6-20090617.0 #0: 2009-06-17 04:15:14 UTC

builder@lanath.juniper.net:/volume/build/junos/9.6/production/20090617.0/obj-i386/bsd/sys/compile/JUNIPER
Timecounter "i8254" frequency 1193182 Hz quality 0
CPU: Intel(R) Xeon(R) CPU          @ 1.86GHz (1862.01-MHz 686-class CPU)

Origin = "GenuineIntel" Id = 0x1067a Stepping = 10
Features=0xbfebfbff
...
```

### show system boot-messages (QFX3500 Switch)

```
user@switch> show sytem boot-messages
getmemsize: msgbufp[size=32768] = 0x81d07fe4

System physical memory distribution:
-----
Total physical memory: 4160749568 (3968 MB)
Physical memory used: 3472883712 (3312 MB)
Physical memory allocated to kernel: 2130706432 (2032 MB)
Physical memory allocated to user BTLB: 1342177280 (1280 MB)
-----

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JUNOS 11.1I #0: 2010-09-17 19:18:07 UTC

ssiano@sv1-junos-pool125.juniper.net:/c/ssiano/DEV_QFX_SI_BRANCH/03/20100917.399988/
obj-xlr/bsd/sys/compile/JUNIPER-DCTOR
WARNING: debug.mpsafenet forced to 0 as ipsec requires Giant
```

```

JUNOS 11.1I #0: 2010-09-17 19:18:07 UTC

ssiano@sv1-junos-pool125.juniper.net:/c/ssiano/DEV_QFX_SI_BRANCH/03/20100917.399988/
obj-xlr/bsd/sys/compile/JUNIPER-DCTOR
real memory = 3472883712 (3312MB)
avail memory = 1708171264 (1629MB)
cpuid: 0, btlb_cpumap:0xffffffff8
FreeBSD/SMP: Multiprocessor System Detected: 12 CPUs
ETHERNET SOCKET BRIDGE initialising
Initializing QFX platform properties ..
cpu0 on motherboard
: RMI's XLR CPU Rev. 0.3 with no FPU implemented
    L1 Cache: I size 32kb(32 line), D size 32kb(32 line), eight way.
    L2 Cache: Size 1024kb, eight way
pic_lbus0: <XLR Local Bus>
pic_lbus0: <XLR Local Bus> on motherboard
Enter qfx control ethernet probe addr:0xc5eeec00
gmac4: <XLR GMAC GE Ethernet> on pic_lbus0
me0: Ethernet address 00:1d:b5:f7:68:40
Enter qfx control ethernet probe addr:0xc5eeeb40
gmac5: <XLR GMAC GE Ethernet> on pic_lbus0
me1: Ethernet address 00:1d:b5:f7:68:41
Enter qfx control ethernet probe addr:0xc5eeea80
gmac6: <XLR GMAC GE Ethernet> on pic_lbus0
me1: Ethernet address 00:1d:b5:f7:68:42
sio0 on pic_lbus0
Entering sioattach
sio0: type 16550A, console
xls_setup_intr: skip irq 3, xlr regs are set up somewhere else.
gblmem0 on pic_lbus0
ehci0: <RMI XLS USB 2.0 controller> on pic_lbus0
ehci_bus_attach: allocated resource. tag=1, base=bef24000
xls_ehci_init: endian hardware swapping NOT enabled.
usb0: EHCI version 1.0
usb0 on ehci0
usb0: USB revision 2.0
uhub0: vendor 0x0000 EHCI root hub, class 9/0, rev 2.00/1.00, addr 1
uhub0: 2 ports with 2 removable, self powered
umass0: USB USBFlashDrive, rev 2.00/11.00, addr 2
pcib0: PCIe link 0 up
pcib0: PCIe link 2 up
pcib0: PCIe link 3 up
pcib0: <XLS PCI Host Controller> on pic_lbus0
pci0: <PCI bus> on pcib0
pcib1: <PCI-PCI bridge> at device 0.0 on pci0
pci1: <PCI bus> on pcib1
pci1: <network, ethernet> at device 0.0 (no driver attached)
pcib2: <PCI-PCI bridge> at device 1.0 on pci0
pcib3: <PCI-PCI bridge> at device 2.0 on pci0
pci2: <PCI bus> on pcib3
pci2: <network, ethernet> at device 0.0 (no driver attached)
pcib4: <PCI-PCI bridge> at device 3.0 on pci0
pci3: <PCI bus> on pcib4
pci3: <network, ethernet> at device 0.0 (no driver attached)
cfi device address space at 0xbc000000
cfi0: <AMD/Fujitsu - 8MB> on pic_lbus0
cfi device address space at 0xbc000000
i2c0: <I2C bus controller> on pic_lbus0
i2c1: <I2C bus controller> on pic_lbus0
qfx_fmn0 on pic_lbus0
pool offset 1503776768

```

```
xlr_lbus0: <XLR Local Bus Controller> on motherboard
qfx_bcpld_probe[124]
qfx_bcpld_probe[138]: dev_type=0x0
qfx_bcpld_probe[124]
qfx_bcpld0: QFX BCPLD probe success
qfx_bcpld0qfx_bcpld_attach[174]
qfx_bcpld_attach[207] : bus_space_tag=0x0, bus_space_handle=0xbd900000
qfx_bcpld_probe[124]
qfx_bcpld1: QFX BCPLD probe success
qfx_bcpld1qfx_bcpld_attach[174]
tor_bcpld_slave_attach[1245] : bus_space_tag=0x0, bus_space_handle=0xbda00000
Initializing product: 96 ..
bmeb: bmeb_lib_init done 0xc60a5000, addr 0x809c99a0
bme0:Virtual BME driver initializing
Timecounter "mips" frequency 1200000000 Hz quality 0
Timecounter "xlr_pic_timer" frequency 66666666 Hz quality 1
Timecounters tick every 1.000 msec
Loading the NETPFE fc module
IPsec: Initialized Security Association Processing.
SMP: AP CPU #3 Launched!
SMP: AP CPU #1 Launched!
SMP: AP CPU #2 Launched!
SMP: AP CPU #4 Launched!
SMP: AP CPU #5 Launched!
SMP: AP CPU #7 Launched!
SMP: AP CPU #6 Launched!
SMP: AP CPU #11 Launched!
SMP: AP CPU #10 Launched!
SMP: AP CPU #9 Launched!
SMP: AP CPU #8 Launched!
da0 at umass-sim0 bus 0 target 0 lun 0
da0: <USB USBFlashDrive 1100> Removable Direct Access SCSI-0 device
da0: 40.000MB/s transfers
da0: 3920MB (8028160 512 byte sectors: 255H 63S/T 499C)
Trying to mount root from ufs:/dev/da0s1a
```

## show system buffers

<b>Syntax</b>	show system buffers
<b>Syntax (EX Series)</b>	show system buffers <all-members> <local> <member <i>member-id</i> >
<b>Syntax (TX Matrix Router)</b>	show system buffers <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show system buffers <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (MX Series Router)</b>	show system buffers <all-members> <local> <member <i>member-id</i> >
<b>Syntax (QFX Series)</b>	show system buffers <infrastructure <i>name</i>   interconnect-device <i>name</i>   node-group <i>name</i>   root-only (infrastructure <i>name</i>   interconnect-device <i>name</i>   node-group <i>name</i> )>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> 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.
<b>Description</b>	Display information about the buffer pool that the Routing Engine uses for local traffic. Local traffic is the routing and management traffic that is exchanged between the Routing Engine and the Packet Forwarding Engine within the router or switch, as well as the routing and management traffic from IP (that is, from OSPF, BGP, SNMP, ping operations, and so on).
<b>Options</b>	<p><b>none</b>—Show all buffer statistics.</p> <p><b>all-lcc</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, show buffer statistics for all T640 routers connected to the TX Matrix router. On a TX Matrix Plus router, show buffer statistics for all routers connected to the TX Matrix Plus router.</p> <p><b>all-chassis</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Show buffer statistics for all of the chassis.</p> <p><b>all-members</b>—(EX4200 switches and MX Series routers only) (Optional) Show buffer statistics for all members of the Virtual Chassis configuration.</p> <p><b>infrastructure <i>name</i></b>—(QFabric systems only) (Optional) Show buffer statistics for a fabric control Routing Engine or a fabric control Routing Engine.</p>

**interconnect-device *name***—(QFabric systems only) (Optional) Show buffer statistics for the Interconnect device.

**lcc *number***—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, show buffer statistics for a specific T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, show buffer statistics for a specific router (line-card chassis) that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(EX4200 switches and MX Series routers only) (Optional) Show buffer statistics for the local Virtual Chassis member.

**member *member-id***—(EX4200 switches and MX Series routers only) (Optional) Show buffer statistics for the specified member of the Virtual Chassis configuration. For EX4200 switches, replace *member-id* with a value from 0 through 9. For an MX Series Virtual Chassis, replace *member-id* with a value of 0 or 1.

**node-group *name***—(QFabric systems only) (Optional) Show buffer statistics for the Node group

**sfc**—(TX Matrix Plus routers only) (Optional) Show buffer statistics for the TX Matrix Plus router. Replace *number* with 0.

**Additional Information** By default, when you issue the **show system buffers** command on the master Routing Engine of a TX Matrix router or a TX Matrix Plus router, the command is broadcast to all the master Routing Engines of the LCCs connected to it in the routing matrix. Likewise, if you issue the same command on the backup Routing Engine of a TX Matrix or a TX Matrix Plus router, the command is broadcast to all backup Routing Engines of the LCCs that are connected to it in the routing matrix.

A special type of memory buffer called a *cluster* is 2 KB in size. For more information, see *The Design and Implementation of the 4.4BSD Operation System* by McKusic, Bostic, Karels, and Quarterman.

**Required Privilege Level** view

Related Documentation	<ul style="list-style-type: none"><li>• <a href="#">Routing Matrix with a TX Matrix Plus Router Solutions Page</a></li></ul>
List of Sample Output	<a href="#">show system buffers on page 932</a> <a href="#">show system buffers scc (TX Matrix Router) on page 933</a> <a href="#">show system buffers sfc (TX Matrix Plus Router) on page 933</a> <a href="#">show system buffers all-chassis (TX Matrix Plus Router) on page 933</a> <a href="#">show system buffers node-group (QFabric System) on page 934</a>
Output Fields	<a href="#">Table 48 on page 932</a> describes the output fields for the <b>show system buffers</b> command. Output fields are listed in the approximate order in which they appear.

Table 48: show system buffers Output Fields

Field Name	Field Description
<b>mbufs in use</b>	Memory buffers (mbufs) are 128-byte buffers that are used for various purposes inside the kernel. Each memory buffer has a type, and the output itemizes the amount allocated for each type. Types with no memory buffers allocated are not displayed.
<b>mbufs allocated to packet headers</b>	Number of memory buffers currently holding packet headers
<b>mbufs allocated to control blocks</b>	Number of memory buffers currently holding the state for sockets.
<b>mbufs allocated to send data</b>	Number of memory buffers currently holding socket send data.
<b>mbufs allocated to pfe refill data</b>	Number of memory buffers currently holding Packet Forwarding Engine refill data.
<b>mbufs allocated to fxp data</b>	Number of memory buffers currently holding fxp data.
<b>mbufs allocated to socket names and addresses</b>	Number of memory buffers currently holding addresses for sockets.
<b>mbuf clusters in use</b>	Allocation statistics for memory buffer clusters.
<b>allocated to network</b>	Total amount of memory in use by the networking and interprocess communication (IPC) code.
<b>requests for memory denied</b>	Number of times a memory allocation request within the IPC and networking code failed.
<b>requests for memory delayed</b>	Number of times a memory allocation request within the IPC and networking code was postponed.
<b>calls to protocol drain routines</b>	Number of times a memory allocation request within the IPC and networking code triggered a memory reclamation attempt.

## Sample Output

### show system buffers

```

user@host> show system buffers
397/893/1290 mbufs in use (current/cache/total)
395/331/726/30000 mbuf clusters in use (current/cache/total/max)
384/256 mbuf+clusters out of packet secondary zone in use (current/cache)
0/0/0/0 4k (page size) jumbo clusters in use (current/cache/total/max)
0/0/0/0 9k jumbo clusters in use (current/cache/total/max)
0/0/0/0 16k jumbo clusters in use (current/cache/total/max)
889K/885K/1774K bytes allocated to network (current/cache/total)
0/0/0 requests for mbufs denied (mbufs/clusters/mbuf+clusters)
0/0/0 requests for jumbo clusters denied (4k/9k/16k)
0/5/1024 sfbufs in use (current/peak/max)

```



```

0 requests for sbufs denied
0 requests for sbufs delayed
0 requests for I/O initiated by sendfile
0 calls to protocol drain routines

```

#### show system buffers scc (TX Matrix Router)

```

user@host> show system buffers scc
213 mbufs in use:
    11 mbufs allocated to packet headers
    26 mbufs allocated to socket names and addresses
    2 mbufs allocated to socket options
    17 mbufs allocated to socket send data
    2 mbufs allocated to pfe data
    155 mbufs allocated to fxp data (rx)
    511 mbufs allocated to <mbuf type 86>
    256 mbufs allocated to <mbuf type 92>
924/1162 mbuf clusters in use
2788 Kbytes allocated to network (75% in use)
0 requests for memory denied
0 requests for memory delayed
0 calls to protocol drain routines

```

#### show system buffers sfc (TX Matrix Plus Router)

```

user@host> show system buffers sfc 0

sfc0-re0:
-----
4363/2807/7170 mbufs in use (current/cache/total)
4358/1968/6326/30000 mbuf clusters in use (current/cache/total/max)
256/128 mbuf+clusters out of packet secondary zone in use (current/cache)
0/0/0/0 4k (page size) jumbo clusters in use (current/cache/total/max)
0/0/0/0 9k jumbo clusters in use (current/cache/total/max)
0/0/0/0 16k jumbo clusters in use (current/cache/total/max)
9806K/4637K/14444K bytes allocated to network (current/cache/total)
0/0/0 requests for mbufs denied (mbufs/clusters/mbuf+clusters)
0/0/0 requests for jumbo clusters denied (4k/9k/16k)
0/10/1024 sbufs in use (current/peak/max)
0 requests for sbufs denied
0 requests for sbufs delayed
0 requests for I/O initiated by sendfile
0 calls to protocol drain routines

```

#### show system buffers all-chassis (TX Matrix Plus Router)

```

user@host> show system buffers all-chassis

sfc0-re0:
-----
4363/2807/7170 mbufs in use (current/cache/total)
4358/1968/6326/30000 mbuf clusters in use (current/cache/total/max)
256/128 mbuf+clusters out of packet secondary zone in use (current/cache)
0/0/0/0 4k (page size) jumbo clusters in use (current/cache/total/max)
0/0/0/0 9k jumbo clusters in use (current/cache/total/max)
0/0/0/0 16k jumbo clusters in use (current/cache/total/max)
9806K/4637K/14444K bytes allocated to network (current/cache/total)
0/0/0 requests for mbufs denied (mbufs/clusters/mbuf+clusters)
0/0/0 requests for jumbo clusters denied (4k/9k/16k)
0/10/1024 sbufs in use (current/peak/max)
0 requests for sbufs denied
0 requests for sbufs delayed

```

```
0 requests for I/O initiated by sendfile
0 calls to protocol drain routines
```

```
lcc0-re0:
```

```
-----
772/2558/3330 mbufs in use (current/cache/total)
772/598/1370/30000 mbuf clusters in use (current/cache/total/max)
768/512 mbuf+clusters out of packet secondary zone in use (current/cache)
0/0/0/0 4k (page size) jumbo clusters in use (current/cache/total/max)
0/0/0/0 9k jumbo clusters in use (current/cache/total/max)
0/0/0/0 16k jumbo clusters in use (current/cache/total/max)
1737K/1835K/3572K bytes allocated to network (current/cache/total)
0/0/0 requests for mbufs denied (mbufs/clusters/mbuf+clusters)
0/0/0 requests for jumbo clusters denied (4k/9k/16k)
0/4/1024 sbufs in use (current/peak/max)
0 requests for sbufs denied
0 requests for sbufs delayed
0 requests for I/O initiated by sendfile
0 calls to protocol drain routines
```

```
lcc1-re0:
```

```
-----
773/2437/3210 mbufs in use (current/cache/total)
773/453/1226/30000 mbuf clusters in use (current/cache/total/max)
768/384 mbuf+clusters out of packet secondary zone in use (current/cache)
0/0/0/0 4k (page size) jumbo clusters in use (current/cache/total/max)
0/0/0/0 9k jumbo clusters in use (current/cache/total/max)
0/0/0/0 16k jumbo clusters in use (current/cache/total/max)
1739K/1515K/3254K bytes allocated to network (current/cache/total)
0/0/0 requests for mbufs denied (mbufs/clusters/mbuf+clusters)
0/0/0 requests for jumbo clusters denied (4k/9k/16k)
0/7/1024 sbufs in use (current/peak/max)
0 requests for sbufs denied
0 requests for sbufs delayed
0 requests for I/O initiated by sendfile
0 calls to protocol drain routines
```

```
lcc2-re0:
```

```
-----
816/2514/3330 mbufs in use (current/cache/total)
816/554/1370/30000 mbuf clusters in use (current/cache/total/max)
768/512 mbuf+clusters out of packet secondary zone in use (current/cache)
0/0/0/0 4k (page size) jumbo clusters in use (current/cache/total/max)
0/0/0/0 9k jumbo clusters in use (current/cache/total/max)
0/0/0/0 16k jumbo clusters in use (current/cache/total/max)
1836K/1736K/3572K bytes allocated to network (current/cache/total)
0/0/0 requests for mbufs denied (mbufs/clusters/mbuf+clusters)
0/0/0 requests for jumbo clusters denied (4k/9k/16k)
0/4/1024 sbufs in use (current/peak/max)
0 requests for sbufs denied
0 requests for sbufs delayed
0 requests for I/O initiated by sendfile
```

### show system buffers node-group (QFabric System)

```
user@switch> show system buffers node-group node1
node-group node1:
```

```
-----
2/2698/2700 mbufs in use (current/cache/total)
2/1520/1522/30000 mbuf clusters in use (current/cache/total/max)
0/1280 mbuf+clusters out of packet secondary zone in use (current/cache)
```

```

0/0/0/0 4k (page size) jumbo clusters in use (current/cache/total/max)
0/0/0/0 9k jumbo clusters in use (current/cache/total/max)
0/0/0/0 16k jumbo clusters in use (current/cache/total/max)
4K/3714K/3719K bytes allocated to network (current/cache/total)
0/0/0 requests for mbufs denied (mbufs/clusters/mbuf+clusters)
0/0/0 requests for jumbo clusters denied (4k/9k/16k)
0/6/6656 sbufs in use (current/peak/max)
0 requests for sbufs denied
0 requests for sbufs delayed
0 requests for I/O initiated by sendfile
0 calls to protocol drain routines

```

```
re0:
```

```

-----
516/639/1155 mbufs in use (current/cache/total)
515/147/662/30000 mbuf clusters in use (current/cache/total/max)
512/128 mbuf+clusters out of packet secondary zone in use (current/cache)
0/0/0/0 4k (page size) jumbo clusters in use (current/cache/total/max)
0/0/0/0 9k jumbo clusters in use (current/cache/total/max)
0/0/0/0 16k jumbo clusters in use (current/cache/total/max)
1159K/453K/1612K bytes allocated to network (current/cache/total)
0/0/0 requests for mbufs denied (mbufs/clusters/mbuf+clusters)
0/0/0 requests for jumbo clusters denied (4k/9k/16k)
0/4/1024 sbufs in use (current/peak/max)
0 requests for sbufs denied
0 requests for sbufs delayed
0 requests for I/O initiated by sendfile
0 calls to protocol drain routines

```

```
re1:
```

```

-----
519/771/1290 mbufs in use (current/cache/total)
518/176/694/30000 mbuf clusters in use (current/cache/total/max)
512/128 mbuf+clusters out of packet secondary zone in use (current/cache)
0/0/0/0 4k (page size) jumbo clusters in use (current/cache/total/max)
0/0/0/0 9k jumbo clusters in use (current/cache/total/max)
0/0/0/0 16k jumbo clusters in use (current/cache/total/max)
1165K/544K/1710K bytes allocated to network (current/cache/total)
0/0/0 requests for mbufs denied (mbufs/clusters/mbuf+clusters)
0/0/0 requests for jumbo clusters denied (4k/9k/16k)
0/4/1024 sbufs in use (current/peak/max)
0 requests for sbufs denied
0 requests for sbufs delayed
0 requests for I/O initiated by sendfile
0 calls to protocol drain routines

```

## show system connections

---

<b>Syntax</b>	show system connections <extensive> <all-chassis   all-lcc   lcc <i>number</i>   scc> <inet   inet6> <show-routing-instances>
<b>Syntax (EX Series)</b>	show system connections <extensive> <all-members> <inet   inet6> <local> <member <i>member-id</i> > <show-routing-instances>
<b>Syntax (TX Matrix Router)</b>	show system connections <extensive> <all-chassis   all-lcc   lcc <i>number</i>   scc> <inet   inet6> <show-routing-instances>
<b>Syntax (TX Matrix Plus Router)</b>	show system connections <extensive> <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> > <inet   inet6> <show-routing-instances>
<b>Syntax (MX Series Router)</b>	show system connections <extensive> <all-members> <inet   inet6> <local> <member <i>member-id</i> > <show-routing-instances>
<b>Syntax (QFX Series)</b>	show system connections <extensive> <inet> <infrastructure <i>name</i> > <interconnect-device <i>name</i> > <node-group <i>name</i> > <show-routing-instances>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> 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.
<b>Description</b>	Display information about the active IP sockets on the Routing Engine. Use this command to verify which servers are active on a system and what connections are currently in progress.

- Options** **none**—Display information about all active IP sockets on the Routing Engine.
- extensive**—(Optional) Display exhaustive system process information, which, for TCP connections, includes the TCP control block. This option is useful for debugging TCP connections.
- all-chassis**—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display system connection activity for all the routers in the chassis.
- all-lcc**—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system connection activity for all T640 routers connected to the TX Matrix router. On a TX Matrix Plus router, display system connection activity for all connected T1600 or T4000 LCCs
- all-members**—(EX4200 switches and MX Series routers only) (Optional) Display system connection activity for all members of the Virtual Chassis configuration.
- inet | inet6**—(Optional) Display IPv4 connections or IPv6 connections, respectively.
- infrastructure *name***—(QFabric systems only) (Optional) Display system connection activity for the fabric control Routing Engines or fabric manager Routing Engines.
- interconnect-device *name***—(QFabric systems only) (Optional) Display system connection activity for the Interconnect device.
- lcc *number***—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system connection activity for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system connection activity for a specific router that is connected to the TX Matrix Plus router. Replace *number* with the following values depending on the LCC configuration:
- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
  - 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
  - 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
  - 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- local**—(EX4200 switches and MX Series routers only) (Optional) Display system connection activity for the local Virtual Chassis member.
- member *member-id***—(EX4200 switches and MX Series routers only) (Optional) Display system connection activity for the specified member of the Virtual Chassis configuration. For EX4200 switches, replace *member-id* with a value from 0 through 9. For an MX Series Virtual Chassis, replace *member-id* with a value of 0 or 1.
- node-group *name***—(QFabric systems only) (Optional) Display system connection activity for the Node group.

**scc**—(TX Matrix routers only) (Optional) Display system connection activity for the TX Matrix router (or switch-card chassis).

**sfc**—(TX Matrix routers only) (Optional) Display system connection activity for the TX Matrix Plus router.

**show-routing-instances**—(Optional) Display routing instances.

**Additional Information** By default, when you issue the **show system connections** command on the master Routing Engine of a TX Matrix router or a TX Matrix Plus router, the command is broadcast to all the master Routing Engines of the LCCs connected to it in the routing matrix. Likewise, if you issue the same command on the backup Routing Engine of a TX Matrix or a TX Matrix Plus router, the command is broadcast to all backup Routing Engines of the LCCs that are connected to it in the routing matrix.

**Required Privilege Level** view

**Related Documentation**

- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output**

- [show system connections on page 939](#)
- [show system connections extensive on page 939](#)
- [show system connections lcc \(TX Matrix Router\) on page 940](#)
- [show system connections show-routing-instances on page 941](#)
- [show system connections \(TX Matrix Plus Router\) on page 942](#)
- [show system connections sfc \(TX Matrix Plus Router\) on page 945](#)
- [show system connections show-routing-instances \(TX Matrix Plus Router\) on page 947](#)
- [show system connections \(QFX3500 Switch\) on page 952](#)

**Output Fields** [Table 49 on page 938](#) describes the output fields for the **show system connections** command. Output fields are listed in the approximate order in which they appear.

**Table 49: show system connections Output Fields**

Field Name	Field Description
<b>Proto</b>	Protocol of the socket: <b>IP</b> , <b>TCP</b> , or <b>UDP</b> for IPv4 or IPv6.
<b>Recv-Q</b>	Number of input packets received by the protocol and waiting to be processed by the application.
<b>Send-Q</b>	Number of output packets sent by the application and waiting to be processed by the protocol.
<b>Local Address</b>	Local address and port of the socket, separated by a period. An asterisk (*) indicates that the bound address is the wildcard address. Server sockets typically have the wildcard address and a well-known port bound to them.
<b>Foreign Address</b>	Foreign address and port of the socket, separated by a period. An asterisk (*) indicates that the address or port is a wildcard.

Table 49: show system connections Output Fields (*continued*)

Field Name	Field Description
Routing Instance	(Displayed only when the <b>show-routing-instance</b> option is used.) Routing instances associated with active IP sockets on the Routing Engine.
(state)	For TCP, the protocol state of the socket.

## Sample Output

### show system connections

```

user@host> show system connections
Active Internet connections (including servers)
Proto Recv-Q Send-Q Local Address          Foreign Address         (state)
tcp      0      0 192.168.4.16.513      208.197.169.254.894    ESTABLISHED
tcp      0      0 192.168.4.16.513      208.197.169.195.945    ESTABLISHED
tcp      0      0 *.23                  *.*                     LISTEN
tcp      0      0 *.22                  *.*                     LISTEN
tcp      0      0 *.513                 *.*                     LISTEN
tcp00 *.514             *.*                     LISTEN
tcp 0 0*.21                  *.*                     LISTEN
tcp00 *.79              *.*                     LISTEN
tcp 00 *.1023               *.*                     LISTEN
tcp 00 *.111                *.*                     LISTEN
udp00192.168.4.16.1634 208.197.169.249.2049
udp00192.168.4.16.1627 208.197.169.254.2049
udp00192.168.4.16.1371 208.197.169.195.2049
udp00*.*              *.*
udp00*.9999           *.*
udp00 *.161           *.*
udp00192.168.4.16.1039 192.168.4.16.1023
udp00192.168.4.16.1038 192.168.4.16.1023
udp 00 192.168.4.16.1037 192.168.4.16.1023
udp00192.168.4.16.1036 192.168.4.16.1023
udp00*.1022           *.*
udp00*.1023           *.*
udp00*.111            *.*
udp00*.*              *.*

```

### show system connections extensive

```

user@host> show system connections extensive

Active Internet connections (including servers)
Proto Recv-Q Send-Q Local Address          Foreign Address         (state)
tcp4      0      6 192.168.187.15.23      172.27.133.138.3013    ESTABLISHED
  sndsbcc:          6 sndsbmbcnt:          256 sndsbmbmax:        272000
  sndsblwat:        2048 sndsbhiwat:        34000
  rcvsbcc:          0 rcvsbmbcnt:          0 rcvsbmbmax:        533120
  rcvsblwat:        1 rcvsbhiwat:        66640
  proc id:          0 proc name:
    iss: 2566994072 sndup: 2566994491
    snduna: 2566994491 sndnxt: 2566994494 sndwnd: 64094
    sndmax: 2566994494 sndcwnd: 6589 sndssthresh: 2720

```

```

        irs: 236981199      rcvup: 236981325
        rcvnxt: 236981327   rcvadv: 237046862   rcvwnd: 66640
        rtt: 140058623     srtt: 15519       rttv: 908
        rxtcur: 1200       rxtshift: 0         rtseq: 2566994491
        rttmin: 1000      mss: 1360
        flags: SACK_PERMIT [0x2000200]
tcp4      0      0 10.255.165.93.179
10.255.165.203.65141 ESTABLISHED
        sndsbcc: 0 sndsbmbcnt: 0 sndsbmbmax: 131072
        sndsblowat: 2048 sndsbhiwat: 16384
        rcvsbcc: 0 rcvsbmbcnt: 0 rcvsbmbmax: 131072
        rcvsblowat: 1 rcvsbhiwat: 16384
        proc id: 0 proc name:
        iss: 2555961065 sndup: 2555995917
        snduna: 2555995917 sndnxt: 2555995917 sndwnd: 16384
        sndmax: 2555995917 sndcwnd: 1000 sndssthresh: 1073725440
        irs: 2123825753 rcvup: 2123860681
        rcvnxt: 2123860681 rcvadv: 2123877065 rcvwnd: 16384
        rtt: 0 srtt: 3309 rttv: 72
        rxtcur: 1200 rxtshift: 0 rtseq: 2555995898
        rttmin: 1000 mss: 500
        flags: REQ_SCALE RCVD_SCALE REQ_TSTMP RCVD_TSTMP SACK_PERMIT [0x3e0]
tcp4      0      0 10.255.165.93.179
10.255.165.93.179 ESTABLISHED
        sndsbcc: 0 sndsbmbcnt: 0 sndsbmbmax: 131072
        sndsblowat: 2048 sndsbhiwat: 16384
        rcvsbcc: 0 rcvsbmbcnt: 0 rcvsbmbmax: 131072
        rcvsblowat: 1 rcvsbhiwat: 16384
        proc id: 5022 proc name: rpd
        iss: 2123825753 sndup: 2123860662
        snduna: 2123860681 sndnxt: 2123860681 sndwnd: 16384
        sndmax: 2123860681 sndcwnd: 1000 sndssthresh: 1073725440
        irs: 2555961065 rcvup: 2555995917
        rcvnxt: 2555995917 rcvadv: 2556012301 rcvwnd: 16384
        rtt: 0 srtt: 3279 rttv: 22
        rxtcur: 1200 rxtshift: 0 rtseq: 2123860662
        rttmin: 1000 mss: 500
        flags: REQ_SCALE RCVD_SCALE REQ_TSTMP RCVD_TSTMP SACK_PERMIT [0x100003e0]
tcp4      0      0 10.255.165.203.179
10.255.165.113.52404 ESTABLISHED
        sndsbcc: 0 sndsbmbcnt: 0 sndsbmbmax: 131072
        sndsblowat: 2048 sndsbhiwat: 16384
        rcvsbcc: 0 rcvsbmbcnt: 0 rcvsbmbmax: 131072
        rcvsblowat: 1 rcvsbhiwat: 16384
        proc id: 0 proc name:
        iss: 1109297190 sndup: 1109332099
        snduna: 1109332118 sndnxt: 1109332118 sndwnd: 16384
        sndmax: 1109332118 sndcwnd: 1000 sndssthresh: 1073725440
        irs: 1476831634 rcvup: 1476866449
        rcvnxt: 1476866449 rcvadv: 1476882833 rcvwnd: 16384
        rtt: 0 srtt: 3235 rttv: 18
        rxtcur: 1200 rxtshift: 0 rtseq: 1109332099
        rttmin: 1000 mss: 500
        flags: REQ_SCALE RCVD_SCALE REQ_TSTMP RCVD_TSTMP SACK_PERMIT [0x3e0]

```

#### show system connections lcc (TX Matrix Router)

```
user@host> show system connections lcc 2
```

```
lcc2-re0:
```

```
-----
```



```

Active Internet connections (including servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         (state)
tcp4      0      0 192.168.66.131.1342     192.168.66.130.23     ESTABLISHED
tcp4      0      0 192.168.66.131.2059     192.168.66.130.23     ESTABLISHED
tcp4      0      0 192.168.66.131.4571     192.168.66.130.23     ESTABLISHED
tcp4      0      0 192.168.66.131.2496     192.168.66.130.23     ESTABLISHED
tcp4      0      0 *.3221                  *.*                     LISTEN
tcp4      0      0 *.23                    *.*                     LISTEN
tcp4      0      0 *.22                    *.*                     LISTEN
tcp4      0      0 *.514                   *.*                     LISTEN
tcp4      0      0 *.513                   *.*                     LISTEN
tcp4      0      0 *.21                    *.*                     LISTEN
tcp4      0      0 *.79                    *.*                     LISTEN
tcp4      0      0 *.6234                  *.*                     LISTEN
udp4      0      0 *.514                   *.*
udp4      0      0 *.6333                  *.*

```

#### show system connections show-routing-instances

```

user@host> show system connections show-routing-instances
Active Internet connections (including servers) (including routing-instances)
Proto Recv-Q Send-Q Local Address           Foreign Address         Routing Instance
(state)
tcp4      0      0 192.168.69.204.23       172.17.28.19.4267      default
ESTABLISHED
tcp4      0      0 192.168.69.204.58540    10.209.7.138.23        default
ESTABLISHED
tcp4      0      0 192.168.69.204.23       172.17.28.19.1098      default
ESTABLISHED
tcp4      0      0 192.168.7.1.57668       192.168.9.1.179        default
ESTABLISHED
tcp4      0      0 192.168.7.1.179         192.168.8.1.49209      default
ESTABLISHED
tcp4      0      0 128.0.0.1.6234          128.0.3.17.1024
__juniper_private1__ ESTABLISHED
tcp4      0      0 128.0.0.4.9000           128.0.0.4.59103
__juniper_private1__ ESTABLISHED
tcp4      0      0 128.0.0.4.59103         128.0.0.4.9000
__juniper_private1__ ESTABLISHED
tcp4      0      0 *.32012                  *.*
__juniper_private1__ LISTEN
tcp4      0      0 *.9000                   *.*
__juniper_private1__ LISTEN
tcp4      0      0 *.33007                  *.*
__juniper_private2__ LISTEN
tcp46     0      0 *.179                    *.*                     default
LISTEN
tcp4      0      0 *.179                    *.*                     default
LISTEN
tcp4      0      0 *.6154                   *.*
__juniper_private1__ LISTEN
tcp4      0      0 *.6153                   *.*
__juniper_private1__ LISTEN
tcp4      0      0 *.7000                   *.*
__juniper_private1__ LISTEN
tcp4      0      0 *.6152                   *.*
__juniper_private1__ LISTEN
tcp4      0      0 *.6156                   *.*
__juniper_private1__ LISTEN
tcp4      0      0 *.33005                  *.*
__juniper_private2__ LISTEN

```

```

tcp4      0      0 *.31343          *.*
__juniper_private1__ LISTEN
tcp4      0      0 *.31341          *.*
__juniper_private1__ LISTEN
tcp4      0      0 *.32003          *.*
__juniper_private2__ LISTEN
tcp4      0      0 *.666            *.*
__juniper_private1__ LISTEN
tcp4      0      0 *.38             *.*
__juniper_private1__ LISTEN
tcp4      0      0 *.3221           *.*
LISTEN                                           default

```

### show system connections (TX Matrix Plus Router)

```

user@host> show system connections
sfc0-re0:

```

```

-----
Active Internet connections (including servers)
Proto Recv-Q Send-Q Local Address                               Foreign Address
                                (state)
tcp4      0      3 192.168.178.11.23                          172.17.28.19.3565 ESTABLISHED
tcp4      0      0 192.168.178.11.23                          172.17.28.204.62719 ESTABLISHED
tcp4      0      0 192.168.178.11.23                          192.168.69.199.51255 ESTABLISHED
tcp4      0      0 192.168.178.11.23                          172.24.26.227.42860 ESTABLISHED
tcp4      0      0 *.6156                                           *.*
LISTEN
tcp4      0      0 162.0.0.4.32012                             162.0.0.5.58935 ESTABLISHED
tcp4      0      0 *.32012                                           *.*
LISTEN
tcp4      0      0 *.33007                                           *.*
LISTEN
tcp4      0      0 *.666                                           *.*
LISTEN
tcp4      0      0 162.0.0.4.6161                             162.0.0.5.62026 ESTABLISHED
tcp4      0      0 *.33005                                           *.*
LISTEN
tcp4      0      0 162.0.0.4.9000                             162.0.0.4.51611 ESTABLISHED
tcp4      0      0 162.0.0.4.51611                             162.0.0.4.9000 ESTABLISHED
tcp4      0      0 *.6151                                           *.*
LISTEN
tcp4      0      0 *.6154                                           *.*
LISTEN
tcp4      0      0 *.6153                                           *.*
LISTEN
tcp4      0      0 *.31343                                           *.*
LISTEN
tcp4      0      0 *.31341                                           *.*
LISTEN
tcp4      0      0 *.9000                                           *.*
LISTEN
tcp4      0      0 *.6152                                           *.*
LISTEN

```

```

tcp4      0      0 *.32003          *.*
          LISTEN
tcp4      0      0 *.33009          *.*
          LISTEN
tcp4      0      0 *.3221           *.*
          LISTEN
tcp4      0      0 *.23             *.*
          LISTEN
tcp4      0      0 *.22             *.*
          LISTEN
tcp4      0      0 *.514            *.*
          LISTEN
tcp4      0      0 *.513            *.*
          LISTEN
tcp4      0      0 *.21             *.*
          LISTEN
tcp4      0      0 *.79             *.*
          LISTEN
tcp4      0      0 *.514            *.*
          LISTEN
tcp4      0      0 *.513            *.*
          LISTEN
tcp4      0      0 *.6234           *.*
          LISTEN
udp4      0      0 127.0.0.1.123    *.*
udp4      0      0 10.255.178.11.123 *.*
udp4      0      0 *.123            *.*
udp46     0      0 *.514            *.*
udp4      0      0 *.514            *.*
udp46     0      0 *.62027          *.*
udp4      0      0 *.59363          *.*
udp4      0      0 *.31342          *.*
udp46     0      0 *.161            *.*
udp4      0      0 *.161            *.*
udp4      0      0 *.31340          *.*
udp4      0      0 *.31340          *.*
udp46     0      0 *.49152          *.*
udp46     0      0 *.4784           *.*
udp46     0      0 *.3784           *.*
udp4      0      0 *.49152          *.*
udp4      0      0 *.4784           *.*
udp4      0      0 *.3784           *.*
udp4      0      0 *.6333           *.*
ip4       0      0 *.*              *.*
ip4       0      0 *.*              *.*

```

lcc0-re0:

```

-----
Active Internet connections (including servers)
Proto Recv-Q Send-Q Local Address           Foreign Address
          (state)
tcp4      0      0 192.168.178.3.23      172.24.26.227.50399    ESTABLISHED
tcp4      0      0 *.6234                *.*
          LISTEN
tcp4      0      0 *.7000                *.*
          LISTEN
tcp4      0      0 *.9000                *.*
          LISTEN
tcp4      0      0 *.33009               *.*
          LISTEN

```

```

tcp4      0      0 *.3221          *.*
          LISTEN
tcp4      0      0 *.23            *.*
          LISTEN
tcp4      0      0 *.22            *.*
          LISTEN
tcp4      0      0 *.514           *.*
          LISTEN
tcp4      0      0 *.513           *.*
          LISTEN
tcp4      0      0 *.21            *.*
          LISTEN
tcp4      0      0 *.79            *.*
          LISTEN
tcp4      0      0 *.514           *.*
          LISTEN
tcp4      0      0 *.513           *.*
          LISTEN
udp46     0      0 *.514           *.*
udp4       0      0 *.514           *.*
udp46     0      0 *.59924         *.*
udp4       0      0 *.59412         *.*
udp46     0      0 *.161           *.*
udp4       0      0 *.161           *.*
udp4       0      0 *.31342         *.*
udp4       0      0 *.6333          *.*

```

```

lcc1-re0:

```

```

-----
Active Internet connections (including servers)
Proto Recv-Q Send-Q Local Address           Foreign Address
      (state)
tcp4      0      0 *.6234           *.*
          LISTEN
tcp4      0      0 *.7000           *.*
          LISTEN
tcp4      0      0 *.9000           *.*
          LISTEN
tcp4      0      0 *.3221           *.*
          LISTEN
tcp4      0      0 *.23             *.*
          LISTEN
tcp4      0      0 *.22             *.*
          LISTEN
tcp4      0      0 *.514            *.*
          LISTEN
tcp4      0      0 *.513            *.*
          LISTEN
tcp4      0      0 *.21             *.*
          LISTEN
tcp4      0      0 *.79             *.*
          LISTEN
tcp4      0      0 *.514            *.*
          LISTEN
tcp4      0      0 *.513            *.*
          LISTEN
tcp4      0      0 *.33009          *.*
          LISTEN
udp46     0      0 *.514            *.*
udp4       0      0 *.514            *.*
udp46     0      0 *.59924         *.*

```

```

udp4      0      0 *.59412      *.*
udp4      0      0 *.31342      *.*
udp46     0      0 *.161        *.*
udp4      0      0 *.161        *.*
udp4      0      0 *.6333       *.*

```

lcc2-re0:

```

-----
Active Internet connections (including servers)
Proto Recv-Q Send-Q Local Address           Foreign Address
      (state)
tcp4      0      0 *.6234          *.*
      LISTEN
tcp4      0      0 *.7000          *.*
      LISTEN
tcp4      0      0 *.9000          *.*
      LISTEN
tcp4      0      0 *.33009         *.*
      LISTEN
tcp4      0      0 *.3221          *.*
      LISTEN
tcp4      0      0 *.23            *.*
      LISTEN
tcp4      0      0 *.22            *.*
      LISTEN
tcp4      0      0 *.514           *.*
...

```

#### show system connections sfc (TX Matrix Plus Router)

```

user@host> show system connections sfc 0
sfc0-re0:

```

```

-----
Active Internet connections (including servers)
Proto Recv-Q Send-Q Local Address           Foreign Address
      (state)
tcp4      0      0 162.0.0.4.514        132.0.0.4.952
      TIME_WAIT
tcp4      0      0 162.0.0.4.514        131.0.0.4.694
      TIME_WAIT
tcp4      0      0 162.0.0.4.514        130.0.0.4.860
      TIME_WAIT
tcp4      0      0 162.0.0.4.514        129.0.0.4.716
      TIME_WAIT
tcp4      0      0 162.0.0.4.996        132.0.0.4.514
      TIME_WAIT
tcp4      0      0 162.0.0.4.798        131.0.0.4.514
      TIME_WAIT
tcp4      0      0 162.0.0.4.995        130.0.0.4.514
      TIME_WAIT
tcp4      0      0 162.0.0.4.895        129.0.0.4.514
      TIME_WAIT
tcp4      0      0 192.168.178.11.21    172.17.28.204.64662  TIME_WAIT
tcp4      0      0 192.168.178.11.21    172.17.28.204.51612  TIME_WAIT
tcp4      0      0 *.6156            *.*
      LISTEN
tcp4      0      0 *.9000            *.*
      LISTEN
tcp4      0      0 *.666             *.*

```

				LISTEN		
tcp4	0	2	192.168.178.11.23			
172.17.28.19.3565				ESTABLISHED		
tcp4	0	0	192.168.178.11.23			
172.17.28.204.62719				ESTABLISHED		
tcp4	0	0	192.168.178.11.23			
192.168.69.199.51255				ESTABLISHED		
tcp4	0	0	192.168.178.11.23			
172.24.26.227.42860				ESTABLISHED		
tcp4	0	0	162.0.0.4.32012			162.0.0.5.58935
				ESTABLISHED		
tcp4	0	0	*,32012			*,*
				LISTEN		
tcp4	0	0	*,33007			*,*
				LISTEN		
tcp4	0	1432	162.0.0.4.6161			162.0.0.5.62026
				ESTABLISHED		
tcp4	0	0	*,33005			*,*
				LISTEN		
tcp4	0	0	162.0.0.4.9000			162.0.0.4.51611
				FIN_WAIT_2		
tcp4	0	0	162.0.0.4.51611			162.0.0.4.9000
				CLOSE_WAIT		
tcp4	0	0	*,6151			*,*
				LISTEN		
tcp4	0	0	*,6154			*,*
				LISTEN		
tcp4	0	0	*,6153			*,*
				LISTEN		
tcp4	0	0	*,31343			*,*
				LISTEN		
tcp4	0	0	*,31341			*,*
				LISTEN		
tcp4	0	0	*,6152			*,*
				LISTEN		
tcp4	0	0	*,32003			*,*
				LISTEN		
tcp4	0	0	*,33009			*,*
				LISTEN		
tcp4	0	0	*,3221			*,*
				LISTEN		
tcp4	0	0	*,23			*,*
				LISTEN		
tcp4	0	0	*,22			*,*
				LISTEN		
tcp4	0	0	*,514			*,*
				LISTEN		
tcp4	0	0	*,513			*,*
				LISTEN		
tcp4	0	0	*,21			*,*
				LISTEN		
tcp4	0	0	*,79			*,*
				LISTEN		
tcp4	0	0	*,514			*,*
				LISTEN		
tcp4	0	0	*,513			*,*
				LISTEN		
tcp4	0	0	*,6234			*,*
				LISTEN		
udp4	0	0	127.0.0.1.123			*,*
udp4	0	0	10.255.178.11.123			*,*

```

udp4      0      0 *.123      *.*
udp46     0      0 *.514      *.*
udp4      0      0 *.514      *.*
udp46     0      0 *.50895    *.*
udp4      0      0 *.50794    *.*
udp4      0      0 *.31342    *.*
udp46     0      0 *.161      *.*
udp4      0      0 *.161      *.*
udp4      0      0 *.31340    *.*
udp4      0      0 *.31340    *.*
udp46     0      0 *.49152    *.*
udp46     0      0 *.4784     *.*
udp46     0      0 *.3784     *.*
udp4      0      0 *.49152    *.*
udp4      0      0 *.4784     *.*
udp4      0      0 *.3784     *.*
udp4      0      0 *.6333     *.*
ip4       104     0 *.         *.*
ip4       0      0 *.         *.*
ip4       0      0 *.         *.*

```

#### show system connections show-routing-instances (TX Matrix Plus Router)

```

user@host> show system connections show-routing-instances
sfc0-re0:

```

```

-----
Active Internet connections (including servers) (including routing-instances)
Proto Recv-Q Send-Q Local Address           Foreign Address
-----
Routing Instance (state)
tcp4      0      0 *.6156                  *.*
      __juniper_private1__ LISTEN
tcp4      0      0 *.9000                  *.*
      __juniper_private1__ LISTEN
tcp4      0      0 *.666                   *.*
      __juniper_private1__ LISTEN
tcp4      0      2 192.168.178.11.23      default ESTABLISHED
172.17.28.19.3565
tcp4      0      0 192.168.178.11.23      default ESTABLISHED
172.17.28.204.62719
tcp4      0      0 192.168.178.11.23      default ESTABLISHED
192.168.69.199.51255
tcp4      0      0 192.168.178.11.23      default ESTABLISHED
172.24.26.227.42860
tcp4      0      0 162.0.0.4.32012        162.0.0.5.58935
      __juniper_private1__ ESTABLISHED
tcp4      0      0 *.32012                  *.*
      __juniper_private1__ LISTEN
tcp4      0      0 *.33007                  *.*
      __juniper_private2__ LISTEN
tcp4      0      0 162.0.0.4.6161         162.0.0.5.62026
      __juniper_private1__ ESTABLISHED
tcp4      0      0 *.33005                  *.*
      __juniper_private2__ LISTEN
tcp4      0      0 162.0.0.4.9000         162.0.0.4.51611
      __juniper_private1__ FIN_WAIT_2
tcp4      0      0 162.0.0.4.51611       162.0.0.4.9000
      __juniper_private1__ CLOSE_WAIT
tcp4      0      0 *.6151                  *.*
      __juniper_private1__ LISTEN
tcp4      0      0 *.6154                  *.*
      __juniper_private1__ LISTEN

```

tcp4	0	0	*.6153	__juniper_private1__	LISTEN	*.*
tcp4	0	0	*.31343	__juniper_private1__	LISTEN	*.*
tcp4	0	0	*.31341	__juniper_private1__	LISTEN	*.*
tcp4	0	0	*.6152	__juniper_private1__	LISTEN	*.*
tcp4	0	0	*.32003	__juniper_private2__	LISTEN	*.*
tcp4	0	0	*.33009	__juniper_private2__	LISTEN	*.*
tcp4	0	0	*.3221	default	LISTEN	*.*
tcp4	0	0	*.23	default	LISTEN	*.*
tcp4	0	0	*.22	default	LISTEN	*.*
tcp4	0	0	*.514	default	LISTEN	*.*
tcp4	0	0	*.513	default	LISTEN	*.*
tcp4	0	0	*.21	default	LISTEN	*.*
tcp4	0	0	*.79	default	LISTEN	*.*
tcp4	0	0	*.514	__juniper_private1__	LISTEN	*.*
tcp4	0	0	*.513	__juniper_private1__	LISTEN	*.*
tcp4	0	0	*.6234	__juniper_private1__	LISTEN	*.*
udp4	0	0	127.0.0.1.123	default		*.*
udp4	0	0	10.255.178.11.123	default		*.*
udp4	0	0	*.123	default		*.*
udp46	0	0	*.514	default		*.*
udp4	0	0	*.514	default		*.*
udp46	0	0	*.50895	default		*.*
udp4	0	0	*.50794	default		*.*
udp4	0	0	*.31342	__juniper_private1__		*.*
udp46	0	0	*.161	default		*.*
udp4	0	0	*.161	default		*.*
udp4	0	0	*.31340	__juniper_private2__		*.*
udp4	0	0	*.31340	__juniper_private1__		*.*
udp46	0	0	*.49152	default		*.*
udp46	0	0	*.4784	default		*.*
udp46	0	0	*.3784			*.*



```

udp4      0      0 *.49152      default      *. *
udp4      0      0 *.4784       default      *. *
udp4      0      0 *.3784       default      *. *
udp4      0      0 *.6333       default      *. *
ip4       0      0 *. *         __juniper_private1__  *. *
ip4       0      0 *. *         default      *. *
ip4       0      0 *. *         default      *. *
ip4       0      0 *. *         default      *. *

lcc0-re0:
-----
Active Internet connections (including servers) (including routing-instances)
Proto Recv-Q Send-Q Local Address           Routing Instance      (state)        Foreign Address
tcp4      0      0 *.7000        __juniper_private1__ LISTEN           *. *
tcp4      0      0 192.168.178.3.23 default              ESTABLISHED
172.24.26.227.50399
tcp4      0      0 *.6234        __juniper_private1__ LISTEN           *. *
tcp4      0      0 *.9000        __juniper_private1__ LISTEN           *. *
tcp4      0      0 *.33009       __juniper_private1__ LISTEN           *. *
tcp4      0      0 *.3221        __juniper_private2__ LISTEN           *. *
tcp4      0      0 *.23          default             LISTEN           *. *
tcp4      0      0 *.22          default             LISTEN           *. *
tcp4      0      0 *.514         default             LISTEN           *. *
tcp4      0      0 *.513         default             LISTEN           *. *
tcp4      0      0 *.21          default             LISTEN           *. *
tcp4      0      0 *.79          default             LISTEN           *. *
tcp4      0      0 *.514         __juniper_private1__ LISTEN           *. *
tcp4      0      0 *.513         __juniper_private1__ LISTEN           *. *
udp46     0      0 *.514         default             *. *
udp4      0      0 *.514         default             *. *
udp46     0      0 *.59924       default             *. *
udp4      0      0 *.59412       default             *. *
udp46     0      0 *.161         default             *. *
udp4      0      0 *.161         default             *. *

```

```

udp4      0      0 *.31342      *.*
          __juniper_private1__
udp4      0      0 *.6333       *.*
          __juniper_private1__

```

```
lcc1-re0:
```

```

-----
Active Internet connections (including servers) (including routing-instances)
Proto Recv-Q Send-Q Local Address           Foreign Address
      Routing Instance      (state)
tcp4      0      0 *.7000            *.*
          __juniper_private1__ LISTEN
tcp4      0      0 *.6234            *.*
          __juniper_private1__ LISTEN
tcp4      0      0 *.9000            *.*
          __juniper_private1__ LISTEN
tcp4      0      0 *.3221            *.*
          default             LISTEN
tcp4      0      0 *.23              *.*
          default             LISTEN
tcp4      0      0 *.22              *.*
          default             LISTEN
tcp4      0      0 *.514             *.*
          default             LISTEN
tcp4      0      0 *.513             *.*
          default             LISTEN
tcp4      0      0 *.21              *.*
          default             LISTEN
tcp4      0      0 *.79              *.*
          default             LISTEN
tcp4      0      0 *.514             *.*
          __juniper_private1__ LISTEN
tcp4      0      0 *.513             *.*
          __juniper_private1__ LISTEN
tcp4      0      0 *.33009           *.*
          __juniper_private2__ LISTEN
udp46     0      0 *.514             *.*
          default
udp4      0      0 *.514             *.*
          default
udp46     0      0 *.59924           *.*
          default
udp4      0      0 *.59412           *.*
          default
udp4      0      0 *.31342           *.*
          __juniper_private1__
udp46     0      0 *.161             *.*
          default
udp4      0      0 *.161             *.*
          default
udp4      0      0 *.6333            *.*
          __juniper_private1__

```

```
lcc2-re0:
```

```

-----
Active Internet connections (including servers) (including routing-instances)
Proto Recv-Q Send-Q Local Address           Foreign Address
      Routing Instance      (state)
tcp4      0      0 *.7000            *.*
          __juniper_private1__ LISTEN
tcp4      0      0 *.6234            *.*

```

```

tcp4      0      0 *.9000      __juniper_private1__ LISTEN      *. *
tcp4      0      0 *.33009     __juniper_private1__ LISTEN      *. *
tcp4      0      0 *.3221      __juniper_private2__ LISTEN      *. *
tcp4      0      0 *.23        default        LISTEN      *. *
tcp4      0      0 *.22        default        LISTEN      *. *
tcp4      0      0 *.514       default        LISTEN      *. *
tcp4      0      0 *.513       default        LISTEN      *. *
tcp4      0      0 *.21        default        LISTEN      *. *
tcp4      0      0 *.79        default        LISTEN      *. *
tcp4      0      0 *.514       default        LISTEN      *. *
tcp4      0      0 *.513       __juniper_private1__ LISTEN      *. *
tcp4      0      0 *.513       __juniper_private1__ LISTEN      *. *
udp46     0      0 *.514       default        *. *
udp4      0      0 *.514       default        *. *
udp4      0      0 *.31342     __juniper_private1__ *. *
udp46     0      0 *.62103     default        *. *
udp4      0      0 *.59924     default        *. *
udp46     0      0 *.161       default        *. *
udp4      0      0 *.161       default        *. *
udp4      0      0 *.6333      __juniper_private1__ *. *

```

lcc3-re0:

```

-----
Active Internet connections (including servers) (including routing-instances)
Proto Recv-Q Send-Q Local Address           Foreign Address
      Routing Instance      (state)
tcp4      0      0 *.7000      __juniper_private1__ LISTEN      *. *
tcp4      0      0 *.6234      __juniper_private1__ LISTEN      *. *
tcp4      0      0 *.9000      __juniper_private1__ LISTEN      *. *
tcp4      0      0 *.33009     __juniper_private1__ LISTEN      *. *
tcp4      0      0 *.3221      __juniper_private2__ LISTEN      *. *
tcp4      0      0 *.23        default        LISTEN      *. *
tcp4      0      0 *.22        default        LISTEN      *. *
tcp4      0      0 *.514       default        LISTEN      *. *

```

```

tcp4      0      0 *.513      default    LISTEN     *.*
tcp4      0      0 *.21       default    LISTEN     *.*
tcp4      0      0 *.79       default    LISTEN     *.*
tcp4      0      0 *.514      default    LISTEN     *.*
tcp4      0      0 *.513      __juniper_private1__ LISTEN     *.*
tcp4      0      0 *.514      __juniper_private1__ LISTEN     *.*
udp46     0      0 *.514      default    *.*
udp4      0      0 *.514      default    *.*
udp46     0      0 *.62103    default    *.*
udp4      0      0 *.59924    default    *.*
udp4      0      0 *.31342    default    *.*
udp46     0      0 *.161      __juniper_private1__ *.*
udp4      0      0 *.161      default    *.*
udp4      0      0 *.6333     default    *.*
udp4      0      0 *.6333     __juniper_private1__

```

#### show system connections (QFX3500 Switch)

```

user@switch> show system connections
Active Internet connections (including servers)
Proto Recv-Q Send-Q Local Address                               Foreign Address
      (state)
tcp4      0      0 10.94.204.110.23                           172.17.28.19.1308 ESTABLISHED
tcp4      0      0 128.0.0.1.6234                             128.0.0.1.65142  ESTABLISHED
tcp4      0      0 128.0.0.1.65142                             128.0.0.1.6234  ESTABLISHED
tcp4      0      0 128.0.0.1.33003                             128.0.0.1.61441  ESTABLISHED
tcp4      0      0 128.0.0.1.61441                             128.0.0.1.33003  ESTABLISHED
tcp46     0      0 *.179                                         *.*              LISTEN
tcp4      0      0 *.179                                         *.*              LISTEN
tcp4      0      0 128.0.0.16.9000                             128.0.0.16.50970 ESTABLISHED
tcp4      0      0 128.0.0.16.50970                             128.0.0.16.9000  ESTABLISHED
tcp4      0      0 *.38                                         *.*              LISTEN
tcp4      0      0 *.3491                                        *.*              LISTEN
tcp4      0      0 *.6156                                        *.*              LISTEN
tcp4      0      0 128.0.0.1.33001                             128.0.0.1.59437  ESTABLISHED
tcp4      0      0 128.0.0.1.59437                             128.0.0.1.33001  ESTABLISHED

```

tcp4	0	0	128.0.0.1.33023	128.0.0.1.63605
			ESTABLISHED	
tcp4	0	0	128.0.0.1.63605	128.0.0.1.33023
			ESTABLISHED	
tcp4	0	0	128.0.0.1.33001	128.0.0.1.63830
			ESTABLISHED	
tcp4	0	0	128.0.0.1.63830	128.0.0.1.33001
			ESTABLISHED	
tcp4	0	0	*,667	*,*
			LISTEN	
tcp4	0	0	*,6156	*,*
			LISTEN	
tcp4	0	0	128.0.0.1.7000	128.0.0.1.51580
			ESTABLISHED	
tcp4	0	0	128.0.0.1.51580	128.0.0.1.7000
			ESTABLISHED	
tcp4	0	0	128.0.0.1.6234	128.0.0.1.53646
			ESTABLISHED	
tcp4	0	0	*,33001	*,*
			LISTEN	
tcp4	0	0	*,33003	*,*
			LISTEN	
tcp4	0	0	128.0.0.1.53646	128.0.0.1.6234
			ESTABLISHED	
tcp4	0	0	128.0.0.16.9000	128.0.0.16.63454
			ESTABLISHED	
tcp4	0	0	128.0.0.16.63454	128.0.0.16.9000
			ESTABLISHED	
tcp4	0	0	*,666	*,*
			LISTEN	
tcp4	0	0	*,7000	*,*
			LISTEN	
tcp4	0	0	*,51627	*,*
			LISTEN	
tcp4	0	0	*,3492	*,*
			LISTEN	
tcp4	0	0	*,33023	*,*
			LISTEN	
tcp4	0	0	*,33013	*,*
			LISTEN	
tcp4	0	0	*,7202	*,*
			LISTEN	
tcp4	0	0	*,6151	*,*
			LISTEN	
tcp4	0	0	*,9000	*,*
			LISTEN	
tcp4	0	0	*,6161	*,*
			LISTEN	
tcp4	0	0	*,6011	*,*
			LISTEN	
tcp4	0	0	*,3221	*,*
			LISTEN	
tcp4	0	0	*,23	*,*
			LISTEN	
tcp4	0	0	*,22	*,*
			LISTEN	
tcp4	0	0	*,514	*,*
			LISTEN	
tcp4	0	0	*,513	*,*
			LISTEN	
tcp4	0	0	*,21	*,*

			LISTEN	
tcp4	0	0 *.79		*.*
			LISTEN	
tcp4	0	0 *.514		*.*
			LISTEN	
tcp4	0	0 *.513		*.*
			LISTEN	
tcp4	0	0 *.1127		*.*
			LISTEN	
tcp4	0	0 *.1129		*.*
			LISTEN	
tcp4	0	0 *.1128		*.*
			LISTEN	
tcp4	0	0 *.6234		*.*
			LISTEN	
udp46	0	0 *.514		*.*
udp4	0	0 *.514		*.*
udp4	0	0 128.0.0.1.123		*.*
udp46	0	0 *.53344		*.*
udp4	0	0 *.54261		*.*
udp46	0	0 *.161		*.*
udp4	0	0 *.161		*.*
udp4	0	0 *.31342		*.*
udp4	0	0 *.59137		*.*
udp4	0	0 *. *		*.*
udp46	0	0 *.49152		*.*
udp46	0	0 *.4784		*.*
udp46	0	0 *.3784		*.*
udp4	0	0 *.49152		*.*
udp4	0	0 *.4784		*.*
udp4	0	0 *.3784		*.*
udp4	0	0 10.255.204.110.123		*.*
udp4	0	0 *.123		*.*
udp4	0	0 *.67		*.*
udp4	0	0 *.6333		*.*
udp4	0	0 *.2293		*.*
ip4	0	0 *. *		*.*
ip4	0	0 *. *		*.*
ip4	0	0 *. *		*.*

## show system core-dumps

<b>Syntax</b>	<pre>show system core-dumps &lt;brief   detail&gt; &lt;core-filename&gt; &lt;core-file-info&gt;</pre>
<b>Syntax (EX Series Switches)</b>	<pre>show system core-dumps &lt;all-members&gt; &lt;brief   detail&gt; &lt;core-filename&gt; &lt;core-file-info&gt; &lt;local&gt; &lt;member member-id&gt;</pre>
<b>Syntax (TX Matrix Router)</b>	<pre>show system core-dumps &lt;all-chassis   all-lcc   lcc number   scc&gt; &lt;brief   detail&gt; &lt;core-filename&gt; &lt;core-file-info&gt;</pre>
<b>Syntax (TX Matrix Plus Router)</b>	<pre>show system core-dumps &lt;all-chassis   all-lcc   lcc number   sfc number&gt; &lt;brief   detail&gt; &lt;core-filename&gt; &lt;core-file-info&gt;</pre>
<b>Syntax (QFX Series)</b>	<pre>show system core-dumps &lt;brief   detail&gt; &lt;component (UUID   serial number   all)&gt; &lt;core-file-info component (UUID   serial number) core-file-name&gt; &lt;display-period (hours   minutes   seconds)&gt; &lt;display-order&gt; &lt;kernel-crashinfo component (UUID   serial number)&gt; &lt;repository (core   log)&gt;</pre>
<b>Release Information</b>	<p>Command introduced before Junos OS Release 8.5.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p><b>sfc</b> option 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>
<b>Description</b>	<p>Show core files on all routers or switches running Junos OS. You can use the <b>show system core-dumps</b> command to show a list of system core files created when the router or switch has failed. This command can be useful for diagnostic purposes. Each list item includes the file permissions, number of links, owner, group, size, modification date, and path and filename. On a QFabric system, you can view core-dump files on individual QFabric system devices as well as on the entire QFabric system.</p> <p>You can use the option <b>core-filename</b> and its options <b>core-file-info</b>, <b>brief</b>, and <b>detail</b> to display more information about the specified core-dump files.</p>
<b>Options</b>	<p><b>none</b>—Display a list of all existing core-dump files.</p>

**all-chassis**—(TX Matrix and TX Matrix Plus routers only) (Optional) On a routing matrix based on a TX Matrix router, display system core files for the TX Matrix router switch-card chassis [SCC] and all the T640 routers [LCCs] connected to the TX Matrix router.

On a routing matrix based on a TX Matrix Plus router, display system core files for the TX Matrix Plus router (switch-fabric chassis [SFC]) and all the T1600 routers [LCCs] connected to the TX Matrix Plus router.

**<all-lcc | lcc number>**—(TX Matrix and TX Matrix Plus routers only) (Optional) On a routing matrix based on the TX Matrix router, display core dump files for all T640 routers (line-card chassis [LCCs]) or a specific T640 router [LCC] connected to the TX Matrix router.

On a routing matrix based on the TX Matrix Plus router, display logging information for all T1600 routers (line-card chassis [LCCs]) or a specific T1600 router (LCC) connected to the TX Matrix Plus router. When using the **lcc number** option, replace **number** with a value from 0 through 3.



**NOTE:** The **all-chassis** option displays system core files for the SCC or SFC and the LCCs connected to the SCC or SFC in the routing matrix while the **all-lcc** option only displays system core files for the LCCs in the routing matrix.

**all-members**—(EX4200 switches) (Optional) Display system core files on all members of the Virtual Chassis configuration.

**brief**—(Optional) View details of a binary file.

**component (UUID | serial number | all)**—(QFabric systems only) (Optional) Display a list of core-dump files located on individual QFabric system device or on the entire QFabric system.

**core-file-info**—(Optional) Display the stack trace of a core file.

**core-filename**—(Optional) Name of a specific core file to display.

**detail**—(Optional) View stack trace with details of the binary file.

**display-order (timestamp-sort | alphanumeric-sort)**—(QFabric systems only) (Optional) Display list of debug artifacts generated within the specified period—for example, within the last hour, within the last 20 minutes, or within the last 32 seconds—or according to their filename.

**display-period (hours | minutes | seconds)**—(QFabric systems only) (Optional) Display core-dump files generated within the specified period—for example, within the last hour, within the last 20 minutes, or within the last 32 seconds.

**kernel-crashinfo component (UUID | serial number)**—(QFabric systems only) (Optional) Display kernel crash information from the EEPROM on a QFabric system device.



**local**—(EX4200 switches only) (Optional) Display system core files on the local Virtual Chassis member.

**member *member-id***—(EX4200 switches only) (Optional) Display system core files on the specified member of the Virtual Chassis configuration. Replace *member-id* with a value from 0 through 9.

**repository (core | log)**—(QFabric systems only) (Optional) Specify either the core or log repository in which to view core-dump files.

**scc**—(TX Matrix routers only) (Optional) Display system core files on the TX Matrix router (or switch-card chassis).

**sfc**—(TX Matrix Plus routers only) (Optional) Display system core files on the TX Matrix Plus router (or switch-fabric chassis).

**Required Privilege Level**

view

**List of Sample Output**

[show system core-dumps on page 959](#)  
[show system core-dumps on page 959](#)  
[show system core-dumps \(TX Matrix Plus Router\) on page 959](#)  
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[show system core-dumps core-file-info component serial number core-file-name \(QFabric Systems\) on page 962](#)  
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[show system core-dumps display-period \(QFabric Systems\) on page 962](#)  
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**Output Fields**

[Table 50 on page 957](#) describes the output fields for the **show system core-dumps** command. Output fields are listed in the approximate order in which they appear.

**Table 50: show system core-dumps Output Fields**

Field Name	Field Description
<i>Permissions</i>	Read/write permissions for the file named.
<i>Links</i>	Number of links to the file.
<i>Owner</i>	Name of the file owner.
<i>Group</i>	Name of the group with file access.
<i>File size</i>	File size in bytes.
<i>Modified</i>	Last file modification date and time.

Table 50: show system core-dumps Output Fields (*continued*)

Field Name	Field Description
<i>Path/filename</i>	File path where the file resides and the filename.
<b>Repository scope:</b>	Repository where core-dump files and log files are stored. The core-dump files are located in the <b>core</b> repository, and the log files are located in the <b>log</b> repository. The default <b>Repository scope</b> is shared since both the <b>core</b> and <b>log</b> repositories are shared by all of the QFabric system devices.
<b>Repository head:</b>	Path to the top-level repository location.
<b>Repository name:</b>	Name of the repository: <b>core</b> or <b>log</b> .
<b>List of nodes for core repository:</b>	List of core-dump files associated with a particular QFabric system device located in the core repository.
<b>Node Group</b>	Name of the QFabric system device.
<b>Node Identifier</b>	UUID or serial number of the QFabric system device.
<b>Num</b>	Number of core-dump and log files.
<b>Model</b>	Model number of the QFabric system device.
<b>Usage</b>	Usage of the repository in megabytes.
<b>Total usage of core repository:</b>	Total usage of core-dump files associated with a particular QFabric system device located in the core repository. Usage is specified in megabytes and as a percentage.
<b>Total usage of log repository:</b>	Total usage of log files associated with a particular QFabric system device located in the log repository. Usage is specified in megabytes and as a percentage.
<b>List of nodes for core repository:</b>	List of core-dump files associated with a particular QFabric system device located in the core repository.
<b>List of nodes for log repository:</b>	List of log files associated with a particular QFabric system device located in the log repository.
<b>Filename</b>	Name of the core-dump file.
<b>Date</b>	Last core-dump file modification date and time.
<b>Size</b>	Size of the core-dump file.
<b>Core filename</b>	Filename of the core-dump file.
<b>Process name</b>	Name of the process that is generating a core-dump file or log file.

Table 50: show system core-dumps Output Fields (*continued*)

Field Name	Field Description
Release	Junos OS release.
Build server	Junos OS build server.
Build date	Junos OS build date.
Stack trace	Stack trace of the core-dump file.

## Sample Output

### show system core-dumps

This example shows the command output if core files exist.

```
user@switcht> show system core-dumps
-rw----- 1 root wheel 268369920 Jun 18 17:59 /var/crash/vmcore.0
-rw-rw---- 1 root field 3371008 Jun 18 17:53 /var/tmp/rpd.core.0
-rw-r--r-- 1 root wheel 27775914 Jun 18 17:59 /var/crash/kernel.0
```

### show system core-dumps

This example shows the command output if core files do not exist.

```
user@host> show system core-dumps
/var/crash/*core*: No such file or directory
/var/tmp/*core*: No such file or directory
/var/crash/kernel.*: No such file or directory
```

### show system core-dumps (TX Matrix Plus Router)

```
user@host> show system core-dumps
sfc0-re0:
-----
/var/crash/kernel.*: No such file or directory
/tftpboot/corefiles/*core*: No such file or directory

/var/crash/cores:
total 8

/var/tmp/cores:
total 1627592
-rw-r--r-- 1 root field 535346090 May 15 07:36
rpd.core-tarball.0.090515.0736.tgz
-rw-r--r-- 1 root field 105632057 May 15 07:37
rpd.core-tarball.1.090515.0737.tgz
-rw-r--r-- 1 root field 101981681 May 15 07:38
rpd.core-tarball.2.090515.0738.tgz
-rw-r--r-- 1 root field 85854573 May 15 07:40
rpd.core-tarball.3.090515.0740.tgz
-rw-r--r-- 1 root field 4157845 May 15 08:18
rpd.core-tarball.4.090515.0818.tgz

lcc0-re0:
-----
```

```
/var/crash/kernel.*: No such file or directory
/tftpboot/corefiles/*core*: No such file or directory

/var/crash/cores:
total 8

/var/tmp/cores:
total 12

lcc1-re0:
-----
/var/crash/kernel.*: No such file or directory
/tftpboot/corefiles/*core*: No such file or directory

/var/crash/cores:
total 8

/var/tmp/cores:
total 10024
-rw-r--r-- 1 root field 1875794 Apr 22 15:47
chassisd.core-tarball.0.090422.1547.tgz
-rw-r--r-- 1 root field 1894183 Apr 22 19:02
chassisd.core-tarball.0.090422.1902.tgz
-rw-r--r-- 1 root field 1290240 Apr 26 16:01 ksyncd_1558.core.0.090426.1601

lcc2-re0:
-----
/var/crash/kernel.*: No such file or directory
/tftpboot/corefiles/*core*: No such file or directory

/var/crash/cores:
total 21124008
-rw-r--r-- 1 root wheel 1022376528 May 2 06:43
core-LCC2-EGFPC7.core.0.090502.0643
-rw-r--r-- 1 root wheel 1022376528 May 2 08:13
core-LCC2-EGFPC7.core.0.090502.0813
-rw-r--r-- 1 root wheel 1022376544 May 5 06:15
core-LCC2-EGFPC7.core.0.090505.0615
-rw-r--r-- 1 root wheel 1022376544 May 6 10:59
core-LCC2-EGFPC7.core.0.090506.1059
-rw-r--r-- 1 root wheel 1022376528 May 2 06:58
core-LCC2-EGFPC7.core.1.090502.0658
-rw-r--r-- 1 root wheel 754271232 May 5 06:33
core-LCC2-EGFPC7.core.1.090505.0633
-rw-r--r-- 1 root wheel 264897536 May 6 11:12
core-LCC2-EGFPC7.core.1.090506.1112
-rw-r--r-- 1 root wheel 1022376528 May 2 07:22
core-LCC2-EGFPC7.core.2.090502.0722
-rw-r--r-- 1 root wheel 163633152 May 5 06:52
core-LCC2-EGFPC7.core.2.090505.0652
-rw-r--r-- 1 root wheel 171312128 May 6 12:13
core-LCC2-EGFPC7.core.2.090506.1213
-rw-r--r-- 1 root wheel 1022376528 May 2 07:39
core-LCC2-EGFPC7.core.3.090502.0739
-rw-r--r-- 1 root wheel 1022376528 May 2 07:55
core-LCC2-EGFPC7.core.4.090502.0755
-rw-r--r-- 1 root wheel 427277312 May 7 04:47
core-LCC2-STFPC4.core.0.090507.0447
-rw-r--r-- 1 root wheel 419609600 May 7 04:47
core-LCC2-STFPC5.core.0.090507.0447
-rw-r--r-- 1 root wheel 432356352 May 7 04:47
```

```
core-LCC2-STFPC6.core.0.090507.0447
```

```
/var/tmp/cores:
```

```
total 2568
```

```
-rw-r--r-- 1 root field 1290240 May 14 14:26 ksyncd_1540.core.0.090514.1426
...
```

### show system core-dumps (QFX3500 Switch)

```
user@switch> show system core-dumps
```

```
/var/crash/*core*: No such file or directory
```

```
-rw-rw---- 1 root field 1545143 Jun 4 2012 /var/tmp/pafxpc.core.0.gz
```

```
-rw-rw---- 1 root field 1545146 Jun 4 2012 /var/tmp/pafxpc.core.1.gz
```

```
-rw-rw---- 1 root field 1545141 Jun 4 2012 /var/tmp/pafxpc.core.2.gz
```

```
-rw-rw---- 1 root field 1545146 Jun 4 2012 /var/tmp/pafxpc.core.3.gz
```

```
-rw-rw---- 1 root field 1545142 Jun 5 2012 /var/tmp/pafxpc.core.4.gz
```

```
/var/tmp/pics/*core*: No such file or directory
```

```
/var/crash/kernel.*: No such file or directory
```

```
/tftpboot/corefiles/*core*: No such file or directory
```

```
total 5
```

### show system core-dumps (QFabric Systems)

```
user@switch> show system core-dumps
```

```
Repository scope: shared
```

```
Repository head: /pbdata/export
```

```
List of nodes for core repository: /pbdata/export/rdumps/
```

Node Group	Node Identifier	Num	Model	Usage
DG-0	BCF7208D-E44F-E011-802F-4171BAAC781D	0	qfx3100	0M
FM-0	73747cd8-0710-11e1-b6a4-00e081c5297e	0	fx-jvre	0M
DRE-0	77116f18-0710-11e1-a2a0-00e081c5297e	0	fx-jvre	0M
NW-NG-0	BBAK0394	0	qfx3500	0M
NW-NG-0	cd78871a-0710-11e1-878e-00e081c5297e	0	fx-jvre	0M
NW-NG-0	d0afdale-0710-11e1-a1d0-00e081c5297e	0	fx-jvre	0M
FC-0	d31ab7a6-0710-11e1-ad1b-00e081c5297e	0	fx-jvre	0M
FC-1	d4d0f254-0710-11e1-90c3-00e081c5297e	0	fx-jvre	0M
IC-WS001	WS001	0	-	-
IC-WS001	WS001/YW3803	0	qfxc08-3008	0M
IC-WS001	WS001/YN5999	0	qfxc08-3008	0M
node-device1	BBAK0372	0	qfx3500	0M
node-device1	EE3093	0	qfx3500	0M

```
Total usage of core repository:0M of 70000M (0.0%)
```

```
List of nodes for log repository: /pbdata/export/rlogs/
```

Node Group	Node Identifier	Num	Model	Usage
DG-0	BCF7208D-E44F-E011-802F-4171BAAC781D	0	qfx3100	0M
FM-0	73747cd8-0710-11e1-b6a4-00e081c5297e	1	fx-jvre	0M
DRE-0	77116f18-0710-11e1-a2a0-00e081c5297e	1	fx-jvre	0M
NW-NG-0	BBAK0394	1	qfx3500	0M
NW-NG-0	cd78871a-0710-11e1-878e-00e081c5297e	1	fx-jvre	0M
NW-NG-0	d0afdale-0710-11e1-a1d0-00e081c5297e	3	fx-jvre	0M
FC-0	d31ab7a6-0710-11e1-ad1b-00e081c5297e	1	fx-jvre	0M
FC-1	d4d0f254-0710-11e1-90c3-00e081c5297e	1	fx-jvre	0M
IC-WS001	WS001	0	-	-
IC-WS001	WS001/YN5999	1	qfxc08-3008	0M
IC-WS001	WS001/YW3803	1	qfxc08-3008	0M
node-device1	BBAK0372	1	qfx3500	0M
node-device1	EE3093	1	qfx3500	0M

```
Total usage of log repository:0M of 70000M (0.0%)
```

**show system core-dumps core-file-info component serial number core-file-name (QFabric Systems)**

```

user@switch> show system core-dumps core-file-info component
e8ff4b3e-7d92-11e0-be5d-00e081c1fe0e cosd.core.0.1519.05162011131846.gz
Repository scope: shared
Repository head: /pbstorage
Repository name: core
Core filename: /pbstorage/rumps/e8ff4b3e-7d92-11e0-be5d-
00e081c1fe0e/5658.cosd.core.0.1519.05162011131846
Process name: cosd
Release: 11.3I0
Build server: /c/ssengupta/dfx_ha_v1/obj-i386-dcp/dcp/usr.sbin/cosd
Build date: 2011-05-14 01:11:44 UTC
Stack trace:
#0 0x8885d183 in select () from /usr/lib/libc.so.6
#0 0x8885d183 in select () from /usr/lib/libc.so.6
#1 0x887d4a45 in pselect () from /usr/lib/libc.so.6
#2 0x88774719 in pselect () from /usr/lib/libthr.so.2
#3 0x885de5db in __evGetNext () from /usr/lib/libisc.so.2
#4 0x885debf0 in __evMainLoop () from /usr/lib/libisc.so.2
#5 0x081125b2 in cosd_loop ()
#6 0x0812e19a in main ()

```

**show system core-dumps component serial number display-order alphanumeric-sort repository core (QFabric Systems)**

```

user@switch> show system core-dumps component BBAK8891 display-order alphanumeric-sort
repository core
Repository scope: shared
Repository head: /pbdata/export
Repository name: core
List of core dumps for component BBAK8891
Repository location: /pbdata/export/rumps/BBAK8891

```

Filename	Date	Size
eswd.core.0.1361.11172011214257.gz	Nov 17 21:43:10 2011	4779553
eswd.core.1.80267.11172011214514.gz	Nov 17 21:45:19 2011	3541648
eswd.core.2.80682.11172011214535.gz	Nov 17 21:45:43 2011	2156683
vccpd.core.0.1195.11182011151131.gz	Nov 18 15:11:35 2011	375617

Number of core dumps in repository:4

**show system core-dumps display-period (QFabric Systems)**

```

user@switch> show system core-dumps display-period 24h
show system core-dumps display-period 24h
Repository scope: shared
Repository head: /pbdata/export
List of core dumps at repository: /pbdata/export/rumps
Delta timespec: Last 24h
Component: BBAK8273

```

Filename	Size	Date
vccpd.core.0.1195.11182011151131.gz	Nov 18 15:11:35 2011	375794

Component: cedb7b0e-0025-11e1-9a5f-00e081c52990

Filename	Size	Date
vccpd.core.0.1461.11182011151131.gz	Nov 18 15:11:31 2011	120951

Component: ee19c4f8-0025-11e1-aef6-00e081c52990

Filename	Size	Date
vccpd.core.0.1462.11182011151131.gz	Nov 18 15:11:31 2011	109420

Component: BBAK8281		
Filename	Size	Date
vccpd.core.0.1196.11182011151131.gz	Nov 18 15:11:36 2011	375373
Component: BBAK8891		
Filename	Size	Date
vccpd.core.0.1195.11182011151131.gz	Nov 18 15:11:35 2011	375617
Component: BBAK8276		
Filename	Size	Date
vccpd.core.0.1196.11182011151131.gz	Nov 18 15:11:35 2011	375350
Component: BBAK8868		
Filename	Size	Date
vccpd.core.0.1196.11182011151130.gz	Nov 18 15:11:34 2011	376211
Component: BBAK8835		
Filename	Size	Date
vccpd.core.0.1195.11182011151130.gz	Nov 18 15:11:35 2011	375700
Component: BBAK8283		
Filename	Size	Date
vccpd.core.0.1195.11182011151131.gz	Nov 18 15:11:36 2011	368298
Component: YW3781/YW3781		
Filename	Size	Date
vccpd.core.0.1220.11182011151131.gz	Nov 18 15:11:38 2011	380002
Component: 09726be2-0026-11e1-82d9-00e081c52990		
Filename	Size	Date
vccpd.core.0.1461.11182011151130.gz	Nov 18 15:11:31 2011	119965
Component: BBAK8309		
Filename	Size	Date
vccpd.core.0.1196.11182011151131.gz	Nov 18 15:11:36 2011	378930
Component: 303d476a-0026-11e1-abf4-00e081c52990		
Filename	Size	Date
vccpd.core.0.1460.11182011151131.gz	Nov 18 15:11:31 2011	118385
Component: YW3798/YW3798		
Filename	Size	Date
vccpd.core.0.1219.11182011151131.gz	Nov 18 15:11:36 2011	380455
List of log dumps at repository: /pbdata/export/rlogs		
Delta timespec: Last 24h		
Component: BBAK8273		
Filename	Size	Date
vccpd.tarball.0.1195.11182011151138.tgz	Nov 18 15:11:39 2011	20415
Component: cedb7b0e-0025-11e1-9a5f-00e081c52990		
Filename	Size	Date
vccpd.tarball.0.1461.11182011151131.tgz	Nov 18 15:11:33 2011	19651
Component: ee19c4f8-0025-11e1-aef6-00e081c52990		
Filename	Size	Date
vccpd.tarball.0.1462.11182011151133.tgz	Nov 18 15:11:36 2011	24650
Component: BBAK8281		
Filename	Size	Date

vccpd.tarball.0.1196.11182011151137.tgz	Nov 18 15:11:41 2011	19445
Component: BBAK8891		
Filename	Size	Date
vccpd.tarball.0.1195.11182011151138.tgz	Nov 18 15:11:41 2011	21916
Component: BBAK8276		
Filename	Size	Date
vccpd.tarball.0.1196.11182011151137.tgz	Nov 18 15:11:39 2011	20461
Component: BBAK8868		
Filename	Size	Date
vccpd.tarball.0.1196.11182011151137.tgz	Nov 18 15:11:41 2011	21924
Component: BBAK8835		
Filename	Size	Date
vccpd.tarball.0.1195.11182011151137.tgz	Nov 18 15:11:39 2011	19424
Component: BBAK8283		
Filename	Size	Date
vccpd.tarball.0.1195.11182011151138.tgz	Nov 18 15:11:42 2011	31186
Component: YW3781/YW3781		
Filename	Size	Date
vccpd.tarball.0.1220.11182011151141.tgz	Nov 18 15:11:45 2011	27565
Component: 09726be2-0026-11e1-82d9-00e081c52990		
Filename	Size	Date
vccpd.tarball.0.1461.11182011151130.tgz	Nov 18 15:11:34 2011	19613
Component: BBAK8309		
Filename	Size	Date
vccpd.tarball.0.1196.11182011151138.tgz	Nov 18 15:11:46 2011	50362
Component: 303d476a-0026-11e1-abf4-00e081c52990		
Filename	Size	Date
vccpd.tarball.0.1460.11182011151133.tgz	Nov 18 15:11:33 2011	19360
Component: YW3798/YW3798		
Filename	Size	Date
vccpd.tarball.0.1219.11182011151140.tgz	Nov 18 15:11:49 2011	24473

### show system core-dumps kernel-crashinfo component serial number (QFabric Systems)

```

user@switch> show system core-dumps kernel-crashinfo component A0001/YA0197
Node: A0001/YA0197

Information about previous kernel crash:

-- Kernel panic data --

Panic string: kdb_sysctl_panic
System uptime: 3 day 20 hr 59 min 40 sec Kernel crash time: 2011-11-15 Wed 15:25:17
Kernel build linkstamp: JUNOS 11.3I #0: 2011-11-10 20:42:27 UTC

-- Stacktrace of panicing context --
Processor 1 (crash monarch):
savectx+0x0 (c9552800,80214efc,802a7fbc,c88ad05c) ra 801b93a8 sz 0
kdm_kcore_save_crashinfo+0x254 (c9552800,0,802a7fbc,c88ad05c) ra 801b9f44 sz 784
kdm_kcore_kern_panic_event_handler+0x4b0 (c9552800,0,802a7fbc,c88ad05c) ra
8022a9b8 sz 88

```



```
panic+0x1d0 (c9552800,0,4,77fed534) ra 802540c0 sz 56
kdb_sysctl_panic+0x70 (c9552800,0,4,77fed534) ra 80237e58 sz 40 sysctl_root+0x12c
(c9552800,0,4,e8bc5cf8) ra 80238e50 sz 48
userland_sysctl+0x164 (c9552800,0,4,e8bc5cf8) ra 8023956c sz 104
__sysctl+0xe4 (c9552800,0,4,e8bc5cf8) ra 806d62e8 sz 160
trap+0xe1c (c9552800,0,4,e8bc5cf8) ra 80896e68 sz 128
MipsUserGenException+0x1a4 (c9552800,0,4,405cd12c) ra 0 sz 0
pid 82340, process: sysctl
```

#### Processor 0:

```
restoreintr+0x14 (1,81bca820,3,0) ra 806cdc3c sz 0
spinlock_exit+0x30 (1,81bca820,3,0) ra 8025d354 sz 24
sleepq_release+0x64 (1,81bca820,3,0) ra 8025e670 sz 24
sleepq_timeout+0x224 (1,81bca820,3,0) ra 80240294 sz 48
softclock+0x434 (1,81bca820,3,0) ra 802067f8 sz 80
ithread_loop+0x244 (1,81bca820,3,0) ra 80200e28 sz 64 fork_exit+0xc0
(1,81bca820,3,0) ra 80897c28 sz 48
MipsNMIEException+0x34 (1,81bca820,3,0) ra 0 sz 0
pid 82340, process: sysctl
```

#### Processor 2:

```
cpu_idle+0x20 (80960000,51bbc,2031df,81bca1b8) ra 80204948 sz 24 idle_proc+0x130
(80960000,51bbc,2031df,81bca1b8) ra 80200e28 sz 56 fork_exit+0xc0
(80960000,51bbc,2031df,81bca1b8) ra 80897c28 sz 48
MipsNMIEException+0x34 (80960000,51bbc,2031df,81bca1b8) ra 0 sz 0
pid 82340, process: sysctl
```

#### Processor 3:

```
cpu_idle+0x20 (80960000,51bbc,2038df,81bca300) ra 80204948 sz 24 idle_proc+0x130
(80960000,51bbc,2038df,81bca300) ra 80200e28 sz 56 fork_exit+0xc0
(80960000,51bbc,2038df,81bca300) ra 80897c28 sz 48
MipsNMIEException+0x34 (80960000,51bbc,2038df,81bca300) ra 0 sz 0
pid 82340, process: sysctl
```

#### Processor 4:

```
cpu_idle+0x20 (80960000,51bbc,2037df,81bca448) ra 80204948 sz 24 idle_proc+0x130
(80960000,51bbc,2037df,81bca448) ra 80200e28 sz 56 fork_exit+0xc0
(80960000,51bbc,2037df,81bca448) ra 80897c28 sz 48
MipsNMIEException+0x34 (80960000,51bbc,2037df,81bca448) ra 0 sz 0
pid 82340, process: sysctl
```

#### Processor 5:

```
restoreintr+0x14 (1,51bbc,203edf,81bca590) ra 806cdc3c sz 0
spinlock_exit+0x30 (1,51bbc,203edf,81bca590) ra 80204a34 sz 24 idle_proc+0x21c
(1,51bbc,203edf,81bca590) ra 80200e28 sz 56 fork_exit+0xc0
(1,51bbc,203edf,81bca590) ra 80897c28 sz 48
MipsNMIEException+0x34 (1,51bbc,203edf,81bca590) ra 0 sz 0
pid 82340, process: sysctl
```

#### Processor 6:

```
cpu_idle+0x20 (80960000,51bbc,205cdf,81bca6d8) ra 80204948 sz 24 idle_proc+0x130
(80960000,51bbc,205cdf,81bca6d8) ra 80200e28 sz 56 fork_exit+0xc0
(80960000,51bbc,205cdf,81bca6d8) ra 80897c28 sz 48
MipsNMIEException+0x34 (80960000,51bbc,205cdf,81bca6d8) ra 0 sz 0
pid 82340, process: sysctl
```

#### Processor 7:

```
lockmgr+0x5ac (c97e8484,c8dd9800,0,c8dd9800) ra 8c11c81c sz 48
sal_sem_take+0x134 (c97e8484,c8dd9800,0,c8dd9800) ra 8c351108 sz 56
_bcm_esw_linkscan_thread+0x45c (c97e8484,c8dd9800,0,c8dd9800) ra 8c11c8b4 sz 104
sal_thread_start_wrap+0x74 (c97e8484,c8dd9800,0,c8dd9800) ra 80200e28 sz 32
```

```

fork_exit+0xc0 (c97e8484,c8dd9800,0,c8dd9800) ra 80897c28 sz 48
MipsNMIException+0x34 (c97e8484,c8dd9800,0,c8dd9800) ra 0 sz 0
pid 82340, process: sysctl
-- End of stacktrace --

```

### show system core-dumps repository core (QFabric Systems)

```

user@switch> show system core-dumps repository core
Repository scope: shared
Repository head: /pbdata/export
Repository name: core
List of nodes for core repository: /pbdata/export/rdumps/

```

Node Group	Node Identifier	Num	Model	Usage
DG-0	BCF7208D-E44F-E011-802F-4171BAAC781D	0	qfx3100	0M
FM-0	73747cd8-0710-11e1-b6a4-00e081c5297e	0	fx-jvre	0M
DRE-0	77116f18-0710-11e1-a2a0-00e081c5297e	0	fx-jvre	0M
NW-NG-0	BBAK0394	0	qfx3500	0M
NW-NG-0	cd78871a-0710-11e1-878e-00e081c5297e	0	fx-jvre	0M
NW-NG-0	d0afda1e-0710-11e1-a1d0-00e081c5297e	0	fx-jvre	0M
FC-0	d31ab7a6-0710-11e1-ad1b-00e081c5297e	0	fx-jvre	0M
FC-1	d4d0f254-0710-11e1-90c3-00e081c5297e	0	fx-jvre	0M
IC-WS001	WS001	0	-	-
IC-WS001	WS001/YW3803	0	qfxc08-3008	0M
IC-WS001	WS001/YN5999	0	qfxc08-3008	0M
node-device1	BBAK0372	0	qfx3500	0M
node-device1	EE3093	0	qfx3500	0M

Total usage of core repository: 0M of 70000M (0.0%)

### show system core-dumps repository log (QFabric Systems)

```

user@switch> show system core-dumps repository log
Repository scope: shared
Repository head: /pbdata/export
Repository name: log
List of nodes for log repository: /pbdata/export/rlogs/

```

Node Group	Node Identifier	Num	Model	Usage
DG-0	BCF7208D-E44F-E011-802F-4171BAAC781D	0	qfx3100	0M
FM-0	73747cd8-0710-11e1-b6a4-00e081c5297e	1	fx-jvre	0M
DRE-0	77116f18-0710-11e1-a2a0-00e081c5297e	1	fx-jvre	0M
NW-NG-0	BBAK0394	1	qfx3500	0M
NW-NG-0	cd78871a-0710-11e1-878e-00e081c5297e	1	fx-jvre	0M
NW-NG-0	d0afda1e-0710-11e1-a1d0-00e081c5297e	3	fx-jvre	0M
FC-0	d31ab7a6-0710-11e1-ad1b-00e081c5297e	1	fx-jvre	0M
FC-1	d4d0f254-0710-11e1-90c3-00e081c5297e	1	fx-jvre	0M
IC-WS001	WS001	0	-	-
IC-WS001	WS001/YN5999	1	qfxc08-3008	0M
IC-WS001	WS001/YW3803	1	qfxc08-3008	0M
node-device1	BBAK0372	1	qfx3500	0M
node-device1	EE3093	1	qfx3500	0M

Total usage of log repository: 0M of 70000M (0.0%)

## show system memory

<b>Syntax</b>	show system memory
<b>Syntax (EX Series Switches)</b>	show system memory <all-members> <local> <member <i>member-id</i> >
<b>Syntax (MX Series Routers)</b>	show system memory <all-members> <local> <member <i>member-id</i> >
<b>Syntax (TX Matrix Routers)</b>	show system memory <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Routers)</b>	show system memory <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (QFX Series)</b>	show system memory <infrastructure <i>name</i> > <interconnect-device <i>name</i> > <node-group <i>name</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 12.1.
<b>Description</b>	Display system-wide memory distribution and usage including the Junos OS kernel, software processes, and memory disks. Use the <b>show system memory</b> command for troubleshooting with Juniper Networks Customer Support.
<b>Options</b>	<p><b>none</b>—Display the Junos OS system memory distribution and usage information.</p> <p><b>all-chassis</b>—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system memory distribution and usage information for all chassis.</p> <p><b>all-lcc</b>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system memory distribution and usage information for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display the system memory distribution and usage information for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p><b>all-members</b>—(EX4200 switches and MX Series routers only) (Optional) Display system memory distribution and usage information for all members of the Virtual Chassis configuration.</p> <p><b>infrastructure <i>name</i></b>—(QFabric switches only) (Optional) Display system memory distribution and usage information for the fabric control Routing Engine and fabric manager Routing Engine.</p>

**interconnect-device *name***—(QFabric switches only) (Optional) Display system memory distribution and usage information for the Interconnect device.

**lcc *number***—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system memory distribution and usage information for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system memory distribution and usage information for a specific T1600 router that is connected to the TX Matrix Plus router. Replace ***number*** with a value from **0** through **3**.

**local**—(EX4200 switches and MX Series routers only) (Optional) Display system memory distribution and usage information for the local Virtual Chassis member.

**member *member-id***—(EX4200 switches and MX Series routers only) (Optional) Display system memory distribution and usage information for the specified member of the Virtual Chassis configuration. For EX4200 switches, replace ***member-id*** with a value from **0** through **9**. For an MX Series Virtual Chassis, replace ***member-id*** with a value of **0** or **1**.

**node-group *name***—(QFabric switches only) (Optional) Display system memory distribution and usage information for the Node group.

**scc**—(TX Matrix routers only) (Optional) Display system memory distribution and usage information for the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Display system memory distribution and usage information for the TX Matrix Plus router (or switch-fabric chassis). Replace ***number*** with **0**.

**Additional Information** By default, when you issue the **show system memory** command on a TX Matrix or TX Matrix Plus master Routing Engine, the command is broadcast to all the T640 (in a routing matrix based on a TX Matrix router) or T1600 (in a routing matrix based on a TX Matrix Plus router) master Routing Engines connected to it. Likewise, if you issue the same command on the TX Matrix or TX Matrix Plus backup Routing Engine, the command is broadcast to all the T640 (in a routing matrix based on a TX Matrix router) or T1600 (in a routing matrix based on a TX Matrix Plus router) backup Routing Engines that are connected to it.

**Required Privilege Level** view

**List of Sample Output** [show system memory on page 969](#)  
[show system memory scc \(TX Matrix Routers\) on page 970](#)  
[show system memory sfc \(TX Matrix Plus Routers\) on page 971](#)  
[show system memory | display xml on page 972](#)  
[show system memory | display xml \(QFX Series\) on page 991](#)

**Output Fields** [Table 51 on page 969](#) lists the output fields for the **show system memory** command. Output fields are listed in the approximate order in which they appear.

Table 51: show system memory Output Fields

Field Name	Field Description
System memory usage distribution	<p>Amount of memory used by the system, represented in kilobytes and as a percentage of the total memory.</p> <ul style="list-style-type: none"> <li>Total memory—Actual memory available to the system at the time of system initialization.</li> <li>Reserved memory—Amount of total memory reserved for the system at the time of system initialization, but not managed by virtual memory sub-system.</li> <li>Wired memory—Amount of total memory wired in the system that never paged out.</li> <li>Active memory—Amount of total memory actively in use.</li> <li>Inactive—Amount of total memory in use, but not referenced recently.</li> <li>Cache—Amount of total memory almost available for allocation.</li> <li>Free—Amount of total memory available for allocation.</li> </ul>
Memory disk resident memory	Memory used by the memory disks, but not accounted for in the kernel map. For example, swap-based memory disk.
VM-Kbytes	Virtual memory used as per all virtual mappings in the kernel or process map and percentage thereof based on maximum addressable virtual memory as per any kernel, system, architecture, or resource limits.
Resident	Real memory used as per actual resident pages of all mappings in the kernel or process map and percentage thereof based on the total real memory available in the system.
Map-name	Name of the map.
PID	Process ID.
Process-name	Name of the process.

## Sample Output

### show system memory

```

user@host> show system memory
System memory usage distribution:
  Total memory: 1035552 Kbytes (100%)
  Reserved memory: 18684 Kbytes ( 1%)
  Wired memory: 526072 Kbytes ( 50%)
  Active memory: 154792 Kbytes ( 14%)
  Inactive memory: 64664 Kbytes ( 6%)
  Cache memory: 69840 Kbytes ( 6%)
  Free memory: 200688 Kbytes ( 19%)
Memory disk resident memory: 19016 Kbytes
VM-Kbytes( % ) Resident( % ) Map-name
570580(54.36) 92704(08.95) kernel
Pid VM-Kbytes( % ) Resident( % ) Process-name
1451 4756(00.15) 1000(00.09) /sbin/pmap

```

```

1411      727012(23.14)    18008(01.73) mgd: (mgd) (root)/dev/ttyd0
---(more)---

```

### show system memory scc (TX Matrix Routers)

```

user@host> show system memory scc
scc-re0:
-----
System memory usage distribution:
  Total memory: 3657172 Kbytes (100%)
  Reserved memory: 64848 Kbytes ( 1%)
  Wired memory: 95432 Kbytes ( 2%)
  Active memory: 225940 Kbytes ( 6%)
  Inactive memory: 70664 Kbytes ( 1%)
  Cache memory: 833104 Kbytes ( 22%)
  Free memory: 2366344 Kbytes ( 64%)
Memory disk resident memory: 72488 Kbytes
VM-Kbytes( % ) Resident( % ) Map-name
980928(93.45) 180732(00.00) kernel
Pid      VM-Kbytes( % ) Resident( % ) Process-name
29709      4776(00.15)    1132(00.00) /sbin/pmap
29707      727220(23.14)   20552(00.00) mgd: (mgd) (root)
29520      727248(23.14)   20832(00.00) mgd: (mgd) (regress)/dev/ttyd0
29519      18148(00.57)    12616(00.00) cli
29509      3824(00.12)     2552(00.00) -csh
29498      2104(00.06)     1684(00.00) login [pam]
29497      1960(00.06)     1364(00.00) telnetd
1546      772688(24.59)    7412(00.00) /usr/sbin/mib2d
1525      729752(23.22)    3688(00.00) /usr/sbin/smid
1524      721116(22.95)   2404(00.00) /usr/sbin/relayd
1522      723448(23.02)    2336(00.00) /usr/sbin/stats-agentd
1521      721268(22.95)    2596(00.00) /usr/sbin/irsd
1520      733124(23.33)    6816(00.00) /usr/sbin/dfwd
1519      773156(24.61)    6176(00.00) /usr/sbin/pfed
1519      773156(24.61)    6176(00.00) /usr/sbin/pfed
1518      783036(24.92)   23364(00.00) /usr/sbin/snmpd
1517      728292(23.18)    5100(00.00) /sbin/dcd
1516      770780(24.53)    4916(00.00) /usr/sbin/smihelperd
1515      721136(22.95)    2460(00.00) /usr/sbin/mspd
1514      763520(24.30)    3932(00.00) /usr/sbin/pkid
1513      722756(23.00)    3044(00.00) /usr/sbin/sendd
1512      721232(22.95)    2308(00.00) /usr/sbin/mplsoamd
1511      725744(23.10)    4092(00.00) /usr/sbin/cfmd
1510      721412(22.96)    2732(00.00) /usr/sbin/lfmd
1509      721268(22.95)    2632(00.00) /usr/sbin/oamd
1508      768312(24.45)    5708(00.00) /usr/sbin/l2cpd
1507      775556(24.68)    8400(00.00) /usr/sbin/dfcd
1506      721508(22.96)    2800(00.00) /usr/sbin/pppd
1505      723452(23.02)    2916(00.00) /usr/sbin/rdd
1504      721196(22.95)    2544(00.00) /usr/sbin/fsad
1503      3288(00.10)     1532(00.00) /usr/sbin/rtspd
1502      721336(22.96)    2680(00.00) /usr/sbin/lmpd
1501      766528(24.39)    5128(00.00) /usr/sbin/cosd
1500      763380(24.29)    3988(00.00) /usr/sbin/rmopd
1499      762484(24.27)    3352(00.00) /usr/sbin/apspd
1498      767244(24.42)    4924(00.00) /usr/sbin/l2ald
1497      781340(24.87)   10268(00.00) /usr/sbin/rpd
1496      0(00.00)          0(00.00) peer proxy
1495      2348(00.07)     2240(00.00) /usr/sbin/xntpd
1484      0(00.00)          0(00.00) peer proxy

```

```

1466      1772(00.05)    1156(00.00) /usr/libexec/getty
---(more)---

```

### show system memory sfc (TX Matrix Plus Routers)

```

user@host> show system-memory sfc 0
sfc0-re0:

```

```

-----
System memory usage distribution:
  Total memory: 3394000 Kbytes (100%)
  Reserved memory: 60216 Kbytes ( 1%)
  Wired memory: 85160 Kbytes ( 2%)
  Active memory: 264484 Kbytes ( 7%)
  Inactive memory: 72644 Kbytes ( 2%)
  Cache memory: 1203868 Kbytes ( 35%)
  Free memory: 1706752 Kbytes ( 50%)
Memory disk resident memory: 72564 Kbytes
VM-Kbytes( % ) Resident( % ) Map-name
980864(93.45) 171684(00.00) kernel
Pid  VM-Kbytes( % ) Resident( % ) Process-name
16415  4808(00.15)    1164(00.00) /sbin/pmap
16413  727308(23.15)  20736(00.00) mgd: (mgd) (root)
16358  727336(23.15)  21036(00.00) mgd: (mgd) (regress)/dev/ttyt1
16357  18320(00.58)    12752(00.00) cli
16356  3832(00.12)     2592(00.00) -csh
16331  2104(00.06)     1684(00.00) login [pam]
16330  1960(00.06)     1388(00.00) telnetd
15396  1764(00.05)     1144(00.00) /usr/libexec/getty
13624  0(00.00)         0(00.00) peer proxy
8719   730052(23.23)  4120(00.00) /usr/sbin/bdbrepd
8621   0(00.00)        0(00.00) jsr_kkcm
7786   1596(00.05)     840(00.00) tail
7677   3988(00.12)     2668(00.00) -csh
7667   2116(00.06)     1612(00.00) login [pam]
7666   1956(00.06)     1368(00.00) telnetd
7455   736588(23.44)  30892(00.00) mgd: (mgd) (root)/dev/ttyd0
7454   18308(00.58)  12344(00.00) cli
7410   3936(00.12)     2688(00.00) -csh
1625   0(00.00)        0(00.00) peer proxy
1612   0(00.00)        0(00.00) peer proxy
1560   729840(23.23)  3804(00.00) /usr/sbin/smid
1559   723484(23.02)  2304(00.00) /usr/sbin/stats-agentd
1558   721144(22.95)  2352(00.00) /usr/sbin/relayd
1557   721320(22.96)  2716(00.00) /usr/sbin/irsd
1556   731768(23.29)  4896(00.00) /usr/sbin/smihelperd
1555   721904(22.97)  3228(00.00) /usr/sbin/mspd
1554   724504(23.06)  3864(00.00) /usr/sbin/pkid
1552   722788(23.00)  3044(00.00) /usr/sbin/sendd
1551   721256(22.95)  2244(00.00) /usr/sbin/mpi1soamd
1550   725880(23.10)  4288(00.00) /usr/sbin/cfmd
1549   721532(22.96)  2728(00.00) /usr/sbin/lfmd
1548   721300(22.95)  2500(00.00) /usr/sbin/oamd
1547   729232(23.21)  5648(00.00) /usr/sbin/l2cpd
1546   736544(23.44)  8324(00.00) /usr/sbin/dfcd
1545   721552(22.96)  2820(00.00) /usr/sbin/pppd
1544   723500(23.02)  2948(00.00) /usr/sbin/rdd
1543   721260(22.95)  2688(00.00) /usr/sbin/fsad
1542   3312(00.10)    1520(00.00) /usr/sbin/rtspd
1536   721460(22.96)  2776(00.00) /usr/sbin/lmpd
1535   727792(23.16)  5576(00.00) /usr/sbin/cosd

```

```

1534      724468(23.06)      4020(00.00) /usr/sbin/rmopd
---(more)---

```

### show system memory | display xml

```

user@host> show system-memory | display xml
<rpc-reply xmlns:junos="http://xml.juniper.net/junos/12.1D0/junos">
  <system-memory-information>
    <system-memory-summary-information>
      <system-memory-total>3657172</system-memory-total>
      <system-memory-total-percent>100%</system-memory-total-percent>
      <system-memory-reserved> 64848</system-memory-reserved>
      <system-memory-reserved-percent> 1%</system-memory-reserved-percent>

      <system-memory-wired> 481988</system-memory-wired>
      <system-memory-wired-percent> 13%</system-memory-wired-percent>
      <system-memory-active>1329648</system-memory-active>
      <system-memory-active-percent> 36%</system-memory-active-percent>
      <system-memory-inactive> 444196</system-memory-inactive>
      <system-memory-inactive-percent> 12%</system-memory-inactive-percent>

      <system-memory-cache> 709908</system-memory-cache>
      <system-memory-cache-percent> 19%</system-memory-cache-percent>
      <system-memory-free> 625604</system-memory-free>
      <system-memory-free-percent> 17%</system-memory-free-percent>
    </system-memory-summary-information>
    <memory-disk-resident-information>
      <resident-memory> 104028</resident-memory>
    </memory-disk-resident-information>
    <pmap-terse-information
xmlns="http://xml.juniper.net/junos/12.1D0/junos-pmap">
      <pmap-terse-summary junos:style="pmap-map-terse-summary">
        <map-name>kernel</map-name>
        <size>985708</size>
        <size-percent>93.91</size-percent>
        <resident>565600</resident>
        <resident-percent>00.00</resident-percent>
      </pmap-terse-summary>
    </pmap-terse-information>
    <pmap-terse-information
xmlns="http://xml.juniper.net/junos/12.1D0/junos-pmap">
      <pmap-terse-summary junos:style="pmap-process-terse-summary">
        <pid>16688</pid>
        <process-name>/sbin/pmap</process-name>
        <size>4796</size>
        <size-percent>00.15</size-percent>
        <resident>1152</resident>
        <resident-percent>00.00</resident-percent>
      </pmap-terse-summary>
      <pmap-terse-summary junos:style="pmap-process-terse-summary">
        <pid>16636</pid>
        <process-name>mgd: (mgd) (regress)/dev/tty0</process-name>
        <size>727396</size>
        <size-percent>23.15</size-percent>
        <resident>21080</resident>
        <resident-percent>00.00</resident-percent>
      </pmap-terse-summary>
      <pmap-terse-summary junos:style="pmap-process-terse-summary">
        <pid>16635</pid>
        <process-name>cli</process-name>
        <size>18308</size>

```



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        <size-percent>00.58</size-percent>
        <resident>12888</resident>
        <resident-percent>00.00</resident-percent>
    </pmap-terse-summary>
    <pmap-terse-summary junos:style="pmap-process-terse-summary">
        <pid>16621</pid>
        <process-name>-su</process-name>
        <size>4012</size>
        <size-percent>00.12</size-percent>
        <resident>2836</resident>
        <resident-percent>00.00</resident-percent>
    </pmap-terse-summary>
    <pmap-terse-summary junos:style="pmap-process-terse-summary">
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        <process-name>su</process-name>
        <size>1932</size>
        <size-percent>00.06</size-percent>
        <resident>1328</resident>
        <resident-percent>00.00</resident-percent>
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    <pmap-terse-summary junos:style="pmap-process-terse-summary">
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        <process-name>-csh</process-name>
        <size>3920</size>
        <size-percent>00.12</size-percent>
        <resident>2688</resident>
        <resident-percent>00.00</resident-percent>
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    <pmap-terse-summary junos:style="pmap-process-terse-summary">
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        <process-name>login [pam]</process-name>
        <size>2104</size>
        <size-percent>00.06</size-percent>
        <resident>1684</resident>
        <resident-percent>00.00</resident-percent>
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    <pmap-terse-summary junos:style="pmap-process-terse-summary">
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        <process-name>telnetd</process-name>
        <size>1960</size>
        <size-percent>00.06</size-percent>
        <resident>1388</resident>
        <resident-percent>00.00</resident-percent>
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        <process-name>/usr/sbin/rpd</process-name>
        <size>1086396</size>
        <size-percent>34.58</size-percent>
        <resident>337424</resident>
        <resident-percent>00.00</resident-percent>
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        <process-name>peer proxy</process-name>
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        <size-percent>00.00</size-percent>
        <resident>0</resident>
        <resident-percent>00.00</resident-percent>
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    <pmap-terse-summary junos:style="pmap-process-terse-summary">

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<size-percent>00.00</size-percent>
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<pmap-terse-summary junos:style="pmap-process-terse-summary">
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  <process-name>peer proxy</process-name>
  <size>0</size>
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  <resident>0</resident>
  <resident-percent>00.00</resident-percent>
</pmap-terse-summary>
<pmap-terse-summary junos:style="pmap-process-terse-summary">
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  <resident>0</resident>
  <resident-percent>00.00</resident-percent>
</pmap-terse-summary>
<pmap-terse-summary junos:style="pmap-process-terse-summary">
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  <size>0</size>
  <size-percent>00.00</size-percent>
  <resident>0</resident>
  <resident-percent>00.00</resident-percent>
</pmap-terse-summary>
<pmap-terse-summary junos:style="pmap-process-terse-summary">
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  <process-name>/usr/sbin/dfwd</process-name>
  <size>929844</size>
  <size-percent>29.59</size-percent>
  <resident>183884</resident>
  <resident-percent>00.00</resident-percent>
</pmap-terse-summary>
<pmap-terse-summary junos:style="pmap-process-terse-summary">
  <pid>1542</pid>
  <process-name>/usr/sbin/irsd</process-name>
  <size>721364</size>
  <size-percent>22.96</size-percent>
  <resident>2760</resident>
  <resident-percent>00.00</resident-percent>
</pmap-terse-summary>
<pmap-terse-summary junos:style="pmap-process-terse-summary">
  <pid>1541</pid>
  <process-name>/usr/sbin/smid</process-name>
  <size>742292</size>
  <size-percent>23.62</size-percent>
  <resident>5572</resident>
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        <process-name>/usr/sbin/relayd</process-name>
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        <resident>2484</resident>
        <resident-percent>00.00</resident-percent>
    </pmap-terse-summary>
    <pmap-terse-summary junos:style="pmap-process-terse-summary">
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        <process-name>/usr/sbin/stats-agentd</process-name>
        <size>723484</size>
        <size-percent>23.02</size-percent>
        <resident>2316</resident>
        <resident-percent>00.00</resident-percent>
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        <process-name>/usr/sbin/mib2d</process-name>
        <size>972596</size>
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        <resident>185108</resident>
        <resident-percent>00.00</resident-percent>
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    <pmap-terse-summary junos:style="pmap-process-terse-summary">
        <pid>1537</pid>
        <process-name>/usr/sbin/snmpd</process-name>
        <size>740164</size>
        <size-percent>23.55</size-percent>
        <resident>19620</resident>
        <resident-percent>00.00</resident-percent>
    </pmap-terse-summary>
    <pmap-terse-summary junos:style="pmap-process-terse-summary">
        <pid>1536</pid>
        <process-name>/sbin/dcd</process-name>
        <size>901156</size>
        <size-percent>28.68</size-percent>
        <resident>158284</resident>
        <resident-percent>00.00</resident-percent>
    </pmap-terse-summary>
    <pmap-terse-summary junos:style="pmap-process-terse-summary">
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        <process-name>/usr/sbin/mcsnoopd</process-name>
        <size>753612</size>
        <size-percent>23.98</size-percent>
        <resident>33364</resident>
        <resident-percent>00.00</resident-percent>
    </pmap-terse-summary>
    <pmap-terse-summary junos:style="pmap-process-terse-summary">
        <pid>1534</pid>
        <process-name>/usr/sbin/smihelperd</process-name>
        <size>744208</size>
        <size-percent>23.68</size-percent>
        <resident>4864</resident>
        <resident-percent>00.00</resident-percent>
    </pmap-terse-summary>
    <pmap-terse-summary junos:style="pmap-process-terse-summary">
        <pid>1533</pid>
        <process-name>/usr/sbin/mspd</process-name>

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<size>721244</size>
<size-percent>22.95</size-percent>
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<resident-percent>00.00</resident-percent>
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  <process-name>/usr/sbin/pkid</process-name>
  <size>724580</size>
  <size-percent>23.06</size-percent>
  <resident>4004</resident>
  <resident-percent>00.00</resident-percent>
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<pmap-terse-summary junos:style="pmap-process-terse-summary">
  <pid>1531</pid>
  <process-name>/usr/sbin/jddosd</process-name>
  <size>727212</size>
  <size-percent>23.14</size-percent>
  <resident>5472</resident>
  <resident-percent>00.00</resident-percent>
</pmap-terse-summary>
<pmap-terse-summary junos:style="pmap-process-terse-summary">
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</pmap-terse-summary>
<pmap-terse-summary junos:style="pmap-process-terse-summary">
  <pid>1525</pid>
  <process-name>/usr/sbin/iccpd</process-name>
  <size>721036</size>
  <size-percent>22.95</size-percent>
  <resident>2256</resident>
  <resident-percent>00.00</resident-percent>
</pmap-terse-summary>
<pmap-terse-summary junos:style="pmap-process-terse-summary">
  <pid>1524</pid>
  <process-name>/usr/sbin/sendd</process-name>
  <size>722864</size>
  <size-percent>23.00</size-percent>
  <resident>3124</resident>
  <resident-percent>00.00</resident-percent>
</pmap-terse-summary>
<pmap-terse-summary junos:style="pmap-process-terse-summary">
  <pid>1523</pid>
  <process-name>/usr/sbin/mpiisoamd</process-name>
  <size>721344</size>
  <size-percent>22.96</size-percent>
  <resident>2396</resident>
  <resident-percent>00.00</resident-percent>
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<pmap-terse-summary junos:style="pmap-process-terse-summary">
  <pid>1522</pid>
  <process-name>/usr/sbin/cfmd</process-name>
  <size>769612</size>
  <size-percent>24.49</size-percent>
  <resident>30644</resident>
  <resident-percent>00.00</resident-percent>
</pmap-terse-summary>
<pmap-terse-summary junos:style="pmap-process-terse-summary">
  <pid>1521</pid>
  <process-name>/usr/sbin/lfmd</process-name>
  <size>721672</size>
  <size-percent>22.97</size-percent>
  <resident>3036</resident>
  <resident-percent>00.00</resident-percent>
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  <process-name>/usr/sbin/oamd</process-name>
  <size>721376</size>
  <size-percent>22.96</size-percent>
  <resident>2740</resident>
  <resident-percent>00.00</resident-percent>
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<pmap-terse-summary junos:style="pmap-process-terse-summary">
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  <process-name>/usr/sbin/l2cpd</process-name>
  <size>739028</size>
  <size-percent>23.52</size-percent>
  <resident>15804</resident>
  <resident-percent>00.00</resident-percent>
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<pmap-terse-summary junos:style="pmap-process-terse-summary">
  <pid>1518</pid>
  <process-name>/usr/sbin/dfcd</process-name>
  <size>748984</size>
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  <resident>8300</resident>
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  <process-name>/usr/sbin/pppd</process-name>
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  <size-percent>22.96</size-percent>
  <resident>2908</resident>
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  <process-name>/usr/sbin/rdd</process-name>
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  <resident>3080</resident>
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<pmap-terse-summary junos:style="pmap-process-terse-summary">
  <pid>1515</pid>
  <process-name>/usr/sbin/fsad</process-name>
  <size>721304</size>
  <size-percent>22.95</size-percent>

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<resident-percent>00.00</resident-percent>
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<pmap-terse-summary junos:style="pmap-process-terse-summary">
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  <process-name>/usr/sbin/rtspd</process-name>
  <size>3312</size>
  <size-percent>00.10</size-percent>
  <resident>1520</resident>
  <resident-percent>00.00</resident-percent>
</pmap-terse-summary>
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  <pid>1513</pid>
  <process-name>/usr/sbin/lmpd</process-name>
  <size>721540</size>
  <size-percent>22.96</size-percent>
  <resident>2936</resident>
  <resident-percent>00.00</resident-percent>
</pmap-terse-summary>
<pmap-terse-summary junos:style="pmap-process-terse-summary">
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  <process-name>/usr/sbin/cosd</process-name>
  <size>848668</size>
  <size-percent>27.01</size-percent>
  <resident>107800</resident>
  <resident-percent>00.00</resident-percent>
</pmap-terse-summary>
<pmap-terse-summary junos:style="pmap-process-terse-summary">
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  <process-name>/usr/sbin/rmopd</process-name>
  <size>737332</size>
  <size-percent>23.46</size-percent>
  <resident>17012</resident>
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</pmap-terse-summary>
<pmap-terse-summary junos:style="pmap-process-terse-summary">
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  <size>745864</size>
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  <size>723540</size>
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<pmap-terse-summary junos:style="pmap-process-terse-summary">
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  <size>770032</size>
  <size-percent>24.51</size-percent>
  <resident>48108</resident>
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<pmap-terse-summary junos:style="pmap-process-terse-summary">
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    <process-name>/usr/sbin/xntpd</process-name>
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    <size-percent>00.07</size-percent>
    <resident>2356</resident>
    <resident-percent>00.00</resident-percent>
  </pmap-terse-summary>
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    <pid>1498</pid>
    <process-name>/usr/sbin/pfed</process-name>
    <size>779232</size>
    <size-percent>24.80</size-percent>
    <resident>9688</resident>
    <resident-percent>00.00</resident-percent>
  </pmap-terse-summary>
  <pmap-terse-summary junos:style="pmap-process-terse-summary">
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    <size>779232</size>
    <size-percent>24.80</size-percent>
    <resident>9688</resident>
    <resident-percent>00.00</resident-percent>
  </pmap-terse-summary>
  <pmap-terse-summary junos:style="pmap-process-terse-summary">
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    <size>723156</size>
    <size-percent>23.01</size-percent>
    <resident>2924</resident>
    <resident-percent>00.00</resident-percent>
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  <pmap-terse-summary junos:style="pmap-process-terse-summary">
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    <process-name>/usr/libexec/getty</process-name>
    <size>1764</size>
    <size-percent>00.05</size-percent>
    <resident>1132</resident>
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  <pmap-terse-summary junos:style="pmap-process-terse-summary">
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    <process-name>/usr/libexec/getty</process-name>
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    <resident>1132</resident>
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    <resident-percent>00.00</resident-percent>
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    <resident>6088</resident>
    <resident-percent>00.00</resident-percent>
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  <size>726068</size>
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  <resident>4580</resident>
  <resident-percent>00.00</resident-percent>
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  <size>843652</size>
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  <resident>56936</resident>
  <resident-percent>00.00</resident-percent>
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  <resident>12708</resident>
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</pmap-terse-summary>
<pmap-terse-summary junos:style="pmap-process-terse-summary">
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  <process-name>/usr/sbin/tnp.sntpd</process-name>
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  <process-name>/usr/sbin/inetd</process-name>
  <size>3084</size>
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        <resident>1440</resident>
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        <resident>20300</resident>
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        <resident>2272</resident>
        <resident-percent>00.00</resident-percent>
    </pmap-terse-summary>
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        <process-name>/usr/sbin/alarmd</process-name>
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        <resident>17296</resident>
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        <resident>17296</resident>
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        <process-name>/usr/sbin/tnetd</process-name>
        <size>1716</size>
        <size-percent>00.05</size-percent>
        <resident>1152</resident>
        <resident-percent>00.00</resident-percent>
    </pmap-terse-summary>
    <pmap-terse-summary junos:style="pmap-process-terse-summary">
        <pid>1451</pid>
        <process-name>/usr/libexec/bslockd</process-name>
        <size>1772</size>
        <size-percent>00.05</size-percent>
        <resident>1200</resident>
        <resident-percent>00.00</resident-percent>
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    <pmap-terse-summary junos:style="pmap-process-terse-summary">

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<process-name>/sbin/watchdog</process-name>
<size>1560</size>
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<resident>744</resident>
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  <process-name>/usr/sbin/cron</process-name>
  <size>1684</size>
  <size-percent>00.05</size-percent>
  <resident>1224</resident>
  <resident-percent>00.00</resident-percent>
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  <process-name>kresrsv</process-name>
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  <size-percent>00.00</size-percent>
  <resident>0</resident>
  <resident-percent>00.00</resident-percent>
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  <process-name>bcmLINK.0</process-name>
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  <size-percent>00.00</size-percent>
  <resident>0</resident>
  <resident-percent>00.00</resident-percent>
</pmap-terse-summary>
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  <process-name>bcmXGS3AsyncTX</process-name>
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  <resident-percent>00.00</resident-percent>
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  <size-percent>22.96</size-percent>
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    <process-name>pagezero</process-name>
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    <process-name>swi1: ipfwd</process-name>
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    <resident>0</resident>
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  </pmap-terse-summary>
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    <process-name>swi4: ip6mismatch+</process-name>
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    <process-name>swi3: ip6opt ipopt</process-name>
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  <process-name>swi9: +</process-name>
  <size>0</size>
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        <size-percent>00.00</size-percent>
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        <process-name>g_down</process-name>
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  <resident-percent>00.00</resident-percent>
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  <process-name>swi6: vm</process-name>
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</pmap-terse-summary>
<pmap-terse-summary junos:style="pmap-process-terse-summary">
  <pid>1</pid>
  <process-name>/packages/mnt/jbase/sbin/init</process-name>
  <size>1420</size>
  <size-percent>00.04</size-percent>
  <resident>796</resident>
  <resident-percent>00.00</resident-percent>
</pmap-terse-summary>
<pmap-terse-summary junos:style="pmap-process-terse-summary">
  <pid>10</pid>
  <process-name>ktrace</process-name>
  <size>0</size>
  <size-percent>00.00</size-percent>
  <resident>0</resident>
```

```

        <resident-percent>00.00</resident-percent>
    </pmap-terse-summary>
    <pmap-terse-summary junos:style="pmap-process-terse-summary">
        <pid>0</pid>
        <process-name>swapper</process-name>
        <size>0</size>
        <size-percent>00.00</size-percent>
        <resident>0</resident>
        <resident-percent>00.00</resident-percent>
    </pmap-terse-summary>
</pmap-terse-information>
</system-memory-information>
<cli>
    <banner></banner>
</cli>
</rpc-reply>

```

### show system memory | display xml (QFX Series)

```

user@switch> show system-memory | display xml
<rpc-reply xmlns:junos="http://xml.juniper.net/junos/12.1I0/junos">
  <system-memory-information>
    <system-memory-summary-information>
      <system-memory-total>3391488</system-memory-total>
      <system-memory-total-percent>100%</system-memory-total-percent>
      <system-memory-reserved>1619892</system-memory-reserved>
      <system-memory-reserved-percent> 47%</system-memory-reserved-percent>

      <system-memory-wired>1592936</system-memory-wired>
      <system-memory-wired-percent> 46%</system-memory-wired-percent>
      <system-memory-active> 177736</system-memory-active>
      <system-memory-active-percent> 5%</system-memory-active-percent>
      <system-memory-inactive> 60480</system-memory-inactive>
      <system-memory-inactive-percent> 1%</system-memory-inactive-percent>

      <system-memory-cache> 39240</system-memory-cache>
      <system-memory-cache-percent> 1%</system-memory-cache-percent>
      <system-memory-free>1244628</system-memory-free>
      <system-memory-free-percent> 36%</system-memory-free-percent>
    </system-memory-summary-information>
    <memory-disk-resident-information>
      <resident-memory> 16424</resident-memory>
    </memory-disk-resident-information>
    <output>
      pmap: unable to load pmap_helper module: No such file or directory
    </output>
    <output>
      pmap: unable to load pmap_helper module: No such file or directory
    </output>
  </system-memory-information>
</cli>
  <banner></banner>
</cli>
</rpc-reply>

```

## show system processes

---

<b>Syntax</b>	<pre>show system processes &lt;brief   detail   extensive   summary&gt; &lt;health (pid <i>process-identifier</i>   process-name <i>process-name</i>)&gt; &lt;providers&gt; &lt;resource-limits (brief   detail) <i>process-name</i>&gt; &lt;wide&gt;</pre>
<b>Syntax (EX Series Switches)</b>	<pre>show system processes &lt;all-members&gt; &lt;brief   detail   extensive   summary&gt; &lt;health (pid <i>process-identifier</i>   process-name <i>process-name</i>)&gt; &lt;local&gt; &lt;member <i>member-id</i>&gt; &lt;providers&gt; &lt;resource-limits (brief   detail) <i>process-name</i>&gt; &lt;wide&gt;</pre>
<b>Syntax (MX Series Routers)</b>	<pre>show system processes &lt;all-members&gt; &lt;brief   detail   extensive   summary&gt; &lt;health (pid <i>process-identifier</i>   process-name <i>process-name</i>)&gt; &lt;local&gt; &lt;member <i>member-id</i>&gt; &lt;providers&gt; &lt;resource-limits (brief   detail) <i>process-name</i>&gt; &lt;wide&gt;</pre>
<b>Syntax (QFX Series)</b>	<pre>show system processes &lt;brief   detail   extensive   summary &gt; &lt;health (pid <i>process-identifier</i>   process-name <i>process-name</i>)&gt; &lt;interconnect-device <i>name</i>&gt; &lt;node-group <i>name</i>&gt; &lt;providers&gt; &lt;resource-limits&gt; &lt;wide&gt;</pre>
<b>Syntax (TX Matrix Routers)</b>	<pre>show system processes &lt;brief   detail   extensive   summary&gt; &lt;all-chassis  all-lcc   lcc <i>number</i>   scc&gt; &lt;wide&gt;</pre>
<b>Syntax (TX Matrix Plus Router)</b>	<pre>show system processes &lt;brief   detail   extensive   summary&gt; &lt;all-chassis  all-lcc   lcc <i>number</i>   sfc <i>number</i>&gt; &lt;wide&gt;</pre>
<b>Release Information</b>	<p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Option <b>sfc</b> 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>

<b>Description</b>	Display information about software processes that are running on the router or switch and that have controlling terminals.
<b>Options</b>	<p><b>none</b>—Display standard information about system processes.</p> <p><b>brief   detail   extensive   summary</b>—(Optional) Display the specified level of detail.</p> <p><b>adaptive-services</b>—(Optional) Display the configuration management process that manages the configuration for stateful firewall, Network Address Translation (NAT), intrusion detection services (IDS), and IP Security (IPsec) services on the Adaptive Services PIC.</p> <p><b>alarm-control</b>—(Optional) Display the process to configure the system alarm.</p> <p><b>all-chassis</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display standard system process information about all the T640 routers (in a routing matrix based on the TX Matrix router) or all the T1600 or T4000 routers (in a routing matrix based on the TX Matrix Plus router) in the chassis.</p> <p><b>all-lcc</b>—(TX Matrix routers and TX Matrix Plus router only) (Optional) Display standard system process information for all T640 routers (or line-card chassis) connected to the TX Matrix router. Display standard system process information for all connected T1600 or T4000 LCCs.</p> <p><b>all-members</b>—(EX4200 switches and MX Series routers only) (Optional) Display standard system process information for all members of the Virtual Chassis configuration.</p> <p><b>ancpd-service</b>—Display the Access Node Control Protocol (ANCP) process, which works with a special Internet Group Management Protocol (IGMP) session to collect outgoing interface mapping events in a scalable manner.</p> <p><b>application-identification</b>—Display the process that identifies an application using intrusion detection and prevention (IDP) to allow or deny traffic based on applications running on standard or nonstandard ports.</p> <p><b>audit-process</b>—(Optional) Display the RADIUS accounting process.</p> <p><b>auto-configuration</b>—Display the Interface Auto-Configuration process.</p> <p><b>bootp</b>—Display the process that enables a router, switch, or interface to act as a Dynamic Host Configuration Protocol (DHCP) or bootstrap protocol (BOOTP) relay agent. DHCP relaying is disabled.</p> <p><b>captive-portal-content-delivery</b>—Display the HTTP redirect service by specifying the location to which a subscriber's initial Web browser session is redirected, enabling initial provisioning and service selection for the subscriber.</p> <p><b>ce-l2tp-service</b>—(Optional) (M10, M10i, M7i, and MX Series routers only) Display the Universal Edge Layer 2 Tunneling Protocol (L2TP) process, which establishes L2TP tunnels and Point-to-Point Protocol (PPP) sessions through L2TP tunnels.</p>

- cfm**—Display Ethernet Operations, Administration, and Maintenance (OAM) connectivity fault management (CFM) process, which can be used to monitor the physical link between two switches.
- chassis-control**—(Optional) Display the chassis management process.
- class-of-service**—(Optional) Display the class-of-service (CoS) process, which controls the router's or switch's CoS configuration.
- clksyncd-service**—Display the external clock synchronization process, which uses synchronous Ethernet (SyncE).
- craft-control**—Display the process for the I/O of the craft interface.
- database-replication**—(EX Series switches and MX Series routers only) (Optional) Display the database replication process.
- dapath-trace-service**—Display the packet path tracing process.
- dhcp-service**—(EX Series switches and MX Series routers only) (Optional) Display the Dynamic Host Configuration Protocol process, which enables a DHCP server to allocate network IP addresses and deliver configuration settings to client hosts without user intervention.
- diameter-service**—(Optional) Display the diameter process.
- disk-monitoring**—(Optional) Display the disk monitoring process, which checks the health of the hard disk drive on the Routing Engine.
- dynamic-flow-capture**—(Optional) Display the dynamic flow capture (DFC) process, which controls DFC configurations on Monitoring Services III PICs.
- ecc-error-logging**—(Optional) Display the error checking and correction (ECC) process, which logs ECC parity errors in memory on the Routing Engine.
- ethernet-connectivity-fault-management**— Display the process that provides IEEE 802.1ag OAM connectivity fault management (CFM) database information for CFM maintenance association end points (MEPs) in a CFM session.
- ethernet-link-fault-management**—(EX Series switches and MX Series routers only) (Optional) Display the process that provides the OAM link fault management (LFM) information for Ethernet interfaces.
- event-processing**—(Optional) Display the event process (eventd).
- firewall**—(Optional) Display the firewall management process, which manages the firewall configuration and enables accepting or rejecting packets that are transiting an interface on a router or switch.
- general-authentication-service**—(EX Series switches and MX Series routers only) (Optional) Display the general authentication process.

**health** (*pid* *process-identifier* | *process-name* *process-name*)—(Optional) Display process health information, either by process id (PID) or by process name.

**iccp-service**—Display the Inter-Chassis Communication Protocol (ICCP) process.

**idp-policy**—Display the intrusion detection and prevention (IDP) protocol process.

**ilmi**—Display the Integrated Local Management Interface (ILMI) protocol process, which provides bidirectional exchange of management information between two ATM interfaces across a physical connection.

**inet-process**—Display the IP multicast family process.

**init**—Display the process that initializes the USB modem.

**interface-control**—(Optional) Display the interface process, which controls the router's or switch's physical interface devices and logical interfaces.

**kernel-replication**—(Optional) Display the kernel replication process, which replicates the state of the backup Routing Engine when graceful Routing Engine switchover (GRES) is configured.

**l2-learning**—(Optional) Display the Layer 2 address flooding and learning process.

**l2cpd-service**—Display the Layer 2 Control Protocol process, which enables features such as Layer 2 protocol tunneling and nonstop bridging.

**lACP**—(Optional) Display the Link Aggregation Control Protocol (LACP) process. LACP provides a standardized means for exchanging information between partner systems on a link to allow their link aggregation control instances to reach agreement on the identity of the LAG to which the link belongs, and then to move the link to that LAG, and to enable the transmission and reception processes for the link to function in an orderly manner.

**lcc number**—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display standard system process information for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display standard system process information for a specific router that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(EX4200 switches and MX Series routers only) (Optional) Display standard system process information for the local Virtual Chassis member.

**local-policy-decision-function**—Display the process for the Local Policy Decision Function, which regulates collection of statistics related to applications and application groups and tracking of information about dynamic subscribers and static interfaces.

**logical-system-mux**—Display the logical router multiplexer process (lrmuxd), which manages the multiple instances of the routing protocols process (rpd) on a machine running logical routers.

**mac-validation**—Display the MAC validation process, which configures MAC address validation for subscriber interfaces created on demux interfaces in dynamic profiles on MX Series routers.

**member *member-id***—(EX4200 switches and MX Series routers only) (Optional) Display standard system process information for the specified member of the Virtual Chassis configuration. For EX4200 switches, replace ***member-id*** with a value from 0 through 9. For an MX Series Virtual Chassis, replace ***member-id*** with a value of 0 or 1.

**mib-process**—(Optional) Display the MIB II process, which provides the router's MIB II agent.

**mobile-ip**—(Optional) Display the Mobile IP process, which configures Junos OS Mobile IP features.

**mountd-service**—(EX Series switches and MX Series routers only) (Optional) Display the service for NFS mounts requests.

**mpls-traceroute**—(Optional) Display the MPLS Periodic Traceroute process.

**mspd**—(Optional) Display the Multiservice process.

**multicast-snooping**—(EX Series switches and MX Series routers only) (Optional) Display the multicast snooping process, which makes Layer 2 devices such as VLAN switches aware of Layer 3 information, such as the media access control (MAC) addresses of members of a multicast group.

**named-service**—(Optional) Display the DNS Server process, which is used by a router or a switch to resolve hostnames into addresses.

**neighbor-liveness**—Display the process, which specifies the maximum length of time that the router waits for its neighbor to re-establish an LDP session.

**nfsd-service**—(Optional) Display the Remote NFS Server process, which provides remote file access for applications that need NFS-based transport.

**ntp**—Display the Network Time Protocol (NTP) process, which provides the mechanisms to synchronize time and coordinate time distribution in a large, diverse network.

**packet-triggered-subscribers**—Display the packet-triggered subscribers and policy control (PTSP) process, which allows the application of policies to dynamic subscribers that are controlled by a subscriber termination device.



**peer-selection-service**—(Optional) Display the Peer Selection Service process.

**periodic-packet-services**—Display the Periodic packet management process, which is responsible for processing a variety of time-sensitive periodic tasks so that other processes can more optimally direct their resources.

**pfe**—Display the Packet Forwarding Engine management process.

**pgcp-service**—(Optional) Display the pgcpd service process running on the Routing Engine.

**pgm**—Display the Pragmatic General Multicast (PGM) protocol process, which enables a reliable transport layer for multicast applications.

**pic-services-logging**—(Optional) Display the logging process for some PICs. With this process, also known as fsad (the file system access daemon), PICs send special logging information to the Routing Engine for archiving on the hard disk.

**ppp**—(Optional) Display the Point-to-Point Protocol (PPP) process, which is the encapsulation protocol process for transporting IP traffic across point-to-point links.

**ppp-service**—Display the Universal edge PPP process, which is the encapsulation protocol process for transporting IP traffic across universal edge routers.

**pppoe**—(Optional) Display the Point-to-Point Protocol over Ethernet (PPPoE) process, which combines PPP that typically runs over broadband connections with the Ethernet link-layer protocol that allows users to connect to a network of hosts over a bridge or access concentrator.

**process-monitor**—Display the process health monitor process (pmond).

**providers**—(Optional) Display provider processes.

**redundancy-interface-process**—(Optional) Display the ASP redundancy process.

**remote-operations**—(Optional) Display the remote operations process, which provides the ping and traceroute MIBs.

**resource-cleanup**—Display the resource cleanup process.

**resource-limits (brief | detail) *process-name***—(Optional) Display process resource limits.

**routing**—(Optional) Display the routing protocol process.

**sampling**—(Optional) Display the sampling process, which performs packet sampling based on particular input interfaces and various fields in the packet header.

**sbc-configuration-process**—Display the session border controller (SBC) process of the border signaling gateway (BSG).

**scc**—(TX Matrix routers only) (Optional) Display standard system process information for the TX Matrix router (or switch-card chassis).

**sdk-service**—Display the SDK Service process, which runs on the Routing Engine and is responsible for communications between the SDK application and Junos OS. Although the SDK Service process is present on the router, it is turned off by default.

**secure-neighbor-discovery**—(EX Series switches and MX Series routers only) (Optional) Display the secure Neighbor Discovery Protocol (NDP) process, which provides support for protecting NDP messages.

**send**—(Optional) Display the Secure Neighbor Discovery Protocol (SEND) process, which provides support for protecting Neighbor Discovery Protocol (NDP) messages.

**service-deployment**—(Optional) Display the service deployment process, which enables Junos OS to work with the Session and Resource Control (SRC) software.

**sfc number**—(TX Matrix Plus routers only) (Optional) Display system process information for the TX Matrix Plus router. Replace *number* with 0.

**snmp**—Display the SNMP process, which enables the monitoring of network devices from a central location and provides the router's or switch's SNMP master agent.

**sonet-aps**—Display the SONET Automatic Protection Switching (APS) process, which monitors any SONET interface that participates in APS.

**static-subscribers**—(Optional) Display the Static subscribers process, which associates subscribers with statically configured interfaces and provides dynamic service activation and activation for these subscribers.

**tunnel-oamd**—(Optional) Display the Tunnel OAM process, which enables the Operations, Administration, and Maintenance of Layer 2 tunneled networks. Layer 2 protocol tunneling (L2PT) allows service providers to send Layer 2 protocol data units (PDUs) across the provider's cloud and deliver them to Juniper Networks EX Series Ethernet Switches that are not part of the local broadcast domain.

**vrrp**—(EX Series switches and MX Series routers only) (Optional) Display the Virtual Router Redundancy Protocol (VRRP) process, which enables hosts on a LAN to make use of redundant routing platforms on that LAN without requiring more than the static configuration of a single default route on the hosts.

**watchdog**—Display the watchdog timer process, which enables the watchdog timer when Junos OS encounters a problem.

**wide**—(Optional) Display process information that might be wider than 80 columns.

**Additional Information** By default, when you issue the **show system processes** command on the master Routing Engine of a TX Matrix router or a TX Matrix Plus router, the command is broadcast to all the master Routing Engines of the LCCs connected to it in the routing matrix. Likewise, if you issue the same command on the backup Routing Engine of a TX Matrix or a TX Matrix Plus router, the command is broadcast to all backup Routing Engines of the LCCs that are connected to it in the routing matrix.

**Required Privilege Level** view

**Related Documentation**

- [List of Junos OS Processes](#)
- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output**

- [show system processes on page 1001](#)
- [show system processes brief on page 1001](#)
- [show system processes detail on page 1002](#)
- [show system processes extensive on page 1002](#)
- [show system processes lcc wide \(TX Matrix Routing Matrix\) on page 1003](#)
- [show system processes summary on page 1003](#)
- [show system processes \(TX Matrix Plus Router\) on page 1004](#)
- [show system processes sfc \(TX Matrix Plus Router\) on page 1011](#)
- [show system processes lcc wide \(TX Matrix Plus Routing Matrix\) on page 1014](#)
- [show system processes \(QFX Series\) on page 1015](#)

**Output Fields** [Table 52 on page 999](#) describes the output fields for the **show system processes** command. Output fields are listed in the approximate order in which they appear.

**Table 52: show system processes Output Fields**

Field Name	Field Description	Level of Output
last pid	Last process identifier assigned to the process.	brief extensive summary
load averages	Three load averages followed by the current time.	brief extensive summary
processes	Number of existing processes and the number of processes in each state (sleeping, running, starting, zombies, and stopped).	brief extensive summary
Mem	Information about physical and virtual memory allocation.	brief extensive summary
Swap	Information about physical and virtual memory allocation.	brief extensive summary
PID	Process identifier.	detail extensive summary
TT	Control terminal name.	none detail

Table 52: show system processes Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>STAT</b>	<p>Symbolic process state. The state is given by a sequence of letters. The first letter indicates the run state of the process:</p> <ul style="list-style-type: none"> <li>• <b>D</b>—In disk or other short-term, uninterruptible wait</li> <li>• <b>I</b>—Idle (sleeping longer than about 20 seconds)</li> <li>• <b>R</b>—Runnable</li> <li>• <b>S</b>—Sleeping for less than 20 seconds</li> <li>• <b>T</b>—Stopped</li> <li>• <b>Z</b>—Dead (zombie)</li> <li>• <b>+</b> —The process is in the foreground process group of its control terminal.</li> <li>• <b>&lt;</b>—The process has raised CPU scheduling priority.</li> <li>• <b>&gt;</b>—The process has specified a soft limit on memory requirements and is currently exceeding that limit; such a process is not swapped.</li> <li>• <b>A</b>—The process requested random page replacement.</li> <li>• <b>E</b>—The process is trying to exit.</li> <li>• <b>L</b>—The process has pages locked in core.</li> <li>• <b>N</b>—The process has reduced CPU scheduling priority.</li> <li>• <b>S</b>—The process requested first-in, first-out (FIFO) page replacement.</li> <li>• <b>s</b>—The process is a session leader.</li> <li>• <b>V</b>—The process is temporarily suspended.</li> <li>• <b>W</b>—The process is swapped out.</li> <li>• <b>X</b>—The process is being traced or debugged.</li> </ul>	none <b>detail</b>
<b>UID</b>	User identifier.	<b>detail</b>
<b>USERNAME</b>	Process owner.	<b>extensive summary</b>
<b>PPID</b>	Parent process identifier.	<b>detail</b>
<b>CPU</b>	<p>(D)—Short-term CPU usage.</p> <p>(E and S)—Raw (unweighted) CPU usage. The value of this field is used to sort the processes in the output.</p>	<b>detail extensive summary</b>
<b>RSS</b>	Resident set size.	<b>detail</b>
<b>WCHAN</b>	Symbolic name of the wait channel.	<b>detail</b>
<b>STARTED</b>	Local time when the process started running.	<b>detail</b>
<b>PRI</b>	Current priority of the process. A lower number indicates a higher priority.	<b>detail extensive summary</b>
<b>NI or NICE</b>	UNIX "niceness" value. A lower number indicates a higher priority.	<b>detail extensive summary</b>
<b>SIZE</b>	Total size of the process (text, data, and stack), in kilobytes.	<b>extensive summary</b>

Table 52: show system processes Output Fields (*continued*)

Field Name	Field Description	Level of Output
RES	Current amount of resident memory, in kilobytes.	extensive summary
STATE	Current state of the process (for example, <b>sleep</b> , <b>wait</b> , <b>run</b> , <b>idle</b> , <b>zombie</b> , or <b>stop</b> ).	extensive summary
TIME	(S)—Number of system and user CPU seconds that the process has used.  (None, D, and E)—Total amount of time that the command has been running.	detail extensive summary
WCPU	Weighted CPU usage.	extensive summary
COMMAND	Command that is currently running.	detail extensive summary
THR	Number of threads in the process	extensive

## Sample Output

### show system processes

```

user@host> show system processes
PID  TT  STAT      TIME COMMAND
  0  ??  DLs      0:00.70 (swapper)
  1  ??  Is       0:00.35 /sbin/init --
  2  ??  DL       0:00.00 (pagedaemon)
  3  ??  DL       0:00.00 (vmdaemon)
  4  ??  DL       0:42.37 (update)
  5  ??  DL       0:00.00 (if_jnx)
 80  ??  Ss       0:14.66 syslogd -s
 96  ??  Is       0:00.01 portmap
128  ??  Is       0:02.70 cron
173  ??  Is       0:02.24 /usr/local/sbin/sshd (sshd1)
189  ??  S        0:03.80 /sbin/watchdog -t180
190  ??  I        0:00.03 /usr/sbin/tetd -N
191  ??  S        2:24.76 /sbin/ifd -N
192  ??  S<       0:55.44 /usr/sbin/xntpd -N
195  ??  S        0:53.11 /usr/sbin/snmpd -N
196  ??  S        1:15.73 /usr/sbin/mib2d -N
198  ??  I        0:00.75 /usr/sbin/inetd -N
2677 ??  I        0:00.01 /usr/sbin/mgd -N
2712 ??  Ss       0:00.24 rlogind
2735 ??  R        0:00.00 /bin/ps -ax
1985 p0-  S        0:07.41 ./rpd -N
2713 p0  Is       0:00.24 -tcsh (tcsh)
2726 p0  S+       0:00.07 cli

```

### show system processes brief

```

user@host> show system processes brief
last pid:  543; load averages:  0.00,  0.00,  0.00   18:29:47
37 processes:  1 running, 36 sleeping

```

Mem: 25M Active, 3976K Inact, 19M Wired, 8346K Buf, 202M Free  
 Swap: 528M Total, 64K Used, 528M Free

### show system processes detail

```
user@host> show system processes detail
```

PID	UID	PPID	CPU	PRI	NI	RSS	WCHAN	STARTED	TT	STAT	TIME	COMMAND
3151	1049	3129	2	28	0	672	-	1:13PM	p0	R+	0:00.00	ps -ax -r
1	0	0	0	10	0	376	wait	1:51PM	??	Is	0:00.29	/sbin/ini
2	0	0	0	-18	0	12	psleep	1:51PM	??	DL	0:00.00	(pagedae
3	0	0	0	28	0	12	psleep	1:51PM	??	DL	0:00.00	(vmddaemo
4	0	0	0	28	0	12	update	1:51PM	??	DL	0:07.15	(update)
5	0	0	0	2	0	12	pfesel	1:51PM	??	IL	0:02.90	(if_pfe)
27	0	1	0	10	0	17936	mfsidl	1:51PM	??	Is	0:00.46	mfs /dev/
81	0	1	0	2	0	496	select	1:52PM	??	Ss	0:31.21	syslogd -
119	1	1	0	2	0	492	select	1:52PM	??	Is	0:00.00	portmap
134	0	1	0	2	0	580	select	1:52PM	??	S	0:02.95	amd -p -a
151	0	1	0	18	0	532	pause	1:52PM	??	Is	0:00.34	cron
183	0	1	0	2	0	420	select	1:52PM	??	Ss	0:00.07	/usr/loca
206	0	1	0	18	0	72	pause	1:52PM	??	S	0:00.51	/sbin/wat
207	0	1	0	2	0	520	select	1:52PM	??	I	0:00.16	/usr/sbin
208	0	1	0	2	0	536	select	1:52PM	??	S	0:08.21	/sbin/dcd
210	0	1	255	2	-12	740	select	1:52PM	??	S<	0:05.83	/usr/sbin
211	0	1	0	2	0	376	select	1:52PM	??	S	0:00.03	/usr/sbin
215	0	1	0	2	0	548	select	1:52PM	??	I	0:00.50	/usr/sbin
219	0	1	0	3	0	540	ttyin	1:52PM	v0	Is+	0:00.02	/usr/libe
220	0	1	0	3	0	540	ttyin	1:52PM	v1	Is+	0:00.01	/usr/libe
221	0	1	0	3	0	540	ttyin	1:52PM	v2	Is+	0:00.01	/usr/libe
222	0	1	0	3	0	540	ttyin	1:52PM	v3	Is+	0:00.01	/usr/libe
735	0	1	0	2	0	468	select	2:47PM	??	S	0:19.14	/usr/sbin
736	0	1	0	2	0	212	select	2:47PM	??	S	0:14.13	/usr/sbin
1380	0	1	0	3	0	888	ttyin	7:32PM	d0	Is+	0:00.46	bash
3019	0	207	0	2	0	636	select	10:49AM	??	Ss	0:02.93	tnp.chass
3122	0	1380	0	2	0	1764	select	12:33PM	d0	S	0:00.77	./rpd -N
3128	0	215	0	2	0	580	select	12:45PM	??	Ss	0:00.12	rlogind
3129	1049	3128	0	18	0	944	pause	12:45PM	p0	Ss	0:00.14	-tcsh (tc
0	0	0	0	-18	0	0	sched	1:51PM	??	DLs	0:00.10	(swapper

### show system processes extensive

```
user@host> show system processes extensive
```

Mem: 241M Active, 99M Inact, 78M Wired, 325M Cache, 69M Buf, 1251M Free  
 Swap: 2048M Total, 2048M Free

PID	USERNAME	THR	PRI	NICE	SIZE	RES	STATE	TIME	WCPU	COMMAND
11	root	1	171	52	OK	12K	RUN	807.5H	98.73%	idle
13	root	1	-20	-139	OK	12K	WAIT	36:17	0.00%	swi7: clock sio
1499	root	1	96	0	7212K	3040K	select	34:01	0.00%	license-check
1621	root	1	96	0	20968K	11216K	select	20:25	0.00%	mib2d
1465	root	2	8	-88	115M	11748K	nanslp	14:32	0.00%	chassisd
1478	root	1	96	0	6336K	3816K	select	11:28	0.00%	ppmd
20	root	1	-68	-187	OK	12K	WAIT	10:28	0.00%	irq10: em0 em1+++*
1490	root	1	96	0	11792K	4336K	select	9:44	0.00%	shm-rtsdbd
1618	root	1	96	0	39584K	7464K	select	8:47	0.00%	pfed
1622	root	1	96	0	15268K	10988K	select	6:16	0.00%	snmpd
1466	root	1	96	0	7408K	2896K	select	5:44	0.00%	alarmd
7	root	1	-16	0	OK	12K	client	5:09	0.00%	ifstate notify
1480	root	1	96	0	5388K	2660K	select	4:29	0.00%	ksyncd
12	root	1	-40	-159	OK	12K	WAIT	4:15	0.00%	swi2: netisr 0

```

1462 root      1  96    0 1836K 1240K select  3:57 0.00% bslockd
   55 root      1 -16    0    0K   12K -      3:44 0.00% schedcpu
1392 root      1  16    0    0K   12K bcmsem  3:37 0.00% bcmLINK.0
   47 root      1 -16    0    0K   12K psleep  3:25 0.00% vmkmemdaemon
   36 root      1  20    0    0K   12K syncer  2:46 0.00% syncer
1484 root      1  96    0 7484K 3428K select  2:38 0.00% clksyncd
1616 root      1  96    0 4848K 2848K select  2:18 0.00% irsd
1487 root      1  96    0 32800K 6992K select  2:10 0.00% smid
1623 root      1  96    0 34616K 5464K select  2:01 0.00% dcd
   15 root      1 -16    0    0K   12K -      1:59 0.00% yarrow
   49 root      1 -16    0    0K   12K .       1:51 0.00% ddostasks

```

### show system processes lcc wide (TX Matrix Routing Matrix)

```

user@host> show system processes lcc 2 wide
lcc2-re0:

```

```

-----
PID  TT  STAT      TIME COMMAND
  0  ??  DLs      0:00.00 (swapper)
  1  ??  ILs      0:00.10 /sbin/preinit -- (init)
  2  ??  DL       0:00.00 (pagedaemon)
  3  ??  DL       0:00.00 (vmdaemon)
  4  ??  DL       0:00.00 (bufdaemon)
  5  ??  DL       0:00.04 (syncer)
  6  ??  DL       0:00.00 (netdaemon)
  7  ??  IL       0:00.00 (if_pic_listen)
  8  ??  IL       0:00.00 (scs_housekeeping)
  9  ??  IL       0:00.00 (if_pfe_listen)
 10  ??  DL       0:00.00 (vmuncachedaemon)
 11  ??  SL       0:00.02 (cb_poll)
172  ??  ILs      0:00.21 mfs -o noauto /dev/ad1s1b /tmp (newfs)
2909 ??  Is      0:00.00 pccardd
2932 ??  Ss      0:00.07 syslogd -r -s
3039 ??  Is      0:00.00 cron
3217 ??  I       0:00.00 /sbin/watchdog -d
3218 ??  I       0:00.02 /usr/sbin/tnetd -N
3221 ??  S       0:00.11 /usr/sbin/alarmd -N
3222 ??  S       0:00.85 /usr/sbin/craftd -N
3223 ??  S       0:00.05 /usr/sbin/mgd -N
3224 ??  I       0:00.02 /usr/sbin/inetd -N
3225 ??  I       0:00.00 /usr/sbin/tnp.sntpd -N
3226 ??  I       0:00.01 /usr/sbin/tnp.sntpc -N
3228 ??  I       0:00.01 /usr/sbin/smartd -N
3231 ??  I       0:00.01 /usr/sbin/eccd -N
3425 ??  S       0:00.09 /usr/sbin/dfwd -N
3426 ??  S       0:00.19 /sbin/dcd -N
3427 ??  I       0:00.04 /usr/sbin/pfed -N
3430 ??  S       0:00.10 /usr/sbin/ksyncd -N
3482 ??  S       1:53.63 /usr/sbin/chassisd -N
4285 ??  SL      0:00.01 (peer proxy)
4286 ??  SL      0:00.00 (peer proxy)
4303 ??  Ss      0:00.00 mgd: (mgd) (root) (mgd)
4304 ??  R       0:00.00 /bin/ps -ax -ww
3270 d0  Is+     0:00.00 /usr/libexec/getty std.9600 ttyd0

```

### show system processes summary

```

user@host> show system processes summary
last pid:  543;  load averages:  0.00,  0.00,  0.00    18:29:47
37 processes:  1 running, 36 sleeping

```

Mem: 25M Active, 3976K Inact, 19M Wired, 8346K Buf, 202M Free  
 Swap: 528M Total, 64K Used, 528M Free

PID	USERNAME	PRI	NICE	SIZE	RES	STATE	TIME	WCPU	CPU	COMMAND
527	root	2	0	176K	580K	select	0:00	0.04%	0.04%	rlogind
543	root	30	0	604K	768K	RUN	0:00	0.00%	0.00%	top

### show system processes (TX Matrix Plus Router)

user@host> show system processes  
 sfc0-re0:

```

-----
PID  TT  STAT      TIME COMMAND
  0  ??  WLS      0:00.00 [swapper]
  1  ??  ILs      0:00.18 /packages/mnt/jbase/sbin/init --
  2  ??  DL       0:00.20 [g_event]
  3  ??  DL       0:00.39 [g_up]
  4  ??  DL       0:00.32 [g_down]
  5  ??  DL       0:00.00 [thread taskq]
  6  ??  DL       0:00.09 [kqueue taskq]
  7  ??  DL       0:00.01 [pagedaemon]
  8  ??  DL       0:00.00 [vmdaemon]
  9  ??  DL       0:06.63 [pagezero]
 10  ??  DL       0:00.00 [ktrace]
 11  ??  RL      310:52.98 [idle]
 12  ??  WL       0:11.03 [swi2: net]
 13  ??  WL       0:27.58 [swi7: clock sio]
 14  ??  WL       0:00.00 [swi6: vm]
 15  ??  DL       0:03.02 [yarrow]
 16  ??  WL       0:00.00 [swi9: +]
 17  ??  WL       0:00.00 [swi8: +]
 18  ??  WL       0:00.00 [swi5: cambio]
 19  ??  WL       0:00.00 [swi9: task queue]
 20  ??  WL       0:11.41 [irq16: uhci0 uhci*]
 21  ??  DL       0:00.00 [usb0]
 22  ??  DL       0:00.00 [usbtask]
 23  ??  WL       0:39.51 [irq17: uhci1 uhci*]
 24  ??  DL       0:00.00 [usb1]
 25  ??  WL       0:00.00 [irq18: uhci2 uhci*]
 26  ??  DL       0:00.83 [usb2]
 27  ??  DL       0:00.00 [usb3]
 28  ??  DL       0:00.00 [usb4]
 29  ??  DL       0:00.00 [usb5]
 30  ??  DL       0:00.73 [usb6]
 31  ??  DL       0:00.00 [usb7]
 32  ??  WL       0:00.00 [irq14: ata0]
 33  ??  WL       0:00.00 [irq15: ata1]
 34  ??  WL       0:00.00 [irq1: atkbd0]
 35  ??  WL       0:00.00 [swi0: sio]
 36  ??  WL       0:00.00 [irq11: isab0]
 37  ??  WL       0:00.00 [swi3: ip6opt ipopt]
 38  ??  WL       0:00.00 [swi4: ip6mismatch+]
 39  ??  WL       0:00.00 [swi1: ipfwd]
 40  ??  DL       0:00.02 [bufdaemon]
 41  ??  DL       0:00.02 [vnlr]
 42  ??  DL       0:00.39 [syncer]
 43  ??  DL       0:00.05 [softdepflush]
 44  ??  DL       0:00.00 [netdaemon]
 45  ??  DL       0:00.02 [vmuncachedaemon]
 46  ??  DL       0:00.00 [if_pic_listen]
 47  ??  DL       0:00.35 [vmkmemdaemon]

```



```

48 ?? DL 0:00.00 [cb_poll]
49 ?? DL 0:00.06 [if_pfe_listen]
50 ?? DL 0:00.00 [scs_housekeeping]
51 ?? IL 0:00.00 [kern_dump_proc]
52 ?? IL 0:00.00 [nfsiod 0]
53 ?? IL 0:00.00 [nfsiod 1]
54 ?? IL 0:00.00 [nfsiod 2]
55 ?? IL 0:00.00 [nfsiod 3]
56 ?? DL 0:00.37 [schedcpu]
57 ?? DL 0:00.56 [md0]
79 ?? DL 0:02.58 [md1]
100 ?? DL 0:00.03 [md2]
118 ?? DL 0:00.01 [md3]
139 ?? DL 0:00.95 [md4]
160 ?? DL 0:00.12 [md5]
181 ?? DL 0:00.00 [md6]
217 ?? DL 0:00.02 [md7]
227 ?? DL 0:00.05 [md8]
1341 ?? SL 0:01.34 [bcmTX]
1342 ?? SL 0:01.68 [bcmXGS3AsyncTX]
1343 ?? SL 0:41.40 [bcmLINK.0]
1345 ?? SL 0:33.83 [bcmLINK.1]
1350 ?? Is 0:00.01 /usr/sbin/cron
1502 ?? S 0:00.01 /sbin/watchdog -t-1
1503 ?? S 0:00.86 /usr/libexec/bslockd -mp -N
1504 ?? S 0:00.01 /usr/sbin/tnetd -N
1507 ?? S 0:01.32 /usr/sbin/alarmd -N
1508 ?? S 0:14.54 /usr/sbin/craftd -N
1509 ?? S 0:01.19 /usr/sbin/mgd -N
1512 ?? I 0:00.05 /usr/sbin/inetd -N
1513 ?? S 0:00.10 /usr/sbin/tnp.snptd -N
1517 ?? S 0:00.11 /usr/sbin/smartd -N
1525 ?? S 0:01.10 /usr/sbin/idpd -N
1526 ?? S 0:01.43 /usr/sbin/license-check -U -M -p 10 -i 10
1527 ?? I 0:00.01 /usr/libexec/getty Pc ttyv0
1616 ?? DL 0:00.30 [peer proxy]
1617 ?? DL 0:00.32 [peer proxy]
1618 ?? DL 0:00.34 [peer proxy]
1619 ?? DL 0:00.30 [peer proxy]
2391 ?? Is 0:00.01 telnetd
7331 ?? Ss 0:00.03 telnetd
9538 ?? DL 0:01.16 [jsr_kkcm]
9613 ?? DL 0:00.18 [peer proxy]
23781 ?? Ss 0:00.01 telnetd
23926 ?? Ss 0:00.01 mgd: (mgd) (regress)/dev/tty2 (mgd)
36867 ?? S 0:03.14 /usr/sbin/rpd -N
36874 ?? S 0:00.08 /usr/sbin/lmpd
36876 ?? S 0:00.17 /usr/sbin/lacpd -N
36877 ?? S 0:00.15 /usr/sbin/bfdd -N
36878 ?? S 0:05.05 /usr/sbin/ppmd -N
36907 ?? S 0:25.07 /usr/sbin/chassisd -N
37775 ?? S 0:00.01 /usr/sbin/bdbrepd -N
45727 ?? S 0:00.02 /usr/sbin/xntpd -j -N -g (ntpd)
45729 ?? S 0:00.38 /usr/sbin/l2ald -N
45730 ?? S< 0:00.12 /usr/sbin/apsd -N
45731 ?? SN 0:00.10 /usr/sbin/sampled -N
45732 ?? S 0:00.03 /usr/sbin/ilmid -N
45733 ?? S 0:00.09 /usr/sbin/rmopd -N
45734 ?? S 0:00.30 /usr/sbin/cosd
45735 ?? I 0:00.00 /usr/sbin/rtspd -N
45736 ?? S 0:00.06 /usr/sbin/fsad -N

```

```

45737 ?? S      0:00.05 /usr/sbin/rdd -N
45738 ?? S      0:00.10 /usr/sbin/pppd -N
45739 ?? S      0:00.05 /usr/sbin/dfcd -N
45740 ?? S      0:00.07 /usr/sbin/lfmd -N
45741 ?? S      0:00.01 /usr/sbin/implsoamd -N
45742 ?? I      0:00.01 /usr/sbin/sendd -N
45743 ?? S      0:00.08 /usr/sbin/appidd -N
45744 ?? S      0:00.05 /usr/sbin/mspd -N
45745 ?? S      0:00.25 /usr/sbin/jdiameterd -N
45746 ?? S      0:00.10 /usr/sbin/pfed -N
45747 ?? S      0:00.19 /usr/sbin/lpdfd -N
45748 ?? S      0:00.63 /sbin/dcd -N
45750 ?? S      0:00.45 /usr/sbin/mib2d -N
45751 ?? S      0:00.15 /usr/sbin/dfwd -N
45752 ?? S      0:00.15 /usr/sbin/irsd -N
45764 ?? S      0:20.59 /usr/sbin/snmpd -N
56479 ?? Ss     0:00.00 mgd: (mgd) (root) (mgd)
56480 ?? R      0:00.00 /bin/ps -ax
1142 d0- I      0:00.01 /usr/sbin/usbd -N
1160 d0- S      0:29.17 /usr/sbin/eventd -N -r -s -A
6527 d0 Is+    0:00.00 /usr/libexec/getty std.9600 ttyd0
2392 p1 Is      0:00.00 login [pam] (login)
2393 p1 I       0:00.00 -csh (csh)
2394 p1 I       0:00.00 su -
2395 p1 I+      0:00.01 -su (csh)
23782 p2 Is      0:00.00 login [pam] (login)
23881 p2 I       0:00.00 -csh (csh)
23925 p2 S+     0:00.03 cli
7332 p3 Is      0:00.00 login [pam] (login)
7333 p3 I       0:00.00 -csh (csh)
23780 p3 S+     0:00.02 telnet aj

```

lcc0-re0:

```

-----
PID  TT  STAT      TIME COMMAND
0   ??  WLS      0:00.00 [swapper]
1   ??  ILs      0:00.16 /packages/mnt/jbase/sbin/init --
2   ??  DL       0:00.01 [g_event]
3   ??  DL       0:00.16 [g_up]
4   ??  DL       0:00.11 [g_down]
5   ??  DL       0:00.00 [thread taskq]
6   ??  DL       0:00.00 [kqueue taskq]
7   ??  DL       0:00.00 [pagedaemon]
8   ??  DL       0:00.00 [vmdaemon]
9   ??  DL       0:01.77 [pagezero]
10  ??  DL       0:00.00 [ktrace]
11  ??  RL      17:22.31 [idle]
12  ??  WL       0:00.32 [swi2: net]
13  ??  WL       0:01.21 [swi7: clock sio]
14  ??  WL       0:00.00 [swi6: vm]
15  ??  DL       0:00.10 [yarrow]
16  ??  WL       0:00.00 [swi9: +]
17  ??  WL       0:00.00 [swi8: +]
18  ??  WL       0:00.00 [swi5: cambio]
19  ??  WL       0:00.00 [swi9: task queue]
20  ??  WL       0:02.73 [irq10: bcm0 uhci1*]
21  ??  WL       0:00.02 [irq11: cb0 uhci0+*]
22  ??  DL       0:00.00 [usb0]
23  ??  DL       0:00.00 [usbtask]
24  ??  DL       0:00.00 [usb1]
25  ??  DL       0:00.05 [usb2]

```

```

26 ?? DL 0:00.00 [usb3]
27 ?? DL 0:00.00 [usb4]
28 ?? DL 0:00.00 [usb5]
29 ?? DL 0:00.04 [usb6]
30 ?? DL 0:00.00 [usb7]
31 ?? WL 0:00.00 [irq14: ata0]
32 ?? WL 0:00.00 [irq15: ata1]
33 ?? WL 0:00.00 [irq1: atkbd0]
34 ?? WL 0:00.00 [swi0: sio]
35 ?? WL 0:00.00 [swi3: ip6opt ipopt]
36 ?? WL 0:00.00 [swi4: ip6mismatch+]
37 ?? WL 0:00.00 [swi1: ipfwd]
38 ?? DL 0:00.00 [bufdaemon]
39 ?? DL 0:00.00 [vn1ru]
40 ?? DL 0:00.01 [syncer]
41 ?? DL 0:00.00 [softdepflush]
42 ?? DL 0:00.00 [netdaemon]
43 ?? DL 0:00.00 [vmuncachedaemon]
44 ?? DL 0:00.00 [if_pic_listen]
45 ?? DL 0:00.02 [vmkmemdaemon]
46 ?? DL 0:00.01 [cb_poll]
47 ?? DL 0:00.00 [if_pfe_listen]
48 ?? DL 0:00.00 [scs_housekeeping]
49 ?? IL 0:00.00 [kern_dump_proc]
50 ?? IL 0:00.00 [nfsiod 0]
51 ?? IL 0:00.00 [nfsiod 1]
52 ?? IL 0:00.00 [nfsiod 2]
53 ?? IL 0:00.00 [nfsiod 3]
54 ?? DL 0:00.01 [schedcpu]
55 ?? DL 0:00.73 [md0]
77 ?? DL 0:03.54 [md1]
98 ?? DL 0:00.37 [md2]
116 ?? DL 0:00.02 [md3]
137 ?? DL 0:00.56 [md4]
158 ?? DL 0:00.15 [md5]
179 ?? DL 0:00.00 [md6]
215 ?? DL 0:00.03 [md7]
225 ?? DL 0:00.03 [md8]
1078 ?? DL 0:00.00 [jsr_kkcm]
1363 ?? SL 0:00.09 [bcmTX]
1364 ?? SL 0:00.10 [bcmXGS3AsyncTX]
1365 ?? SL 0:03.08 [bcmLINK.0]
1370 ?? Is 0:00.00 /usr/sbin/cron
1522 ?? S 0:00.00 /sbin/watchdog -t-1
1523 ?? S 0:00.05 /usr/libexec/bslockd -mp -N
1524 ?? I 0:00.01 /usr/sbin/tnetd -N
1526 ?? S 0:04.98 /usr/sbin/chassisd -N
1527 ?? S 0:00.04 /usr/sbin/alarmd -N
1528 ?? I 0:00.40 /usr/sbin/craftd -N
1529 ?? S 0:00.08 /usr/sbin/mgd -N
1532 ?? I 0:00.04 /usr/sbin/inetd -N
1533 ?? I 0:00.00 /usr/sbin/tnp.sntpd -N
1534 ?? I 0:00.00 /usr/sbin/tnp.sntpc -N
1536 ?? S 0:00.01 /usr/sbin/smartd -N
1540 ?? I 0:00.07 /usr/sbin/jcsd -N
1541 ?? S 0:00.11 /usr/sbin/idpd -N
1542 ?? I 0:00.00 /usr/libexec/getty Pc ttyv0
2089 ?? DL 0:00.01 [peer proxy]
2090 ?? DL 0:00.01 [peer proxy]
2091 ?? DL 0:00.01 [peer proxy]
2657 ?? S 0:00.02 /usr/sbin/dfwd -N

```

```

2658 ?? S      0:00.02 /sbin/dcd -N
2659 ?? S      0:00.05 /usr/sbin/snmpd -N
2660 ?? S      0:00.01 /usr/sbin/mib2d -N
2661 ?? S      0:00.01 /usr/sbin/pfed -N
2662 ?? S      0:00.01 /usr/sbin/irsd -N
2667 ?? S      0:00.13 /usr/sbin/ksyncd -N
2690 ?? Ss     0:00.00 mgd: (mgd) (root) (mgd)
2691 ?? R      0:00.00 /bin/ps -ax
1164 d0- S     0:00.00 /usr/sbin/usbd -N
1182 d0- S     0:00.34 /usr/sbin/eventd -N -r -s -A
1543 d0 Is+    0:00.00 /usr/libexec/getty std.9600 ttyd0

```

```
lcc1-re0:
```

```

-----
PID  TT  STAT    TIME COMMAND
  0  ??  Wls     0:00.00 [swapper]
  1  ??  ILs     0:00.17 /packages/mnt/jbase/sbin/init --
  2  ??  DL      0:00.01 [g_event]
  3  ??  DL      0:00.16 [g_up]
  4  ??  DL      0:00.11 [g_down]
  5  ??  DL      0:00.00 [thread taskq]
  6  ??  DL      0:00.00 [kqueue taskq]
  7  ??  DL      0:00.00 [pagedaemon]
  8  ??  DL      0:00.00 [vmdaemon]
  9  ??  DL      0:01.77 [pagezero]
 10  ??  DL      0:00.00 [ktrace]
 11  ??  RL     17:22.83 [idle]
 12  ??  WL      0:00.35 [swi2: net]
 13  ??  WL      0:01.20 [swi7: clock sio]
 14  ??  WL      0:00.00 [swi6: vm]
 15  ??  DL      0:00.10 [yarrow]
 16  ??  WL      0:00.00 [swi9: +]
 17  ??  WL      0:00.00 [swi8: +]
 18  ??  WL      0:00.00 [swi5: cambio]
 19  ??  WL      0:00.00 [swi9: task queue]
 20  ??  WL      0:02.87 [irq10: bcm0 uhci1*]
 21  ??  WL      0:00.02 [irq11: cb0 uhci0+*]
 22  ??  DL      0:00.00 [usb0]
 23  ??  DL      0:00.00 [usbtask]
 24  ??  DL      0:00.00 [usb1]
 25  ??  DL      0:00.05 [usb2]
 26  ??  DL      0:00.00 [usb3]
 27  ??  DL      0:00.00 [usb4]
 28  ??  DL      0:00.00 [usb5]
 29  ??  DL      0:00.04 [usb6]
 30  ??  DL      0:00.00 [usb7]
 31  ??  WL      0:00.00 [irq14: ata0]
 32  ??  WL      0:00.00 [irq15: ata1]
 33  ??  WL      0:00.00 [irq1: atkbd0]
 34  ??  WL      0:00.00 [swi0: sio]
 35  ??  WL      0:00.00 [swi3: ip6opt ipopt]
 36  ??  WL      0:00.00 [swi4: ip6mismatch+]
 37  ??  WL      0:00.00 [swi1: ipfwd]
 38  ??  DL      0:00.00 [bufdaemon]
 39  ??  DL      0:00.00 [vn1ru]
 40  ??  DL      0:00.01 [syncer]
 41  ??  DL      0:00.00 [softdepflush]
 42  ??  DL      0:00.00 [netdaemon]
 43  ??  DL      0:00.00 [vmuncachedaemon]
 44  ??  DL      0:00.00 [if_pic_listen]
 45  ??  DL      0:00.02 [vmknemdaemon]

```

```

46 ?? DL 0:00.01 [cb_poll]
47 ?? DL 0:00.00 [if_pfe_listen]
48 ?? DL 0:00.00 [scs_housekeeping]
49 ?? IL 0:00.00 [kern_dump_proc]
50 ?? IL 0:00.00 [nfsiod 0]
51 ?? IL 0:00.00 [nfsiod 1]
52 ?? IL 0:00.00 [nfsiod 2]
53 ?? IL 0:00.00 [nfsiod 3]
54 ?? DL 0:00.02 [schedcpu]
55 ?? DL 0:00.75 [md0]
77 ?? DL 0:03.40 [md1]
98 ?? DL 0:00.37 [md2]
116 ?? DL 0:00.02 [md3]
137 ?? DL 0:00.56 [md4]
158 ?? DL 0:00.15 [md5]
179 ?? DL 0:00.00 [md6]
215 ?? DL 0:00.03 [md7]
225 ?? DL 0:00.03 [md8]
1052 ?? DL 0:00.00 [jsr_kkcm]
1337 ?? SL 0:00.09 [bcmTX]
1338 ?? SL 0:00.10 [bcmXGS3AsyncTX]
1339 ?? SL 0:03.10 [bcmLINK.0]
1344 ?? Is 0:00.00 /usr/sbin/cron
1496 ?? S 0:00.00 /sbin/watchdog -t-1
1497 ?? S 0:00.05 /usr/libexec/bslockd -mp -N
1498 ?? I 0:00.01 /usr/sbin/tnetd -N
1500 ?? S 0:04.97 /usr/sbin/chassisd -N
1501 ?? S 0:00.04 /usr/sbin/alarmd -N
1502 ?? I 0:00.40 /usr/sbin/craftd -N
1503 ?? S 0:00.08 /usr/sbin/mgd -N
1506 ?? I 0:00.04 /usr/sbin/inetd -N
1507 ?? I 0:00.00 /usr/sbin/tnp.snmpd -N
1508 ?? I 0:00.00 /usr/sbin/tnp.sntpc -N
1510 ?? S 0:00.01 /usr/sbin/smartd -N
1514 ?? I 0:00.07 /usr/sbin/jcsd -N
1515 ?? S 0:00.18 /usr/sbin/idpd -N
1516 ?? I 0:00.00 /usr/libexec/getty Pc ttyv0
2068 ?? DL 0:00.01 [peer proxy]
2069 ?? DL 0:00.01 [peer proxy]
2070 ?? DL 0:00.01 [peer proxy]
2666 ?? S 0:00.02 /sbin/dcd -N
2667 ?? S 0:00.01 /usr/sbin/irsd -N
2668 ?? S 0:00.01 /usr/sbin/pfed -N
2669 ?? S 0:00.05 /usr/sbin/snmpd -N
2670 ?? S 0:00.01 /usr/sbin/mib2d -N
2671 ?? S 0:00.02 /usr/sbin/dfwd -N
2675 ?? S 0:00.13 /usr/sbin/ksyncd -N
2699 ?? Ss 0:00.00 mgd: (mgd) (root) (mgd)
2700 ?? R 0:00.00 /bin/ps -ax
1138 d0- S 0:00.00 /usr/sbin/usbd -N
1156 d0- S 0:00.37 /usr/sbin/eventd -N -r -s -A
1517 d0 Is+ 0:00.00 /usr/libexec/getty std.9600 ttyd0

```

lcc2-re0:

```

-----
PID TT STAT TIME COMMAND
0 ?? Wls 0:00.00 [swapper]
1 ?? ILs 0:00.18 /packages/mnt/jbase/sbin/init --
2 ?? DL 0:00.01 [g_event]
3 ?? DL 0:00.17 [g_up]
4 ?? DL 0:00.12 [g_down]

```

```

5 ?? DL 0:00.00 [thread taskq]
6 ?? DL 0:00.00 [kqueue taskq]
7 ?? DL 0:00.00 [pagedaemon]
8 ?? DL 0:00.00 [vmdaemon]
9 ?? DL 0:01.77 [pagezero]
10 ?? DL 0:00.00 [ktrace]
11 ?? RL 17:19.13 [idle]
12 ?? WL 0:00.36 [swi2: net]
13 ?? WL 0:01.20 [swi7: clock sio]
14 ?? WL 0:00.00 [swi6: vm]
15 ?? DL 0:00.13 [yarrow]
16 ?? WL 0:00.00 [swi9: +]
17 ?? WL 0:00.00 [swi8: +]
18 ?? WL 0:00.00 [swi5: cambio]
19 ?? WL 0:00.00 [swi9: task queue]
20 ?? WL 0:03.03 [irq10: bcm0 uhci1*]
21 ?? WL 0:00.02 [irq11: cb0 uhci0+*]
22 ?? DL 0:00.00 [usb0]
23 ?? DL 0:00.00 [usbtask]
24 ?? DL 0:00.00 [usb1]
25 ?? DL 0:00.05 [usb2]
26 ?? DL 0:00.00 [usb3]
27 ?? DL 0:00.00 [usb4]
28 ?? DL 0:00.00 [usb5]
29 ?? DL 0:00.04 [usb6]
30 ?? DL 0:00.00 [usb7]
31 ?? WL 0:00.00 [irq14: ata0]
32 ?? WL 0:00.00 [irq15: ata1]
33 ?? WL 0:00.00 [irq1: atkbd0]
34 ?? WL 0:00.00 [swi0: sio]
35 ?? WL 0:00.00 [swi3: ip6opt ipopt]
36 ?? WL 0:00.00 [swi4: ip6mismatch+]
37 ?? WL 0:00.00 [swi1: ipfwd]
38 ?? DL 0:00.00 [bufdaemon]
39 ?? DL 0:00.00 [vn1ru]
40 ?? DL 0:00.01 [syncer]
41 ?? DL 0:00.00 [softdepflush]
42 ?? DL 0:00.00 [netdaemon]
43 ?? DL 0:00.00 [vmuncachedaemon]
44 ?? DL 0:00.00 [if_pic_listen]
45 ?? DL 0:00.02 [vmkmemdaemon]
46 ?? DL 0:00.01 [cb_poll]
47 ?? DL 0:00.00 [if_pfe_listen]
48 ?? DL 0:00.00 [scs_housekeeping]
49 ?? IL 0:00.00 [kern_dump_proc]
50 ?? IL 0:00.00 [nfsiod 0]
51 ?? IL 0:00.00 [nfsiod 1]
52 ?? IL 0:00.00 [nfsiod 2]
53 ?? IL 0:00.00 [nfsiod 3]
54 ?? DL 0:00.02 [schedcpu]
55 ?? DL 0:00.75 [md0]
77 ?? DL 0:03.48 [md1]
98 ?? DL 0:00.59 [md2]
116 ?? DL 0:00.02 [md3]
137 ?? DL 0:00.56 [md4]
158 ?? DL 0:00.15 [md5]
179 ?? DL 0:00.00 [md6]
215 ?? DL 0:00.03 [md7]
225 ?? DL 0:00.03 [md8]
1052 ?? DL 0:00.00 [jsr_kkcm]
1337 ?? SL 0:00.09 [bcmTX]

```

```

1338 ?? SL      0:00.10 [bcmXGS3AsyncTX]
1339 ?? SL      0:03.22 [bcmLINK.0]
1344 ?? Is      0:00.00 /usr/sbin/cron
1496 ?? S       0:00.00 /sbin/watchdog -t-1
1497 ?? S       0:00.05 /usr/libexec/bslockd -mp -N
1498 ?? S       0:00.01 /usr/sbin/tnetd -N
1500 ?? R       0:05.17 /usr/sbin/chassisd -N
1501 ?? S       0:00.04 /usr/sbin/alarmd -N
1502 ?? I       0:00.39 /usr/sbin/craftd -N
1503 ?? S       0:00.08 /usr/sbin/mgd -N
1506 ?? I       0:00.05 /usr/sbin/inetd -N
1507 ?? I       0:00.00 /usr/sbin/tnp.sntpd -N
1508 ?? I       0:00.00 /usr/sbin/tnp.sntpc -N
1510 ?? S       0:00.01 /usr/sbin/smartd -N
1514 ?? I       0:00.07 /usr/sbin/jcsd -N
1515 ?? S       0:00.17 /usr/sbin/idpd -N
1516 ?? I       0:00.00 /usr/libexec/getty Pc ttyv0
2591 ?? DL      0:00.01 [peer proxy]
2592 ?? DL      0:00.01 [peer proxy]
2593 ?? DL      0:00.01 [peer proxy]
2597 ?? DL      0:00.00 [peer proxy]
3192 ?? S       0:00.01 /usr/sbin/irsd -N
3193 ?? S       0:00.05 /usr/sbin/snmpd -N
3194 ?? S       0:00.02 /sbin/dcd -N
3195 ?? S       0:00.01 /usr/sbin/pfed -N
3196 ?? S       0:00.01 /usr/sbin/mib2d -N
3197 ?? S       0:00.02 /usr/sbin/dfwd -N
3198 ?? S       0:00.13 /usr/sbin/ksyncd -N
3228 ?? Ss      0:00.00 mgd: (mgd) (root) (mgd)
3229 ?? R       0:00.00 /bin/ps -ax
1138 d0- S      0:00.00 /usr/sbin/usbd -N
1156 d0- S      0:00.42 /usr/sbin/eventd -N -r -s -A
1517 d0 Is+     0:00.00 /usr/libexec/getty std.9600 ttyd0
...

```

### show system processes sfc (TX Matrix Plus Router)

```

user@host> show system processes sfc 0
sfc0-re0:

```

```

-----
PID TT  STAT      TIME COMMAND
  0 ??  WLS      0:00.00 [swapper]
  1 ??  SLs      0:00.18 /packages/mnt/jbase/sbin/init --
  2 ??  DL       0:00.20 [g_event]
  3 ??  DL       0:00.39 [g_up]
  4 ??  DL       0:00.32 [g_down]
  5 ??  DL       0:00.00 [thread taskq]
  6 ??  DL       0:00.09 [kqueue taskq]
  7 ??  DL       0:00.01 [pagedaemon]
  8 ??  DL       0:00.00 [vmdaemon]
  9 ??  DL       0:06.63 [pagezero]
 10 ??  DL       0:00.00 [ktrace]
 11 ??  RL      312:09.00 [idle]
 12 ??  WL       0:11.07 [swi2: net]
 13 ??  WL       0:27.70 [swi7: clock sio]
 14 ??  WL       0:00.00 [swi6: vm]
 15 ??  DL       0:03.03 [yarrow]
 16 ??  WL       0:00.00 [swi9: +]
 17 ??  WL       0:00.00 [swi8: +]
 18 ??  WL       0:00.00 [swi5: cambio]
 19 ??  WL       0:00.00 [swi9: task queue]

```

```

20 ?? WL 0:11.46 [irq16: uhci0 uhci*]
21 ?? DL 0:00.00 [usb0]
22 ?? DL 0:00.00 [usbtask]
23 ?? WL 0:39.63 [irq17: uhci1 uhci*]
24 ?? DL 0:00.00 [usb1]
25 ?? WL 0:00.00 [irq18: uhci2 uhci*]
26 ?? DL 0:00.84 [usb2]
27 ?? DL 0:00.00 [usb3]
28 ?? DL 0:00.00 [usb4]
29 ?? DL 0:00.00 [usb5]
30 ?? DL 0:00.73 [usb6]
31 ?? DL 0:00.00 [usb7]
32 ?? WL 0:00.00 [irq14: ata0]
33 ?? WL 0:00.00 [irq15: ata1]
34 ?? WL 0:00.00 [irq1: atkbd0]
35 ?? WL 0:00.00 [swi0: sio]
36 ?? WL 0:00.00 [irq11: isab0]
37 ?? WL 0:00.00 [swi3: ip6opt ipopt]
38 ?? WL 0:00.00 [swi4: ip6mismatch+]
39 ?? WL 0:00.00 [swi1: ipfwd]
40 ?? DL 0:00.02 [bufdaemon]
41 ?? DL 0:00.02 [vn1ru]
42 ?? DL 0:00.39 [syncer]
43 ?? DL 0:00.05 [softdepflush]
44 ?? DL 0:00.00 [netdaemon]
45 ?? DL 0:00.02 [vmuncachedaemon]
46 ?? DL 0:00.00 [if_pic_listen]
47 ?? DL 0:00.35 [vmkmemdaemon]
48 ?? DL 0:00.00 [cb_poll]
49 ?? DL 0:00.06 [if_pfe_listen]
50 ?? DL 0:00.00 [scs_housekeeping]
51 ?? IL 0:00.00 [kern_dump_proc]
52 ?? IL 0:00.00 [nfsiod 0]
53 ?? IL 0:00.00 [nfsiod 1]
54 ?? IL 0:00.00 [nfsiod 2]
55 ?? IL 0:00.00 [nfsiod 3]
56 ?? DL 0:00.37 [schedcpu]
57 ?? DL 0:00.56 [md0]
79 ?? DL 0:02.58 [md1]
100 ?? DL 0:00.03 [md2]
118 ?? DL 0:00.01 [md3]
139 ?? DL 0:00.95 [md4]
160 ?? DL 0:00.12 [md5]
181 ?? DL 0:00.00 [md6]
217 ?? DL 0:00.02 [md7]
227 ?? DL 0:00.05 [md8]
1341 ?? SL 0:01.35 [bcmTX]
1342 ?? SL 0:01.69 [bcmXGS3AsyncTX]
1343 ?? SL 0:41.57 [bcmLINK.0]
1345 ?? SL 0:33.97 [bcmLINK.1]
1350 ?? Is 0:00.01 /usr/sbin/cron
1502 ?? S 0:00.01 /sbin/watchdog -t-1
1503 ?? S 0:00.86 /usr/libexec/bslockd -mp -N
1504 ?? I 0:00.01 /usr/sbin/tnetd -N
1507 ?? S 0:01.32 /usr/sbin/alarmd -N
1508 ?? S 0:14.54 /usr/sbin/craftd -N
1509 ?? S 0:01.20 /usr/sbin/mgd -N
1512 ?? S 0:00.05 /usr/sbin/inetd -N
1513 ?? S 0:00.10 /usr/sbin/tnp.snptd -N
1517 ?? S 0:00.11 /usr/sbin/smartd -N
1525 ?? S 0:01.11 /usr/sbin/idpd -N

```



```

1526 ?? S      0:01.43 /usr/sbin/license-check -U -M -p 10 -i 10
1527 ?? I      0:00.01 /usr/libexec/getty Pc ttyv0
1616 ?? DL     0:00.30 [peer proxy]
1617 ?? DL     0:00.32 [peer proxy]
1618 ?? DL     0:00.34 [peer proxy]
1619 ?? DL     0:00.30 [peer proxy]
2391 ?? Is     0:00.01 telnetd
7331 ?? Ss     0:00.03 telnetd
9538 ?? DL     0:01.16 [jsr_kkcm]
9613 ?? DL     0:00.18 [peer proxy]
23781 ?? Ss    0:00.01 telnetd
23926 ?? Ss    0:00.03 mgd: (mgd) (regress)/dev/tty2 (mgd)
36867 ?? S     0:03.14 /usr/sbin/rpd -N
36874 ?? S     0:00.08 /usr/sbin/lmpd
36876 ?? S     0:00.17 /usr/sbin/lacpd -N
36877 ?? S     0:00.15 /usr/sbin/bfd -N
36878 ?? S     0:05.05 /usr/sbin/ppmd -N
36907 ?? S     0:26.63 /usr/sbin/chassisd -N
37775 ?? S     0:00.01 /usr/sbin/bdbrepd -N
45727 ?? S     0:00.02 /usr/sbin/xntpd -j -N -g (ntpd)
45729 ?? S     0:00.40 /usr/sbin/l2ald -N
45730 ?? S<    0:00.13 /usr/sbin/apd -N
45731 ?? SN     0:00.10 /usr/sbin/sampled -N
45732 ?? S     0:00.03 /usr/sbin/ilmid -N
45733 ?? S     0:00.09 /usr/sbin/rmopd -N
45734 ?? S     0:00.31 /usr/sbin/cosd
45735 ?? I     0:00.00 /usr/sbin/rtsdpd -N
45736 ?? S     0:00.06 /usr/sbin/fsad -N
45737 ?? S     0:00.05 /usr/sbin/rdd -N
45738 ?? S     0:00.10 /usr/sbin/pppd -N
45739 ?? S     0:00.05 /usr/sbin/dfcd -N
45740 ?? S     0:00.08 /usr/sbin/lfmd -N
45741 ?? S     0:00.01 /usr/sbin/mpiisoamd -N
45742 ?? I     0:00.01 /usr/sbin/sendd -N
45743 ?? S     0:00.08 /usr/sbin/appidd -N
45744 ?? S     0:00.05 /usr/sbin/mspd -N
45745 ?? S     0:00.27 /usr/sbin/jdiameterd -N
45746 ?? S     0:00.10 /usr/sbin/pfed -N
45747 ?? S     0:00.19 /usr/sbin/lpdfd -N
45748 ?? S     0:00.64 /sbin/dcd -N
45750 ?? S     0:00.46 /usr/sbin/mib2d -N
45751 ?? S     0:00.16 /usr/sbin/dfwd -N
45752 ?? S     0:00.15 /usr/sbin/irsd -N
45764 ?? S     0:20.60 /usr/sbin/snmpd -N
56481 ?? Ss    0:00.02 telnetd
56548 ?? Rs    0:00.19 mgd: (mgd) (regress)/dev/tty0 (mgd)
56577 ?? Ss    0:00.00 mgd: (mgd) (root) (mgd)
56578 ?? R     0:00.00 /bin/ps -ax
1142 d0- S     0:00.01 /usr/sbin/usbd -N
1160 d0- S     0:29.71 /usr/sbin/eventd -N -r -s -A
6527 d0 Is+    0:00.00 /usr/libexec/getty std.9600 ttyd0
56482 p0 Is     0:00.00 login [pam] (login)
56483 p0 S       0:00.01 -csh (csh)
56547 p0 S+     0:00.02 cli
2392 p1 Is     0:00.00 login [pam] (login)
2393 p1 I       0:00.00 -csh (csh)
2394 p1 I       0:00.00 su -
2395 p1 I+     0:00.01 -su (csh)
23782 p2 Is     0:00.00 login [pam] (login)
23881 p2 I       0:00.00 -csh (csh)
23925 p2 S+     0:00.03 cli

```

```

7332 p3 Is 0:00.00 login [pam] (login)
7333 p3 I 0:00.00 -csh (csh)
23780 p3 S+ 0:00.02 telnet aj

```

### show system processes lcc wide (TX Matrix Plus Routing Matrix)

```

user@host> show system processes lcc 2 wide
lcc2-re0:

```

```

-----
PID  TT  STAT      TIME PROVIDER COMMAND
0   ??  WLS      0:00.00 (null)  [swapper]
1   ??  ILs      0:00.19      /packages/mnt/jbase/sbin/init --
2   ??  DL       0:00.02      [g_event]
3   ??  DL       0:00.19      [g_up]
4   ??  DL       0:00.13      [g_down]
5   ??  DL       0:00.00      [thread taskq]
6   ??  DL       0:00.00      [kqueue taskq]
7   ??  DL       0:00.00      [pagedaemon]
8   ??  DL       0:00.00      [vmdaemon]
9   ??  DL       0:01.77      [pagezero]
10  ??  DL       0:00.00      [ktrace]
11  ??  RL      20:33.81      [idle]
12  ??  WL       0:00.38      [swi2: net]
13  ??  WL       0:01.43      [swi7: clock sio]
14  ??  WL       0:00.00      [swi6: vm]
15  ??  DL       0:00.14      [yarrow]
16  ??  WL       0:00.00      [swi9: +]
17  ??  WL       0:00.00      [swi8: +]
18  ??  WL       0:00.00      [swi5: cambio]
19  ??  WL       0:00.00      [swi9: task queue]
20  ??  WL       0:03.18      [irq10: bcm0 uhci1*]
21  ??  WL       0:00.03      [irq11: cb0 uhci0+*]
22  ??  DL       0:00.00      [usb0]
23  ??  DL       0:00.00      [usbtask]
24  ??  DL       0:00.00      [usb1]
25  ??  DL       0:00.06      [usb2]
26  ??  DL       0:00.00      [usb3]
27  ??  DL       0:00.00      [usb4]
28  ??  DL       0:00.00      [usb5]
29  ??  DL       0:00.05      [usb6]
30  ??  DL       0:00.00      [usb7]
31  ??  WL       0:00.00      [irq14: ata0]
32  ??  WL       0:00.00      [irq15: ata1]
33  ??  WL       0:00.00      [irq1: atkbd0]
34  ??  WL       0:00.00      [swi0: sio]
35  ??  WL       0:00.00      [swi3: ip6opt ipopt]
36  ??  WL       0:00.00      [swi4: ip6mismatch+]
37  ??  WL       0:00.00      [swi1: ipfwd]
38  ??  DL       0:00.00      [bufdaemon]
39  ??  DL       0:00.00      [vnlr]
40  ??  DL       0:00.02      [syncer]
41  ??  DL       0:00.01      [softdepflush]
42  ??  DL       0:00.00      [netdaemon]
43  ??  DL       0:00.00      [vmuncachedaemon]
44  ??  DL       0:00.00      [if_pic_listen]
45  ??  DL       0:00.03      [vmkmemdaemon]
46  ??  DL       0:00.01      [cb_poll]
47  ??  DL       0:00.00      [if_pfe_listen]
48  ??  DL       0:00.00      [scs_housekeeping]
49  ??  IL       0:00.00      [kern_dump_proc]
50  ??  IL       0:00.00      [nfsiod 0]

```

```

51 ?? IL 0:00.00 [nfsiod 1]
52 ?? IL 0:00.00 [nfsiod 2]
53 ?? IL 0:00.00 [nfsiod 3]
54 ?? DL 0:00.02 [schedcpu]
55 ?? DL 0:00.75 [md0]
77 ?? DL 0:03.84 [md1]
98 ?? DL 0:00.59 [md2]
116 ?? DL 0:00.02 [md3]
137 ?? DL 0:00.72 [md4]
158 ?? DL 0:00.15 [md5]
179 ?? DL 0:00.00 [md6]
215 ?? DL 0:00.03 [md7]
225 ?? DL 0:00.03 [md8]
1052 ?? DL 0:00.00 [jsr_kkcm]
1337 ?? SL 0:00.11 [bcmTX]
1338 ?? SL 0:00.12 [bcmXGS3AsyncTX]
1339 ?? SL 0:03.82 [bcmLINK.0]
1344 ?? Is 0:00.00 /usr/sbin/cron
1496 ?? I 0:00.00 /sbin/watchdog -t-1
1497 ?? S 0:00.06 /usr/libexec/bslockd -mp -N
1498 ?? I 0:00.01 /usr/sbin/tnetd -N
1500 ?? S 0:09.93 /usr/sbin/chassisd -N
1501 ?? S 0:00.05 /usr/sbin/alarmd -N
1502 ?? I 0:00.39 /usr/sbin/craftd -N
1503 ?? S 0:00.09 /usr/sbin/mgd -N
1506 ?? I 0:00.05 /usr/sbin/inetd -N
1507 ?? I 0:00.00 /usr/sbin/tnp.sntpd -N
1508 ?? I 0:00.00 /usr/sbin/tnp.sntpc -N
1510 ?? S 0:00.01 /usr/sbin/smartd -N
1514 ?? I 0:00.07 /usr/sbin/jcsd -N
1515 ?? S 0:00.17 /usr/sbin/idpd -N
1516 ?? I 0:00.00 /usr/libexec/getty Pc ttyv0
2591 ?? DL 0:00.01 [peer proxy]
2592 ?? DL 0:00.01 [peer proxy]
2593 ?? DL 0:00.01 [peer proxy]
2597 ?? DL 0:00.01 [peer proxy]
3192 ?? S 0:00.02 /usr/sbin/irsd -N
3193 ?? S 0:00.05 /usr/sbin/snmpd -N
3194 ?? S 0:00.04 /sbin/dcd -N
3195 ?? I 0:00.01 /usr/sbin/pfed -N
3196 ?? S 0:00.02 /usr/sbin/mib2d -N
3197 ?? I 0:00.03 /usr/sbin/dfwd -N
3198 ?? S 0:00.15 /usr/sbin/ksyncd -N
3559 ?? Ss 0:00.00 mgd: (mgd) (root) (mgd)
3560 ?? R 0:00.00 /bin/ps -ax -jppw
1138 d0- S 0:00.00 /usr/sbin/usbd -N
1156 d0- S 0:00.50 /usr/sbin/eventd -N -r -s -A
1517 d0 Is+ 0:00.00 /usr/libexec/getty std.9600 ttyd0

```

### show system processes (QFX Series)

```

user@switch> show system processes
PID TT STAT TIME COMMAND
0 ?? Wls -2341043:-31.01 [swapper]
1 ?? SLs 0:01.34 /packages/mnt/jbase/sbin/init --
2 ?? DL 2:48.31 [g_event]
3 ?? DL 1:47.44 [g_up]
4 ?? DL 1:37.82 [g_down]
5 ?? DL 0:00.00 [kdm_tcp_poller]
6 ?? DL 0:00.00 [thread taskq]
7 ?? DL 0:04.86 [kqueue taskq]

```

```

 9 ?? DL      0:03.94 [pagedaemon]
10 ?? DL      0:00.00 [ktrace]
11 ?? RL      0:00.00 [idle: cpu31]
12 ?? RL      0:00.00 [idle: cpu30]
13 ?? RL      0:00.00 [idle: cpu29]
14 ?? RL      0:00.00 [idle: cpu28]
15 ?? RL      0:00.00 [idle: cpu27]
16 ?? RL      0:00.00 [idle: cpu26]
17 ?? RL      0:00.00 [idle: cpu25]
18 ?? RL      0:00.00 [idle: cpu24]
19 ?? RL      0:00.00 [idle: cpu23]
20 ?? RL      0:00.00 [idle: cpu22]
21 ?? RL      0:00.00 [idle: cpu21]
22 ?? RL      0:00.00 [idle: cpu20]
23 ?? RL      0:00.00 [idle: cpu19]
24 ?? RL      0:00.00 [idle: cpu18]
25 ?? RL      0:00.00 [idle: cpu17]
26 ?? RL      0:00.00 [idle: cpu16]
27 ?? RL      0:00.00 [idle: cpu15]
28 ?? RL      0:00.00 [idle: cpu14]
29 ?? RL      0:00.00 [idle: cpu13]
30 ?? RL      0:00.00 [idle: cpu12]
31 ?? RL      0:00.00 [idle: cpu11]
32 ?? RL      0:00.00 [idle: cpu10]
33 ?? RL      0:00.00 [idle: cpu9]
34 ?? RL      18184:07.25 [idle: cpu8]
35 ?? RL      0:00.00 [idle: cpu7]
36 ?? RL      17862:11.31 [idle: cpu6]
37 ?? RL      19343:45.16 [idle: cpu5]
38 ?? RL      5192:38.30 [idle: cpu4]
39 ?? RL      0:00.00 [idle: cpu3]
40 ?? RL      19278:02.24 [idle: cpu2]
41 ?? RL      19291:00.72 [idle: cpu1]
42 ?? RL      18910:31.21 [idle: cpu0]
43 ?? WL      19:03.74 [swi2: net]
44 ?? WL      261:43.82 [swi7: clock sio]
45 ?? WL      0:00.00 [swi6: vm]
46 ?? DL      2:18.57 [yarrow]
47 ?? WL      0:00.00 [swi9: +]
48 ?? WL      0:00.00 [swi8: +]
49 ?? WL      0:12.36 [swi5: cambio]
50 ?? WL      0:00.00 [swi9: task queue]
51 ?? WL      0:00.00 [swi0: sio]
52 ?? WL      0:32.40 [irq39: ehci0]
53 ?? DL      0:00.21 [usb0]
54 ?? DL      0:00.00 [usbtask]
55 ?? WL      0:00.00 [irq22: xlr_lbus0]
56 ?? WL      0:00.00 [irq38: xlr_lbus0]
57 ?? WL      0:00.00 [swi3: ip6opt ipopt]
58 ?? WL      0:00.00 [swi4: ip6mismatch+]
59 ?? WL      0:00.00 [swi1: ipfwd]
60 ?? DL      0:18.65 [pagezero]
61 ?? DL      0:18.59 [bufdaemon]
62 ?? DL      1:10.44 [vnlr_u_mem]
63 ?? DL      1:51.66 [syncer]
64 ?? DL      0:20.22 [vnlr_u]
65 ?? DL      0:40.48 [softdepflush]
66 ?? DL      0:00.00 [netdaemon]
67 ?? DL      20:47.67 [vmkmemdaemon]
68 ?? DL      0:00.00 [if_pfe_listen]
69 ?? SL      0:02.80 [kdm_checkkcore]

```

```

70 ?? SL      0:03.34 [kdm_savekcore]
71 ?? SL      0:04.31 [kdm_livekcore]
72 ?? SL      0:06.14 [kdm_logger]
73 ?? SL      0:04.31 [kdm_kdb]
74 ?? SL      0:00.02 [devrt_kernel_thread]
75 ?? DL      0:21.54 [vmuncachedaemon]
76 ?? DL      0:00.00 [if_pic_listen0]
77 ?? SL      0:00.00 [nfsiod 0]
78 ?? SL      0:00.00 [nfsiod 1]
79 ?? SL      0:00.00 [nfsiod 2]
80 ?? SL      0:00.00 [nfsiod 3]
81 ?? WL      5:59.98 [irq13: +]
82 ?? RL      105:06.81 [pkt_sender: cpu0]
83 ?? DL      0:03.62 [md0]
95 ?? DL      0:37.04 [md1]
115 ?? DL     0:06.01 [md2]
135 ?? DL     0:00.75 [md3]
155 ?? DL     0:21.17 [md4]
175 ?? DL     0:01.90 [md5]
195 ?? DL     0:06.26 [md6]
231 ?? DL     0:00.01 [md7]
755 ?? Ss     0:04.17 /usr/sbin/cron
847 ?? S      0:00.10 /usr/sbin/tinetd -N
849 ?? S      0:06.82 /usr/sbin/mgd -N
850 ?? S      0:00.32 /usr/sbin/inetd -N
852 ?? S      1:05.34 /usr/sbin/dhcpd -N
853 ?? S      0:00.18 /usr/sbin/inetd -p /var/run/inetd_4.pid -N -JU __juni
855 ?? L      1181:02.21 /usr/sbin/dc-pfe -N (pafxpc)
857 ?? S      17:55.86 /usr/sbin/vccpd -N
896 ?? S      93:43.45 /usr/sbin/chassism -N
953 ?? S      0:02.89 /sbin/watchdog -t-1
954 ?? S      3:34.00 /sbin/dcd -N
955 ?? S      10:30.13 /usr/sbin/chassisd -N
956 ?? DL     0:00.21 [peer proxy]
957 ?? S      4:07.43 /usr/sbin/alarmd -N
958 ?? S      0:31.69 /usr/sbin/craftd -N
959 ?? S      0:55.16 /usr/sbin/mib2d -N
960 ?? S      3:40.64 /usr/sbin/rpd -N
961 ?? S      0:00.03 /usr/sbin/tnp.snmpd -N
962 ?? S      0:51.94 /usr/sbin/pfed -N
963 ?? S      0:47.31 /usr/sbin/rmopd -N
964 ?? S      0:33.65 /usr/sbin/cosd
965 ?? S      1:48.41 /usr/sbin/ppmd -N
966 ?? S      0:07.18 /usr/sbin/dfwd -N
967 ?? S      1:02.56 /usr/sbin/bfdd -N
968 ?? S      0:00.63 /usr/sbin/rdd -N
969 ?? S      0:40.61 /usr/sbin/dfcd -N
971 ?? S      0:07.81 /usr/sbin/bdbrepd -N
972 ?? S      0:00.28 /usr/sbin/sendd -N
973 ?? S      1:37.69 /usr/sbin/xntpd -j -N -g -JU __juniper_private4__ (nt
974 ?? S      5:56.28 /usr/sbin/snmpd -N -JU __juniper_private4__
975 ?? S      16:46.82 /usr/sbin/jdiameterd -N
976 ?? S      2:34.13 /usr/sbin/eswd -N
977 ?? S      1:03.05 /usr/sbin/sflowd -N
978 ?? S      0:22.30 /usr/sbin/fcd -N
979 ?? S      1:07.01 /usr/sbin/vccpdf -N
982 ?? S      0:25.25 /usr/sbin/mcsnoopd -N
983 ?? S      3:45.68 /usr/sbin/rpdf -N
1043 ?? S      0:37.87 /usr/sbin/lacpd -N
1048 ?? DL     0:01.29 [peer proxy]
1111 ?? WL     0:00.00 [swi2: FMNITHRD+]

```

```
1112 ?? DL 0:00.03 [peer proxy]
12816 ?? S 15:35.32 /usr/sbin/sfid -N
30893 ?? Ss 0:00.65 sshd: tlewis@tty0 (sshd)
30897 ?? Ss 0:00.15 mgd: (mgd) (tlewis)/dev/tty0 (mgd)
30905 ?? Ss 0:00.64 sshd: tlewis@tty1 (sshd)
30909 ?? Ss 0:00.15 mgd: (mgd) (tlewis)/dev/tty1 (mgd)
30910 ?? Ss 0:01.26 sshd: tcheng@tty2 (sshd)
30914 ?? Ss 0:00.80 mgd: (mgd) (tcheng)/dev/tty2 (mgd)
30937 ?? R 0:00.03 /bin/ps -ax
661 d0- S 0:21.24 /usr/sbin/eventd -N -r -s -A
860 d0 Ss+ 0:00.07 /usr/libexec/getty std.9600 ttyd0
30896 p0 Ss+ 0:00.55 -cli (cli)
30908 p1 Ss+ 0:00.50 -cli (cli)
30913 p2 Ss+ 0:00.85 -cli (cli)
```

## show system queues

<b>Syntax</b>	show system queues
<b>Syntax (TX Matrix Router)</b>	show system queues <all-chassis  all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show system queues <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (MX Series Router)</b>	show system queues <all-members> <local> <member <i>member-id</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
<b>Description</b>	Display queue statistics.
<b>Options</b>	<p><b>all-chassis</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system queue statistics for all the T640 routers in the chassis that are connected to the TX Matrix router. On a TX Matrix Plus router, display system queue statistics for all the T1600 or T4000 routers in the chassis that are connected to the TX Matrix Plus router.</p> <p><b>all-lcc</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display system queue statistics for all LCC chassis attached to the TX Matrix or TX Matrix Plus router.</p> <p><b>all-members</b>—(MX Series routers only) (Optional) Display system queue statistics for all members of the Virtual Chassis configuration.</p> <p><b>lcc <i>number</i></b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system queue statistics for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system queue statistics for a specific connected router that is connected to the TX Matrix Plus router.</p> <p>Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"> <li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li> <li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li> <li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> <li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> </ul>

**local**—(MX Series routers only) (Optional) Display system queue statistics for the local Virtual Chassis member.

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

**scc**—(TX Matrix routers only) (Optional) Display queue statistics for the TX Matrix router.

**sfc *number***—(TX Matrix Plus routers only) (Optional) Display system queue statistics for the TX Matrix Plus router. Replace ***number*** with 0.

**Additional Information** By default, when you issue the **show system queues** command on the master Routing Engine of a TX Matrix router or a TX Matrix Plus router, the command is broadcast to all the master Routing Engines of the LCCs connected to it in the routing matrix. Likewise, if you issue the same command on the backup Routing Engine of a TX Matrix or a TX Matrix Plus router, the command is broadcast to all backup Routing Engines of the LCCs that are connected to it in the routing matrix.

**Required Privilege Level** maintenance

**Related Documentation** • [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output** [show system queues on page 1021](#)  
[show system queues scc \(TX Matrix Router\) on page 1021](#)  
[show system queues sfc \(TX Matrix Router\) on page 1022](#)

**Output Fields** [Table 53 on page 1020](#) lists the output fields for the **show system queues** command. Output fields are listed in the approximate order in which they appear.

**Table 53: show system queues Output Fields**

Field Name	Field Description
<b>Output interface</b>	Interface on the router on which the queue exists: <ul style="list-style-type: none"> <li><b>fxp0</b>—Management Ethernet interface</li> <li><b>fxp1</b>—Internal Ethernet interface</li> <li><b>lsi</b>—Internally generated interface and not configurable</li> <li><b>dsc</b>—Discard interface</li> </ul>
<b>bytes</b>	Number of bytes in the queue.
<b>max</b>	Maximum number of bytes allowed in the queue.
<b>packets</b>	Number of packets in the queue.
<b>max</b>	Maximum number of packets allowed in the queue.
<b>drops</b>	Number of packets dropped from the queue.



## Sample Output

### show system queues

```
user@host> show system queues
output interface      bytes      max      packets  max      drops
fxp0                  0      1250000      0      4166      6
fxp1                  0      1250000      0      4166     19
lsi                   0       12500       0       41       0
dsc                   0         0         0         0       0
```

### show system queues scc (TX Matrix Router)

```
user@host> show system queues scc
output interface      bytes      max      packets  max      drops
fxp0                  0      1250000      0      4166      5
lsi                   0       12500       0       41       0
dsc                   0         0         0         0       0
lo0                   0         0         0         0       0
bcm0                  0     12500000      0     30000      0
em0                   0     12500000      0     30000      0
gre                   0       12500       0       41       0
ipip                  0       12500       0       41       0
tap                   0         0         0         0       0
pime                  0       12500       0       41       0
pimd                  0       12500       0       41       0
mtun                  0       12500       0       41       0
so-1/0/0              0       12500       0       416      0
so-1/1/0              0       12500       0       416      0
so-21/0/0             0       12500       0       416      0
ge-21/1/0             0     1250000      0     4166      0
ge-21/1/1             0     1250000      0     4166      3
ge-21/2/0             0     1250000      0     4166      0
ge-21/2/1             0     1250000      0     4166      3
so-21/3/0             0       12500       0       416      0
so-0/0/0              0       12500       0       416      0
so-0/1/0              0       12500       0       416      0
so-0/2/0              0       12500       0       416      0
pd-0/3/0              0       12500       0       41       0
pe-0/3/0              0       12500       0       41       0
gr-0/3/0              0       12500       0       41       0
ip-0/3/0              0       12500       0       41       0
vt-0/3/0              0       12500       0       41       0
mt-0/3/0              0       12500       0       41       0
lt-0/3/0              0       12500       0       41       0
so-17/0/0             0       12500       0       416      0
input protocol      bytes      max      packets  max      drops
splfdq               0     1000000      0      1000      0
splnetq              0     1000000      0      1000      0
arpintrq             0       1000       0       50       0
optionq              0     200000      0       200      0
icmpq                0       50000      0       50       0
frlmiq               0         0         0         0       0
spppintrq            0       25000      0       250      0
clnlintrq            0     200000      0       200      0
tnpintrq             0     1250000      0     4166      0
tagintrq             0     200000      0       200      0
tagfragq            0     200000      0       200      0
```

## show system queues sfc (TX Matrix Router)

```
user@host> show system queues sfc 0
sfc0-re0:
```

output interface	bytes	max	packets	max	drops
ixgbe1	0	125000000	0	45000	4384
ixgbe0	0	125000000	0	45000	0
lsi	0	12500	0	41	0
dsc	0	0	0	0	0
lo0	0	0	0	0	0
em0	0	12500000	0	41666	1
gre	0	12500	0	41	0
ipip	0	12500	0	41	0
tap	0	0	0	0	0
pime	0	12500	0	41	0
pimd	0	12500	0	41	0
mtun	0	12500	0	41	0
xe-12/0/0	0	1250000	0	4166	0
xe-12/0/1	0	1250000	0	4166	0
xe-12/0/2	0	1250000	0	4166	0
xe-12/0/3	0	1250000	0	4166	0
xe-12/1/0	0	1250000	0	4166	0
xe-12/1/1	0	1250000	0	4166	0
xe-12/1/2	0	1250000	0	4166	0
xe-12/1/3	0	1250000	0	4166	0
xe-20/0/0	0	1250000	0	4166	0
xe-20/0/1	0	1250000	0	4166	0
xe-20/0/2	0	1250000	0	4166	0
xe-20/0/3	0	1250000	0	4166	0
xe-20/1/0	0	1250000	0	4166	0
xe-20/1/1	0	1250000	0	4166	0
xe-20/1/2	0	1250000	0	4166	0
xe-20/1/3	0	1250000	0	4166	0
ge-15/0/0	0	1250000	0	4166	75
ge-15/0/1	0	1250000	0	4166	0
ge-15/0/2	0	1250000	0	4166	75
ge-15/0/3	0	1250000	0	4166	75
ge-15/0/4	0	1250000	0	4166	0
ge-15/0/5	0	1250000	0	4166	0
ge-15/0/6	0	1250000	0	4166	0
ge-15/0/7	0	1250000	0	4166	0
ge-15/0/8	0	1250000	0	4166	0
ge-15/0/9	0	1250000	0	4166	0
xe-4/0/0	0	1250000	0	4166	0
xe-4/0/1	0	1250000	0	4166	0
xe-4/0/2	0	1250000	0	4166	0
xe-4/0/3	0	1250000	0	4166	0
xe-4/1/0	0	1250000	0	4166	0
xe-4/1/1	0	1250000	0	4166	0
xe-4/1/2	0	1250000	0	4166	0
xe-4/1/3	0	1250000	0	4166	0
xe-24/0/0	0	1250000	0	4166	0
xe-24/0/1	0	1250000	0	4166	0
xe-24/0/2	0	1250000	0	4166	0
xe-24/0/3	0	1250000	0	4166	0
xe-24/1/0	0	1250000	0	4166	0
xe-24/1/1	0	1250000	0	4166	0
xe-24/1/2	0	1250000	0	4166	0
xe-24/1/3	0	1250000	0	4166	0
ge-7/0/0	0	1250000	0	4166	0

ge-7/0/1	0	1250000	0	4166	0
ge-7/0/2	0	1250000	0	4166	0
ge-7/0/3	0	1250000	0	4166	75
ge-7/0/4	0	1250000	0	4166	0
ge-7/0/5	0	1250000	0	4166	0
ge-7/0/6	0	1250000	0	4166	0
ge-7/0/7	0	1250000	0	4166	0
ge-7/0/8	0	1250000	0	4166	0
ge-7/0/9	0	1250000	0	4166	0
so-7/1/0	0	125000	0	416	0
so-7/2/0	0	125000	0	416	0
xe-21/0/0	0	1250000	0	4166	0
xe-21/0/1	0	1250000	0	4166	0
xe-21/0/2	0	1250000	0	4166	0
xe-21/0/3	0	1250000	0	4166	0
xe-21/1/0	0	1250000	0	4166	0
xe-21/1/1	0	1250000	0	4166	0
xe-21/1/2	0	1250000	0	4166	0
xe-21/1/3	0	1250000	0	4166	0
xe-14/0/0	0	1250000	0	4166	0
xe-14/0/1	0	1250000	0	4166	0
xe-14/0/2	0	1250000	0	4166	0
xe-14/0/3	0	1250000	0	4166	0
xe-14/1/0	0	1250000	0	4166	0
xe-14/1/1	0	1250000	0	4166	0
xe-14/1/2	0	1250000	0	4166	0
xe-14/1/3	0	1250000	0	4166	0
xe-25/0/0	0	1250000	0	4166	0
xe-25/0/1	0	1250000	0	4166	0
xe-25/0/2	0	1250000	0	4166	0
xe-25/0/3	0	1250000	0	4166	0
xe-25/1/0	0	1250000	0	4166	0
xe-25/1/1	0	1250000	0	4166	0
xe-25/1/2	0	1250000	0	4166	0
xe-25/1/3	0	1250000	0	4166	0
so-22/0/0	0	125000	0	416	0
so-22/0/1	0	125000	0	416	0
so-22/0/2	0	125000	0	416	0
so-22/0/3	0	125000	0	416	0
xe-22/1/0	0	1250000	0	4166	0
xe-22/1/1	0	1250000	0	4166	0
xe-22/1/2	0	1250000	0	4166	0
xe-22/1/3	0	1250000	0	4166	0
xe-6/0/0	0	1250000	0	4166	0
xe-6/0/1	0	1250000	0	4166	0
xe-6/0/2	0	1250000	0	4166	0
xe-6/0/3	0	1250000	0	4166	0
xe-6/1/0	0	1250000	0	4166	0
xe-6/1/1	0	1250000	0	4166	0
xe-6/1/2	0	1250000	0	4166	0
xe-6/1/3	0	1250000	0	4166	0
xe-26/0/0	0	1250000	0	4166	0
xe-26/0/1	0	1250000	0	4166	0
xe-26/0/2	0	1250000	0	4166	0
xe-26/0/3	0	1250000	0	4166	0
xe-26/1/0	0	1250000	0	4166	0
xe-26/1/1	0	1250000	0	4166	0
xe-26/1/2	0	1250000	0	4166	0
xe-26/1/3	0	1250000	0	4166	0
ge-31/0/0	0	1250000	0	4166	0
ge-31/0/1	0	1250000	0	4166	0

ge-31/0/2	0	1250000	0	4166	0
ge-31/0/3	0	1250000	0	4166	0
ge-31/0/4	0	1250000	0	4166	75
ge-31/0/5	0	1250000	0	4166	0
ge-31/0/6	0	1250000	0	4166	75
ge-31/0/7	0	1250000	0	4166	0
ge-31/0/8	0	1250000	0	4166	0
ge-31/0/9	0	1250000	0	4166	0
pd-31/1/0	0	12500	0	41	0
pe-31/1/0	0	12500	0	41	0
gr-31/1/0	0	12500	0	41	0
ip-31/1/0	0	12500	0	41	0
vt-31/1/0	0	12500	0	41	0
mt-31/1/0	0	12500	0	41	0
lt-31/1/0	0	12500	0	41	0
so-29/0/0	0	125000	0	416	0
so-29/0/1	0	125000	0	416	0
so-29/0/2	0	125000	0	416	0
so-29/0/3	0	125000	0	416	0
xe-29/1/0	0	1250000	0	4166	0
xe-29/1/1	0	1250000	0	4166	0
xe-29/1/2	0	1250000	0	4166	0
xe-29/1/3	0	1250000	0	4166	0
so-28/0/0	0	125000	0	416	0
so-28/0/1	0	125000	0	416	0
so-28/0/2	0	125000	0	416	0
so-28/0/3	0	125000	0	416	0
ge-23/0/0	0	1250000	0	4166	0
ge-23/0/1	0	1250000	0	4166	0
ge-23/0/2	0	1250000	0	4166	0
ge-23/0/3	0	1250000	0	4166	0
ge-23/0/4	0	1250000	0	4166	0
ge-23/0/5	0	1250000	0	4166	0
ge-23/0/6	0	1250000	0	4166	0
ge-23/0/7	0	1250000	0	4166	0
ge-23/0/8	0	1250000	0	4166	0
ge-23/0/9	0	1250000	0	4166	0
input protocol	bytes	max	packets	max	drops
sp1fwdq	0	1000000	0	1000	0
sp1netq	0	1000000	0	1000	0
arpintrq	0	1000	0	50	0
optionq	0	200000	0	200	0
icmpq	0	50000	0	50	0
frlmiq	0	0	0	0	0
spppintrq	0	25000	0	250	0
atmctlpktq	0	0	0	0	0
atmoamq	0	0	0	0	0
tnpintrq	0	1250000	0	4166	0
tagintrq	0	200000	0	200	0
tagfragq	0	200000	0	200	0

## show system reboot

<b>Syntax</b>	show system reboot <both-routing-engines>
<b>Syntax (EX Series Switches)</b>	show system reboot <all-members> <both-routing-engines> <local> <member <i>member-id</i> >
<b>Syntax (TX Matrix Router)</b>	show system reboot <all-chassis   all-lcc   lcc <i>number</i>   scc> <both-routing-engines>
<b>Syntax (TX Matrix Plus Router)</b>	show system reboot <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> > <both-routing-engines>
<b>Syntax (MX Series Router)</b>	show system reboot <all-members> <both-routing-engines> <local> <member <i>member-id</i> >
<b>Syntax (QFX Series)</b>	show system reboot <both-routing-engines> <infrastructure <i>name</i> > <interconnect-device <i>name</i> > <node-device <i>name</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> 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.
<b>Description</b>	Display pending system reboots or halts.
<b>Options</b>	<p><b>none</b>—Display pending reboots or halts on the active Routing Engine.</p> <p><b>all-chassis</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display halt or reboot request information for all the T640 routers in the chassis that are connected to the TX Matrix router. On a TX Matrix Plus router, display halt or reboot request information for all the T1600 or T4000 routers in the chassis that are connected to the TX Matrix Plus router.</p> <p><b>all-members</b>—(EX4200 switches and MX Series routers only) (Optional) Display halt or reboot request information for all members of the Virtual Chassis configuration.</p> <p><b>all-lcc</b>—(TX Matrix routers and TX Matrix Plus router only) (Optional) On a TX Matrix Plus router, display system halt or reboot request information for all T640 routers</p>

connected to the TX Matrix router. On a TX Matrix Plus router, display halt or reboot request information for all connected T1600 or T4000 LCCs.

**both-routing-engines**—(Systems with multiple Routing Engines) (Optional) Display halt or reboot request information on both Routing Engines.

**infrastructure *name***—(QFabric systems only) (Optional) Display reboot request information on the fabric manager Routing Engines and fabric control Routing Engines.

**interconnect-device *name***—(QFabric systems only) (Optional) Display reboot request information on the Interconnect device.

**lcc *number***—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display halt or reboot request information for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display halt or reboot request information for a specific router that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(EX4200 switches and MX Series routers only) (Optional) Display halt or reboot request information for the local Virtual Chassis member.

**member *member-id***—(EX4200 switches and MX Series routers only) (Optional) Display halt or reboot request information for the specified member of the Virtual Chassis configuration. For EX4200 switches, replace *member-id* with a value from 0 through 9. For an MX Series Virtual Chassis, replace *member-id* with a value of 0 or 1.

**node-group *name***—(QFabric systems only) (Optional) Display reboot request information on the Node group.

**scc**—(TX Matrix router only) (Optional) Display halt or reboot request information for the TX Matrix router (or switch-card chassis).

**sfc**—(TX Matrix Plus router only) (Optional) Display halt or reboot request information for the TX Matrix Plus router.

**Additional Information** By default, when you issue the **show system reboot** command on a TX Matrix or TX Matrix Plus master Routing Engine, the command is broadcast to all the T640 (in a routing matrix based on the TX Matrix router) or T1600 (in a routing matrix based on the TX Matrix Plus router) master Routing Engines connected to it. Likewise, if you issue the

same command on the TX Matrix or TX Matrix Plus backup Routing Engine, the command is broadcast to all the T640 (in a routing matrix based on the TX Matrix router) or T1600 (in a routing matrix based on the TX Matrix Plus router) backup Routing Engines that are connected to it.

**Required Privilege Level** maintenance

**Related Documentation**

- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output** [show system reboot on page 1027](#)  
[show system reboot all-lcc \(TX Matrix Router\) on page 1027](#)  
[show system reboot sfc \(TX Matrix Plus Router\) on page 1027](#)  
[show system reboot \(QFX3500 Switch\) on page 1027](#)

## Sample Output

### show system reboot

```
user@host> show system reboot
reboot requested by root at Wed Feb 10 17:40:46 1999
[process id 17885]
```

### show system reboot all-lcc (TX Matrix Router)

```
user@host> show system reboot all-lcc
lcc0-re0:
-----
No shutdown/reboot scheduled.

lcc2-re0:
-----
No shutdown/reboot scheduled.
```

### show system reboot sfc (TX Matrix Plus Router)

```
user@host> show system sfc 0
No shutdown/reboot scheduled.
```

### show system reboot (QFX3500 Switch)

```
user@switch> show system reboot
No shutdown/reboot scheduled.
```

## show system statistics arp

---

<b>Syntax</b>	show system statistics arp
<b>Syntax (EX Series Switches)</b>	show system statistics arp <all-members> <local> <member <i>member-id</i> >
<b>Syntax (TX Matrix Router)</b>	show system statistics arp <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show system statistics arp <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
<b>Description</b>	Display system-wide Address Resolution Protocol (ARP) statistics.
<b>Options</b>	<p><b>none</b>—Display system-wide ARP statistics.</p> <p><b>all-chassis</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display ARP statistics for all the routers in the chassis.</p> <p><b>all-lcc</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system-wide ARP statistics for all T640 routers connected to the TX Matrix router. On a TX Matrix Plus router, display system-wide ARP statistics for all routers connected to the TX Matrix Plus router</p> <p><b>all-members</b>—(EX4200 switches only) (Optional) Display ARP statistics for all members of the Virtual Chassis configuration.</p> <p><b>lcc <i>number</i></b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display ARP statistics for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display ARP statistics for a specific router that is connected to the TX Matrix Plus router.</p> <p>Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"><li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li><li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li><li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li><li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li></ul>



**local**—(EX4200 switches only) (Optional) Display ARP statistics for the local Virtual Chassis member.

**member *member-id***—(EX4200 switches only) (Optional) Display ARP statistics for the specified member of the Virtual Chassis configuration. Replace *member-id* with a value from 0 through 9.

**scc**—(TX Matrix routers only) (Optional) Display ARP statistics for the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Display ARP statistics for the TX Matrix Plus router. Replace *number* with 0.

**Additional Information** By default, when you issue the **show system statistics arp** command on the master Routing Engine of a TX Matrix router or a TX Matrix Plus router, the command is broadcast to all the master Routing Engines of the LCCs connected to it in the routing matrix. Likewise, if you issue the same command on the backup Routing Engine of a TX Matrix or a TX Matrix Plus router, the command is broadcast to all backup Routing Engines of the LCCs that are connected to it in the routing matrix.

**Required Privilege Level** view

**Related Documentation** • [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output** [show system statistics arp on page 1029](#)  
[show system statistics arp \(EX Series Switches\) on page 1030](#)  
[show system statistics arp \(TX Matrix Plus Router\) on page 1030](#)

## Sample Output

### show system statistics arp

```
user@host> show system statistics arp
arp:
    184710 datagrams received
    2886 ARP requests received
    684 ARP replies received
    0 resolution request received
    0 unrestricted proxy requests
    0 restricted proxy requests
    0 received proxy requests
    0 unrestricted proxy requests not proxied
    0 restricted proxy requests not proxied
    0 datagrams with bogus interface
    0 datagrams with incorrect length
    0 datagrams for non-IP protocol
    0 datagrams with unsupported op code
    0 datagrams with bad protocol address length
    0 datagrams with bad hardware address length
    0 datagrams with multicast source address
    0 datagrams with multicast target address
    0 datagrams with my own hardware address
    0 datagrams for an address not on the interface
    0 datagrams with a broadcast source address
```

```
0 datagrams with source address duplicate to mine
181140 datagrams which were not for me
0 packets discarded waiting for resolution
4 packets sent after waiting for resolution
703 ARP requests sent
2886 ARP replies sent
0 requests for memory denied
0 requests dropped on entry
0 requests dropped during retry
0 requests dropped due to interface deletion
0 requests on unnumbered interfaces
0 new requests on unnumbered interfaces
0 replies for from unnumbered interfaces
0 requests on unnumbered interface with non-subnetted donor
0 replies from unnumbered interface with non-subnetted donor
```

#### show system statistics arp (EX Series Switches)

```
user@host> show system statistics arp
arp:
186423 datagrams received
88 ARP requests received
88 ARP replies received
0 resolution request received
0 unrestricted proxy requests
0 restricted proxy requests
0 received proxy requests
0 proxy requests not proxied
0 restricted proxy requests not proxied
0 datagrams with bogus interface
0 datagrams with incorrect length
0 datagrams for non-IP protocol
0 datagrams with unsupported op code
0 datagrams with bad protocol address length
0 datagrams with bad hardware address length
0 datagrams with multicast source address
0 datagrams with multicast source address
0 datagrams with my own hardware address
164 datagrams for an address not on the interface
0 datagrams with a broadcast source address
0 datagrams with source address duplicate to mine
186075 datagrams which were not for me
0 packets discarded waiting for resolution
0 packets sent after waiting for resolution
50 ARP requests sent
88 ARP replies sent
0 requests for memory denied
0 requests dropped on entry
0 requests dropped during retry
0 requests dropped due to interface deletion
0 requests on unnumbered interfaces
0 new requests on unnumbered interfaces
0 replies for from unnumbered interfaces
0 requests on unnumbered interface with non-subnetted donor
0 replies from unnumbered interface with non-subnetted donor
```

#### show system statistics arp (TX Matrix Plus Router)

```
user@host> show system statistics arp
sfc0-re0:
```

-----

arp:

```

487 datagrams received
8 ARP requests received
438 ARP replys received
438 resolution requests received
0 unrestricted proxy requests
0 restricted proxy requests
0 received proxy requests
0 proxy requestss not proxied
0 restricted-proxy requestss not proxied
0 with bogus interface
0 with incorrect length
0 for non-IP protocol
0 with unsupported op code
0 with bad protocol address length
0 with bad hardware address length
0 with multicast source address
0 with multicast target address
0 with my own hardware address
0 for an address not on the interface
0 with a broadcast source address
0 with source address duplicate to mine
41 which were not for me
0 packets discarded waiting for resolution
438 packets sent after waiting for resolution
1282 ARP requests sent
8 ARP replys sent
0 requests for memory denied
0 requests dropped on entry
0 requests dropped during retry
0 requests dropped due to interface deletion
0 requests on unnumbered interfaces
0 new requests on unnumbered interfaces
0 replies for from unnumbered interfaces
0 requests on unnumbered interface with non-subnetted donor
0 replies from unnumbered interface with non-subnetted donor

```

1cc0-re0:

arp:

```

19 datagrams received
0 ARP requests received
1 ARP reply received
0 resolution requests received
0 unrestricted proxy requests
0 restricted proxy requests
0 received proxy requests
0 proxy requestss not proxied
0 restricted-proxy requestss not proxied
0 with bogus interface
0 with incorrect length
0 for non-IP protocol
0 with unsupported op code
0 with bad protocol address length
0 with bad hardware address length
0 with multicast source address
0 with multicast target address
0 with my own hardware address
0 for an address not on the interface
0 with a broadcast source address
0 with source address duplicate to mine

```

```
18 which were not for me
0 packets discarded waiting for resolution
0 packets sent after waiting for resolution
8 ARP requests sent
0 ARP replys sent
0 requests for memory denied
0 requests dropped on entry
0 requests dropped during retry
0 requests dropped due to interface deletion
0 requests on unnumbered interfaces
0 new requests on unnumbered interfaces
0 replies for from unnumbered interfaces
0 requests on unnumbered interface with non-subnetted donor
0 replies from unnumbered interface with non-subnetted donor
```

lcc1-re0:

-----  
arp:

```
17 datagrams received
0 ARP requests received
1 ARP reply received
0 resolution requests received
0 unrestricted proxy requests
0 restricted proxy requests
0 received proxy requests
0 proxy requestss not proxied
0 restricted-proxy requestss not proxied
0 with bogus interface
0 with incorrect length
0 for non-IP protocol
0 with unsupported op code
0 with bad protocol address length
0 with bad hardware address length
0 with multicast source address
0 with multicast target address
0 with my own hardware address
0 for an address not on the interface
0 with a broadcast source address
0 with source address duplicate to mine
16 which were not for me
0 packets discarded waiting for resolution
0 packets sent after waiting for resolution
9 ARP requests sent
0 ARP replys sent
0 requests for memory denied
0 requests dropped on entry
0 requests dropped during retry
0 requests dropped due to interface deletion
0 requests on unnumbered interfaces
0 new requests on unnumbered interfaces
0 replies for from unnumbered interfaces
0 requests on unnumbered interface with non-subnetted donor
0 replies from unnumbered interface with non-subnetted donor
```

lcc2-re0:

-----  
arp:

```
18 datagrams received
1 ARP request received
1 ARP reply received
0 resolution requests received
```

```

0 unrestricted proxy requests
0 restricted proxy requests
0 received proxy requests
0 proxy requestss not proxied
0 restricted-proxy requestss not proxied
0 with bogus interface
0 with incorrect length
0 for non-IP protocol
0 with unsupported op code
0 with bad protocol address length
0 with bad hardware address length
0 with multicast source address
0 with multicast target address
0 with my own hardware address
0 for an address not on the interface
0 with a broadcast source address
0 with source address duplicate to mine
16 which were not for me
0 packets discarded waiting for resolution
0 packets sent after waiting for resolution
9 ARP requests sent
1 ARP reply sent
0 requests for memory denied
0 requests dropped on entry
0 requests dropped during retry
0 requests dropped due to interface deletion
0 requests on unnumbered interfaces
0 new requests on unnumbered interfaces
0 replies for from unnumbered interfaces
0 requests on unnumbered interface with non-subnetted donor
0 replies from unnumbered interface with non-subnetted donor

```

lcc3-re0:

-----  
arp:

```

13 datagrams received
0 ARP requests received
1 ARP reply received
0 resolution requests received
0 unrestricted proxy requests
0 restricted proxy requests
0 received proxy requests
0 proxy requestss not proxied
0 restricted-proxy requestss not proxied
0 with bogus interface
0 with incorrect length
0 for non-IP protocol
0 with unsupported op code
0 with bad protocol address length
0 with bad hardware address length
0 with multicast source address
0 with multicast target address
0 with my own hardware address
0 for an address not on the interface
0 with a broadcast source address
0 with source address duplicate to mine
12 which were not for me
0 packets discarded waiting for resolution
0 packets sent after waiting for resolution
8 ARP requests sent
0 ARP replys sent

```

0 requests for memory denied  
0 requests dropped on entry  
0 requests dropped during retry  
0 requests dropped due to interface deletion  
0 requests on unnumbered interfaces  
0 new requests on unnumbered interfaces  
0 replies for from unnumbered interfaces  
0 requests on unnumbered interface with non-subnetted donor  
0 replies from unnumbered interface with non-subnetted donor

## show system statistics clns

<b>Syntax</b>	show system statistics clns
<b>Syntax (TX Matrix Router)</b>	show system statistics clns <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show system statistics clns <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
<b>Description</b>	Display system-wide Connectionless Network Service (CLNS) statistics.
<b>Options</b>	<p><b>all-chassis</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display system statistics for CLNS for all the routers in the chassis.</p> <p><b>all-lcc</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for CLNS for all T640 routers connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for CLNS for all connected T1600 or T4000 LCCs.</p> <p><b>lcc <i>number</i></b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for CLNS for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for CLNS for a specific router that is connected to the TX Matrix Plus router. Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"> <li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li> <li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li> <li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> <li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> </ul> <p><b>scc</b>—(TX Matrix routers only) (Optional) Display system statistics for CLNS for the TX Matrix router (or switch-card chassis).</p> <p><b>sfc <i>number</i></b>—(TX Matrix Plus routers only) (Optional) Display system statistics for CLNS for the TX Matrix Plus router. Replace <i>number</i> with 0.</p>
<b>Additional Information</b>	By default, when you issue the <b>show system statistics clns</b> command on the master Routing Engine of a TX Matrix router or TX Matrix Plus router, the command is broadcast to all the master Routing Engines of the LCCs connected to it in the routing matrix. Likewise, if you issue the same command on the backup Routing Engine of a TX Matrix

or a TX Matrix Plus router, the command is broadcast to all backup Routing Engines of the LCCs that are connected to it in the routing matrix.

**Required Privilege Level** view

**Related Documentation**

- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output** [show system statistics clns on page 1036](#)  
[show system statistics clns \(EX Series Switches\) on page 1036](#)  
[show system statistics clns \(TX Matrix Plus Router\) on page 1037](#)

## Sample Output

### show system statistics clns

```
user@host> show system statistics clns
cln1:
  0 total packets received
  0 packets delivered
  0 too small
  0 bad header length
  0 bad checksum
  0 bad version
  0 unknown or unsupported protocol
  0 bogus sdl size
  0 no free memory in socket buffer
  0 send packets discarded
  0 sbappend failure
  0 mcopy failure
  0 address fields were not reasonable
  0 segment information forgotten
  0 forwarded packets
  0 total packets sent
  0 output packets discarded
  0 non-forwarded packets
  0 packets fragmented
  0 fragments sent
  0 fragments discarded
  0 fragments timed out
  0 fragmentation prohibited
  0 packets reconstructed
  0 packets destined to dead nexthop
  0 packets discarded due to no route
  0 Error pdu rate drops
  0 ER pdu generation failure
```

### show system statistics clns (EX Series Switches)

```
user@host> show system statistics clns
cln1:
  0 Total packets received
  0 Packets delivered
  0 Too small packets
  0 Packets with bad header length
  0 Packets with bad checksum
  0 Bad version packets
  0 Unknown or unsupported protocol packets
  0 Packets with bogus sdl size
```



```

0 No free memory in socket buffer
0 Send packets discarded
0 Sbappend failure
0 Mcopy failure
0 Address fields were not reasonable
0 Segment information forgotten
0 Forwarded packets
0 Total packets sent
0 Output packets discarded
0 Non-forwarded packets
0 Packets fragmented
0 Fragments sent
0 Fragments discarded
0 Fragments timed out
0 Fragmentation prohibited
0 Packets reconstructed
0 Packets destined to dead nexthop
0 Packets discarded due to no route
0 Error pdu rate drops
0 ER pdu generation failure

```

#### show system statistics clns (TX Matrix Plus Router)

```

user@host> show system statistics clns
sfc0-re0:

```

```

-----
cln1:

```

```

0 total packets received
0 packets delivered
0 too small
0 bad header length
0 bad checksum
0 bad version
0 unknown or unsupport protocol
0 bogus sdl size
0 no free memory in socket buffer
0 send packets discarded
0 sbappend failure
0 mcopy failure
0 address fields were not reasonable
0 segment information forgotten
0 forwarded packets
0 total packets sent
0 output packets discarded
0 non-forwarded packets
0 packets fragmented
0 fragments sent
0 fragments discarded
0 fragments timed out
0 fragmentation prohibited
0 packets reconstructed
0 packets destined to dead nexthop
0 packets discarded due to no route
0 Error pdu rate drops
0 ER pdu generation failure

```

```

lcc0-re1:

```

```

-----
cln1:

```

```

0 total packets received
0 packets delivered

```

```

0 too small
0 bad header length
0 bad checksum
0 bad version
0 unknown or unsupported protocol
0 bogus sdl size
0 no free memory in socket buffer
0 send packets discarded
0 sbappend failure
0 mcopy failure
0 address fields were not reasonable
0 segment information forgotten
0 forwarded packets
0 total packets sent
0 output packets discarded
0 non-forwarded packets
0 packets fragmented
0 fragments sent
0 fragments discarded
0 fragments timed out
0 fragmentation prohibited
0 packets reconstructed
0 packets destined to dead nexthop
0 packets discarded due to no route
0 Error pdu rate drops
0 ER pdu generation failure

```

lcc1-re1:

-----  
c1n1:

```

0 total packets received
0 packets delivered
0 too small
0 bad header length
0 bad checksum
0 bad version
0 unknown or unsupported protocol
0 bogus sdl size
0 no free memory in socket buffer
0 send packets discarded
0 sbappend failure
0 mcopy failure
0 address fields were not reasonable
0 segment information forgotten
0 forwarded packets
0 total packets sent
0 output packets discarded
0 non-forwarded packets
0 packets fragmented
0 fragments sent
0 fragments discarded
0 fragments timed out
0 fragmentation prohibited
0 packets reconstructed
0 packets destined to dead nexthop
0 packets discarded due to no route
0 Error pdu rate drops
0 ER pdu generation failure

```

lcc2-re1:

-----

```

c1n1:
0 total packets received
0 packets delivered
0 too small
0 bad header length
0 bad checksum
0 bad version
0 unknown or unsupport protocol
0 bogus sdl size
0 no free memory in socket buffer
0 send packets discarded
0 sbappend failure
0 mcopy failure
0 address fields were not reasonable
0 segment information forgotten
0 forwarded packets
0 total packets sent
0 output packets discarded
0 non-forwarded packets
0 packets fragmented
0 fragments sent
0 fragments discarded
0 fragments timed out
0 fragmentation prohibited
0 packets reconstructed
0 packets destined to dead nexthop
0 packets discarded due to no route
0 Error pdu rate drops
0 ER pdu generation failure

```

```
lcc3-re1:
```

```

-----
c1n1:
0 total packets received
0 packets delivered
0 too small
0 bad header length
0 bad checksum
0 bad version
0 unknown or unsupport protocol
0 bogus sdl size
0 no free memory in socket buffer
0 send packets discarded
0 sbappend failure
0 mcopy failure
0 address fields were not reasonable
0 segment information forgotten
0 forwarded packets
0 total packets sent
0 output packets discarded
0 non-forwarded packets
0 packets fragmented
0 fragments sent
0 fragments discarded
0 fragments timed out
0 fragmentation prohibited
0 packets reconstructed
0 packets destined to dead nexthop
0 packets discarded due to no route

```

0 Error pdu rate drops  
0 ER pdu generation failure

## show system statistics icmp

<b>Syntax</b>	show system statistics icmp
<b>Syntax (EX Series Switches)</b>	show system statistics icmp <all-members> <local> <member <i>member-id</i> >
<b>Syntax (TX Matrix Router)</b>	show system statistics icmp <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show system statistics icmp <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
<b>Description</b>	Display system-wide Internet Control Message Protocol (ICMP) statistics.
<b>Options</b>	<p><b>none</b>—Display system statistics for ICMP.</p> <p><b>all-chassis</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display system statistics for ICMP for all the routers in the chassis.</p> <p><b>all-lcc</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for ICMP for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for ICMP for all connected T1600 or T4000 LCCs.</p> <p><b>all-members</b>—(EX4200 switches only) (Optional) Display ICMP statistics for all members of the Virtual Chassis configuration.</p> <p><b>lcc <i>number</i></b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for ICMP for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for ICMP for a specific router that is connected to the TX Matrix Plus router. Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"> <li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li> <li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li> <li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> <li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> </ul>

**local**—(EX4200 switches only) (Optional) Display ICMP statistics for the local Virtual Chassis member.

**member *member-id***—(EX4200 switches only) (Optional) Display ICMP statistics for the specified member of the Virtual Chassis configuration. Replace *member-id* with a value from 0 through 9.

**scc**—(TX Matrix routers only) (Optional) Display system statistics for ICMP for the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers and TX Matrix Plus routers with 3D SIBs only) (Optional) Display system statistics for ICMP for the TX Matrix Plus router. Replace *number* with 0.

**Additional Information** By default, when you issue the **show system statistics icmp** command on the master Routing Engine of a TX Matrix router or a TX Matrix Plus router, the command is broadcast to all the master Routing Engines of the LCCs connected to it in the routing matrix. Likewise, if you issue the same command on the backup Routing Engine of a TX Matrix or a TX Matrix Plus router, the command is broadcast to all backup Routing Engines of the LCCs that are connected to it in the routing matrix.

**Required Privilege Level** view

**Related Documentation**

- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output** [show system statistics icmp on page 1042](#)  
[show system statistics icmp \(EX Series Switches\) on page 1043](#)  
[show system statistics icmp \(TX Matrix Plus Router\) on page 1043](#)

## Sample Output

### show system statistics icmp

```
user@host> show system statistics icmp
icmp:
    16783 drops due to rate limit
    9998 calls to icmp_error
    0 errors not generated because old message was icmp
    Output Histogram
        38877 echo reply
        1 destination unreachable
        1 routing redirect
        163 echo
        5000 time exceeded
        4996 parameter problem
        5000 time stamp reply
    0 messages with bad code fields
    0 messages less than the minimum length
    0 messages with bad checksum
    0 messages with bad source address
    20000 messages with bad length
    0 echo drops with broadcast or multicast destination address
    0 timestamp drops with broadcast or multicast destination address
    Input Histogram
```

```

5093 echo reply
5000 destination unreachable
5000 source quench
5000 routing redirect
5000 alternate host address
38877 echo
5000 router advertisement
5000 router solicitation
5000 time exceeded
5000 parameter problem
5000 time stamp
5000 time stamp reply
5000 information request
5000 information request reply
5000 address mask request
5000 address mask reply
5000 traceroute
5000 data conversion error
5000 mobile host redirect
5000 IPv6 where-are-you
5000 IPv6 i-am-here
5000 mobile registration request
5000 mobile registration reply
5000 skip
5000 photuris
43877 message responses generated

```

#### show system statistics icmp (EX Series Switches)

```

user@host> show system statistics icmp
icmp:
  0 drops due to rate limit
  12 calls to icmp_error
  0 errors not generated because old message was icmp
  Output histogram:
    297 echo reply
    12 destination unreachable
  0 messages with bad code fields
  0 messages less than the minimum length
  0 messages with bad checksum
  0 messages with bad source address
  0 messages with bad length
  0 echo drops with broadcast or multicast destination address
  0 timestamp drops with broadcast or multicast destination address
  Input histogram:
    297 echo
  297 message responses generated

```

#### show system statistics icmp (TX Matrix Plus Router)

```

user@host> show system statistics icmp
sfc0-re0:
-----
icmp:
  0 drops due to rate limit
  0 calls to icmp_error
  0 errors not generated because old message was icmp
  Output histogram:
    echo reply: 21
  0 messages with bad code fields
  0 messages less than the minimum length

```

```
0 messages with bad checksum
0 messages with bad source address
0 messages with bad length
0 echo drops with broadcast or multicast destination address
0 timestamp drops with broadcast or multicast destination address
Input histogram:
    echo: 21
21 message responses generated
```

lcc0-re0:

```
-----
icmp:
    0 drops due to rate limit
    1 call to icmp_error
    0 errors not generated because old message was icmp
Output histogram:
    echo reply: 24
    destination unreachable: 1
0 messages with bad code fields
0 messages less than the minimum length
0 messages with bad checksum
0 messages with bad source address
0 messages with bad length
0 echo drops with broadcast or multicast destination address
0 timestamp drops with broadcast or multicast destination address
Input histogram:
    echo: 24
24 message responses generated
```

lcc1-re0:

```
-----
icmp:
    0 drops due to rate limit
    0 calls to icmp_error
    0 errors not generated because old message was icmp
Output histogram:
    echo reply: 23
0 messages with bad code fields
0 messages less than the minimum length
0 messages with bad checksum
0 messages with bad source address
0 messages with bad length
0 echo drops with broadcast or multicast destination address
0 timestamp drops with broadcast or multicast destination address
Input histogram:
    echo: 23
23 message responses generated
```

lcc2-re0:

```
-----
icmp:
    0 drops due to rate limit
    0 calls to icmp_error
    0 errors not generated because old message was icmp
Output histogram:
    echo reply: 22
0 messages with bad code fields
0 messages less than the minimum length
0 messages with bad checksum
0 messages with bad source address
0 messages with bad length
```



```
0 echo drops with broadcast or multicast destination address
0 timestamp drops with broadcast or multicast destination address
Input histogram:
    echo: 22
22 message responses generated
```

```
lcc3-re0:
```

```
-----
icmp:
```

```
0 drops due to rate limit
0 calls to icmp_error
0 errors not generated because old message was icmp
Output histogram:
    echo reply: 22
0 messages with bad code fields
0 messages less than the minimum length
0 messages with bad checksum
0 messages with bad source address
0 messages with bad length
0 echo drops with broadcast or multicast destination address
0 timestamp drops with broadcast or multicast destination address
Input histogram:
    echo: 22
22 message responses generated
```

## show system statistics icmp6

---

<b>Syntax</b>	show system statistics icmp6
<b>Syntax (EX Series Switches)</b>	show system statistics icmp6 <all-members> <local> <member <i>member-id</i> >
<b>Syntax (TX Matrix Router)</b>	show system statistics icmp6 <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show system statistics icmp6 <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
<b>Description</b>	Display system-wide Internet Control Message Protocol for IPv6 (ICMPv6) statistics.
<b>Options</b>	<p><b>none</b>—Display system statistics for ICMPv6.</p> <p><b>all-chassis</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display system statistics for ICMPv6 for all the routers in the chassis.</p> <p><b>all-lcc</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for ICMPv6 for all T640 routers connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for ICMPv6 for all connected T1600 or T4000 LCCs.</p> <p><b>all-members</b>—(EX4200 switches only) (Optional) Display ICMPv6 statistics for all members of the Virtual Chassis configuration.</p> <p><b>lcc <i>number</i></b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for ICMPv6 for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for ICMPv6 for a specific router that is connected to the TX Matrix Plus router.</p> <p>Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"><li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li><li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li><li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li><li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li></ul>

**local**—(EX4200 switches only) (Optional) Display ICMPv6 statistics for the local Virtual Chassis member.

**member *member-id***—(EX4200 switches only) (Optional) Display ICMPv6 statistics for the specified member of the Virtual Chassis configuration. Replace *member-id* with a value from 0 through 9.

**scc**—(TX Matrix routers only) (Optional) Display system statistics for ICMPv6 for the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Display system statistics for ICMPv6 for the TX Matrix Plus router. Replace *number* with 0.

**Additional Information** By default, when you issue the **show system statistics icmp6** command on the master Routing Engine of a TX Matrix router or a TX Matrix Plus router, the command is broadcast to all the master Routing Engines of the LCCs connected to it in the routing matrix. Likewise, if you issue the same command on the backup Routing Engine of a TX Matrix or a TX Matrix Plus router, the command is broadcast to all backup Routing Engines of the LCCs that are connected to it in the routing matrix.

**Required Privilege Level** view

**Related Documentation** • [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output** [show system statistics icmp6 on page 1047](#)  
[show system statistics icmp6 \(EX Series Switches\) on page 1048](#)  
[show system statistics icmp6 \(TX Matrix Plus Router\) on page 1049](#)

## Sample Output

**show system statistics icmp6**

```
user@host> show system statistics icmp6
icmp6:
  23224 Calls to icmp_error
  0 Errors not generated because old message was icmp error
  24491 Errors not generated because rate limitation
  Output histogram:
    12 unreachable
    15500 parameter problem
    206 echo
    33863 echo reply
    2413 multicast listener query
    12 multicast listener report
    302 router advertisement
    192 neighbor solicitation
    58 neighbor advertisement
  0 Messages with bad code fields
  0 Messages < minimum length
  0 Bad checksums
  0 Messages with bad length
  Input histogram:
    5012 unreachable
    5000 packet too big
```

```

5000 time exceeded
5000 parameter problem
33863 echo
5091 echo reply
5010 multicast listener query
5020 multicast listener report
5000 multicast listener done
5000 router solicitation
5000 router advertisement
5030 neighbor solicitation
5060 neighbor advertisement
5000 redirect
5000 router renumbering
5000 node information request
5000 node information reply
5000 Version 2 Multicast Listener Report
0 No route
0 Administratively prohibited
0 Beyond scope
12 Address unreachable
0 Port unreachable
0 packet too big
0 Time exceed transit
0 Time exceed reassembly
0 Erroneous header field
23212 Unrecognized next header
0 Unrecognized option
0 redirect
0 Unknown
33863 Message responses generated
0 Messages with too many ND options

```

#### show system statistics icmp6 (EX Series Switches)

```

user@host> show system statistics icmp6
icmp6:
0 Calls to icmp_error
0 Errors not generated because old message was icmp error
0 Errors not generated because rate limitation
0 Messages with bad code fields
0 Messages < minimum length
0 Bad checksums
0 Messages with bad length
0 No route
0 Administratively prohibited
0 Beyond scope
0 Address unreachable
0 Port unreachable
0 packet too big
0 Time exceed transit
0 Time exceed reassembly
0 Erroneous header field
0 Unrecognized next header
0 Unrecognized option
0 redirect
0 Unknown
0 Message responses generated
0 Messages with too many ND options

```

## Sample Output

### show system statistics icmp6 (TX Matrix Plus Router)

```

user@host> show system statistics icmp6
sfc0-re0:
-----
icmp6:
  0 calls to icmp_error
  0 errors not generated because old message was icmp error or so
  0 errors not generated because rate limitation
  Output histogram:
    neighbor solicitation: 12
    neighbor advertisement: 4
  0 messages with bad code fields
  0 messages < minimum length
  0 bad checksums
  0 messages with bad length
  Histogram of error messages to be generated:
    0 no route
    0 administratively prohibited
    0 beyond scope
    0 address unreachable
    0 port unreachable
    0 packet too big
    0 time exceed transit
    0 time exceed reassembly
    0 erroneous header field
    0 unrecognized next header
    0 unrecognized option
    0 redirect
    0 unknown
  0 message responses generated
  0 messages with too many ND options

lcc0-re0:
-----
icmp6:
  0 calls to icmp_error
  0 errors not generated because old message was icmp error or so
  0 errors not generated because rate limitation
  Output histogram:
    neighbor solicitation: 12
    neighbor advertisement: 4
  0 messages with bad code fields
  0 messages < minimum length
  0 bad checksums
  0 messages with bad length
  Histogram of error messages to be generated:
    0 no route
    0 administratively prohibited
    0 beyond scope
    0 address unreachable
    0 port unreachable
    0 packet too big
    0 time exceed transit
    0 time exceed reassembly
    0 erroneous header field
    0 unrecognized next header
    0 unrecognized option
    0 redirect

```

0 unknown  
0 message responses generated  
0 messages with too many ND options

lcc1-re0:

-----  
icmp6:

0 calls to icmp\_error  
0 errors not generated because old message was icmp error or so  
0 errors not generated because rate limitation  
Output histogram:  
    neighbor solicitation: 12  
    neighbor advertisement: 4  
0 messages with bad code fields  
0 messages < minimum length  
0 bad checksums  
0 messages with bad length  
Input histogram:  
    neighbor advertisement: 2  
Histogram of error messages to be generated:  
    0 no route  
    0 administratively prohibited  
    0 beyond scope  
    0 address unreachable  
    0 port unreachable  
    0 packet too big  
    0 time exceed transit  
    0 time exceed reassembly  
    0 erroneous header field  
    0 unrecognized next header  
    0 unrecognized option  
    0 redirect  
    0 unknown  
0 message responses generated  
0 messages with too many ND options

lcc2-re0:

-----  
icmp6:

0 calls to icmp\_error  
0 errors not generated because old message was icmp error or so  
0 errors not generated because rate limitation  
Output histogram:  
    neighbor solicitation: 12  
    neighbor advertisement: 4  
0 messages with bad code fields  
0 messages < minimum length  
0 bad checksums  
0 messages with bad length  
Input histogram:  
    neighbor advertisement: 2  
Histogram of error messages to be generated:  
    0 no route  
    0 administratively prohibited  
    0 beyond scope  
    0 address unreachable  
    0 port unreachable  
    0 packet too big  
    0 time exceed transit  
    0 time exceed reassembly  
    0 erroneous header field

```

0 unrecognized next header
0 unrecognized option
0 redirect
0 unknown
0 message responses generated
0 messages with too many ND options

```

```
lcc3-re0:
```

```
-----
icmp6:
```

```

0 calls to icmp_error
0 errors not generated because old message was icmp error or so
0 errors not generated because rate limitation
Output histogram:
    neighbor solicitation: 12
    neighbor advertisement: 4
0 messages with bad code fields
0 messages < minimum length
0 bad checksums
0 messages with bad length
Input histogram:
    neighbor advertisement: 2
Histogram of error messages to be generated:
0 no route
0 administratively prohibited
0 beyond scope
0 address unreachable
0 port unreachable
0 packet too big
0 time exceed transit
0 time exceed reassembly
0 erroneous header field
0 unrecognized next header
0 unrecognized option
0 redirect
0 unknown
0 message responses generated
0 messages with too many ND options

```

## show system statistics igmp

---

<b>Syntax</b>	show system statistics igmp
<b>Syntax (EX Series Switches)</b>	show system statistics igmp <all-members> <local> <member <i>member-id</i> >
<b>Syntax (TX Matrix Router)</b>	show system statistics igmp <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show system statistics igmp <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6. Command introduced in Junos OS Release 12.1 for the QFX Series.
<b>Description</b>	Display system-wide Internet Group Management Protocol (IGMP) statistics.
<b>Options</b>	<p><b>none</b>—Display system statistics for IGMP.</p> <p><b>all-chassis</b>—(TX Matrix routers and TX Matrix Plus routers only ) (Optional) Display system statistics for IGMP for all the routers in the chassis.</p> <p><b>all-lcc</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for IGMP for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for IGMP for all connected T1600 or T4000 LCCs.</p> <p><b>all-members</b>—(EX4200 switches only) (Optional) Display IGMP statistics for all members of the Virtual Chassis configuration.</p> <p><b>lcc <i>number</i></b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for IGMP for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for IGMP for a specific router that is connected to the TX Matrix Plus router. Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"><li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li><li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li><li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li><li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li></ul>



**local**—(EX4200 switches only) (Optional) Display IGMP statistics for the local Virtual Chassis member.

**member *member-id***—(EX4200 switches only) (Optional) Display IGMP statistics for the specified member of the Virtual Chassis configuration. Replace *member-id* with a value from 0 through 9.

**scc**—(TX Matrix routers only) (Optional) Display system statistics for IGMP for the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Display system statistics for IGMP for the TX Matrix Plus router. Replace *number* with 0.

**Additional Information** By default, when you issue the **show system statistics igmp** command on the master Routing Engine of a TX Matrix router or a TX Matrix Plus router, the command is broadcast to all the master Routing Engines of the LCCs connected to it in the routing matrix. Likewise, if you issue the same command on the backup Routing Engine of a TX Matrix or a TX Matrix Plus router, the command is broadcast to all backup Routing Engines of the LCCs that are connected to it in the routing matrix.

**Required Privilege Level** view

**Related Documentation** • [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output** [show system statistics igmp on page 1053](#)  
[show system statistics igmp \(EX Series Switches\) on page 1053](#)  
[show system statistics igmp \(TX Matrix Plus Router\) on page 1054](#)

## Sample Output

### show system statistics igmp

```
user@host> show system statistics igmp
igmp:
    17178 messages received
    0 messages received with too few bytes
    0 messages received with bad checksum
    0 membership queries received
    0 membership queries received with invalid field(s)
    0 membership reports received
    0 membership reports received with invalid field(s)
    0 membership reports received for groups to which we belong
    0 membership reports sent
```

### show system statistics igmp (EX Series Switches)

```
user@host> show system statistics igmp
igmp:
    0 messages received
    0 messages received with too few bytes
    0 messages received with bad checksum
    0 membership queries received
    0 membership queries received with invalid fields
    0 membership reports received
```

```
0 membership reports received with invalid fields
0 membership reports received for groups to which we belong
0 Membership reports sent
```

### show system statistics igmp (TX Matrix Plus Router)

```
user@host> show system statistics igmp
sfc0-re0:
```

```
-----
igmp:
    0 messages received
    0 messages received with too few bytes
    0 messages received with bad checksum
    0 membership queries received
    0 membership queries received with invalid field(s)
    0 membership reports received
    0 membership reports received with invalid field(s)
    0 membership reports received for groups to which we belong
    0 membership reports sent
```

```
lcc0-re0:
```

```
-----
igmp:
    0 messages received
    0 messages received with too few bytes
    0 messages received with bad checksum
    0 membership queries received
    0 membership queries received with invalid field(s)
    0 membership reports received
    0 membership reports received with invalid field(s)
    0 membership reports received for groups to which we belong
    0 membership reports sent
```

```
lcc1-re0:
```

```
-----
igmp:
    0 messages received
    0 messages received with too few bytes
    0 messages received with bad checksum
    0 membership queries received
    0 membership queries received with invalid field(s)
    0 membership reports received
    0 membership reports received with invalid field(s)
    0 membership reports received for groups to which we belong
    0 membership reports sent
```

```
lcc2-re0:
```

```
-----
igmp:
    0 messages received
    0 messages received with too few bytes
    0 messages received with bad checksum
    0 membership queries received
    0 membership queries received with invalid field(s)
    0 membership reports received
    0 membership reports received with invalid field(s)
    0 membership reports received for groups to which we belong
    0 membership reports sent
```

```
lcc3-re0:
```

```
igmp:
  0 messages received
  0 messages received with too few bytes
  0 messages received with bad checksum
  0 membership queries received
  0 membership queries received with invalid field(s)
  0 membership reports received
  0 membership reports received with invalid field(s)
  0 membership reports received for groups to which we belong
  0 membership reports sent
```

## show system statistics ip

---

<b>Syntax</b>	show system statistics ip
<b>Syntax (EX Series Switches)</b>	show system statistics ip <all-members> <local> <member <i>member-id</i> >
<b>Syntax (TX Matrix Router)</b>	show system statistics ip <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show system statistics ip <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
<b>Description</b>	Display system-wide IPv4 statistics.
<b>Options</b>	<p><b>none</b>—Display system statistics for IPv4.</p> <p><b>all-chassis</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display system statistics for IPv4 for all the routers in the chassis.</p> <p><b>all-lcc</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for IPv4 for all T640 routers connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for IPv4 for all T1600 or T4000 routers connected to the TX Matrix Plus router.</p> <p><b>all-members</b>—(EX4200 switches only) (Optional) Display IPv4 statistics for all members of the Virtual Chassis configuration.</p> <p><b>lcc <i>number</i></b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for IPv4 for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for IPv4 for a specific router that is connected to the TX Matrix Plus router. Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"><li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li><li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li><li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li><li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li></ul>

**local**—(EX4200 switches only) (Optional) Display IPv4 statistics for the local Virtual Chassis member.

**member *member-id***—(EX4200 switches only) (Optional) Display IPv4 statistics for the specified member of the Virtual Chassis configuration. Replace *member-id* with a value from 0 through 9.

**scc**—(TX Matrix routers only) (Optional) Display system statistics for IPv4 for the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Display system statistics for IPv4 for the TX Matrix Plus router. Replace *number* with 0.

**Additional Information** By default, when you issue the **show system statistics ip** command on the master Routing Engine of a TX Matrix router or a TX Matrix Plus router, the command is broadcast to all the master Routing Engines of the LCCs connected to it in the routing matrix. Likewise, if you issue the same command on the backup Routing Engine of a TX Matrix or a TX Matrix Plus router, the command is broadcast to all backup Routing Engines of the LCCs that are connected to it in the routing matrix.

**Required Privilege Level** view

**Related Documentation** • [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output** [show system statistics ip on page 1057](#)  
[show system statistics ip \(EX Series Switches\) on page 1058](#)  
[show system statistics ip \(TX Matrix Plus Router\) on page 1059](#)

## Sample Output

### show system statistics ip

```
user@host> show system statistics ip
ip:
    1752658 total packets received
    0 bad header checksums
    0 with size smaller than minimum
    0 with data size < data length
    0 with header length < data size
    0 with data length < header length
    0 with incorrect version number
    0 packets destined to dead next hop
    0 fragments received
    0 fragments dropped (dup or out of space)
    0 fragments dropped (queue overflow)
    0 fragments dropped after timeout
    0 fragments dropped due to over limit
    0 packets reassembled ok
    1709456 packets for this host
    10494 packets for unknown/unsupported protocol
    546 packets forwarded
    0 packets not forwardable
    546 redirects sent
    1340179 packets sent from this host
```

```
0 packets sent with fabricated ip header
0 output packets dropped due to no bufs
0 output packets discarded due to no route
0 output datagrams fragmented
0 fragments created
0 datagrams that can't be fragmented
0 packets with bad options
10494 packets with options handled without error
0 strict source and record route options
0 loose source and record route options
0 record route options
0 timestamp options
0 timestamp and address options
0 timestamp and prespecified address options
0 option packets dropped due to rate limit
10494 router alert options
0 multicast packets dropped (no iflist)
0 packets dropped (src and int don't match)
0 transit re packets dropped on mgmt i/f
0 packets used first nexthop in ecmp unilist
0 incoming ttpoip packets received
0 incoming ttpoip packets dropped
0 outgoing TTPoIP packets sent
0 outgoing TTPoIP packets dropped
0 raw packets dropped. no space in socket recv buffer
```

#### show system statistics ip (EX Series Switches)

```
user@host> show system statistics ip
ip:
74121 total packets received
0 bad header checksums
0 with size smaller than minimum
0 with data size < data length
0 with header length < data size
0 with data length < header length
0 with incorrect version number
0 packets destined to dead next hop
0 fragments received
0 fragments dropped (dup or out of space)
0 fragments dropped (queue overflow)
0 fragments dropped after timeout
0 fragments dropped due to over limit
0 packets reassembled ok
1134061 packets for this host
0 packets for unknown/unsupported protocol
40177 packets forwarded
0 packets not forwardable
40177 redirects sent
1122558 packets sent from this host
0 packets sent with fabricated ip header
0 output packets dropped due to no bufs
0 output packets discarded due to no route
0 output datagrams fragmented
0 fragments created
0 datagrams that can't be fragmented
0 packets with bad options
0 packets with options handled without error
0 strict source and record route options
0 loose source and record route options
0 record route options
```

```

0 timestamp options
0 timestamp and address options
0 timestamp and prespecified address options
0 option packets dropped due to rate limit
0 router alert options
0 multicast packets dropped (no iflist)
0 packets dropped (src and int don't match)
0 transit re packets dropped on mgmt i/f
0 packets used first nexthop in ecmp unilist
0 incoming ttpoip packets received
0 incoming ttpoip packets dropped
0 outgoing TTPoIP packets sent
0 outgoing TTPoIP packets dropped

```

### show system statistics ip (TX Matrix Plus Router)

```

user@host> show system statistics ip
sfc0-re0:

```

```

-----
ip:
47695035 total packets received
0 bad header checksums
0 with size smaller than minimum
0 with data size < data length
0 with header length < data size
0 with data length < header length
0 with incorrect version number
0 packets destined to dead next hop
42350 fragments received
0 fragments dropped (dup or out of space)
0 fragments dropped (queue overflow)
0 fragments dropped after timeout
0 fragments dropped due to over limit
21175 packets reassembled ok
47674941 packets for this host
146 packets for unknown/unsupported protocol
0 packets forwarded
0 packets not forwardable
0 redirects sent
61304579 packets sent from this host
8496 packets sent with fabricated ip header
0 output packets dropped due to no bufs
0 output packets discarded due to no route
6746344 output datagrams fragmented
0 fragments created
0 datagrams that can't be fragmented
0 packets with bad options
2400 packets with options handled without error
0 strict source and record route options
0 loose source and record route options
0 record route options
0 timestamp options
0 timestamp and address options
0 timestamp and prespecified address options
0 option packets dropped due to rate limit
2400 router alert options
0 multicast packets dropped (no iflist)
0 packets dropped (src and int don't match)
0 transit re packets dropped on mgmt i/f
0 packets used first nexthop in ecmp unilist
12995412 incoming ttpoip packets received

```

```

0 incoming ttpoip packets dropped
16959177 outgoing TTPoIP packets sent
0 outgoing TTPoIP packets dropped
0 raw packets dropped. no space in socket recv buffer

```

lcc0-re0:

---

ip:

```

12990061 total packets received
0 bad header checksums
0 with size smaller than minimum
0 with data size < data length
0 with header length < data size
0 with data length < header length
0 with incorrect version number
0 packets destined to dead next hop
0 fragments received
0 fragments dropped (dup or out of space)
0 fragments dropped (queue overflow)
0 fragments dropped after timeout
0 fragments dropped due to over limit
0 packets reassembled ok
12989979 packets for this host
82 packets for unknown/unsupported protocol
0 packets forwarded
0 packets not forwardable
0 redirects sent
9318381 packets sent from this host
0 packets sent with fabricated ip header
0 output packets dropped due to no bufs
0 output packets discarded due to no route
3440 output datagrams fragmented
0 fragments created
0 datagrams that can't be fragmented
0 packets with bad options
82 packets with options handled without error
0 strict source and record route options
0 loose source and record route options
0 record route options
0 timestamp options
0 timestamp and address options
0 timestamp and prespecified address options
0 option packets dropped due to rate limit
82 router alert options
0 multicast packets dropped (no iflist)
0 packets dropped (src and int don't match)
0 transit re packets dropped on mgmt i/f
0 packets used first nexthop in ecmp unilist
0 incoming ttpoip packets received
0 incoming ttpoip packets dropped
548071 outgoing TTPoIP packets sent
0 outgoing TTPoIP packets dropped
0 raw packets dropped. no space in socket recv buffer

```

lcc1-re0:

---

ip:

```

12849723 total packets received
0 bad header checksums
0 with size smaller than minimum
0 with data size < data length

```



```

0 with header length < data size
0 with data length < header length
0 with incorrect version number
0 packets destined to dead next hop
0 fragments received
0 fragments dropped (dup or out of space)
0 fragments dropped (queue overflow)
0 fragments dropped after timeout
0 fragments dropped due to over limit
0 packets reassembled ok
12849641 packets for this host
82 packets for unknown/unsupported protocol
0 packets forwarded
0 packets not forwardable
0 redirects sent
7676351 packets sent from this host
0 packets sent with fabricated ip header
0 output packets dropped due to no bufs
0 output packets discarded due to no route
0 output datagrams fragmented
0 fragments created
0 datagrams that can't be fragmented
0 packets with bad options
82 packets with options handled without error
0 strict source and record route options
0 loose source and record route options
0 record route options
0 timestamp options
0 timestamp and address options
0 timestamp and prespecified address options
0 option packets dropped due to rate limit
82 router alert options
0 multicast packets dropped (no iflist)
0 packets dropped (src and int don't match)
0 transit re packets dropped on mgmt i/f
0 packets used first nexthop in ecmp unilist
0 incoming ttpoip packets received
0 incoming ttpoip packets dropped
0 outgoing TTPoIP packets sent
0 outgoing TTPoIP packets dropped
0 raw packets dropped. no space in socket recv buffer

```

lcc2-re0:

-----  
ip:

```

16926850 total packets received
0 bad header checksums
0 with size smaller than minimum
0 with data size < data length
0 with header length < data size
0 with data length < header length
0 with incorrect version number
0 packets destined to dead next hop
0 fragments received
0 fragments dropped (dup or out of space)
0 fragments dropped (queue overflow)
0 fragments dropped after timeout
0 fragments dropped due to over limit
0 packets reassembled ok
16926768 packets for this host
82 packets for unknown/unsupported protocol

```

```
0 packets forwarded
0 packets not forwardable
0 redirects sent
10039747 packets sent from this host
0 packets sent with fabricated ip header
0 output packets dropped due to no bufs
0 output packets discarded due to no route
0 output datagrams fragmented
0 fragments created
0 datagrams that can't be fragmented
0 packets with bad options
82 packets with options handled without error
0 strict source and record route options
0 loose source and record route options
0 record route options
0 timestamp options
0 timestamp and address options
0 timestamp and prespecified address options
0 option packets dropped due to rate limit
82 router alert options
0 multicast packets dropped (no iflist)
0 packets dropped (src and int don't match)
0 transit re packets dropped on mgmt i/f
0 packets used first nexthop in ecmp unilist
0 incoming ttpoip packets received
0 incoming ttpoip packets dropped
0 outgoing TTPoIP packets sent
0 outgoing TTPoIP packets dropped
0 raw packets dropped. no space in socket recv buffer
```

lcc3-re0:

-----  
ip:

```
18025026 total packets received
0 bad header checksums
0 with size smaller than minimum
0 with data size < data length
0 with header length < data size
0 with data length < header length
0 with incorrect version number
0 packets destined to dead next hop
0 fragments received
0 fragments dropped (dup or out of space)
0 fragments dropped (queue overflow)
0 fragments dropped after timeout
0 fragments dropped due to over limit
0 packets reassembled ok
18024944 packets for this host
82 packets for unknown/unsupported protocol
0 packets forwarded
0 packets not forwardable
0 redirects sent
10456545 packets sent from this host
0 packets sent with fabricated ip header
0 output packets dropped due to no bufs
0 output packets discarded due to no route
0 output datagrams fragmented
0 fragments created
0 datagrams that can't be fragmented
0 packets with bad options
82 packets with options handled without error
```

0 strict source and record route options  
0 loose source and record route options  
0 record route options  
0 timestamp options  
0 timestamp and address options  
0 timestamp and prespecified address options  
0 option packets dropped due to rate limit  
82 router alert options  
0 multicast packets dropped (no iflist)  
0 packets dropped (src and int don't match)  
0 transit re packets dropped on mgmt i/f  
0 packets used first nexthop in ecmp unilist  
0 incoming ttpoip packets received  
0 incoming ttpoip packets dropped  
0 outgoing TTPoIP packets sent  
0 outgoing TTPoIP packets dropped  
0 raw packets dropped. no space in socket rcv buffer

## show system statistics ip6

---

<b>Syntax</b>	show system statistics ip6
<b>Syntax (EX Series Switches)</b>	show system statistics ip6 <all-members> <local> <member <i>member-id</i> >
<b>Syntax (TX Matrix Router)</b>	show system statistics ip6 <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show system statistics ip <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
<b>Description</b>	Display system-wide IPv6 statistics.
<b>Options</b>	<p><b>none</b>—Display system statistics for IPv6.</p> <p><b>all-chassis</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display system statistics for IPv6 for all the routers in the chassis.</p> <p><b>all-lcc</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for IPv6 for all T640 routers connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for IPv6 for all connected T1600 or T4000 LCCs.</p> <p><b>all-members</b>—(EX4200 switches only) (Optional) Display IPv6 statistics for all members of the Virtual Chassis configuration.</p> <p><b>lcc <i>number</i></b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for IPv6 for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for IPv6 for a specific router that is connected to the TX Matrix Plus router. Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"><li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li><li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li><li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li><li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li></ul>

**local**—(EX4200 switches only) (Optional) Display IPv6 statistics for the local Virtual Chassis member.

**member *member-id***—(EX4200 switches only) (Optional) Display IPv6 statistics for the specified member of the Virtual Chassis configuration. Replace *member-id* with a value from 0 through 9.

**scc**—(TX Matrix routers only) (Optional) Display system statistics for IPv6 for the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Display system statistics for IPv6 for the TX Matrix Plus router. Replace *number* with 0.

**Additional Information** By default, when you issue the **show system statistics ip6** command on the master Routing Engine of a TX Matrix router or a TX Matrix Plus router, the command is broadcast to all the master Routing Engines of the LCCs connected to it in the routing matrix. Likewise, if you issue the same command on the backup Routing Engine of a TX Matrix or a TX Matrix Plus router, the command is broadcast to all backup Routing Engines of the LCCs that are connected to it in the routing matrix.

**Required Privilege Level** view

**Related Documentation**

- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output**

- [show system statistics ip6 on page 1065](#)
- [show system statistics ip6 \(EX Series Switches\) on page 1066](#)
- [show system statistics ip6 \(TX Matrix Router\) on page 1066](#)

## Sample Output

**show system statistics ip6**

```
user@host> show system statistics ip6
ip6:
  0 total packets received
  0 with size smaller than minimum
  0 with data size < data length
  0 with bad options
  0 with incorrect version number
  0 fragments received
  0 fragments dropped (dup or out of space)
  0 fragments dropped after timeout
  0 fragments that exceeded limit
  0 packets reassembled ok
  0 packets for this host
  0 packets forwarded
  0 packets not forwardable
  0 redirects sent
  0 packets sent from this host
  0 packets sent with fabricated ip header
  0 output packets dropped due to no bufs, etc.
  0 output packets discarded due to no route
  0 output datagrams fragmented
  0 fragments created
```

```
0 datagrams that can't be fragmented
0 packets that violated scope rules
0 multicast packets which we don't join
Mbuf statistics:
0 packets whose headers are not continuous
0 tunneling packets that can't find gif
0 packets discarded due to too may headers
0 failures of source address selection
0 forward cache hit
0 forward cache miss
0 packets destined to dead next hop
0 option packets dropped due to rate limit
0 packets dropped (src and int don't match)
0 packets dropped due to bad protocol
```

### show system statistics ip6 (EX Series Switches)

```
user@host> show system statistics ip6
ip6:
0 total packets received
0 packets with size smaller than minimum
0 packets with data size < data length
0 packets with bad options
0 packets with incorrect version number
0 fragments received
0 fragments dropped (dup or out of space)
0 fragments dropped after timeout
0 fragments that exceeded limit
0 packets reassembled ok
0 packets for this host
0 packets forwarded
0 packets not forwardable
0 redirects sent
0 packets sent from this host
0 packets sent with fabricated ip header
0 output packets dropped due to no bufs, etc.
0 output datagrams fragmented
0 fragments created
0 datagrams that can't be fragmented
0 packets that violated scope rules
0 multicast packets which we don't join
0 packets whose headers are not continuous
0 tunneling packets that can't find gif
0 packets discarded due to too may headers
0 failures of source address selection
0 forward cache hit
0 forward cache miss
0 Packets destined to dead next hop
0 option packets dropped due to rate limit
0 Packets dropped (src and int don't match)
0 packets dropped due to bad protocol
0 transit re packet(null) dropped on mgmt i/f
```

### show system statistics ip6 (TX Matrix Router)

```
user@host> show system statistics ip6
sfc0-re0:
```

```
-----
ip6:
0 total packets received
0 with size smaller than minimum
```

```

0 with data size < data length
0 with bad options
0 with incorrect version number
0 fragments received
0 fragments dropped (dup or out of space)
0 fragments dropped after timeout
0 fragments that exceeded limit
0 packets reassembled ok
0 packets for this host
0 packets forwarded
0 packets not forwardable
0 redirects sent
0 packets sent from this host
0 packets sent with fabricated ip header
0 output packets dropped due to no bufs, etc.
0 output packets discarded due to no route
0 output datagrams fragmented
0 fragments created
0 datagrams that can't be fragmented
0 packets that violated scope rules
0 multicast packets which we don't join
Mbuf statistics:
0 packets whose headers are not continuous
0 tunneling packets that can't find gif
0 packets discarded due to too many headers
0 failures of source address selection
source addresses on an outgoing I/F
    4 link-locals
source addresses of same scope
    4 link-locals
0 forward cache hit
0 forward cache miss
0 packets destined to dead next hop
0 option packets dropped due to rate limit
0 packets dropped (src and int don't match)
0 packets dropped due to bad protocol
0 transit re packet(null) dropped on mgmt i/f
0 packet(null) used first nexthop in ecmp unilist

```

lcc0-re0:

-----  
ip6:

```

0 total packets received
0 with size smaller than minimum
0 with data size < data length
0 with bad options
0 with incorrect version number
0 fragments received
0 fragments dropped (dup or out of space)
0 fragments dropped after timeout
0 fragments that exceeded limit
0 packets reassembled ok
0 packets for this host
0 packets forwarded
0 packets not forwardable
0 redirects sent
0 packets sent from this host
0 packets sent with fabricated ip header
0 output packets dropped due to no bufs, etc.
0 output packets discarded due to no route
0 output datagrams fragmented

```

```
0 fragments created
0 datagrams that can't be fragmented
0 packets that violated scope rules
0 multicast packets which we don't join
Mbuf statistics:
0 packets whose headers are not continuous
0 tunneling packets that can't find gif
0 packets discarded due to too may headers
0 failures of source address selection
source addresses on an outgoing I/F
    4 link-locals
source addresses of same scope
    4 link-locals
0 forward cache hit
0 forward cache miss
0 packets destined to dead next hop
0 option packets dropped due to rate limit
0 packets dropped (src and int don't match)
0 packets dropped due to bad protocol
0 transit re packet(null) dropped on mgmt i/f
0 packet(null) used first nexthop in ecmp unilist
```

lcc1-re0:

-----  
ip6:

```
2 total packets received
0 with size smaller than minimum
0 with data size < data length
0 with bad options
0 with incorrect version number
0 fragments received
0 fragments dropped (dup or out of space)
0 fragments dropped after timeout
0 fragments that exceeded limit
0 packets reassembled ok
0 packets for this host
0 packets forwarded
0 packets not forwardable
0 redirects sent
0 packets sent from this host
0 packets sent with fabricated ip header
0 output packets dropped due to no bufs, etc.
0 output packets discarded due to no route
0 output datagrams fragmented
0 fragments created
0 datagrams that can't be fragmented
0 packets that violated scope rules
0 multicast packets which we don't join
Input histogram:
    ICMP6: 2
Mbuf statistics:
0 packets whose headers are not continuous
0 tunneling packets that can't find gif
0 packets discarded due to too may headers
0 failures of source address selection
source addresses on an outgoing I/F
    4 link-locals
source addresses of same scope
    4 link-locals
0 forward cache hit
0 forward cache miss
```



```

0 packets destined to dead next hop
0 option packets dropped due to rate limit
0 packets dropped (src and int don't match)
0 packets dropped due to bad protocol
0 transit re packet(null) dropped on mgmt i/f
0 packet(null) used first nexthop in ecmp unilist

```

lcc2-re0:

-----

ip6:

```

2 total packets received
0 with size smaller than minimum
0 with data size < data length
0 with bad options
0 with incorrect version number
0 fragments received
0 fragments dropped (dup or out of space)
0 fragments dropped after timeout
0 fragments that exceeded limit
0 packets reassembled ok
0 packets for this host
0 packets forwarded
0 packets not forwardable
0 redirects sent
0 packets sent from this host
0 packets sent with fabricated ip header
0 output packets dropped due to no bufs, etc.
0 output packets discarded due to no route
0 output datagrams fragmented
0 fragments created
0 datagrams that can't be fragmented
0 packets that violated scope rules
0 multicast packets which we don't join
Input histogram:
    ICMP6: 2
Mbuf statistics:
0 packets whose headers are not continuous
0 tunneling packets that can't find gif
0 packets discarded due to too many headers
0 failures of source address selection
source addresses on an outgoing I/F
    4 link-locals
source addresses of same scope
    4 link-locals
0 forward cache hit
0 forward cache miss
0 packets destined to dead next hop
0 option packets dropped due to rate limit
0 packets dropped (src and int don't match)
0 packets dropped due to bad protocol
0 transit re packet(null) dropped on mgmt i/f
0 packet(null) used first nexthop in ecmp unilist

```

lcc3-re0:

-----

ip6:

```

2 total packets received
0 with size smaller than minimum
0 with data size < data length
0 with bad options
0 with incorrect version number

```

```

0 fragments received
0 fragments dropped (dup or out of space)
0 fragments dropped after timeout
0 fragments that exceeded limit
0 packets reassembled ok
0 packets for this host
0 packets forwarded
0 packets not forwardable
0 redirects sent
0 packets sent from this host
0 packets sent with fabricated ip header
0 output packets dropped due to no bufs, etc.
0 output packets discarded due to no route
0 output datagrams fragmented
0 fragments created
0 datagrams that can't be fragmented
0 packets that violated scope rules
0 multicast packets which we don't join
Input histogram:
    ICMP6: 2
Mbuf statistics:
0 packets whose headers are not continuous
0 tunneling packets that can't find gif
0 packets discarded due to too many headers
0 failures of source address selection
source addresses on an outgoing I/F
    4 link-locals
source addresses of same scope
    4 link-locals
0 forward cache hit
0 forward cache miss
0 packets destined to dead next hop
0 option packets dropped due to rate limit
0 packets dropped (src and int don't match)
0 packets dropped due to bad protocol
0 transit re packet(null) dropped on mgmt i/f
0 packet(null) used first nexthop in ecmp unilist

```

## show system statistics mpls

<b>Syntax</b>	show system statistics mpls
<b>Syntax (EX Series Switches)</b>	show system statistics mpls <all-members> <local> <member <i>member-id</i> >
<b>Syntax (TX Matrix Router)</b>	show system statistics mpls <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show system statistics mpls <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
<b>Description</b>	Display system-wide Multiprotocol Label Switching (MPLS) statistics.
<b>Options</b>	<p><b>none</b>—Display system statistics for MPLS.</p> <p><b>all-chassis</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display system statistics for MPLS for all the routers in the chassis.</p> <p><b>all-lcc</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for MPLS for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for MPLS for all connected T1600 or T4000 LCCs.</p> <p><b>all-members</b>—(EX4200 switches only) (Optional) Display MPLS statistics for all members of the Virtual Chassis configuration.</p> <p><b>lcc <i>number</i></b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for MPLS for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for MPLS for a specific router that is connected to the TX Matrix Plus router. Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"> <li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li> <li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li> <li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> <li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> </ul>

**local**—(EX4200 switches only) (Optional) Display MPLS statistics for the local Virtual Chassis member.

**member *member-id***—(EX4200 switches only) (Optional) Display MPLS statistics for the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value from 0 through 9.

**scc**—(TX Matrix routers only) (Optional) Display system statistics for MPLS for the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Display system statistics for MPLS for the TX Matrix Plus router. Replace ***number*** with 0.

**Additional Information** By default, when you issue the **show system statistics mpls** command on the master Routing Engine of a TX Matrix router or a TX Matrix Plus router, the command is broadcast to all the master Routing Engines of the LCCs connected to it in the routing matrix. Likewise, if you issue the same command on the backup Routing Engine of a TX Matrix or a TX Matrix Plus router, the command is broadcast to all backup Routing Engines of the LCCs that are connected to it in the routing matrix.

**Required Privilege Level** view

**Related Documentation**

- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output** [show system statistics mpls on page 1072](#)  
[show system statistics mpls \(EX Series Switches\) on page 1072](#)  
[show system statistics mpls \(TX Matrix Plus Router\) on page 1073](#)

## Sample Output

### show system statistics mpls

```
user@host> show system statistics mpls
mpls:
  0 total mpls packets received
  0 packets forwarded
  0 packets dropped
  0 with header too small
  0 after tagging, can't fit link MTU
  0 with IPv4 explicit NULL tag
  0 with IPv4 explicit NULL cksum errors
  0 with router alert tag
  0 lsp ping packets (ttl-expired/router alert)
  0 with ttl expired
  0 with tag encoding error
  0 packets discarded, no route
```

### show system statistics mpls (EX Series Switches)

```
user@host> show system statistics mpls
mpls:
  0 Total MPLS packets received
  0 Packets forwarded
  0 Packets dropped
```

```

0 Packets with header too small
0 After tagging, packets can't fit link MTU
0 Packets with IPv4 explicit NULL tag
0 Packets with IPv4 explicit NULL cksum errors
0 Packets with router alert tag
0 LSP ping packets (ttl-expired/router alert)
0 Packets with ttl expired
0 Packets with tag encoding error
0 Packets discarded due to no route
0 Packets used first nexthop in ecmp unilist

```

### show system statistics mpls (TX Matrix Plus Router)

```

user@host> show system statistics mpls
sfc0-re0:

```

```

-----
mpls:
0 total mpls packets received
0 packets forwarded
0 packets dropped
0 with header too small
0 after tagging, can't fit link MTU
0 with IPv4 explicit NULL tag
0 with IPv4 explicit NULL cksum errors
0 with router alert tag
0 lsp ping packets (ttl-expired/router alert)
0 with ttl expired
0 with tag encoding error
0 packets discarded, no route
0 packets used first nexthop in ecmp unilist

```

```
lcc0-re0:
```

```

-----
mpls:
0 total mpls packets received
0 packets forwarded
0 packets dropped
0 with header too small
0 after tagging, can't fit link MTU
0 with IPv4 explicit NULL tag
0 with IPv4 explicit NULL cksum errors
0 with router alert tag
0 lsp ping packets (ttl-expired/router alert)
0 with ttl expired
0 with tag encoding error
0 packets discarded, no route
0 packets used first nexthop in ecmp unilist

```

```
lcc1-re0:
```

```

-----
mpls:
0 total mpls packets received
0 packets forwarded
0 packets dropped
0 with header too small
0 after tagging, can't fit link MTU
0 with IPv4 explicit NULL tag
0 with IPv4 explicit NULL cksum errors
0 with router alert tag
0 lsp ping packets (ttl-expired/router alert)
0 with ttl expired

```

```

0 with tag encoding error
0 packets discarded, no route
0 packets used first nexthop in ecmp unilist

```

lcc2-re0:

-----

mpls:

```

0 total mpls packets received
0 packets forwarded
0 packets dropped
0 with header too small
0 after tagging, can't fit link MTU
0 with IPv4 explicit NULL tag
0 with IPv4 explicit NULL cksum errors
0 with router alert tag
0 lsp ping packets (ttl-expired/router alert)
0 with ttl expired
0 with tag encoding error
0 packets discarded, no route
0 packets used first nexthop in ecmp unilist

```

lcc3-re0:

-----

mpls:

```

0 total mpls packets received
0 packets forwarded
0 packets dropped
0 with header too small
0 after tagging, can't fit link MTU
0 with IPv4 explicit NULL tag
0 with IPv4 explicit NULL cksum errors
0 with router alert tag
0 lsp ping packets (ttl-expired/router alert)
0 with ttl expired
0 with tag encoding error
0 packets discarded, no route
0 packets used first nexthop in ecmp unilist

```

## show system statistics rdp

<b>Syntax</b>	show system statistics rdp
<b>Syntax (EX Series Switches)</b>	show system statistics rdp <all-members> <local> <member <i>member-id</i> >
<b>Syntax (TX Matrix Router)</b>	show system statistics rdp <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show system statistics rdp <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
<b>Description</b>	Display system-wide Reliable Datagram Protocol (RDP) statistics.
<b>Options</b>	<p><b>none</b>—Display system statistics for RDP.</p> <p><b>all-chassis</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display system statistics for RDP for all the routers in the chassis.</p> <p><b>all-lcc</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for RDP for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for RDP for all connected T1600 or T4000 LCCs.</p> <p><b>all-members</b>—(EX4200 switches only) (Optional) Display RDP statistics for all members of the Virtual Chassis configuration.</p> <p><b>lcc <i>number</i></b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for RDP for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for RDP for a specific router that is connected to the TX Matrix Plus router. Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"> <li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li> <li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li> <li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> <li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> </ul>

**local**—(EX4200 switches only) (Optional) Display RDP statistics for the local Virtual Chassis member.

**member *member-id***—(EX4200 switches only) (Optional) Display RDP statistics for the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value from 0 through 9.

**scc**—(TX Matrix routers only) (Optional) Display system statistics for RDP for the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Display system statistics for RDP for the TX Matrix Plus router. Replace ***number*** with 0.

**Additional Information** By default, when you issue the **show system statistics rdp** command on the master Routing Engine of a TX Matrix router or a TX Matrix Plus router, the command is broadcast to all the master Routing Engines of the LCCs connected to it in the routing matrix. Likewise, if you issue the same command on the backup Routing Engine of a TX Matrix or a TX Matrix Plus router, the command is broadcast to all backup Routing Engines of the LCCs that are connected to it in the routing matrix.

**Required Privilege Level** view

**Related Documentation**

- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output** [show system statistics rdp on page 1076](#)  
[show system statistics rdp \(EX Series Switches\) on page 1076](#)  
[show system statistics rdp \(TX Matrix Plus Router\) on page 1077](#)

## Sample Output

### show system statistics rdp

```
user@host> show system statistics rdp
rdp:
  49668864 input packets
  0 discards for bad checksum
  0 discards bad sequence number
  0 refused connections
  2031513 acks received
  0 dropped due to full socket buffers
  49692 retransmits
  49668864 output packets
  24809579 acks sent
  28 connects
  0 closes
  22778052 keepalives received
  22778052 keepalives sent
```

### show system statistics rdp (EX Series Switches)

```
user@host> show system statistics rdp
rdp:
  0 Input packets
  0 Packets discarded for bad checksum
```



```

0 Packets discarded due to bad sequence number
0 Refused connections
0 Acks received
0 Packets dropped due to full socket buffers
0 Retransmits
0 Output packets
0 Acks sent
0 Connects
0 Closes
0 Keepalives received
0 Keepalives sent

```

#### show system statistics rdp (TX Matrix Plus Router)

```

user@host> show system statistics rdp
sfc0-re0:

```

```

-----
rdp:
4341558 input packets
0 discards for bad checksum
43452 discards bad sequence number
598 refused connections
85711 acks received
101 dropped due to full socket buffers
9110 retransmits
4335896 output packets
734087 acks sent
372 connects
65 closes
526312 keepalives received
3506373 keepalives sent

```

```

lcc0-re0:

```

```

-----
rdp:
810979 input packets
0 discards for bad checksum
477 discards bad sequence number
484 refused connections
21798 acks received
0 dropped due to full socket buffers
10305 retransmits
813567 output packets
242155 acks sent
68 connects
47 closes
112788 keepalives received
539244 keepalives sent

```

```

lcc1-re0:

```

```

-----
rdp:
804747 input packets
0 discards for bad checksum
335 discards bad sequence number
624 refused connections
24275 acks received
0 dropped due to full socket buffers
9878 retransmits
806163 output packets
233079 acks sent

```

```
67 connects
47 closes
112816 keepalives received
538845 keepalives sent
```

lcc2-re0:

-----

rdp:

```
945112 input packets
0 discards for bad checksum
172 discards bad sequence number
396 refused connections
34676 acks received
0 dropped due to full socket buffers
15176 retransmits
948073 output packets
249913 acks sent
68 connects
45 closes
112748 keepalives received
648232 keepalives sent
```

lcc3-re0:

-----

rdp:

```
1247011 input packets
0 discards for bad checksum
177 discards bad sequence number
575 refused connections
51787 acks received
0 dropped due to full socket buffers
23717 retransmits
1252925 output packets
314103 acks sent
75 connects
46 closes
113132 keepalives received
863225 keepalives sent
```

## show system statistics tcp

<b>Syntax</b>	show system statistics tcp
<b>Syntax (EX Series Switches)</b>	show system statistics tcp <all-members> <local> <member <i>member-id</i> >
<b>Syntax (TX Matrix Router)</b>	show system statistics tcp <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show system statistics tcp <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
<b>Description</b>	Display system-wide Transmission Control Protocol (TCP) statistics.
<b>Options</b>	<p><b>none</b>—Display system statistics for TCP.</p> <p><b>all-chassis</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display system statistics for TCP for all the routers in the chassis.</p> <p><b>all-lcc</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for TCP for all T640 routers connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for TCP for all connected T1600 or T4000 LCCs.</p> <p><b>all-members</b>—(EX4200 switches only) (Optional) Display TCP statistics for all members of the Virtual Chassis configuration.</p> <p><b>lcc <i>number</i></b>—(TX Matrix routers, TX Matrix Plus routers, and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for TCP for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for TCP for a specific router that is connected to the TX Matrix Plus router.</p> <p>Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"> <li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li> <li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li> <li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> <li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> </ul>

**local**—(EX4200 switches only) (Optional) Display TCP statistics for the local Virtual Chassis member.

**member *member-id***—(EX4200 switches only) (Optional) Display TCP statistics for the specified member of the Virtual Chassis configuration. Replace *member-id* with a value from 0 through 9.

**scc**—(TX Matrix routers only) (Optional) Display system statistics for TCP for the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers and TX Matrix Plus routers only) (Optional) Display system statistics for TCP for the TX Matrix Plus router. Replace *number* with 0.

**Additional Information** By default, when you issue the **show system statistics tcp** command on the master Routing Engine of a TX Matrix router or a TX Matrix Plus router, the command is broadcast to all the master Routing Engines of the LCCs connected to it in the routing matrix. Likewise, if you issue the same command on the backup Routing Engine of a TX Matrix or a TX Matrix Plus router, the command is broadcast to all backup Routing Engines of the LCCs that are connected to it in the routing matrix.

**Required Privilege Level** view

**Related Documentation**

- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output** [show system statistics tcp on page 1080](#)  
[show system statistics tcp \(EX Series Switches\) on page 1081](#)  
[show system statistics tcp lcc \(TX Matrix Router\) on page 1083](#)  
[show system statistics tcp \(TX Matrix Plus Router\) on page 1084](#)

## Sample Output

### show system statistics tcp

```
user@host> show system statistics tcp
tcp:
    3844 packets sent
        3618 data packets (1055596 bytes)
        0 data packets (0 bytes) retransmitted
        0 resends initiated by MTU discovery
        205 ack-only packets (148 packets delayed)
        0 URG only packets
        0 window probe packets
        0 window update packets
        1079 control packets
    5815 packets received
        3377 acks (for 1055657 bytes)
        24 duplicate acks
        0 acks for unsent data
        2655 packets (15004 bytes) received in-sequence
        1 completely duplicate packet (0 bytes)
        0 old duplicate packets
        0 packets with some dup. data (0 bytes duped)
        0 out-of-order packets (0 bytes)
        0 packets (0 bytes) of data after window
```

```

    0 window probes
    7 window update packets
    0 packets received after close
    0 discarded for bad checksums
    0 discarded for bad header offset fields
    0 discarded because packet too short
1 connection request
32 connection accepts
0 bad connection attempts
0 listen queue overflows
33 connections established (including accepts)
30 connections closed (including 0 drops)
    27 connections updated cached RTT on close
    27 connections updated cached RTT variance on close
    0 connections updated cached ssthresh on close
0 embryonic connections dropped
3374 segments updated rtt (of 3220 attempts)
0 retransmit timeouts
    0 connections dropped by rexmit timeout
0 persist timeouts
    0 connections dropped by persist timeout
344 keepalive timeouts
    0 keepalive probes sent
    0 connections dropped by keepalive
1096 correct ACK header predictions
1314 correct data packet header predictions
32 syncache entries added
    0 retransmitted
    0 dupsyn
    0 dropped
    32 completed
    0 bucket overflow
    0 cache overflow
    0 reset
    0 stale
    0 aborted
    0 badack
    0 unreach
    0 zone failures
0 cookies sent
0 cookies received
0 ACKs sent in response to in-window but not exact RSTs
0 ACKs sent in response to in-window SYNs on established connections
0 rcv packets dropped by TCP due to bad address
0 out-of-sequence segment drops due to insufficient memory
1058 RST packets
0 ICMP packets ignored by TCP
0 send packets dropped by TCP due to auth errors
0 rcv packets dropped by TCP due to auth errors

```

#### show system statistics tcp (EX Series Switches)

```
user@host> show system statistics tcp
```

```
Tcp:
```

```

572724 packets sent
  21936 data packets (1887657 bytes)
  2 data packets retransmitted (20 bytes)
  0 resends initiated by MTU discovery
  3724 ack only packets (537 packets delayed)
  0 URG only packets
  1 window probe packets

```

```
1 window update packets
1094083 control packets
1134258 packets received
21371 acks(for 1886660 bytes)
5870 duplicate acks
0 acks for unsent data
19908 packets received in-sequence(267794 bytes)
3022 completely duplicate packets(0 bytes)
0 old duplicate packets
4 packets with some duplicate data(4 bytes duped)
2 out-of-order packets(2 bytes)
0 packets of data after window(0 bytes)
0 window probes
40 window update packets
0 packets received after close
0 discarded for bad checksums
0 discarded for bad header offset fields
0 discarded because packet too short
547027 connection requests
80 connection accepts
0 bad connection attempts
0 listen queue overflows
103 connections established (including accepts)
547106 connections closed (including 6 drops)
47 connections updated cached RTT on close
47 connections updated cached RTT variance on close
0 connections updated cached ssthresh on close
547004 embryonic connections dropped
20862 segments updated rtt(of 567830 attempts)
2 retransmit timeouts
0 connections dropped by retransmit timeout
0 persist timeouts
0 connections dropped by persist timeout
3032 keepalive timeouts
3031 keepalive probes sent
1 connections dropped by keepalive
7823 correct ACK header predictions
12533 correct data packet header predictions
80 syncache entries added
0 retransmitted
0 dupsyn
4 dropped
80 completed
0 bucket overflow
0 cache overflow
0 reset
0 stale
0 aborted
0 badack
0 unreach
0 zone failures
0 cookies sent
0 cookies received
1 SACK recovery episodes
1 segment retransmits in SACK recovery episodes
1 byte retransmits in SACK recovery episodes
71 SACK options (SACK blocks) received
1 SACK options (SACK blocks) sent
0 SACK scoreboard overflow
0 ACKs sent in response to in-window but not exact RSTs
0 ACKs sent in response to in-window SYNs on established connections
```

```

0 rcv packets dropped by TCP due to bad address
0 out-of-sequence segment drops due to insufficient memory
547024 RST packets
0 ICMP packets ignored by TCP
0 send packets dropped by TCP due to auth errors
0 rcv packets dropped by TCP due to auth errors
0 outgoing segments dropped due to policing

```

#### show system statistics tcp lcc (TX Matrix Router)

```

user@host> show system statistics tcp lcc 2
lcc2-re0:

```

```

-----
tcp:
  21271 packets sent
    11069 data packets (12044 bytes)
    0 data packets (0 bytes) retransmitted
    0 resends initiated by MTU discovery
    10198 ack-only packets (10194 packets delayed)
    0 URG only packets
    0 window probe packets
    0 window update packets
    4 control packets
  13363 packets received
    11073 acks (for 12044 bytes)
    0 duplicate acks
    0 acks for unsent data
    12895 packets (2400874 bytes) received in-sequence
    0 completely duplicate packets (0 bytes)
    0 old duplicate packets
    0 packets with some dup. data (0 bytes duped)
    0 out-of-order packets (0 bytes)
    0 packets (0 bytes) of data after window
    0 window probes
    0 window update packets
    0 packets received after close
    0 discarded for bad checksums
    0 discarded for bad header offset fields
    0 discarded because packet too short
  4 connection requests
  0 connection accepts
  0 bad connection attempts
  0 listen queue overflows
  4 connections established (including accepts)
  33 connections closed (including 0 drops)
    0 connections updated cached RTT on close
    0 connections updated cached RTT variance on close
    0 connections updated cached ssthresh on close
  0 embryonic connections dropped
  11073 segments updated rtt (of 11073 attempts)
0 retransmit timeouts
  0 connections dropped by rexmit timeout
  0 persist timeouts
    0 connections dropped by persist timeout
  0 keepalive timeouts
    0 keepalive probes sent
    0 connections dropped by keepalive
  464 correct ACK header predictions
  2172 correct data packet header predictions
  0 ACKs sent in response to in-window but not exact RSTs
  0 ACKs sent in response to in-window SYNs on established connections

```

```
0 out-of-sequence segment drops due to insufficient memory
0 RST packets
0 ICMP packets ignored by TCP
```

#### show system statistics tcp (TX Matrix Plus Router)

```
user@host> show system statistics tcp
sfc0-re0:
```

```
-----
Tcp:
```

```
10420 packets sent
    10203 data packets (2374613 bytes)
    0 data packets retransmitted (0 bytes)
    0 resends initiated by MTU discovery
    202 ack only packets (120 packets delayed)
    0 URG only packets
    0 window probe packets
    0 window update packets
    30 control packets
16635 packets received
    9468 acks(for 2374674 bytes)
    32 duplicate acks
    0 acks for unsent data
    7764 packets received in-sequence(38286 bytes)
    20 completely duplicate packets(0 bytes)
    0 old duplicate packets
    0 packets with some duplicate data(0 bytes duped)
    0 out-of-order packets(0 bytes)
    0 packets of data after window(0 bytes)
    0 window probes
    356 window update packets
    0 packets received after close
    0 discarded for bad checksums
    0 discarded for bad header offset fields
    0 discarded because packet too short
10 connection requests
33 connection accepts
0 bad connection attempts
0 listen queue overflows
34 connections established (including accepts)
50 connections closed (including 0 drops)
    24 connections updated cached RTT on close
    24 connections updated cached RTT variance on close
    0 connections updated cached ssthresh on close
9 embryonic connections dropped
9468 segments updated rtt(of 9256 attempts)
0 retransmit timeouts
    0 connections dropped by retransmit timeout
0 persist timeouts
    0 connections dropped by persist timeout
14 keepalive timeouts
    14 keepalive probes sent
    0 connections dropped by keepalive
6220 correct ACK header predictions
6625 correct data packet header predictions
33 syncache entries added
    0 retransmitted
    0 dupsyn
    0 dropped
    33 completed
    0 bucket overflow
```



```

    0 cache overflow
    0 reset
    0 stale
    0 aborted
    0 badack
    0 unreach
    0 zone failures
0 cookies sent
0 cookies received
0 SACK recovery episodes
0 segment retransmits in SACK recovery episodes
0 byte retransmits in SACK recovery episodes
0 SACK options (SACK blocks) received
0 SACK options (SACK blocks) sent
0 SACK scoreboard overflow
0 ACKs sent in response to in-window but not exact RSTs
0 ACKs sent in response to in-window SYNs on established connections
0 rcv packets dropped by TCP due to bad address
0 out-of-sequence segment drops due to insufficient memory
15 RST packets
0 ICMP packets ignored by TCP
0 send packets dropped by TCP due to auth errors
0 rcv packets dropped by TCP due to auth errors
0 outgoing segments dropped due to policing

```

1cc0-re0:

Tcp:

```

1306 packets sent
    1251 data packets (161855 bytes)
    0 data packets retransmitted (0 bytes)
    0 resends initiated by MTU discovery
    51 ack only packets (1 packets delayed)
    0 URG only packets
    0 window probe packets
    0 window update packets
    6 control packets
1397 packets received
    1218 acks(for 161904 bytes)
    2 duplicate acks
    0 acks for unsent data
    612 packets received in-sequence(12495 bytes)
    0 completely duplicate packets(0 bytes)
    0 old duplicate packets
    0 packets with some duplicate data(0 bytes duped)
    0 out-of-order packets(0 bytes)
    0 packets of data after window(0 bytes)
    0 window probes
    22 window update packets
    0 packets received after close
    0 discarded for bad checksums
    0 discarded for bad header offset fields
    0 discarded because packet too short
1 connection requests
24 connection accepts
0 bad connection attempts
0 listen queue overflows
25 connections established (including accepts)
27 connections closed (including 0 drops)
    24 connections updated cached RTT on close
    24 connections updated cached RTT variance on close

```

```
    0 connections updated cached ssthresh on close
0 embryonic connections dropped
1218 segments updated rtt(of 1192 attempts)
0 retransmit timeouts
    0 connections dropped by retransmit timeout
0 persist timeouts
    0 connections dropped by persist timeout
0 keepalive timeouts
    0 keepalive probes sent
    0 connections dropped by keepalive
196 correct ACK header predictions
119 correct data packet header predictions
24 syncache entries added
    0 retransmitted
    0 dupsyn
    0 dropped
    24 completed
    0 bucket overflow
    0 cache overflow
    0 reset
    0 stale
    0 aborted
    0 badack
    0 unreach
    0 zone failures
0 cookies sent
0 cookies received
0 SACK recovery episodes
0 segment retransmits in SACK recovery episodes
0 byte retransmits in SACK recovery episodes
0 SACK options (SACK blocks) received
0 SACK options (SACK blocks) sent
0 SACK scoreboard overflow
0 ACKs sent in response to in-window but not exact RSTs
0 ACKs sent in response to in-window SYNs on established connections
0 rcv packets dropped by TCP due to bad address
0 out-of-sequence segment drops due to insufficient memory
2 RST packets
0 ICMP packets ignored by TCP
0 send packets dropped by TCP due to auth errors
0 rcv packets dropped by TCP due to auth errors
0 outgoing segments dropped due to policing
```

lcc1-re0:

-----  
Tcp:

```
    1118 packets sent
        1066 data packets (131896 bytes)
        0 data packets retransmitted (0 bytes)
        0 resends initiated by MTU discovery
        48 ack only packets (2 packets delayed)
        0 URG only packets
        0 window probe packets
        0 window update packets
        6 control packets
1215 packets received
```

## show system statistics tnp

<b>Syntax</b>	show system statistics tnp
<b>Syntax (EX Series Switches)</b>	show system statistics tnp <all-members> <local> <member <i>member-id</i> >
<b>Syntax (TX Matrix Router)</b>	show system statistics tnp <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show system statistics tnp <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
<b>Description</b>	Display system-wide Trivial Network Protocol (TNP) statistics.
<b>Options</b>	<p><b>none</b>—Display system statistics for TNP.</p> <p><b>all-chassis</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display system statistics for TNP for all the routers in the chassis.</p> <p><b>all-lcc</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for TNP for all T640 routers connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for TNP for all connected T1600 or T4000 LCCs.</p> <p><b>all-members</b>—(EX4200 switches only) (Optional) Display TNP statistics for all members of the Virtual Chassis configuration.</p> <p><b>lcc <i>number</i></b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for TNP for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for TNP for a specific router that is connected to the TX Matrix Plus router. Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"> <li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li> <li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li> <li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> <li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> </ul>

**local**—(EX4200 switches only) (Optional) Display TNP statistics for the local Virtual Chassis member.

**member *member-id***—(EX4200 switches only) (Optional) Display TNP statistics for the specified member of the Virtual Chassis configuration. Replace *member-id* with a value from 0 through 9.

**scc**—(TX Matrix routers only) (Optional) Display system statistics for TNP for the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Display system statistics for TNP for the TX Matrix Plus router. Replace *number* with 0.

**Additional Information** By default, when you issue the **show system statistics tnp** command on the master Routing Engine of a TX Matrix router or a TX Matrix Plus router, the command is broadcast to all the master Routing Engines of the LCCs connected to it in the routing matrix. Likewise, if you issue the same command on the backup Routing Engine of a TX Matrix or a TX Matrix Plus router, the command is broadcast to all backup Routing Engines of the LCCs that are connected to it in the routing matrix.

**Required Privilege Level** view

**Related Documentation**

- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output** [show system statistics tnp on page 1088](#)  
[show system statistics tnp \(EX Series Switches\) on page 1089](#)  
[show system statistics tnp \(TX Matrix Plus Router\) on page 1089](#)

## Sample Output

### show system statistics tnp

```
user@host> show system statistics tnp
tnp:
  146742559 unicast packets received
    0 broadcast packets received
    0 fragmented packets received
    0 hello packets dropped
    0 fragments dropped
    0 fragment reassembly queue flushes
    0 hello packets received
    0 control packets received
  49670972 rdp packets received
  337101 udp packets received
  96734486 tunnel packets received
    0 input packets discarded with no protocol
  98375316 unicast packets sent
    0 broadcast packets sent
    0 fragmented packets sent
    0 hello packets dropped
    0 fragments dropped
    0 hello packets sent
    0 control packets sent
  49670972 rdp packets sent
```

```

337101 udp packets sent
48367243 tunnel packets sent
0 packets sent with unknown protocol

```

### show system statistics tnp (EX Series Switches)

```

user@host> show system statistics tnp
tnp:
    0 Unicast packets received
    0 Broadcast packets received
    0 Fragmented packets received
    0 Hello packets dropped
    0 Fragments dropped
    0 Fragment reassembly queue flushes
    0 Packets with tnp src address collision received
    0 Hello packets received
    0 Control packets received
    0 Rdp packets received
    0 Udp packets received
    0 Tunnel packets received
    0 Input packets discarded with no protocol
    0 Packets of version unspecified received
    0 Packets of version 1 received
    0 Packets of version 2 received
    0 Packets of version 3 received
    0 Unicast packets sent
    0 Broadcast packets sent
    0 Fragmented packets sent
    0 Hello packets dropped
    0 Fragments dropped
    0 Hello packets sent
    0 Control packets sent
    0 Rdp packets sent
    0 Udp packets sent
    0 Tunnel packets sent
    0 Packets sent with unknown protocol
    0 Packets of version unspecified sent
    0 Packets of version 1 sent
    0 Packets of version 2 sent
    0 Packets of version 3 sent

```

### show system statistics tnp (TX Matrix Plus Router)

```

user@host> show system statistics tnp
sfc0-re0:
-----
tnp:
    4543208 unicast packets received
    3306239 broadcast packets received
    2398 fragmented packets received
    0 hello packets dropped
    0 fragments dropped
    53 fragment reassembly queue flushes
    0 packets with tnp src address collision received
    3306148 hello packets received
    0 control packets received
    4439623 rdp packets received
    103676 udp packets received
    0 tunnel packets received
    0 input packets discarded with no protocol
    0 packets of version unspecified received

```

```

0 packets of version 1 received
8265 packets of version 2 received
7841182 packets of version 3 received

```

```

4528238 unicast packets sent
115264 broadcast packets sent
64 fragmented packets sent
0 hello packets dropped
0 fragments dropped
115264 hello packets sent
0 control packets sent
4433293 rdp packets sent
94945 udp packets sent
0 tunnel packets sent
0 packets sent with unknown protocol
0 packets of version unspecified sent
0 packets of version 1 sent
6444 packets of version 2 sent
4637058 packets of version 3 sent

```

lcc0-re0:

-----  
tnp:

```

977938 unicast packets received
894314 broadcast packets received
322 fragmented packets received
0 hello packets dropped
0 fragments dropped
12 fragment reassembly queue flushes
0 packets with tnp src address collision received
894294 hello packets received
0 control packets received
829776 rdp packets received
148182 udp packets received
0 tunnel packets received
0 input packets discarded with no protocol
0 packets of version unspecified received
0 packets of version 1 received
90262 packets of version 2 received
1781990 packets of version 3 received

```

```

981945 unicast packets sent
113988 broadcast packets sent
206 fragmented packets sent
0 hello packets dropped
0 fragments dropped
113988 hello packets sent
0 control packets sent
832646 rdp packets sent
149299 udp packets sent
0 tunnel packets sent
0 packets sent with unknown protocol
0 packets of version unspecified sent
0 packets of version 1 sent
89672 packets of version 2 sent
1006261 packets of version 3 sent

```

lcc1-re0:

-----  
tnp:

```

967870 unicast packets received

```

```

897834 broadcast packets received
38 fragmented packets received
0 hello packets dropped
0 fragments dropped
10 fragment reassembly queue flushes
0 packets with tnp src address collision received
897813 hello packets received
0 control packets received
822840 rdp packets received
145051 udp packets received
0 tunnel packets received
0 input packets discarded with no protocol
0 packets of version unspecified received
0 packets of version 1 received
87117 packets of version 2 received
1778587 packets of version 3 received

970975 unicast packets sent
114031 broadcast packets sent
25 fragmented packets sent
0 hello packets dropped
0 fragments dropped
114031 hello packets sent
0 control packets sent
824773 rdp packets sent
146202 udp packets sent
0 tunnel packets sent
0 packets sent with unknown protocol
0 packets of version unspecified sent
0 packets of version 1 sent
86595 packets of version 2 sent
998411 packets of version 3 sent

```

lcc2-re0:

-----  
tnp:

```

1131139 unicast packets received
1007204 broadcast packets received
620 fragmented packets received
0 hello packets dropped
0 fragments dropped
12 fragment reassembly queue flushes
0 packets with tnp src address collision received
1007185 hello packets received
0 control packets received
966727 rdp packets received
164431 udp packets received
0 tunnel packets received
0 input packets discarded with no protocol
0 packets of version unspecified received
0 packets of version 1 received
106518 packets of version 2 received
2031825 packets of version 3 received

1135108 unicast packets sent
114130 broadcast packets sent
397 fragmented packets sent
0 hello packets dropped
0 fragments dropped
114130 hello packets sent
0 control packets sent

```

```

969748 rdp packets sent
165360 udp packets sent
0 tunnel packets sent
0 packets sent with unknown protocol
0 packets of version unspecified sent
0 packets of version 1 sent
105801 packets of version 2 sent
1143437 packets of version 3 sent

```

lcc3-re0:

tnp:

```

1495619 unicast packets received
1211116 broadcast packets received
1186 fragmented packets received
0 hello packets dropped
0 fragments dropped
13 fragment reassembly queue flushes
0 packets with tnp src address collision received
1211088 hello packets received
0 control packets received
1275765 rdp packets received
219882 udp packets received
0 tunnel packets received
0 input packets discarded with no protocol
0 packets of version unspecified received
0 packets of version 1 received
161944 packets of version 2 received
2544791 packets of version 3 received

```

```

1502341 unicast packets sent
114160 broadcast packets sent
699 fragmented packets sent
0 hello packets dropped
0 fragments dropped
114160 hello packets sent
0 control packets sent
1281678 rdp packets sent
220663 udp packets sent
0 tunnel packets sent
0 packets sent with unknown protocol
0 packets of version unspecified sent
0 packets of version 1 sent
161167 packets of version 2 sent
1455334 packets of version 3 sent

```



## show system statistics tudp

<b>Syntax</b>	show system statistics tudp
<b>Syntax (EX Series Switches)</b>	show system statistics tudp <all-members> <local> <member <i>member-id</i> >
<b>Syntax (TX Matrix Router)</b>	show system statistics tudp <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show system statistics tudp <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
<b>Description</b>	Display system-wide Trivial User Datagram Protocol (TUDP) statistics.
<b>Options</b>	<p><b>none</b>—Display system statistics for TUDP.</p> <p><b>all-chassis</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display system statistics for TUDP for all the routers in the chassis.</p> <p><b>all-lcc</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for TUDP for all T640 routers connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for TUDP for all connected T1600 or T4000 LCCs.</p> <p><b>all-members</b>—(EX4200 switches only) (Optional) Display TUDP statistics for all members of the Virtual Chassis configuration.</p> <p><b>lcc <i>number</i></b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for TUDP for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for TUDP for a specific router that is connected to the TX Matrix Plus router. Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"> <li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li> <li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li> <li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> <li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li> </ul>

**local**—(EX4200 switches only) (Optional) Display TUDP statistics for the local Virtual Chassis member.

**member *member-id***—(EX4200 switches only) (Optional) Display TUDP statistics for the specified member of the Virtual Chassis configuration. Replace *member-id* with a value from 0 through 9.

**scc**—(TX Matrix routers only) (Optional) Display system statistics for TUDP for the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Display system statistics for TUDP for the TX Matrix Plus router. Replace *number* with 0.

**Additional Information** By default, when you issue the **show system statistics tudp** command on the master Routing Engine of a TX Matrix router or a TX Matrix Plus router, the command is broadcast to all the master Routing Engines of the LCCs connected to it in the routing matrix. Likewise, if you issue the same command on the backup Routing Engine of a TX Matrix or a TX Matrix Plus router, the command is broadcast to all backup Routing Engines of the LCCs that are connected to it in the routing matrix.

**Required Privilege Level** view

**Related Documentation**

- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output** [show system statistics tudp on page 1094](#)  
[show system statistics tudp \(TX Matrix Plus Router\) on page 1094](#)

## Sample Output

### show system statistics tudp

```
user@host> show system statistics tudp
tudp:
  337109 datagrams received
  0 with incomplete header
  0 with bad data length field
  0 with bad checksum
  0 dropped due to no socket
  0 broadcast/multicast datagrams dropped due to no socket
  0 dropped due to full socket buffers
  337109 delivered
  337109 datagrams output
```

### show system statistics tudp (TX Matrix Plus Router)

```
user@host> show system statistics tudp
sfc0-re0:
-----
tudp:
  104389 datagrams received
  0 with incomplete header
  0 with bad data length field
  0 with bad checksum
  0 dropped due to no socket
```

```
0 broadcast/multicast datagrams dropped due to no socket
0 dropped due to full socket buffers
104389 delivered
95619 datagrams output
```

lcc0-re0:

-----  
tudp:

```
148623 datagrams received
0 with incomplete header
0 with bad data length field
0 with bad checksum
2 dropped due to no socket
1 broadcast/multicast datagram dropped due to no socket
0 dropped due to full socket buffers
148620 delivered
150327 datagrams output
```

lcc1-re0:

-----  
tudp:

```
145493 datagrams received
0 with incomplete header
0 with bad data length field
0 with bad checksum
0 dropped due to no socket
1 broadcast/multicast datagram dropped due to no socket
0 dropped due to full socket buffers
145492 delivered
147244 datagrams output
```

lcc2-re0:

-----  
tudp:

```
164873 datagrams received
0 with incomplete header
0 with bad data length field
0 with bad checksum
2 dropped due to no socket
0 broadcast/multicast datagrams dropped due to no socket
0 dropped due to full socket buffers
164871 delivered
166339 datagrams output
```

lcc3-re0:

-----  
tudp:

```
220320 datagrams received
0 with incomplete header
0 with bad data length field
0 with bad checksum
6 dropped due to no socket
0 broadcast/multicast datagrams dropped due to no socket
0 dropped due to full socket buffers
220314 delivered
221735 datagrams output
```

## show system statistics udp

---

<b>Syntax</b>	show system statistics udp
<b>Syntax (EX Series Switches)</b>	show system statistics udp <all-members> <local> <member <i>member-id</i> >
<b>Syntax (TX Matrix Router)</b>	show system statistics udp <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show system statistics udp <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
<b>Description</b>	Display system-wide User Datagram Protocol (UDP) statistics.
<b>Options</b>	<p><b>none</b>—Display system statistics for UDP.</p> <p><b>all-chassis</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display system statistics for UDP for all the routers in the chassis.</p> <p><b>all-lcc</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for UDP for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for UDP for all connected T1600 or T4000 LCCs.</p> <p><b>all-members</b>—(EX4200 switches only) (Optional) Display UDP statistics for all members of the Virtual Chassis configuration.</p> <p><b>lcc <i>number</i></b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for UDP for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for UDP for a specific router that is connected to the TX Matrix Plus router. Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"><li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li><li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li><li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li><li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li></ul>

**local**—(EX4200 switches only) (Optional) Display UDP statistics for the local Virtual Chassis member.

**member *member-id***—(EX4200 switches only) (Optional) Display TUDP statistics for the specified member of the Virtual Chassis configuration. Replace *member-id* with a value from 0 through 9.

**scc**—(TX Matrix routers only) (Optional) Display system statistics for UDP for the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display system statistics for UDP for the TX Matrix router or TX Matrix Plus router. Replace *number* with 0.

**Additional Information** By default, when you issue the **show system statistics udp** command on the master Routing Engine of a TX Matrix router or a TX Matrix Plus router, the command is broadcast to all the master Routing Engines of the LCCs connected to it in the routing matrix. Likewise, if you issue the same command on the backup Routing Engine of a TX Matrix or a TX Matrix Plus router, the command is broadcast to all backup Routing Engines of the LCCs that are connected to it in the routing matrix.

**Required Privilege Level** view

**Related Documentation**

- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output** [show system statistics udp on page 1097](#)  
[show system statistics udp \(TX Matrix Plus Router\) on page 1097](#)

## Sample Output

### show system statistics udp

```
user@host> show system statistics udp
udp:
    3658427 datagrams received
    0 with incomplete header
    0 with bad data length field
    0 with bad checksum
    3656885 dropped due to no socket
    3656885 broadcast/multicast datagrams dropped due to no socket
    0 dropped due to full socket buffers
    0 not for hashed pcb
    4291311953 delivered
    1551 datagrams output
```

### show system statistics udp (TX Matrix Plus Router)

```
user@host> show system statistics udp
sfc0-re0:
-----
udp:
    170 datagrams received
    0 with incomplete header
    0 with bad data length field
```

```
0 with bad checksum
0 dropped due to no socket
0 broadcast/multicast datagrams dropped due to no socket
0 dropped due to full socket buffers
0 not for hashed pcb
170 delivered
12079 datagrams output
```

lcc0-re0:

-----  
udp:

```
55 datagrams received
0 with incomplete header
0 with bad data length field
0 with bad checksum
1 dropped due to no socket
0 broadcast/multicast datagrams dropped due to no socket
0 dropped due to full socket buffers
0 not for hashed pcb
54 delivered
3891 datagrams output
```

lcc1-re0:

-----  
udp:

```
50 datagrams received
0 with incomplete header
0 with bad data length field
0 with bad checksum
0 dropped due to no socket
0 broadcast/multicast datagrams dropped due to no socket
0 dropped due to full socket buffers
0 not for hashed pcb
50 delivered
3620 datagrams output
```

lcc2-re0:

-----  
udp:

```
48 datagrams received
0 with incomplete header
0 with bad data length field
0 with bad checksum
0 dropped due to no socket
0 broadcast/multicast datagrams dropped due to no socket
0 dropped due to full socket buffers
0 not for hashed pcb
48 delivered
3734 datagrams output
```

lcc3-re0:

-----  
udp:

```
48 datagrams received
0 with incomplete header
0 with bad data length field
0 with bad checksum
0 dropped due to no socket
0 broadcast/multicast datagrams dropped due to no socket
0 dropped due to full socket buffers
0 not for hashed pcb
```

48 delivered  
3640 datagrams output

## show system statistics vpls

---

<b>Syntax</b>	show system statistics vpls
<b>Syntax (TX Matrix Router)</b>	show system statistics vpls <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show system statistics vpls <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Release Information</b>	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.
<b>Description</b>	Display system-wide Virtual Private LAN Service (VPLS) statistics.
<b>Options</b>	<p><b>none</b>—Display system statistics for VPLS.</p> <p><b>all-chassis</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display system statistics for VPLS for all the routers in the chassis.</p> <p><b>all-lcc</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for VPLS for all T640 routers connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for VPLS for all connected T1600 or T4000 LCCs.</p> <p><b>lcc <i>number</i></b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for VPLS for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for VPLS for a specific router that is connected to the TX Matrix Plus router. Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"><li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li><li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li><li>• 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li><li>• 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.</li></ul> <p><b>scc</b>—(TX Matrix routers only) (Optional) Display system statistics for VPLS for the TX Matrix router (or switch-card chassis).</p> <p><b>sfc <i>number</i></b>—(TX Matrix Plus routers only) (Optional) Display system statistics for VPLS for the TX Matrix Plus router. Replace <i>number</i> with 0.</p>



**Additional Information** By default, when you issue the **show system statistics vpls** command on the master Routing Engine of a TX Matrix router or a TX Matrix Plus router, the command is broadcast to all the master Routing Engines of the LCCs connected to it in the routing matrix. Likewise, if you issue the same command on the backup Routing Engine of a TX Matrix or a TX Matrix Plus router, the command is broadcast to all backup Routing Engines of the LCCs that are connected to it in the routing matrix.

**Required Privilege Level** view

**Related Documentation** • [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output** [show system statistics vpls on page 1101](#)  
[show system statistics vpls \(TX Matrix Plus Router\) on page 1101](#)

## Sample Output

### show system statistics vpls

```
user@host> show system statistics vpls
vpls:
    0 total packets received
    0 with size smaller than minimum
    0 with incorrect version number
    0 packets for this host

    0 packets with no logical interface
    0 packets with no family
    0 packets with no route table
    0 packets with no auxiliary table
    0 packets with no corefacing entry
    0 packets with no CE-facing entry

    0 mac route learning requests
    0 mac routes learnt
    0 requests to learn an existing route
    0 learning requests while learning disabled on interface
    0 learning requests over capacity
    0 mac routes moved
    0 requests to move static route

    0 mac route aging requests
    0 mac routes aged
    0 bogus address in aging requests
    0 requests to age static route
    0 requests to re-ageout aged route
    0 requests involving multiple peer FEs
    0 aging acks from PFE
    0 aging non-acks from PFE
    0 aging requests timed out waiting on FEs
    0 aging requests over max-rate
    0 errors finding peer FEs
```

### show system statistics vpls (TX Matrix Plus Router)

```
user@host> show system statistics vpls
sfc0-re0:
```

```
vp1s:
  0 total packets received
  0 with size smaller than minimum
  0 with incorrect version number
  0 packets for this host

  0 packets with no logical interface
  0 packets with no family
  0 packets with no route table
  0 packets with no auxiliary table
  0 packets with no corefacing entry
  0 packets with no CE-facing entry

  0 mac route learning requests
  0 mac routes learnt
  0 requests to learn an existing route
  0 learning requests while learning disabled on interface
  0 learning requests over capacity
  0 mac routes moved
  0 requests to move static route

  0 mac route aging requests
  0 mac routes aged
  0 bogus address in aging requests
  0 requests to age static route
  0 requests to re-ageout aged route
  0 requests involving multiple peer FEs
  0 aging acks from PFE
  0 aging non-acks from PFE
  0 aging requests timed out waiting on FEs
  0 aging requests over max-rate
  0 errors finding peer FEs
  0 unsupported platform
  0 dropped due to no l3 route table
  0 dropped due to no local ifl
  0 packets punted
  0 dropped due to no socket
```

lcc0-re0:

-----

```
vp1s:
  0 total packets received
  0 with size smaller than minimum
  0 with incorrect version number
  0 packets for this host

  0 packets with no logical interface
  0 packets with no family
  0 packets with no route table
  0 packets with no auxiliary table
  0 packets with no corefacing entry
  0 packets with no CE-facing entry

  0 mac route learning requests
  0 mac routes learnt
  0 requests to learn an existing route
  0 learning requests while learning disabled on interface
  0 learning requests over capacity
  0 mac routes moved
  0 requests to move static route
```

```

0 mac route aging requests
0 mac routes aged
0 bogus address in aging requests
0 requests to age static route
0 requests to re-ageout aged route
0 requests involving multiple peer FEs
0 aging acks from PFE
0 aging non-acks from PFE
0 aging requests timed out waiting on FEs
0 aging requests over max-rate
0 errors finding peer FEs
0 unsupported platform
0 dropped due to no l3 route table
0 dropped due to no local ifl
0 packets punted
0 dropped due to no socket

```

lcc1-re0:

-----

vpls:

```

0 total packets received
0 with size smaller than minimum
0 with incorrect version number
0 packets for this host

0 packets with no logical interface
0 packets with no family
0 packets with no route table
0 packets with no auxiliary table
0 packets with no corefacing entry
0 packets with no CE-facing entry

0 mac route learning requests
0 mac routes learnt
0 requests to learn an existing route
0 learning requests while learning disabled on interface
0 learning requests over capacity
0 mac routes moved
0 requests to move static route

0 mac route aging requests
0 mac routes aged
0 bogus address in aging requests
0 requests to age static route
0 requests to re-ageout aged route
0 requests involving multiple peer FEs
0 aging acks from PFE
0 aging non-acks from PFE
0 aging requests timed out waiting on FEs
0 aging requests over max-rate
0 errors finding peer FEs
0 unsupported platform
0 dropped due to no l3 route table
0 dropped due to no local ifl
0 packets punted
0 dropped due to no socket

```

lcc2-re0:

-----

vpls:

```

0 total packets received

```

```
0 with size smaller than minimum
0 with incorrect version number
0 packets for this host

0 packets with no logical interface
0 packets with no family
0 packets with no route table
0 packets with no auxiliary table
0 packets with no corefacing entry
0 packets with no CE-facing entry

0 mac route learning requests
0 mac routes learnt
0 requests to learn an existing route
0 learning requests while learning disabled on interface
0 learning requests over capacity
0 mac routes moved
0 requests to move static route

0 mac route aging requests
0 mac routes aged
0 bogus address in aging requests
0 requests to age static route
0 requests to re-ageout aged route
0 requests involving multiple peer FEs
0 aging acks from PFE
0 aging non-acks from PFE
0 aging requests timed out waiting on FEs
0 aging requests over max-rate
0 errors finding peer FEs
0 unsupported platform
0 dropped due to no l3 route table
0 dropped due to no local ifl
0 packets punted
0 dropped due to no socket
```

lcc3-re0:

-----  
vpls:

```
0 total packets received
0 with size smaller than minimum
0 with incorrect version number
0 packets for this host

0 packets with no logical interface
0 packets with no family
0 packets with no route table
0 packets with no auxiliary table
0 packets with no corefacing entry
0 packets with no CE-facing entry

0 mac route learning requests
0 mac routes learnt
0 requests to learn an existing route
0 learning requests while learning disabled on interface
0 learning requests over capacity
0 mac routes moved
0 requests to move static route


0 mac route aging requests
0 mac routes aged
```

```
0 bogus address in aging requests
0 requests to age static route
0 requests to re-ageout aged route
0 requests involving multiple peer FEs
0 aging acks from PFE
0 aging non-acks from PFE
0 aging requests timed out waiting on FEs
0 aging requests over max-rate
0 errors finding peer FEs
0 unsupported platform
0 dropped due to no l3 route table
0 dropped due to no local ifl
0 packets punted
0 dropped due to no socket
```

## request system halt

---

<b>Syntax</b>	request system halt <at <i>time</i> > <backup-routing-engine> <both-routing-engines> <other-routing-engine> <in <i>minutes</i> > <media (compact-flash   disk   removable-compact-flash   usb)> <message " <i>text</i> ">
<b>Syntax (EX Series Switches)</b>	request system halt <all-members> <at <i>time</i> > <backup-routing-engine> <both-routing-engines> <in <i>minutes</i> > <local> <media (external   internal)> <member <i>member-id</i> > <message " <i>text</i> "> <other-routing-engine> <slice <i>slice</i> >
<b>Syntax (PTX Series)</b>	request system halt <at <i>time</i> > <backup-routing-engine> <both-routing-engines> <other-routing-engine> <in <i>minutes</i> > <media (compact-flash   disk)> <message " <i>text</i> ">
<b>Syntax (TX Matrix Router)</b>	request system halt <all-lcc   lcc <i>number</i>   scc> <at <i>time</i> > <backup-routing-engine> <both-routing-engines> <other-routing-engine> <in <i>minutes</i> > <media (compact-flash   disk)> <message " <i>text</i> ">
<b>Syntax (TX Matrix Plus Router)</b>	request system halt <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> > <at <i>time</i> > <backup-routing-engine> <both-routing-engines> <other-routing-engine> <in <i>minutes</i> > <media (compact-flash   disk)> <message " <i>text</i> ">

<b>Syntax (MX Series Router)</b>	<pre>request system halt &lt;all-members&gt; &lt;at <i>time</i>&gt; &lt;backup-routing-engine&gt; &lt;both-routing-engines&gt; &lt;in <i>minutes</i>&gt; &lt;local&gt; &lt;media (external   internal)&gt; &lt;member <i>member-id</i>&gt; &lt;message "<i>text</i>"&gt; &lt;other-routing-engine&gt;</pre>
<b>Syntax (QFX Series)</b>	<pre>request system halt &lt;all-members&gt; &lt;at <i>time</i>&gt; &lt;director-device <i>director-device-id</i>&gt; &lt;in <i>minutes</i>&gt; &lt;local&gt; &lt;media &gt; &lt;member <i>member-id</i>&gt; &lt;message "<i>text</i>"&gt; &lt;slice <i>slice</i>&gt;</pre>
<b>Release Information</b>	<p>Command introduced before Junos OS Release 7.4.</p> <p><b>other-routing-engine</b> option introduced in Junos OS Release 8.0.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p><b>sfc</b> option 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><b>director-device</b> option introduced for QFabric systems in Junos OS Release 12.2.</p> <p><b>backup-routing-engine</b> option introduced in Junos OS Release 13.1.</p>
<b>Description</b>	Stop the router or switch software.
	
<p><b>NOTE:</b> When you issue this command on an individual component in a QFabric system, you will receive a warning that says “Hardware-based members will halt, Virtual Junos Routing Engines will reboot.” If you want to halt only one member of a Node group, use the <b>member</b> option from the Node group CLI. You cannot issue this command from the QFabric CLI.</p>	
<b>Options</b>	<p><b>none</b>—Stop the router or switch software immediately.</p> <p><b>all-chassis</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Halt all chassis.</p> <p><b>all-lcc</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, halt all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, halt all T1600 or T4000 routers connected to the TX Matrix Plus router.</p> <p><b>all-members</b>—(EX4200 switches and MX Series routers only) (Optional) Halt all members of the Virtual Chassis configuration.</p>

**at *time***—(Optional) Time at which to stop the software, specified in one of the following ways:

- **now**—Stop the software immediately. This is the default.
- **+*minutes***—Number of minutes from now to stop the software.
- ***yymmddhhmm***—Absolute time at which to stop the software, specified as year, month, day, hour, and minute.
- ***hh:mm***—Absolute time on the current day at which to stop the software.

**backup-routing-engine**—(Optional) Halt the backup Routing Engine. This command halts the backup Routing Engine, regardless from which Routing Engine the command is executed. For example, if you issue the command from the master Routing Engine, the backup Routing Engine is halted. If you issue the command from the backup Routing Engine, the backup Routing Engine is halted.

**both-routing-engines**—(Optional) Halt both Routing Engines at the same time.

**director-device *director-device-id***—(QFabric systems only) Halt a specific Director device.

**lcc *number***—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, halt a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, halt a specific router that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(EX4200 switches and MX Series routers only) (Optional) Halt the local Virtual Chassis member.

**in *minutes***—(Optional) Number of minutes from now to stop the software. This option is an alias for the **at +*minutes*** option.

**media (*compact-flash* | *disk* | *removable-compact-flash* | *usb*)**—(Optional) Boot medium for the next boot. (The options **removable-compact-flash** and **usb** pertain to J Series routers only.)

**media (*external* | *internal*)**—(EX Series and QFX Series switches and MX Series routers only) (Optional) Halt the boot media:

- **external**—Halt the external mass storage device.



- **internal**—Halt the internal flash device.

**member *member-id***—(EX4200 switches and MX Series routers only) (Optional) Halt the specified member of the Virtual Chassis configuration. For EX4200 switches, replace *member-id* with a value from 0 through 9. For an MX Series Virtual Chassis, replace *member-id* with a value of 0 or 1.

**message "*text*"**—(Optional) Message to display to all system users before stopping the software.

**other-routing-engine**—(Optional) Halt the other Routing Engine from which the command is issued. For example, if you issue the command from the master Routing Engine, the backup Routing Engine is halted. Similarly, if you issue the command from the backup Routing Engine, the master Routing Engine is halted.

**scc**—(TX Matrix routers only) (Optional) Halt the TX Matrix router (or switch-card chassis).

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

**slice *slice***—(EX Series and QFX Series switches only) (Optional) Halt a partition on the boot media. This option has the following suboptions:

- 1—Halt partition 1.
- 2—Halt partition 2.
- **alternate**—Reboot from the alternate partition.

**Additional Information** On the M7i router, the **request system halt** command does not immediately power down the Packet Forwarding Engine. The power-down process can take as long as 5 minutes.

On a TX Matrix router and TX Matrix Plus router if you issue the **request system halt** command on the master Routing Engine, all the master Routing Engines connected to the routing matrix are halted. If you issue this command on the backup Routing Engine, all the backup Routing Engines connected to the routing matrix are halted.



**NOTE:** If you have a router or switch with two Routing Engines and you want to shut the power off to the router or switch or remove a Routing Engine, you must first halt the backup Routing Engine (if it has been upgraded), and then halt the master Routing Engine. To halt a Routing Engine, issue the **request system halt** command. You can also halt both Routing Engines at the same time by issuing the **request system halt both-routing-engines** command.

**Required Privilege Level** maintenance

**Related Documentation** • [clear system reboot on page 193](#)

- *request system power-off*
- *Rebooting and Halting a QFX Series Product*
- *[Routing Matrix with a TX Matrix Plus Router Solutions Page](#)*

**List of Sample Output**    [request system halt on page 1111](#)  
[request system halt \(In 2 Hours\) on page 1111](#)  
[request system halt \(Immediately\) on page 1111](#)  
[request system halt \(At 1:20 AM\) on page 1111](#)

**Output Fields**    When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### request system halt

```
user@host> request system halt
Halt the system ? [yes,no] (no) yes

*** FINAL System shutdown message from root@section2 ***
System going down IMMEDIATELY
Terminated
...
syncing disks... 11 8 done
The operating system has halted.
Please press any key to reboot.
```

### request system halt (In 2 Hours)

The following example, which assumes that the time is 5 PM (1700), illustrates three different ways to request that the system stop 2 hours from now:

```
user@host> request system halt at +120
user@host> request system halt in 120
user@host> request system halt at 19:00
```

### request system halt (Immediately)


```
user@host> request system halt at now
```

### request system halt (At 1:20 AM)

To stop the system at 1:20 AM, enter the following command. Because 1:20 AM is the next day, you must specify the absolute time.

```
user@host> request system halt at yymdd120
request system halt at 120
Halt the system at 120? [yes,no] (no) yes
```

## request system storage cleanup

<b>Syntax</b>	request system storage cleanup <dry-run>
<b>Syntax (EX Series Switches)</b>	request system storage cleanup <all-members> <dry-run> <local> <member <i>member-id</i> >
<b>Syntax (MX Series Router)</b>	request system storage cleanup <all-members> <dry-run> <local> <member <i>member-id</i> >
<b>Syntax (QFX Series)</b>	request system storage cleanup <component ( <i>serial number</i>   <i>UUID</i>   all)> <director-group <i>name</i> > <dry-run> <infrastructure <i>name</i> > <interconnect-device <i>name</i> > <name-tag <i>name-tag</i> > <node-group <i>name</i> > <prune> <qfabric (component <i>name</i> )   dry-run   name-tag   repository> <repository (core   log)>
<b>Release Information</b>	Command introduced in Junos OS Release 7.4. <b>dry-run</b> option introduced in Junos OS Release 7.6. Command introduced in Junos OS Release 9.0 for EX Series switches. Command introduced in Junos OS Release 11.1 for the QFX Series.
<b>Description</b>	Free storage space on the router or switch by rotating log files and proposing a list of files for deletion. User input is required for file deletion. On a QFabric system, you can delete debug files located on individual devices or on the entire QFabric system.
<b>Options</b>	<b>all-members</b> —(EX4200 switches and MX Series routers only) (Optional) Delete files on the Virtual Chassis master Routing Engine only.
<div>  <p><b>NOTE:</b> To delete files on the other members of the Virtual Chassis configuration, log in to each backup Routing Engine and delete the files using the <b>request system storage cleanup local</b> command.</p> </div>	
	<b>component (<i>UUID</i>   <i>serial number</i>   all)</b> —(QFabric systems only) (Optional) Delete files located on individual QFabric system devices or on the entire QFabric system.
	<b>director-group <i>name</i></b> —(QFabric systems only) (Optional) Delete files on the Director group.

**dry-run**—(Optional) List files proposed for deletion (without deleting them).

**infrastructure *name***—(QFabric systems only) (Optional) Delete files on the fabric control Routing Engine and fabric manager Routing Engine.

**interconnect-device *name***—(QFabric systems only) (Optional) Delete files on the Interconnect device.

**local**—(EX4200 switches and MX Series routers only) (Optional) Delete files on the local Virtual Chassis member.

**member *member-id***—(EX4200 switches and MX Series routers only) (Optional) Delete files on the specified member of the Virtual Chassis configuration. For EX4200 switches, replace ***member-id*** with a value from 0 through 9. For an MX Series Virtual Chassis, replace ***member-id*** with a value of 0 or 1.

**name-tag *name-tag***—(QFabric systems only) (Optional) Delete debug files that match a specific regular expression.

**node-group *name***—(QFabric systems only) (Optional) Delete files on the Node group.

**prune**—(QFabric systems only) (Optional) Delete debug files located in either the core or log debug repositories of a QFabric system device.

**qfabric component *name***—(QFabric systems only) (Optional) Delete debug files located in the debug repositories of a QFabric system device.

**repository (*core* | *log*)**—(QFabric systems only) (Optional) Specify the repository on the QFabric system device for which you want to delete debug files.

**Additional Information** If logging is configured and being used, the **dry-run** option rotates the log files. In that case, the output displays the message “Currently rotating log files, please wait.” If no logging is currently under way, the output displays only a list of files to delete.

**Required Privilege Level** maintenance

**List of Sample Output**

- [request system storage cleanup dry-run on page 1114](#)
- [request system storage cleanup on page 1115](#)
- [request system storage cleanup director-group \(QFabric Systems\) on page 1115](#)
- [request system storage cleanup infrastructure device-name \(QFabric Systems\) on page 1117](#)
- [request system storage cleanup interconnect-device device-name \(QFabric Systems\) on page 1118](#)
- [request system storage cleanup node-group group-name \(QFabric Systems\) on page 1119](#)
- [request system storage cleanup qfabric component device-name \(QFabric Systems\) on page 1120](#)
- [request system storage cleanup qfabric component device-name repository core \(QFabric Systems\) on page 1120](#)
- [request system storage cleanup qfabric component all \(QFabric Systems\) on page 1120](#)

**Output Fields** Table 54 on page 1114 describes the output fields for the **request system storage cleanup** command. Output fields are listed in the approximate order in which they appear.

**Table 54: request system storage cleanup Output Fields**

Field Name	Field Description
List of files to delete:	Shows list of files available for deletion.
Size	Size of the core-dump file.
Date	Last core-dump file modification date and time.
Name	Name of the core-dump file.
Directory to delete:	Shows list of directories available for deletion.
Repository scope:	Repository where core-dump files and log files are stored. The core-dump files are located in the <b>core</b> repository, and the log files are located in the <b>log</b> repository. The default <b>Repository scope</b> is shared since both the <b>core</b> and <b>log</b> repositories are shared by all of the QFabric system devices.
Repository head:	Name of the top-level repository location.
Repository name:	Name of the repository: <b>core</b> or <b>log</b> .
Creating list of debug artifacts to be removed under:	Shows location of files available for deletion.
List of debug artifacts to be removed under:	Shows list of files available for deletion.

## Sample Output

### request system storage cleanup dry-run

```
user@host> request system storage cleanup dry-run
Currently rotating log files, please wait.
This operation can take up to a minute.
```

List of files to delete:

	Size	Date	Name
	11.4K	Mar 8 15:00	/var/log/messages.1.gz
	7245B	Feb 5 15:00	/var/log/messages.3.gz
	11.8K	Feb 22 13:00	/var/log/messages.2.gz
	3926B	Mar 16 13:57	/var/log/messages.0.gz
	3962B	Feb 22 12:47	/var/log/sampled.1.gz
	4146B	Mar 8 12:20	/var/log/sampled.0.gz
	4708B	Dec 21 11:39	/var/log/sampled.2.gz
	7068B	Jan 16 18:00	/var/log/messages.4.gz
	13.7K	Dec 27 22:00	/var/log/messages.5.gz
	890B	Feb 22 17:22	/var/tmp/sampled.pkts

```
65.8M Oct 26 09:10 /var/sw/pkg/jinstall-7.4R1.7-export-signed.tgz
63.1M Oct 26 09:13 /var/sw/pkg/jbundle-7.4R1.7.tgz
```

### request system storage cleanup

```
user@host> request system storage cleanup
Currently rotating log files, please wait.
This operation can take up to a minute.
```

List of files to delete:

Size	Date	Name
11.4K	Mar 8 15:00	/var/log/messages.1.gz
7245B	Feb 5 15:00	/var/log/messages.3.gz
11.8K	Feb 22 13:00	/var/log/messages.2.gz
3926B	Mar 16 13:57	/var/log/messages.0.gz
11.6K	Mar 8 15:00	/var/log/messages.5.gz
7254B	Feb 5 15:00	/var/log/messages.6.gz
12.9K	Feb 22 13:00	/var/log/messages.8.gz
3726B	Mar 16 13:57	/var/log/messages.7.gz
3962B	Feb 22 12:47	/var/log/sampled.1.gz
4146B	Mar 8 12:20	/var/log/sampled.0.gz
4708B	Dec 21 11:39	/var/log/sampled.2.gz
7068B	Jan 16 18:00	/var/log/messages.4.gz
13.7K	Dec 27 22:00	/var/log/messages.5.gz
890B	Feb 22 17:22	/var/tmp/sampled.pkts
65.8M	Oct 26 09:10	/var/sw/pkg/jinstall-7.4R1.7-export-signed.tgz
63.1M	Oct 26 09:13	/var/sw/pkg/jbundle-7.4R1.7.tgz

Delete these files ? [yes,no] (yes)

### request system storage cleanup director-group (QFabric Systems)

```
user@switch> request system storage cleanup director-group
List of files to delete:
```

Size	Date	Name
4.0K	2011-11-07 05:16:29	/tmp/2064.sfcauth
4.0K	2011-11-07 05:07:34	/tmp/30804.sfcauth
4.0K	2011-11-07 04:13:41	/tmp/26792.sfcauth
4.0K	2011-11-07 04:13:39	/tmp/26432.sfcauth
0	2011-11-07 07:45:40	/tmp/cluster_cleanup.log
1.3M	2011-11-07 07:39:11	/tmp/cn_monitor.20111107-052401.log
4.0K	2011-11-07 07:36:29	/tmp/clustat.28019.log
4.0K	2011-11-07 07:36:29	/tmp/clustat_x.28019.log
9.6M	2011-11-07 05:30:24	/tmp/sfc.2.log
4.0K	2011-11-07 05:28:11	/tmp/mgd-init.1320672491.log
248K	2011-11-07 05:19:24	/tmp/cn_monitor.20111107-045111.log
4.0K	2011-11-07 05:17:18	/tmp/clustat.3401.log
4.0K	2011-11-07 05:17:18	/tmp/clustat_x.3401.log
8.0K	2011-11-07 04:58:25	/tmp/mgd-init.1320670633.log
0	2011-11-07 04:54:01	/tmp/mysql_db_install_5.1.37.log
4.0K	2011-11-07 04:52:08	/tmp/cn_send.log
0	2011-11-07 04:52:00	/tmp/init_eth0.log
4.0K	2011-11-07 04:49:35	/tmp/install_interfaces.sh.log
4.0K	2011-11-07 04:48:15	/tmp/bootstrap.sh.log
160K	2011-11-07 04:47:43	/tmp/bootstrap_cleanup.log
38M	2011-11-07 04:42:42	/tmp/cn_monitor.20111104-110308.log
4.0K	2011-11-07 04:38:47	/tmp/clustat.30913.log
4.0K	2011-11-07 04:38:47	/tmp/clustat_x.30913.log
4.0K	2011-11-07 04:38:03	/tmp/dcf_upgrade.sh.remove.log

```

4.0K 2011-11-07 04:38:03 /tmp/peer_update.log
4.0K 2011-11-07 04:38:02 /tmp/dcf_upgrade.log
4.0K 2011-11-07 04:38:02 /tmp/perl_mark_upgrade.log
8.0K 2011-11-07 04:13:42 /tmp/install_dcf_rpm.log
4.0K 2011-11-07 04:13:06 /tmp/00_cleanup.sh.1320667986.log
0 2011-11-07 04:13:06 /tmp/ccif_patch_4410_4450.sh.1320667986.log
4.0K 2011-11-07 04:13:06 /tmp/dcf-tools.sh.1320667986.log
0 2011-11-07 04:13:06 /tmp/initial.sh.1320667986.log
0 2011-11-07 04:13:06 /tmp/inventory.sh.1320667986.log
4.0K 2011-11-07 04:13:06 /tmp/qf-db.sh.1320667986.log
4.0K 2011-11-07 04:13:06 /tmp/sfc.sh.1320667986.log
8.0K 2011-11-07 04:13:05 /tmp/jinstall-qfabric.log
8.0K 2011-11-04 11:10:24 /tmp/mgd-init.1320430192.log
4.0K 2011-11-04 11:07:03 /tmp/mysql_dcf_db_install.log
8.0K 2011-11-04 10:55:07 /tmp/ccif_patch_4410_4450.sh.1320429307.log
8.0K 2011-11-04 10:55:07 /tmp/initial.sh.1320429307.log
4.0K 2011-11-04 10:55:07 /tmp/inventory.sh.1320429307.log
8.0K 2011-11-04 10:55:07 /tmp/sfc.sh.1320429307.log
4.0K 2011-11-04 10:54:09 /tmp/ks-script-Ax0tz5.log
4.0K 2011-11-07 04:13:06 /tmp//sfc.sh.1320667986.log
8.0K 2011-11-04 10:55:07 /tmp//sfc.sh.1320429307.log

```

## Directory to delete:

```

45M 2011-11-08 10:57:43 /tmp/sfc-captures

```

## List of files to delete:

	Size	Date	Name
4.0K	2011-11-08	05:47:47	/tmp/5713.sfcauth
4.0K	2011-11-08	05:14:32	/tmp/14494.sfcauth
4.0K	2011-11-08	05:11:47	/tmp/9978.sfcauth
4.0K	2011-11-08	05:09:37	/tmp/6128.sfcauth
4.0K	2011-11-08	05:04:28	/tmp/29703.sfcauth
4.0K	2011-11-07	11:59:10	/tmp/7811.sfcauth
4.0K	2011-11-07	11:36:08	/tmp/32415.sfcauth
4.0K	2011-11-07	11:30:30	/tmp/22406.sfcauth
4.0K	2011-11-07	11:24:37	/tmp/12131.sfcauth
4.0K	2011-11-07	10:48:42	/tmp/12687.sfcauth
4.0K	2011-11-07	09:27:20	/tmp/31082.sfcauth
4.0K	2011-11-07	07:33:58	/tmp/14633.sfcauth
4.0K	2011-11-07	05:08:25	/tmp/15447.sfcauth
4.0K	2011-11-07	04:12:29	/tmp/26874.sfcauth
4.0K	2011-11-07	04:12:27	/tmp/26713.sfcauth
4.0K	2011-11-07	03:49:17	/tmp/17691.sfcauth
4.0K	2011-11-05	01:32:23	/tmp/5716.sfcauth
4.0K	2011-11-07	08:00:17	/tmp/sfcsnmpd.log
4.0K	2011-11-07	07:57:50	/tmp/cluster_cleanup.log
824K	2011-11-07	07:38:37	/tmp/cn_monitor.20111107-053643.log
4.0K	2011-11-07	07:36:30	/tmp/clustat.18399.log
4.0K	2011-11-07	07:36:30	/tmp/clustat_x.18399.log
4.0K	2011-11-07	07:35:47	/tmp/command_lock.log
4.0K	2011-11-07	05:39:54	/tmp/mgd-init.1320673194.log
92K	2011-11-07	05:19:25	/tmp/cn_monitor.20111107-050412.log
4.0K	2011-11-07	05:17:20	/tmp/clustat.30115.log
4.0K	2011-11-07	05:17:20	/tmp/clustat_x.30115.log
8.0K	2011-11-07	05:08:07	/tmp/mgd-init.1320671241.log
4.0K	2011-11-07	05:04:57	/tmp/cn_send.log
0	2011-11-07	05:04:52	/tmp/init_eth0.log
4.0K	2011-11-07	05:02:38	/tmp/install_interfaces.sh.log
4.0K	2011-11-07	05:01:19	/tmp/bootstrap.sh.log
160K	2011-11-07	05:00:47	/tmp/bootstrap_cleanup.log



```

28M    2011-11-07 04:42:27 /tmp/cn_monitor.20111104-112954.log
4.0K   2011-11-07 04:38:49 /tmp/clustat.6780.log
4.0K   2011-11-07 04:38:49 /tmp/clustat_x.6780.log
4.0K   2011-11-07 04:38:05 /tmp/issue_event.log
4.0K   2011-11-07 04:38:05 /tmp/peer_upgrade_reboot.log
12K    2011-11-07 04:38:05 /tmp/primary_update.log
4.0K   2011-11-07 04:38:04 /tmp/dcf_upgrade.sh.remove.log
4.0K   2011-11-07 04:38:04 /tmp/peer_rexec_upgrade.log
4.0K   2011-11-07 04:13:42 /tmp/peer_install_dcf_rpm.log
4.0K   2011-11-07 04:11:57 /tmp/dcf-tools.sh.1320667917.log
0       2011-11-07 04:11:57 /tmp/initial.sh.1320667917.log
0       2011-11-07 04:11:57 /tmp/inventory.sh.1320667917.log
4.0K   2011-11-07 04:11:57 /tmp/qf-db.sh.1320667917.log
4.0K   2011-11-07 04:11:57 /tmp/sfc.sh.1320667917.log
4.0K   2011-11-07 04:11:56 /tmp/00_cleanup.sh.1320667916.log
0       2011-11-07 04:11:56 /tmp/ccif_patch_4410_4450.sh.1320667916.log
8.0K   2011-11-07 04:11:56 /tmp/jinstall-qfabric.log
4.0K   2011-11-07 04:11:33 /tmp/dcf_upgrade.log
8.0K   2011-11-04 11:53:12 /tmp/mgd-init.1320432782.log
8.0K   2011-11-04 11:06:17 /tmp/ccif_patch_4410_4450.sh.1320429977.log
8.0K   2011-11-04 11:06:17 /tmp/initial.sh.1320429977.log
4.0K   2011-11-04 11:06:17 /tmp/inventory.sh.1320429977.log
8.0K   2011-11-04 11:06:17 /tmp/sfc.sh.1320429977.log
4.0K   2011-11-04 11:05:19 /tmp/ks-script-_tnWeb.log
4.0K   2011-11-07 04:11:57 /tmp//sfc.sh.1320667917.log
8.0K   2011-11-04 11:06:17 /tmp//sfc.sh.1320429977.log

```

Directory to delete:

```
49M    2011-11-08 10:45:20 /tmp/sfc-captures
```

### request system storage cleanup infrastructure device-name (QFabric Systems)

```
user@switch> request system storage cleanup infrastructure FC-0
re0:
```

-----

List of files to delete:

Size	Date	Name
139B	Nov 8 19:03	/var/log/default-log-messages.0.gz
5602B	Nov 8 19:03	/var/log/messages.0.gz
28.4K	Nov 8 10:15	/var/log/messages.1.gz
35.2K	Nov 7 13:45	/var/log/messages.2.gz
207B	Nov 7 16:02	/var/log/wtmp.0.gz
27B	Nov 7 12:14	/var/log/wtmp.1.gz
184.4M	Nov 7 12:16	/var/sw/pkg/jinstall-dc-re-11.3I20111104_1216_dc-builder-domestic-signed.tgz
124.0K	Nov 7 15:59	/var/tmp/gres-tp/env.dat
0B	Nov 7 12:57	/var/tmp/gres-tp/lock
155B	Nov 7 16:02	/var/tmp/krt_gencfg_filter.txt
0B	Nov 7 12:35	/var/tmp/last_ccif_update
1217B	Nov 7 12:15	/var/tmp/loader.conf.preinstall
184.4M	Nov 6 07:11	/var/tmp/mchassis-install.tgz
10.8M	Nov 7 12:16	/var/tmp/preinstall/bootstrap-install-11.3I20111104_1216_dc-builder.tar
57.4K	Nov 7 12:16	/var/tmp/preinstall/configs-11.3I20111104_1216_dc-builder.tgz
259B	Nov 7 12:16	/var/tmp/preinstall/install.conf
734.3K	Nov 4 13:46	/var/tmp/preinstall/jboot-dc-re-11.3I20111104_1216_dc-builder.tgz
177.8M	Nov 7 12:16	

```

/var/tmp/preinstall/jbundle-dc-re-11.3I20111104_1216_dc-builder-domestic.tgz
124B Nov 7 12:15 /var/tmp/preinstall/metatags
1217B Nov 7 12:16 /var/tmp/preinstall_boot_loader.conf
0B Nov 7 16:02 /var/tmp/rtssdb/if-rtssdb

```

### request system storage cleanup interconnect-device device-name (QFabric Systems)

```

user@switch> request system storage cleanup interconnect IC-WS001
re1:

```

-----

List of files to delete:

	Size	Date	Name
	11B	Nov 7 15:55	/var/jail/tmp/alarmd.ts
	128B	Nov 8 19:06	/var/log/default-log-messages.0.gz
	9965B	Nov 8 19:06	/var/log/messages.0.gz
	15.8K	Nov 8 12:30	/var/log/messages.1.gz
	15.8K	Nov 8 11:00	/var/log/messages.2.gz
	15.7K	Nov 8 07:30	/var/log/messages.3.gz
	15.8K	Nov 8 04:00	/var/log/messages.4.gz
	15.7K	Nov 8 00:30	/var/log/messages.5.gz
	18.7K	Nov 7 21:00	/var/log/messages.6.gz
	17.6K	Nov 7 19:00	/var/log/messages.7.gz
	58.3K	Nov 7 16:00	/var/log/messages.8.gz
	20.3K	Nov 7 15:15	/var/log/messages.9.gz
	90B	Nov 7 15:41	/var/log/wtmp.0.gz
	57B	Nov 7 12:41	/var/log/wtmp.1.gz
	124.0K	Nov 7 15:42	/var/tmp/gres-tp/env.dat
	0B	Nov 7 12:40	/var/tmp/gres-tp/lock
	0B	Nov 7 12:41	/var/tmp/if-rtssdb/env.lock
	12.0K	Nov 7 15:41	/var/tmp/if-rtssdb/env.mem
	132.0K	Nov 7 15:55	/var/tmp/if-rtssdb/shm_usr1.mem
	2688.0K	Nov 7 15:41	/var/tmp/if-rtssdb/shm_usr2.mem
	2048.0K	Nov 7 15:41	/var/tmp/if-rtssdb/trace.mem
	730B	Nov 7 19:57	/var/tmp/juniper.conf+.gz
	155B	Nov 7 15:53	/var/tmp/krt_gencfg_filter.txt
	0B	Nov 7 15:41	/var/tmp/rtssdb/if-rtssdb

```

re0:

```

-----

List of files to delete:

	Size	Date	Name
	11B	Nov 7 15:55	/var/jail/tmp/alarmd.ts
	121B	Nov 8 19:06	/var/log/default-log-messages.0.gz
	16.7K	Nov 8 19:06	/var/log/messages.0.gz
	22.2K	Nov 8 17:45	/var/log/messages.1.gz
	18.4K	Nov 8 17:00	/var/log/messages.2.gz
	21.6K	Nov 8 16:00	/var/log/messages.3.gz
	17.9K	Nov 8 14:30	/var/log/messages.4.gz
	19.4K	Nov 8 13:30	/var/log/messages.5.gz
	18.2K	Nov 8 12:30	/var/log/messages.6.gz
	20.4K	Nov 8 11:30	/var/log/messages.7.gz
	21.4K	Nov 8 10:15	/var/log/messages.8.gz
	21.0K	Nov 8 09:00	/var/log/messages.9.gz
	19.9K	Nov 8 08:13	/var/log/snmp-traps.0.gz
	203B	Nov 8 15:36	/var/log/wtmp.0.gz
	57B	Nov 7 12:41	/var/log/wtmp.1.gz
	124.0K	Nov 7 15:42	/var/tmp/gres-tp/env.dat

```

0B Nov 7 12:40 /var/tmp/gres-tp/lock
0B Nov 7 12:41 /var/tmp/if-rtbdb/env.lock
12.0K Nov 7 15:41 /var/tmp/if-rtbdb/env.mem
132.0K Nov 7 15:55 /var/tmp/if-rtbdb/shm_usr1.mem
2688.0K Nov 7 15:41 /var/tmp/if-rtbdb/shm_usr2.mem
2048.0K Nov 7 15:41 /var/tmp/if-rtbdb/trace.mem
727B Nov 7 15:54 /var/tmp/juniper.conf+.gz
155B Nov 7 15:55 /var/tmp/krt_gencfg_filter.txt
0B Nov 7 15:41 /var/tmp/rtbdb/if-rtbdb

```

### request system storage cleanup node-group group-name (QFabric Systems)

```

user@switch> request system storage cleanup node-group NW-NG-0
BBAK0372:

```

-----

List of files to delete:

	Size	Date	Name
	126B	Nov 8 19:07	/var/log/default-log-messages.0.gz
	179B	Nov 7 13:32	/var/log/install.0.gz
	22.9K	Nov 8 19:07	/var/log/messages.0.gz
	26.5K	Nov 8 17:30	/var/log/messages.1.gz
	20.5K	Nov 8 13:15	/var/log/messages.2.gz
	33.2K	Nov 7 17:45	/var/log/messages.3.gz
	35.5K	Nov 7 15:45	/var/log/messages.4.gz
	339B	Nov 8 17:10	/var/log/wtmp.0.gz
	58B	Nov 7 12:40	/var/log/wtmp.1.gz
	124.0K	Nov 8 17:08	/var/tmp/gres-tp/env.dat
	0B	Nov 7 12:39	/var/tmp/gres-tp/lock
	0B	Nov 7 12:59	/var/tmp/if-rtbdb/env.lock
	12.0K	Nov 8 17:09	/var/tmp/if-rtbdb/env.mem
	2688.0K	Nov 8 17:09	/var/tmp/if-rtbdb/shm_usr1.mem
	132.0K	Nov 8 17:09	/var/tmp/if-rtbdb/shm_usr2.mem
	2048.0K	Nov 8 17:09	/var/tmp/if-rtbdb/trace.mem
	1082B	Nov 8 17:09	/var/tmp/juniper.conf+.gz
	155B	Nov 7 17:39	/var/tmp/krt_gencfg_filter.txt
	0B	Nov 8 17:09	/var/tmp/rtbdb/if-rtbdb

EE3093:

-----

List of files to delete:

	Size	Date	Name
	11B	Nov 8 17:33	/var/jail/tmp/alarmd.ts
	119B	Nov 8 19:08	/var/log/default-log-messages.0.gz
	180B	Nov 7 17:41	/var/log/install.0.gz
	178B	Nov 7 13:32	/var/log/install.1.gz
	2739B	Nov 8 19:08	/var/log/messages.0.gz
	29.8K	Nov 8 18:45	/var/log/messages.1.gz
	31.8K	Nov 8 17:15	/var/log/messages.2.gz
	20.6K	Nov 8 16:00	/var/log/messages.3.gz
	15.4K	Nov 8 10:15	/var/log/messages.4.gz
	15.4K	Nov 8 02:15	/var/log/messages.5.gz
	25.5K	Nov 7 20:45	/var/log/messages.6.gz
	48.0K	Nov 7 17:45	/var/log/messages.7.gz
	32.8K	Nov 7 13:45	/var/log/messages.8.gz
	684B	Nov 8 17:02	/var/log/wtmp.0.gz
	58B	Nov 7 12:40	/var/log/wtmp.1.gz
	124.0K	Nov 7 17:34	/var/tmp/gres-tp/env.dat

```

0B Nov 7 12:40 /var/tmp/gres-tp/lock
0B Nov 7 12:59 /var/tmp/if-rtbdb/env.lock
12.OK Nov 7 17:39 /var/tmp/if-rtbdb/env.mem
2688.OK Nov 7 17:39 /var/tmp/if-rtbdb/shm_usr1.mem
132.OK Nov 7 17:40 /var/tmp/if-rtbdb/shm_usr2.mem
2048.OK Nov 7 17:39 /var/tmp/if-rtbdb/trace.mem
155B Nov 7 17:40 /var/tmp/krt_gencfg_filter.txt
0B Nov 7 17:39 /var/tmp/rtbdb/if-rtbdb

```

### request system storage cleanup qfabric component device-name (QFabric Systems)

```

user@switch> request system storage cleanup qfabric component A0001/YA0197
Repository type: regular
Repository head: /pbstorage
Creating list of debug artifacts to be removed under:
/pbstorage/rdumps/A0001/YA0197
Removing debug artifacts ... (press control C to abort)
Removing /pbstorage/rdumps/A0001/YA0197/cosd.core.0.0.05162011123308.gz ... done
Removing /pbstorage/rdumps/A0001/YA0197/cosd.core.1.0.05162011123614.gz ... done
Removing /pbstorage/rdumps/A0001/YA0197/cosd.core.2.0.05162011123920.gz ... done
Removing /pbstorage/rdumps/A0001/YA0197/livecore.05132011163930.gz ... done
Removing /pbstorage/rdumps/A0001/YA0197/tnetd.core.0.1057.05162011124500.gz ...
done
Removing /pbstorage/rdumps/A0001/YA0197/vmcore.05132011120528.gz ... done
Removing /pbstorage/rdumps/A0001/YA0197/vmcore.kz ... done
Creating list of debug artifacts to be removed under: /pbstorage/rlogs/A0001/YA0197
Removing debug artifacts ... (press control C to abort)
Removing /pbstorage/rlogs/A0001/YA0197/kdumpinfo.05132011120528 ... done
Removing /pbstorage/rlogs/A0001/YA0197/kernel.tarball.0.1039.05122011234415.tgz
... done
Removing /pbstorage/rlogs/A0001/YA0197/kernel.tarball.1.1039.05132011175544.tgz
... done
Removing /pbstorage/rlogs/A0001/YA0197/tnetd.tarball.0.1057.05162011175453.tgz
... done

```

### request system storage cleanup qfabric component device-name repository core (QFabric Systems)

```

user@switch> request system storage cleanup qfabric component EE3093 repository core
Repository scope: shared
Repository head: /pbdata/export
Repository name: core
Creating list of debug artifacts to be removed under: /pbdata/export/rdumps/EE3093
NOTE: core repository under /pbdata/export/rdumps/EE3093 empty

```

### request system storage cleanup qfabric component all (QFabric Systems)

```

user@switch> request system storage cleanup qfabric component all
Repository scope: shared
Repository head: /pbdata/export
Creating list of debug artifacts to be removed under: /pbdata/export/rdumps
NOTE: core repository under /pbdata/export/rdumps/all empty
Creating list of debug artifacts to be removed under: /pbdata/export/rlogs
List of debug artifacts to clean up ... (press control C to abort)
/pbdata/export/rlogs/73747cd8-0710-11e1-b6a4-00e081c5297e/install-11072011125819.log
/pbdata/export/rlogs/77116f18-0710-11e1-a2a0-00e081c5297e/install-11072011125819.log
/pbdata/export/rlogs/BBAK0372/install-11072011121538.log
/pbdata/export/rlogs/BBAK0394/install-11072011121532.log
/pbdata/export/rlogs/EE3093/install-11072011121536.log
/pbdata/export/rlogs/WS001/YN5999/install-11072011121644.log
/pbdata/export/rlogs/WS001/YW3803/install-11072011122429.log
/pbdata/export/rlogs/cd78871a-0710-11e1-878e-00e081c5297e/install-11072011125932.log
/pbdata/export/rlogs/d0afda1e-0710-11e1-a1d0-00e081c5297e/install-11072011125930.log


```

```
/pbdata/export/rlogs/d0afda1e-0710-11e1-a1d0-00e081c5297e/install-11072011133211.log  
/pbdata/export/rlogs/d0afda1e-0710-11e1-a1d0-00e081c5297e/install-11072011155302.log  
/pbdata/export/rlogs/d31ab7a6-0710-11e1-ad1b-00e081c5297e/install-11072011125931.log  
/pbdata/export/rlogs/d4d0f254-0710-11e1-90c3-00e081c5297e/install-11072011125932.log
```

## restart

<b>Syntax</b>	<pre>restart &lt;adaptive-services   ancpd-service   application-identification   audit-process   auto-configuration   captive-portal-content-delivery   ce-l2tp-service   chassis-control   class-of-service   clksyncd-service   database-replication   datapath-trace-service   dhcp-service   diameter-service   disk-monitoring   dynamic-flow-capture   ecc-error-logging   ethernet-connectivity-fault-management   ethernet-link-fault-management   event-processing   firewall   general-authentication-service   gracefully   iccp-service   idp-policy   immediately   interface-control   ipsec-key-management   kernel-replication   l2-learning   l2cpd-service   l2tp-service   l2tp-universal-edge   lacp   license-service   link-management   local-policy-decision-function   mac-validation   mib-process   mobile-ip   mountd-service   mpls-traceroute   mspd   multicast-snooping   named-service   nfsd-service   packet-triggered-subscribers   peer-selection-service   pgcp-service   pgm   pic-services-logging   pki-service   ppp   ppp-service   pppoe   protected-system-domain-service   redundancy-interface-process   remote-operations   root-system-domain-service   routing &lt;logical-system <i>logical-system-name</i>&gt;   sampling   sbc-configuration-process   sdk-service   service-deployment   services   services pgcp gateway <i>gateway-name</i>   snmp   soft   static-subscribers   statistics-service   subscriber-management   subscriber-management-helper   tunnel-oamd   usb-control   vrrp   web-management&gt; &lt;gracefully   immediately   soft&gt;</pre>
<b>Syntax (ACX Series Routers)</b>	<pre>restart &lt;adaptive-services   audit-process   auto-configuration   autoinstallation   chassis-control   class-of-service   clksyncd-service   database-replication   dhcp-service   diameter-service   disk-monitoring   dynamic-flow-capture   ethernet-connectivity-fault-management   ethernet-link-fault-management   event-processing   firewall   general-authentication-service   gracefully   immediately   interface-control   ipsec-key-management   l2-learning   lacp   link-management   mib-process   mobile-ip   mountd-service   mpls-traceroute   mspd   named-service   nfsd-service   pgm   pki-service   ppp   pppoe   redundancy-interface-process   remote-operations   routing   sampling   sdk-service   secure-neighbor-discovery   service-deployment   services   snmp   soft   statistics-service   subscriber-management   subscriber-management-helper   tunnel-oamd   vrrp&gt;</pre>
<b>Syntax (EX Series Switches)</b>	<pre>restart &lt;autoinstallation   chassis-control   class-of-service   database-replication   dhcp   dhcp-service   diameter-service   dot1x-protocol   ethernet-link-fault-management   ethernet-switching   event-processing   firewall   general-authentication-service   interface-control   kernel-replication   l2-learning   lacp   license-service   link-management   lldpd-service   mib-process   mountd-service   multicast-snooping   pgm   redundancy-interface-process   remote-operations   routing   secure-neighbor-discovery   service-deployment   sflow-service   snmp   vrrp   web-management&gt;</pre>
<b>Syntax (Routing Matrix)</b>	<pre>restart &lt;adaptive-services   audit-process   chassis-control   class-of-service   disk-monitoring   dynamic-flow-capture   ecc-error-logging   event-processing   firewall   interface-control   ipsec-key-management   kernel-replication   l2-learning   l2tp-service   lacp   link-management   mib-process   pgm   pic-services-logging   ppp   pppoe   redundancy-interface-process   remote-operations   routing &lt;logical-system <i>logical-system-name</i>&gt;   sampling   service-deployment   snmp&gt; &lt;all   all-lcc   lcc <i>number</i>&gt;</pre>

	<gracefully   immediately   soft>
<b>Syntax (J Series Routing Platform)</b>	<p>restart</p> <p>&lt;adaptive-services   audit-process   chassis-control   class-of-service   dhcp   dialer-services   dlsw   event-processing   firewall   interface-control   ipsec-key-management   isdn-signaling   l2-learning   l2tp-service   mib-process   network-access-service   pgm   ppp   pppoe   remote-operations   routing &lt;logical-system <i>logical-system-name</i>&gt;   sampling   service-deployment   snmp   usb-control   web-management&gt;</p> <p>&lt;gracefully   immediately   soft&gt;</p>
<b>Syntax (TX Matrix Routers)</b>	<p>restart</p> <p>&lt;adaptive-services   audit-process   chassis-control   class-of-service   dhcp-service   diameter-service   disk-monitoring   dynamic-flow-capture   ecc-error-logging   event-processing   firewall   interface-control   ipsec-key-management   kernel-replication   l2-learning   l2tp-service   lacp   link-management   mib-process   pgm   pic-services-logging   ppp   pppoe   redundancy-interface-process   remote-operations   routing &lt;logical-system <i>logical-system-name</i>&gt;   sampling   service-deployment   snmp   statistics-service&gt;</p> <p>&lt;all-chassis   all-lcc   lcc <i>number</i>   scc&gt;</p> <p>&lt;gracefully   immediately   soft&gt;</p>
<b>Syntax (TX Matrix Plus Routers)</b>	<p>restart</p> <p>&lt;adaptive-services   audit-process   chassis-control   class-of-service   dhcp-service   diameter-service   disk-monitoring   dynamic-flow-capture   ecc-error-logging   event-processing   firewall   interface-control   ipsec-key-management   kernel-replication   l2-learning   l2tp-service   lacp   link-management   mib-process   pgm   pic-services-logging   ppp   pppoe   redundancy-interface-process   remote-operations   routing &lt;logical-system <i>logical-system-name</i>&gt;   sampling   service-deployment   snmp   statistics-service&gt;</p> <p>&lt;all-chassis   all-lcc   all-sfc   lcc <i>number</i>   sfc <i>number</i>&gt;</p> <p>&lt;gracefully   immediately   soft&gt;</p>
<b>Syntax (MX Series Routers)</b>	<p>restart</p> <p>&lt;adaptive-services   ancpd-service   application-identification   audit-process   auto-configuration   captive-portal-content-delivery   ce-l2tp-service   chassis-control   class-of-service   clksyncd-service   database-replication   datapath-trace-service   dhcp-service   diameter-service   disk-monitoring   dynamic-flow-capture   ecc-error-logging   ethernet-connectivity-fault-management   ethernet-link-fault-management   event-processing   firewall   general-authentication-service   gracefully   iccp-service   idp-policy   immediately   interface-control   ipsec-key-management   kernel-replication   l2-learning   l2cpd-service   l2tp-service   l2tp-universal-edge   lacp   license-service   link-management   local-policy-decision-function   mac-validation   mib-process   mobile-ip   mounstd-service   mpls-traceroute   mspd   multicast-snooping   named-service   nfsd-service   packet-triggered-subscribers   peer-selection-service   pgcp-service   pgm   pic-services-logging   pki-service   ppp   ppp-service   pppoe   protected-system-domain-service   redundancy-interface-process   remote-operations   root-system-domain-service   routing   routing &lt;logical-system <i>logical-system-name</i>&gt;   sampling   sbc-configuration-process   sdk-service   service-deployment   services   services pgcp gateway <i>gateway-name</i>   snmp   soft   static-subscribers   statistics-service   subscriber-management   subscriber-management-helper   tunnel-oamd   usb-control   vrrp   web-management&gt;</p> <p>&lt;all-members&gt;</p> <p>&lt;gracefully   immediately   soft&gt;</p> <p>&lt;local&gt;</p> <p>&lt;member <i>member-id</i>&gt;</p>

<b>Syntax (J Series Routers)</b>	<pre>restart &lt;adaptive-services   audit-process   chassis-control   class-of-service   dhcp   dhcp-service   dialer-services   diameter-service   dlsf   event-processing   firewall   interface-control   ipsec-key-management   isdn-signaling   l2ald   l2-learning   l2tp-service   mib-process   network-access-service   pgm   ppp   pppoe   remote-operations   routing &lt;logical-system logical-system-name&gt;   sampling   service-deployment   snmp   usb-control   web-management&gt; &lt;gracefully   immediately   soft&gt;</pre>
<b>Syntax (QFX Series)</b>	<pre>restart &lt;adaptive-services   audit-process   chassis-control   class-of-service   dialer-services   diameter-service   dlsf   ethernet-connectivity   event-processing   fibre-channel   firewall   general-authentication-service   igmp-host-services   interface-control   ipsec-key-management   isdn-signaling   l2ald   l2-learning   l2tp-service   mib-process   named-service   network-access-service   nstrace-process   pgm   ppp   pppoe   redundancy-interface-process   remote-operations  logical-system-name&gt;   routing   sampling  secure-neighbor-discovery   service-deployment   snmp   usb-control   web-management&gt; &lt;gracefully   immediately   soft&gt;</pre>
<b>Release Information</b>	<p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Command introduced in Junos OS Release 11.1 for the QFX Series.</p> <p>Command introduced in Junos OS Release 12.2 for ACX Series routers.</p> <p>Options added:</p> <ul style="list-style-type: none"><li>• <b>dynamic-flow-capture</b> in Junos OS Release 7.4.</li><li>• <b>dlsf</b> in Junos OS Release 7.5.</li><li>• <b>event-processing</b> in Junos OS Release 7.5.</li><li>• <b>ppp</b> in Junos OS Release 7.5.</li><li>• <b>l2ald</b> in Junos OS Release 8.0.</li><li>• <b>link-management</b> in Release 8.0.</li><li>• <b>pgcp-service</b> in Junos OS Release 8.4.</li><li>• <b>sbc-configuration-process</b> in Junos OS Release 9.5.</li><li>• <b>services pgcp gateway</b> in Junos OS Release 9.6.</li><li>• <b>sfc</b> and <b>all-sfc</b> for the TX Matrix Router in Junos OS Release 9.6.</li></ul>
<b>Description</b>	<p>Restart a Junos OS process.</p>
	<div><p><b>CAUTION:</b> Never restart a software process unless instructed to do so by a customer support engineer. A restart might cause the router or switch to drop calls and interrupt transmission, resulting in possible loss of data.</p></div>
<b>Options</b>	<p><b>none</b>—Same as <b>gracefully</b>.</p>



- adaptive-services**—(Optional) Restart the configuration management process that manages the configuration for stateful firewall, Network Address Translation (NAT), intrusion detection services (IDS), and IP Security (IPsec) services on the Adaptive Services PIC.
- all-chassis**—(TX Matrix and TX Matrix Plus routers only) (Optional) Restart the software process on all chassis.
- all-lcc**—(TX Matrix and TX Matrix Plus routers only) (Optional) For a TX Matrix router, restart the software process on all T640 routers connected to the TX Matrix router. For a TX Matrix Plus router, restart the software process on all T1600 routers connected to the TX Matrix Plus router.
- all-members**—(MX Series routers only) (Optional) Restart the software process for all members of the Virtual Chassis configuration.
- all-sfc**—(TX Matrix Plus routers only) (Optional) For a TX Matrix Plus router, restart the software processes for the TX Matrix Plus router (or switch-fabric chassis).
- ancpd-service**—(Optional) Restart the Access Node Control Protocol (ANCP) process, which works with a special Internet Group Management Protocol (IGMP) session to collect outgoing interface mapping events in a scalable manner.
- application-identification**—(Optional) Restart the process that identifies an application using intrusion detection and prevention (IDP) to allow or deny traffic based on applications running on standard or nonstandard ports.
- audit-process**—(Optional) Restart the RADIUS accounting process that gathers statistical data that can be used for general network monitoring, analyzing, and tracking usage patterns, for billing a user based on the amount of time or type of services accessed.
- auto-configuration**—(Optional) Restart the Interface Auto-Configuration process.
- autoinstallation**—(EX Series switches only) (Optional) Restart the autoinstallation process.
- captive-portal-content-delivery**—(Optional) Restart the HTTP redirect service by specifying the location to which a subscriber's initial Web browser session is redirected, enabling initial provisioning and service selection for the subscriber.
- ce-l2tp-service**—(M10, M10i, M7i, and MX Series routers only) (Optional) Restart the Universal Edge Layer 2 Tunneling Protocol (L2TP) process, which establishes L2TP tunnels and Point-to-Point Protocol (PPP) sessions through L2TP tunnels.
- chassis-control**—(Optional) Restart the chassis management process.
- class-of-service**—(Optional) Restart the class-of-service (CoS) process, which controls the router's or switch's CoS configuration.
- clksyncd-service**—(Optional) Restart the external clock synchronization process, which uses synchronous Ethernet (SyncE).

**database-replication**—(EX Series switches and MX Series routers only) (Optional) Restart the database replication process.

**datapath-trace-service**—(Optional) Restart the packet path tracing process.

**dhcp**—(J Series routers and EX Series switches only) (Optional) Restart the software process for a Dynamic Host Configuration Protocol (DHCP) server. A DHCP server allocates network IP addresses and delivers configuration settings to client hosts without user intervention.

**dhcp-service**—(Optional) Restart the Dynamic Host Configuration Protocol process.

**dialer-services**—(J Series routers and EX Series switches only) (Optional) Restart the ISDN dial-out process.

**diameter-service**—(Optional) Restart the diameter process.

**disk-monitoring**—(Optional) Restart disk monitoring, which checks the health of the hard disk drive on the Routing Engine.

**dls**—(J Series routers and QFX Series only) (Optional) Restart the data link switching (DLSw) service.

**dot1x-protocol**—(EX Series switches only) (Optional) Restart the port-based network access control process.

**dynamic-flow-capture**—(Optional) Restart the dynamic flow capture (DFC) process, which controls DFC configurations on Monitoring Services III PICs.

**ecc-error-logging**—(Optional) Restart the error checking and correction (ECC) process, which logs ECC parity errors in memory on the Routing Engine.

**ethernet-connectivity-fault-management**—(Optional) Restart the process that provides IEEE 802.1ag Operation, Administration, and Management (OAM) connectivity fault management (CFM) database information for CFM maintenance association end points (MEPs) in a CFM session.

**ethernet-link-fault-management**—(EX Series switches and MX Series routers only) (Optional) Restart the process that provides the OAM link fault management (LFM) information for Ethernet interfaces.

**ethernet-switching**—(EX Series switches only) (Optional) Restart the Ethernet switching process.

**event-processing**—(Optional) Restart the event process (eventd).

**fibre-channel**—(QFX Series only) (Optional) Restart the Fibre Channel process.

**firewall**—(Optional) Restart the firewall management process, which manages the firewall configuration and enables accepting or rejecting packets that are transiting an interface on a router or switch.

**general-authentication-service**—(EX Series switches and MX Series routers only)  
(Optional) Restart the general authentication process.

**gracefully**—(Optional) Restart the software process.

**iccp-service**—(Optional) Restart the Inter-Chassis Communication Protocol (ICCP) process.

**idp-policy**—(Optional) Restart the intrusion detection and prevention (IDP) protocol process.

**immediately**—(Optional) Immediately restart the software process.

**interface-control**—(Optional) Restart the interface process, which controls the router's or switch's physical interface devices and logical interfaces.

**ipsec-key-management**—(Optional) Restart the IPsec key management process.

**isdn-signaling**—(J Series routers and QFX Series only) (Optional) Restart the ISDN signaling process, which initiates ISDN connections.

**kernel-replication**—(Optional) Restart the kernel replication process, which replicates the state of the backup Routing Engine when graceful Routing Engine switchover (GRES) is configured.

**l2-learning**—(Optional) Restart the Layer 2 address flooding and learning process.

**l2cpd-service**—(Optional) Restart the Layer 2 Control Protocol process, which enables features such as Layer 2 protocol tunneling and nonstop bridging.

**l2tp-service**—(M10, M10i, M7i, and MX Series routers only) (Optional) Restart the Layer 2 Tunneling Protocol (L2TP) process, which sets up client services for establishing Point-to-Point Protocol (PPP) tunnels across a network and negotiating Multilink PPP if it is implemented.

**l2tp-universal-edge**—(MX Series routers only) (Optional) Restart the L2TP process, which establishes L2TP tunnels and PPP sessions through L2TP tunnels.

**lACP**—(Optional) Restart the Link Aggregation Control Protocol (LACP) process. LACP provides a standardized means for exchanging information between partner systems on a link to allow their link aggregation control instances to reach agreement on the identity of the LAG to which the link belongs, and then to move the link to that LAG, and to enable the transmission and reception processes for the link to function in an orderly manner.

**lcc number**—(TX Matrix and TX Matrix Plus routers only) (Optional) For a TX Matrix router, restart the software process for a specific T640 router that is connected to the TX Matrix router. For a TX Matrix Plus router, restart the software process for a specific router that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**license-service**—(EX Series switches only) (Optional) Restart the feature license management process.

**link-management**— (TX Matrix and TX Matrix Plus routers and EX Series switches only) (Optional) Restart the Link Management Protocol (LMP) process, which establishes and maintains LMP control channels.

**lldpd-service**—(EX Series switches only) (Optional) Restart the Link Layer Discovery Protocol (LLDP) process.

**local**—(MX Series routers only) (Optional) Restart the software process for the local Virtual Chassis member.

**local-policy-decision-function**— (Optional) Restart the process for the Local Policy Decision Function, which regulates collection of statistics related to applications and application groups and tracking of information about dynamic subscribers and static interfaces.

**mac-validation**— (Optional) Restart the Media Access Control (MAC) validation process, which configures MAC address validation for subscriber interfaces created on demux interfaces in dynamic profiles on MX Series routers.

**member *member-id***—(MX Series routers only) (Optional) Restart the software process for a specific member of the Virtual Chassis configuration. Replace *member-id* with a value of 0 or 1.

**mib-process**—(Optional) Restart the Management Information Base (MIB) version II process, which provides the router's MIB II agent.

**mobile-ip**—(Optional) Restart the Mobile IP process, which configures Junos OS Mobile IP features.

**mountd-service**—(EX Series switches and MX Series routers only) (Optional) Restart the service for NFS mount requests.

**mpls-traceroute**—(Optional) Restart the MPLS Periodic Traceroute process.

**mspd**—(Optional) Restart the Multiservice process.

**multicast-snooping**—(EX Series switches and MX Series routers only) (Optional) Restart the multicast snooping process, which makes Layer 2 devices, such as VLAN switches, aware of Layer 3 information, such as the media access control (MAC) addresses of members of a multicast group.

**named-service**—(Optional) Restart the DNS Server process, which is used by a router or a switch to resolve hostnames into addresses.

**network-access-service**—(J Series routers and QFX Series only) (Optional) Restart the network access process, which provides the router's Challenge Handshake Authentication Protocol (CHAP) authentication service.

**nfsd-service**—(Optional) Restart the Remote NFS Server process, which provides remote file access for applications that need NFS-based transport.

**packet-triggered-subscribers**—(Optional) Restart the packet-triggered subscribers and policy control (PTSP) process, which allows the application of policies to dynamic subscribers that are controlled by a subscriber termination device.

**peer-selection-service**—(Optional) Restart the Peer Selection Service process.

**pgcp-service**—(Optional) Restart the pgcpd service process running on the Routing Engine. This option does not restart pgcpd processes running on mobile station PICs. To restart pgcpd processes running on mobile station PICs, use the **services pgcp gateway** option.

**pgm**—(Optional) Restart the process that implements the Pragmatic General Multicast (PGM) protocol for assisting in the reliable delivery of multicast packets.

**pic-services-logging**—(Optional) Restart the logging process for some PICs. With this process, also known as fsad (the file system access daemon), PICs send special logging information to the Routing Engine for archiving on the hard disk.

**pki-service**—(Optional) Restart the PKI Service process.

**ppp**—(Optional) Restart the Point-to-Point Protocol (PPP) process, which is the encapsulation protocol process for transporting IP traffic across point-to-point links.

**ppp-service**—(Optional) Restart the Universal Edge PPP process, which is the encapsulation protocol process for transporting IP traffic across Universal Edge routers.

**pppoe**—(Optional) Restart the Point-to-Point Protocol over Ethernet (PPPoE) process, which combines PPP that typically runs over broadband connections with the Ethernet link-layer protocol that allows users to connect to a network of hosts over a bridge or access concentrator.

**protected-system-domain-service**—(Optional) Restart the Protected System Domain (PSD) process.

**redundancy-interface-process**—(Optional) Restart the ASP redundancy process.

**remote-operations**—(Optional) Restart the remote operations process, which provides the ping and traceroute MIBs.

**root-system-domain-service**—(Optional) Restart the Root System Domain (RSD) service.

**routing**—(ACX Series routers, QFX Series, EX Series switches, and MX Series routers only) (Optional) Restart the routing protocol process.

**routing <logical-system *logical-system-name*>**—(Optional) Restart the routing protocol process, which controls the routing protocols that run on the router or switch and maintains the routing tables. Optionally, restart the routing protocol process for the specified logical system only.

**sampling**—(Optional) Restart the sampling process, which performs packet sampling based on particular input interfaces and various fields in the packet header.

**sbc-configuration-process**—(Optional) Restart the session border controller (SBC) process of the border signaling gateway (BSG).

**scc**—(TX Matrix routers only) (Optional) Restart the software process on the TX Matrix router (or switch-card chassis).

**sdk-service**—(Optional) Restart the SDK Service process, which runs on the Routing Engine and is responsible for communications between the SDK application and Junos OS. Although the SDK Service process is present on the router, it is turned off by default.

**secure-neighbor-discovery**—(QFX Series, EX Series switches, and MX Series routers only) (Optional) Restart the secure Neighbor Discovery Protocol (NDP) process, which provides support for protecting NDP messages.

**sfc *number***—(TX Matrix Plus routers only) (Optional) Restart the software process on the TX Matrix Plus router (or switch-fabric chassis). Replace ***number*** with **0**.

**service-deployment**—(Optional) Restart the service deployment process, which enables Junos OS to work with the Session and Resource Control (SRC) software.

**services**—(Optional) Restart a service.

**services pgcp gateway *gateway-name***—(Optional) Restart the pgcpd process for a specific border gateway function (BGF) running on an MS-PIC. This option does not restart the pgcpd process running on the Routing Engine. To restart the pgcpd process on the Routing Engine, use the **pgcp-service** option.

**sflow-service**—(EX Series switches only) (Optional) Restart the flow sampling (sFlow technology) process.

**snmp**—(Optional) Restart the SNMP process, which enables the monitoring of network devices from a central location and provides the router's or switch's SNMP master agent.

**soft**—(Optional) Reread and reactivate the configuration without completely restarting the software processes. For example, BGP peers stay up and the routing table stays constant. Omitting this option results in a graceful restart of the software process.

**static-subscribers**—(Optional) Restart the static subscribers process, which associates subscribers with statically configured interfaces and provides dynamic service activation and activation for these subscribers.

**statistics-service**—(Optional) Restart the process that manages the Packet Forwarding Engine statistics.

**subscriber-management**—(Optional) Restart the Subscriber Management process.

**subscriber-management-helper**—(Optional) Restart the Subscriber Management Helper process.

**tunnel-oamd**—(Optional) Restart the Tunnel OAM process, which enables the Operations, Administration, and Maintenance of Layer 2 tunneled networks. Layer 2 protocol tunneling (L2PT) allows service providers to send Layer 2 PDUs across the provider's cloud and deliver them to Juniper Networks EX Series Ethernet Switches that are not part of the local broadcast domain.

**usb-control**—(J Series routers and MX Series routers only) (Optional) Restart the USB control process.

**vrrp**—(ACX Series routers, EX Series switches, and MX Series routers only) (Optional) Restart the Virtual Router Redundancy Protocol (VRRP) process, which enables hosts on a LAN to make use of redundant routing platforms on that LAN without requiring more than the static configuration of a single default route on the hosts.

**web-management**—(J Series routers, QFX Series, EX Series switches, and MX Series routers only) (Optional) Restart the Web management process.

**Required Privilege Level** reset

**Related Documentation**

- *Overview of Junos OS CLI Operational Mode Commands*

**List of Sample Output** [restart interfaces on page 1131](#)

**Output Fields** When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### restart interfaces

```
user@host> restart interfaces
interfaces process terminated
interfaces process restarted
```

## show system commit

<b>Syntax</b>	show system commit
<b>Release Information</b>	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.
<b>Description</b>	Display the system commit history and any pending commit operation.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li><i>clear system commit</i></li> </ul>
<b>List of Sample Output</b>	<a href="#">show system commit on page 1133</a> <a href="#">show system commit (At a Particular Time) on page 1133</a> <a href="#">show system commit (At the Next Reboot) on page 1133</a> <a href="#">show system commit (Rollback Pending) on page 1133</a> <a href="#">show system commit (QFX Series) on page 1133</a>
<b>Output Fields</b>	Table 55 on page 1132 describes the output fields for the <b>show system commit</b> command. Output fields are listed in the approximate order in which they appear.

Table 55: show system commit Output Fields

Field Name	Field Description
Junos XML protocol	Displays the last 50 commit operations listed, most recent to first. The identifier <b>Junos XML protocol</b> designates a configuration created for recovery using the <b>request system configuration rescue save</b> command.
Junos XML protocol	Date and time of the commit operation.
Junos XML protocol	User who executed the commit operation.
Junos XML protocol	Method used to execute the commit operation: <ul style="list-style-type: none"> <li><b>Junos XML protocol</b>—CLI interactive user performed the commit operation.</li> <li><b>Junos XML protocol</b>—Junos XML protocol client performed the commit operation.</li> <li><b>synchronize</b>—The <b>commit synchronize</b> command was performed on the other Routing Engine.</li> <li><b>snmp</b>—An SNMP <b>set</b> request caused the commit operation.</li> <li><b>button</b>—A button on the router or switch was pressed to commit a rescue configuration for recovery.</li> <li><b>autoinstall</b>—A configuration obtained through autoinstallation was committed.</li> <li><b>other</b>—When there is no login name associated with the session, the values for user and client default to root and other. For example, during a reboot after package installation, mgd commits the configuration as a system commit, and there is no login associated with the commit.</li> </ul>



## Sample Output

### show system commit

```
user@host> show system commit
0   2003-07-28 19:14:04 PDT by root via other
1   2003-07-25 22:01:36 PDT by regress via cli
2   2003-07-25 22:01:32 PDT by regress via cli
3   2003-07-25 21:30:13 PDT by root via button
4   2003-07-25 13:46:48 PDT by regress via cli
5   2003-07-25 05:33:21 PDT by root via autoinstall
...
rescue 2002-05-10 15:32:03 PDT by root via other
```

### show system commit (At a Particular Time)

```
user@host> show system commit
commit requested by root via cli at Tue May  7 15:59:00 2002
```

### show system commit (At the Next Reboot)

```
user@host> show system commit
commit requested by root via cli at reboot
```

### show system commit (Rollback Pending)

```
user@host> show system commit
0 2005-01-05 15:00:37 PST by root via cli commit confirmed, rollback in 3mins
```

### show system commit (QFX Series)

```
user@switch> show system commit
0 2011-11-25 19:17:49 PST by root via cli
```

## show system configuration archival

---

**Syntax**    show system configuration archival

**Release Information**    Introduced in Junos OS Release 7.6.  
Command introduced in Junos OS Release 9.0 for EX Series switches.  
Command introduced in Junos OS Release 11.1 for the QFX Series.

**Description**    Display directory and number of files queued for archival transfer.



.....  
**NOTE:** The [edit system configuration] hierarchy is not available on QFabric systems.  
.....

**Options**    This command has no options.

**Required Privilege Level**    maintenance

**List of Sample Output**    [show system configuration archival on page 1134](#)

### Sample Output

show system configuration archival

```
user@host> show system configuration archival

/var/transfer/config/:
total 8
```

## show system configuration rescue

<b>Syntax</b>	show system configuration rescue
<b>Release Information</b>	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.
<b>Description</b>	Display a rescue configuration, if one exists.



**NOTE:** The [edit system configuration] hierarchy is not available on QFabric systems.

<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">show system configuration archival on page 1134</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">show system configuration rescue on page 1135</a>

## Sample Output

### show system configuration rescue

```
user@switch> show system configuration rescue
version "7.3"; groups {
  global {
    system {
      host-name router1;
      domain-name customer.net;
      domain-search [ customer.net ];
      backup-router 192.168.124.254;
      name-server {
        172.17.28.11;
        172.17.28.101;
        172.17.28.100;
        172.17.28.10;
      }
      login {
        user regress {
          uid 928;
          class ;
          shell csh;
          authentication {
            encrypted-password "$1$kPU..$w.4FGRAGanJ8U4Yq6sbj7."; ##
SECRET-DATA
          }
        }
      }
    }
  }
  services {
```

```
        ftp;  
        rlogin;  
        rsh;  
        telnet;  
    }  
}  
.....
```

## show system directory-usage

<b>Syntax</b>	show system directory-usage <depth <i>number</i> > <path>
<b>Syntax (EX Series)</b>	show system directory-usage <all-members> <depth <i>number</i> > <local> <member <i>member-id</i> > <path>
<b>Syntax (TX Matrix Router)</b>	show system directory-usage <all-chassis   all-lcc   lcc <i>number</i>   scc> <depth <i>number</i> > <path>
<b>Syntax (TX Matrix Plus Router)</b>	show system directory-usage <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> > <depth <i>number</i> > <path>
<b>Syntax (MX Series Router)</b>	show system directory-usage <all-members> <depth <i>number</i> > <local> <member <i>member-id</i> > <path>
<b>Syntax (QFX Series)</b>	show system directory-usage <depth <i>number</i> > <path> <infrastructure <i>name</i> > <interconnect-device <i>name</i> > <node-group <i>name</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> 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.
<b>Description</b>	Display directory usage information.
<b>Options</b>	<p><b>none</b>—Display all directory usage information.</p> <p><b>all-chassis</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display directory usage information about all the T640 routers (in a routing matrix based on a TX Matrix router). Display directory usage information about all the T1600 or T4000 routers (in a routing matrix based on a TX Matrix Plus router) in the chassis.</p>

**all-lcc**—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display directory information for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display directory information for all connected T1600 or T4000 LCCs.

**all-members**—(EX4200 switches and MX Series routers only) (Optional) Display directory information for all members of the Virtual Chassis configuration.

**depth *number***—(Optional) Depth of the directory to traverse. This option is useful when you want to limit the output shown for a large file system.

**infrastructure *name***— (QFabric systems only) (Optional) Display directory information for the fabric control Routing Engines and fabric manager Routing Engines.

**interconnect-device *name***— (QFabric systems only) (Optional) Display directory information for the Interconnect device.

**node-group *name***— (QFabric systems only) (Optional) Display directory information for the Node group.

**lcc *number***—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display directory information for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display directory information for a specific router that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(EX4200 switches and MX Series routers only) (Optional) Display directory information for the local Virtual Chassis member.

**member *member-id***—(EX4200 switches and MX Series routers only) (Optional) Display directory information for the specified member of the Virtual Chassis configuration. For EX4200 switches, replace *member-id* with a value from 0 through 9. For an MX Series Virtual Chassis, replace *member-id* with a value of 0 or 1.

***path***—(Optional) Path or root directory to traverse.

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

**sfc *number***—(TX Matrix Plus routers only) (Optional) Display directory information for the TX Matrix Plus router. Replace *number* with 0.

**Required Privilege Level** view

**Related Documentation** • [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output** [show system directory-usage scc \(TX Matrix Router\) on page 1140](#)  
[show system directory-usage sfc \(TX Matrix Plus Router\) on page 1140](#)  
[show system directory-usage \(QFX3500 Switch\) on page 1140](#)

**Output Fields** [Table 56 on page 1139](#) describes the output fields for the **show system directory-usage** command. Output fields are listed in the approximate order in which they appear.

**Table 56: show system directory-usage Output Fields**

Field Name	Field Description
<i>bytes</i>	Number of bytes used by files in a directory.
<i>directory-name</i>	Name of the directory.

## Sample Output

### show system directory-usage scc (TX Matrix Router)

```
user@host> show system directory-usage /var/tmp scc
/var/tmp
1.0K    /var/tmp/vi.recover
2.0K    /var/tmp/instmp.tPMk8u
1.0K    /var/tmp/install
        /var/tmp/instmp.GUMpur
4.8M    /var/tmp/instmp.GUMpur/packages
6.4M    /var/tmp/troy1
297M    /var/tmp/dsw
        /var/tmp/pkg_tmp.2073
83K     /var/tmp/pkg_tmp.2073/bin
        /var/tmp/instmp.oMIDb1
89K     /var/tmp/instmp.oMIDb1/bin
        /var/tmp/instmp.byhMjR
4.6M    /var/tmp/instmp.byhMjR/packages
        /var/tmp/instmp.6fqHf3
1.7M    /var/tmp/instmp.6fqHf3/packages
        /var/tmp/instmp.mljECe
4.6M    /var/tmp/instmp.mljECe/packages
```

### show system directory-usage sfc (TX Matrix Plus Router)

```
user@switch> show system directory-usage /var/tmp sfc 0
sfc0-re0:
-----
        /var/tmp
46K     /var/tmp/gres-tp
        /var/tmp/sec-download
2.0K    /var/tmp/sec-download/sub-download
2.0K    /var/tmp/vi.recover
2.0K    /var/tmp/install
795M    /var/tmp/cores
766K    /var/tmp/pr440594
```

### show system directory-usage (QFX3500 Switch)

```
user@switch> show system directory-usage
/var/tmp
30K     /var/tmp/gres-tp
2.0K    /var/tmp/rtbdb
2.0K    /var/tmp/vi.recover
2.0K    /var/tmp/install
2.0K    /var/tmp/pics
```



## show system rollback

**Syntax** `show system rollback number`  
`<compare number>`

**Release Information** Command introduced before Junos OS Release 7.4.  
 Command introduced in Junos OS Release 9.0 for EX Series switches.  
 Command introduced in Junos OS Release 11.1 for the QFX Series.

**Description** Display the contents of a previously committed configuration, or the differences between two previously committed configurations.



**NOTE:** The `show system rollback` command is a purely operational mode command and cannot be issued with `run` from the configuration mode.

**Options** *number*—Number of a configuration to view. The output displays the configuration. The range of values is 0 through 49.

*compare number*—(Optional) Number of another previously committed (rollback) configuration to compare to rollback *number*. The output displays the differences between the two configurations. The range of values is 0 through 49.

**Required Privilege Level** view

**List of Sample Output** [show system rollback compare on page 1141](#)

## Sample Output

### show system rollback compare


```
user@host> show system rollback 3 compare 1
[edit]
+ interfaces {
+   ge-1/1/1 {
+     unit 0 {
+       family inet {
+         filter {
+           input mf_plp;
+         }
+         address 14.1.1.1/30;
+       }
+     }
+   }
+   ge-1/2/1 {
+     unit 0 {
+       family inet {
+         filter {
+           input mf_plp;
+         }
+         address 13.1.1.1/30;
+       }
+     }
+   }
+ }
```

```

+      }
+    }
+    ge-1/3/0 {
+      unit 0 {
+        family inet {
+          filter {
+            input mf_plp;
+          }
+          address 12.1.1.1/30;
+        }
+      }
+    }
+  }
+}

```

## show system snapshot

<b>Syntax</b>	show system snapshot
<b>Syntax (EX Series Switches)</b>	show system snapshot <all-members local member <i>member-id</i> > <media (external   internal)>
<b>Release Information</b>	Command introduced in Junos OS Release 7.6. Command introduced in Junos OS Release 10.0 for EX Series switches.
<b>Description</b>	<p>Display information about the backup software:</p> <ul style="list-style-type: none"> <li>On the routers, display information about the backup software, which is located in the <b>/altroot</b>, and <b>/altconfig</b> file systems or on the alternate media.</li> <li>On the switches, display information about the backup of the root file system (<b>/</b>) and directories <b>/altroot</b>, <b>/config</b>, <b>/var</b>, and <b>/var/tmp</b>, which are located either on an external USB flash drive or in internal flash memory.</li> </ul>
	<div>  <p><b>NOTE:</b> To back up software, use the <b>request system snapshot</b> command.</p> </div>
<b>Options</b>	<p><b>none</b>—Display information about the backup software.</p> <p><b>all-members   local   member <i>member-id</i></b>—(EX Series switch Virtual Chassis only) (Optional) Display the snapshot in a Virtual Chassis:</p> <ul style="list-style-type: none"> <li><b>all-members</b>—Display the snapshot for all members of the Virtual Chassis.</li> <li><b>local</b>—Display the snapshot on the member of the Virtual Chassis that you are currently logged into.</li> <li><b>member <i>member-id</i></b>—Display the snapshot for the specified member of the Virtual Chassis.</li> </ul> <p><b>media (external   internal)</b>—(EX Series switch only) (Optional) Display the destination media location for the snapshot. The <b>external</b> option specifies the snapshot on an external mass storage device, such as a USB flash drive. The <b>internal</b> option specifies the snapshot on an internal memory source, such as internal flash memory. If no additional options are specified, the command displays the snapshot stored in both slices.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li><a href="#">request system snapshot on page 843</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">show system snapshot (Router) on page 1144</a>

[show system snapshot media external \(Switch\) on page 1144](#)

[show system snapshot media internal \(Switch\) on page 1144](#)

**Output Fields** [Table 57 on page 1144](#) lists the output fields for the **show system snapshot** command. Output fields are listed in the approximate order in which they appear.

**Table 57: show system snapshot Output Fields**

Field Name	Field Description
Creation date	Date and time of the last snapshot.
JUNOS version on snapshot	Junos OS release number of individual software packages.

## Sample Output

### show system snapshot (Router)

```
user@host> show system snapshot
Information for snapshot on hard-disk
Creation date: Oct 5 13:53:29 2005
JUNOS version on snapshot:
  jbase   : 7.3R2.5
  jcrypto: 7.3R2.5
  jdocs   : 7.3R2.5
  jkernel: 7.3R2.5
  jpfe    : M40-7.3R2.5
  jroute  : 7.3R2.5
```

### show system snapshot media external (Switch)

```
user@switch> show system snapshot media external
Information for snapshot on      external (/dev/dals1a) (backup)
Creation date: Mar 19 03:37:18 2012
JUNOS version on snapshot:
  jbase   : ex-12.1I20120111_0048_user
  jcrypto-ex: 12.1I20120111_0048_user
  jdocs-ex: 12.1I20120111_0048_user
  jroute-ex: 12.1I20120111_0048_user
  jswitch-ex: 12.1I20120111_0048_user
  jweb-ex: 12.1I20120111_0048_user
Information for snapshot on      external (/dev/dals2a) (primary)
Creation date: Mar 19 03:38:25 2012
JUNOS version on snapshot:
  jbase   : ex-12.2I20120305_2240_user
  jcrypto-ex: 12.2I20120305_2240_user
  jdocs-ex: 12.2I20120305_2240_user
  jroute-ex: 12.2I20120305_2240_user
  jswitch-ex: 12.2I20120305_2240_user
  jweb-ex: 12.2I20120305_2240_user
```

### show system snapshot media internal (Switch)

```
user@switch> show system snapshot media internal
Information for snapshot on internal (/dev/da0s1a) (backup)
Creation date: Mar 14 05:01:02 2011
JUNOS version on snapshot:
  jbase   : 11.1R1.9
```

```
jcrypto-ex: 11.1R1.9
jdocs-ex: 11.1R1.9
jkernel-ex: 11.1R1.9
jroute-ex: 11.1R1.9
jswitch-ex: 11.1R1.9
jweb-ex: 11.1R1.9
jpfe-ex42x: 11.1R1.9
Information for snapshot on internal (/dev/da0s2a) (primary)
Creation date: Mar 30 08:46:27 2011
JUNOS version on snapshot:
jbase : 11.2-20110330.0
jcrypto-ex: 11.2-20110330.0
jdocs-ex: 11.2-20110330.0
jkernel-ex: 11.2-20110330.0
jroute-ex: 11.2-20110330.0
jswitch-ex: 11.2-20110330.0
jweb-ex: 11.2-20110330.0
jpfe-ex42x: 11.2-20110330.0
```

## show system software

---

<b>Syntax</b>	show system software <detail>
<b>Syntax (EX Series Switches)</b>	show system software <all-members> <detail> <local> <member <i>member-id</i> >
<b>Syntax (TX Matrix Router)</b>	show system software <all-chassis   all-lcc   lcc <i>number</i>   scc> <detail>
<b>Syntax (TX Matrix Plus Router)</b>	show system software <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> > <detail>
<b>Syntax (J Series Routers)</b>	show system software <backup> <detail>
<b>Syntax (QFX Series)</b>	show system software <detail> <infrastructure <i>name</i> > <interconnect-device <i>name</i> > <node-group <i>name</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> 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.
<b>Description</b>	Display the Junos OS extensions loaded on your router or switch.
<b>Options</b>	<b>none</b> —Display standard information about all loaded Junos OS extensions.  <b>all-chassis</b> —(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display system software information for all the T640 routers (TX Matrix Router) or all the routers (TX Matrix Plus Router) in the chassis.  <b>all-lcc</b> —(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system software information for all T640 routers connected to the TX Matrix router. On a TX Matrix Plus router, display system software information for all connected T1600 or T4000 LCCs.  <b>all-members</b> —(EX4200 switches only) (Optional) Display the system software running on all members of the Virtual Chassis configuration.  <b>backup</b> —(J Series routers only) (Optional) Display the status of old system software packages only.

**detail**—(Optional) Display detailed information about available Junos OS extensions.

**infrastructure *name***—(QFabric systems only) (Optional) Display the system software running on the fabric control Routing Engine and the fabric manager Routing Engine.

**interconnect-device *name***—(QFabric systems only) (Optional) Display the system software running on the Interconnect device.

**lcc *number***—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system software information for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system software information for a specific router that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(EX4200 switches only) (Optional) Display the system software running on the local Virtual Chassis member.

**member *member-id***—(EX4200 switches only) (Optional) Display the system software running on the specified member of the Virtual Chassis configuration. Replace *member-id* with a value from 0 through 9.

**node-group *name***—(QFabric systems only) (Optional) Display the system software running on the Node group.

**scc**—(Routing matrix only) (Optional) Display the system software running on a TX Matrix router (or switch-card chassis).

**sfc**—(TX Matrix Plus routers only) (Optional) Display system software information for the TX Matrix Plus router.

**Required Privilege Level**

maintenance

**Related Documentation**

- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output**

[show system software on page 1148](#)  
[show system software \(TX Matrix Plus Router\) on page 1148](#)  
[show system software \(QFX Series\) on page 1152](#)

**Output Fields** When you enter this command, you are provided a list of Junos OS packages installed on the router and their corresponding Junos OS release number.

## Sample Output

### show system software

```
user@host> show system software
Information for jbase:

Comment:
JUNOS Base OS Software Suite [7.2R1.7]

Information for jcrypto:

Comment:
JUNOS Crypto Software Suite [7.2R1.7]
Information for jdocs:

Comment:
JUNOS Online Documentation [7.2R1.7]

Information for jkernel:

Comment:
JUNOS Kernel Software Suite [7.2R1.7]

Information for jpfe:

Comment:
JUNOS Packet Forwarding Engine Support (M20/M40) [7.2R1.7]

Information for jroute:

Comment:
JUNOS Routing Software Suite [7.2R1.7]

Information for junos:

Comment:
JUNOS Base OS boot [7.2R1.7]
```

### show system software (TX Matrix Plus Router)

```
user@host> show system software
sfc0-re0:
-----
Information for jbase:

Comment:
JUNOS Base OS Software Suite [9.6-20090515.0]

Information for jcrypto:
```



Comment:  
JUNOS Crypto Software Suite [9.6-20090515.0]

Information for jdocs:

Comment:  
JUNOS Online Documentation [9.6-20090515.0]  
Information for jkernel:

Comment:  
JUNOS Kernel Software Suite [9.6-20090515.0]

Information for jpfe:

Comment:  
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090515.0]

Information for jpfe-common:

Comment:  
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090515.0]

Information for jroute:Comment:  
JUNOS Routing Software Suite [9.6-20090515.0]

Information for jservices-aacl:

Comment:  
JUNOS Services ACL Container package [9.6-20090515.0]

Information for jservices-appid:

Comment:  
JUNOS AppId Services [9.6-20090515.0]

Information for jservices-bgf:

Comment:  
JUNOS Border Gateway Function package [9.6-20090515.0]  
Information for jservices-idp:

Comment:  
JUNOS IDP Services [9.6-20090515.0]

Information for jservices-llpdf:

Comment:

JUNOS Services LL-PDF Container package [9.6-20090515.0]

Information for jservices-sfw:

Comment:

JUNOS Services Stateful Firewall [9.6-20090515.0]

Information for jservices-voice:

Comment:

JUNOS Voice Services Container package [9.6-20090515.0]

Information for junos:

Comment:

JUNOS Base OS boot [9.6-20090515.0]

...

lcc0-re0:

-----  
Information for jbase:

Comment:

JUNOS Base OS Software Suite [9.6-20090515.0]

Information for jcrypto:

Comment:

JUNOS Crypto Software Suite [9.6-20090515.0]

Information for jdocs:

Comment:

JUNOS Online Documentation [9.6-20090515.0]

Information for jkernel:

Comment:

JUNOS Kernel Software Suite [9.6-20090515.0]

Information for jpfe:

Comment:

JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090515.0]

Information for jpfe-common:

Comment:  
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090515.0]

Information for jroute:

Comment:  
JUNOS Routing Software Suite [9.6-20090515.0]

Information for jservices-aac1:

Comment:  
JUNOS Services ACL Container package [9.6-20090515.0]

Information for jservices-appid:

Comment:  
JUNOS AppId Services [9.6-20090515.0]

Information for jservices-bgf:

Comment:  
JUNOS Border Gateway Function package [9.6-20090515.0]

Information for jservices-idp:

Comment:  
JUNOS IDP Services [9.6-20090515.0]

Information for jservices-llpdf:

Comment:  
JUNOS Services LL-PDF Container package [9.6-20090515.0]

Information for jservices-sfw:

Comment:  
JUNOS Services Stateful Firewall [9.6-20090515.0]

Information for jservices-voice:

Comment:  
JUNOS Voice Services Container package [9.6-20090515.0]

Information for junos:

Comment:  
JUNOS Base OS boot [9.6-20090515.0]

lcc1-re0:

-----  
Information for jbase:

Comment:  
JUNOS Base OS Software Suite [9.6-20090515.0]

Information for jcrypto:

Comment:  
JUNOS Crypto Software Suite [9.6-20090515.0]  
...

#### show system software (QFX Series)

user@switch> **show system software**  
Information for jbase:

Comment:  
JUNOS Base OS Software Suite [11.3-20110730.0]

Information for jcrypto:

Comment:  
JUNOS Crypto Software Suite [11.3-20110730.0]

Information for jdocs:

Comment:  
JUNOS Online Documentation [11.3-20110730.0]

Information for jkernel:

Comment:  
JUNOS Kernel Software Suite [11.3-20110730.0]

Information for jpfe:

Comment:  
JUNOS Packet Forwarding Engine Support (QFX) [11.3-20110730.0]

Information for jroute:

Comment:

JUNOS Routing Software Suite [11.3-20110730.0]

Information for jswitch:

Comment:

JUNOS Enterprise Software Suite [11.3-20110730.0]

Information for junos:

Comment:

JUNOS Base OS boot [11.3-20110730.0]

Information for jweb:

Comment:

JUNOS Web Management [11.3-20110730.0]

## show system storage

---

<b>Syntax</b>	show system storage <detail>
<b>Syntax (EX Series Switches)</b>	show system storage <detail> <all-members> <local> <member <i>member-id</i> >
<b>Syntax (MX Series Router)</b>	show system storage <detail> <all-members> <local> <member <i>member-id</i> >
<b>Syntax (QFX Series)</b>	show system storage <detail> <infrastructure <i>name</i> > <interconnect-device <i>name</i> > <node-group <i>name</i> >
<b>Syntax (SRX Series)</b>	show system storage <detail> <partitions>  For more information, see <b>show system storage partitions (View SRX Series)</b> .
<b>Syntax (TX Matrix Router)</b>	show system storage <detail> <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router and TX Matrix Plus Router with 3D SIBs)</b>	show system storage <detail> <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> option introduced for the TX Matrix Plus router in JUNOS Release 9.6. Command introduced in Junos OS Release 11.1 for the QFX Series.
<b>Description</b>	Display statistics about the amount of free disk space in the router's or switch's file systems.
<b>Options</b>	<b>none</b> —Display standard information about the amount of free disk space in the router's or switch's file systems.  <b>detail</b> —(Optional) Display detailed output.

**all-chassis**—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display system storage statistics for all the routers in the chassis.

**all-lcc**—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system storage statistics for all T640 routers connected to the TX Matrix router. On a TX Matrix Plus router, display system storage statistics for all routers connected to the TX Matrix Plus router.

**all-members**—(EX4200 switches and MX Series routers only) (Optional) Display system storage statistics for all members of the Virtual Chassis configuration.

**infrastructure *name***—(QFabric systems only) (Optional) Display system storage statistics for the fabric control Routing Engines or fabric manager Routing Engines.

**interconnect-device *name***—(QFabric systems only) (Optional) Display system storage statistics for the Interconnect device.

**lcc *number***—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system storage statistics for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system storage statistics for a specific router that is connected to the TX Matrix Plus router. Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(EX4200 switches and MX Series routers only) (Optional) Display system storage statistics for the local Virtual Chassis member.

**member *member-id***—(EX4200 switches and MX Series routers only) (Optional) Display system storage statistics for the specified member of the Virtual Chassis configuration. For EX4200 switches, replace *member-id* with a value from 0 through 9. For an MX Series Virtual Chassis, replace *member-id* with a value of 0 or 1.

**node-group *name***—(QFabric systems only) (Optional) Display system storage statistics for the Node group.

**scc**—(TX Matrix routers only) (Optional) Display system storage statistics for the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Display system storage statistics for the TX Matrix Plus router. Replace *number* with 0.

**Additional Information** By default, when you issue the **show system storage** command on the master Routing Engine of a TX Matrix router or a TX Matrix Plus router, the command is broadcast to all the master Routing Engines of the LCCs connected to it in the routing matrix. Likewise, if you issue the same command on the backup Routing Engine of a TX Matrix or a TX Matrix Plus router, the command is broadcast to all backup Routing Engines of the LCCs that are connected to it in the routing matrix.

**Required Privilege Level** view

**Related Documentation**

- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)
- [show system storage partitions \(View SRX Series\)](#)

**List of Sample Output**

- [show system storage on page 1156](#)
- [show system storage \(TX Matrix Plus Router\) on page 1157](#)
- [show system storage \(QFX3500 Switch\) on page 1159](#)

**Output Fields** [Table 58 on page 1156](#) describes the output fields for the **show system storage** command. Output fields are listed in the approximate order in which they appear.

**Table 58: show system storage Output Fields**

Field Name	Field Description
Filesystem	Name of the filesystem.
Size	Size of the filesystem.
Used	Amount of space used in the filesystem.
Avail	Amount of space available in the filesystem.
Capacity	Percentage of the filesystem space that is being used.
Mounted on	Directory in which the filesystem is mounted.

## Sample Output

**show system storage**

```

user@host> show system storage
Filesystem      Size      Used      Avail  Capacity  Mounted on
/dev/ad0s1a      77M       37M       34M      52%      /
devfs           16K       16K        0B     100%    /dev/
/dev/vn0         12M       12M        0B     100%  /packages/mnt/jbase
/dev/vn1         39M       39M        0B     100%
/packages/mnt/jkernel-7.2R1.7
/dev/vn2         12M       12M        0B     100%
/packages/mnt/jpfe-M40-7.2R1.7
/dev/vn3         2.3M      2.3M        0B     100%
/packages/mnt/jdocs-7.2R1.7
/dev/vn4         14M       14M        0B     100%

```



```

/packages/mnt/jroute-7.2R1.7
/dev/vn5          4.5M      4.5M      0B      100%
/packages/mnt/jcrypto-7.2R1.7
mfs:172          1.5G      4.0K      1.3G      0% /tmp
/dev/ad0s1e       12M      20K      11M      0% /config
procfs           4.0K      4.0K      0B      100% /proc
/dev/ad1s1f       9.4G      4.9G      3.7G      57% /var

```

### show system storage (TX Matrix Plus Router)

```

user@host> show system storage
sfc0-re0:

```

```

-----
Filesystem      Size      Used      Avail  Capacity  Mounted on
/dev/ad0s1a     3.4G     178M     2.9G      6%      /
devfs           1.0K     1.0K      0B     100%    /dev
devfs           1.0K     1.0K      0B     100%    /dev/
/dev/md0        33M      33M      0B     100%    /packages/mnt/jbase
/dev/md1       216M     216M      0B     100%
/packages/mnt/jkernel-9.6-20090519.0
/dev/md2        66M      66M      0B     100%
/packages/mnt/jpfe-T-9.6-20090519.0
/dev/md3        4.1M     4.1M      0B     100%
/packages/mnt/jdocs-9.6-20090519.0
/dev/md4        57M      57M      0B     100%
/packages/mnt/jroute-9.6-20090519.0
/dev/md5        15M      15M      0B     100%
/packages/mnt/jcrypto-9.6-20090519.0
/dev/md6        34M      34M      0B     100%
/packages/mnt/jpfe-common-9.6-20090519.0
/dev/md7        2.0G     10.0K     1.8G      0%    /tmp
/dev/md8        2.0G      1.0M     1.8G      0%    /mfs
/dev/ad0s1e     383M      82K     352M      0%    /config
procfs          4.0K      4.0K      0B     100%    /proc
/dev/ad1s1f     52G      7.5G     40G      16%    /var

```

```

lcc0-re0:

```

```

-----
Filesystem      Size      Used      Avail  Capacity  Mounted on
/dev/ad0s1a     3.4G     178M     2.9G      6%      /
devfs           1.0K     1.0K      0B     100%    /dev
devfs           1.0K     1.0K      0B     100%    /dev/
/dev/md0        33M      33M      0B     100%    /packages/mnt/jbase
/dev/md1       216M     216M      0B     100%
/packages/mnt/jkernel-9.6-20090519.0
/dev/md2        66M      66M      0B     100%
/packages/mnt/jpfe-T-9.6-20090519.0
/dev/md3        4.1M     4.1M      0B     100%
/packages/mnt/jdocs-9.6-20090519.0
/dev/md4        57M      57M      0B     100%
/packages/mnt/jroute-9.6-20090519.0
/dev/md5        15M      15M      0B     100%
/packages/mnt/jcrypto-9.6-20090519.0
/dev/md6        34M      34M      0B     100%
/packages/mnt/jpfe-common-9.6-20090519.0
/dev/md7        2.0G     10.0K     1.8G      0%    /tmp
/dev/md8        2.0G     540K     1.8G      0%    /mfs
/dev/ad0s1e     383M      88K     352M      0%    /config
procfs          4.0K      4.0K      0B     100%    /proc
/dev/ad1s1f     52G      6.3G     41G      13%    /var

```

## lcc1-re0:

Filesystem	Size	Used	Avail	Capacity	Mounted on
/dev/ad0s1a	3.4G	178M	2.9G	6%	/
devfs	1.0K	1.0K	0B	100%	/dev
devfs	1.0K	1.0K	0B	100%	/dev/
/dev/md0	33M	33M	0B	100%	/packages/mnt/jbase
/dev/md1	216M	216M	0B	100%	
/packages/mnt/jkernel-9.6-20090519.0					
/dev/md2	66M	66M	0B	100%	
/packages/mnt/jpfe-T-9.6-20090519.0					
/dev/md3	4.1M	4.1M	0B	100%	
/packages/mnt/jdocs-9.6-20090519.0					
/dev/md4	57M	57M	0B	100%	
/packages/mnt/jroute-9.6-20090519.0					
/dev/md5	15M	15M	0B	100%	
/packages/mnt/jcrypto-9.6-20090519.0					
/dev/md6	34M	34M	0B	100%	
/packages/mnt/jpfe-common-9.6-20090519.0					
/dev/md7	2.0G	10.0K	1.8G	0%	/tmp
/dev/md8	2.0G	540K	1.8G	0%	/mfs
/dev/ad0s1e	383M	88K	352M	0%	/config
procfs	4.0K	4.0K	0B	100%	/proc
/dev/ad1s1f	23G	13G	7.7G	64%	/var

## lcc2-re0:

Filesystem	Size	Used	Avail	Capacity	Mounted on
/dev/ad0s1a	3.4G	178M	2.9G	6%	/
devfs	1.0K	1.0K	0B	100%	/dev
devfs	1.0K	1.0K	0B	100%	/dev/
/dev/md0	33M	33M	0B	100%	/packages/mnt/jbase
/dev/md1	216M	216M	0B	100%	
/packages/mnt/jkernel-9.6-20090519.0					
/dev/md2	66M	66M	0B	100%	
/packages/mnt/jpfe-T-9.6-20090519.0					
/dev/md3	4.1M	4.1M	0B	100%	
/packages/mnt/jdocs-9.6-20090519.0					
/dev/md4	57M	57M	0B	100%	
/packages/mnt/jroute-9.6-20090519.0					
/dev/md5	15M	15M	0B	100%	
/packages/mnt/jcrypto-9.6-20090519.0					
/dev/md6	34M	34M	0B	100%	
/packages/mnt/jpfe-common-9.6-20090519.0					
/dev/md7	2.0G	10.0K	1.8G	0%	/tmp
/dev/md8	2.0G	540K	1.8G	0%	/mfs
/dev/ad0s1e	383M	64K	352M	0%	/config
procfs	4.0K	4.0K	0B	100%	/proc
/dev/ad1s1f	23G	3.7G	17G	18%	/var

## lcc3-re0:

Filesystem	Size	Used	Avail	Capacity	Mounted on
/dev/ad0s1a	3.4G	178M	2.9G	6%	/
devfs	1.0K	1.0K	0B	100%	/dev
devfs	1.0K	1.0K	0B	100%	/dev/
/dev/md0	33M	33M	0B	100%	/packages/mnt/jbase
/dev/md1	216M	216M	0B	100%	
/packages/mnt/jkernel-9.6-20090519.0					
/dev/md2	66M	66M	0B	100%	
/packages/mnt/jpfe-T-9.6-20090519.0					

/dev/md3	4.1M	4.1M	0B	100%	
/packages/mnt/jdocs-9.6-20090519.0					
/dev/md4	57M	57M	0B	100%	
/packages/mnt/jroute-9.6-20090519.0					
/dev/md5	15M	15M	0B	100%	
/packages/mnt/jcrypto-9.6-20090519.0					
/dev/md6	34M	34M	0B	100%	
/packages/mnt/jpfe-common-9.6-20090519.0					
/dev/md7	2.0G	10.0K	1.8G	0%	/tmp
/dev/md8	2.0G	540K	1.8G	0%	/mfs
/dev/ad0s1e	383M	34K	352M	0%	/config
procfs	4.0K	4.0K	0B	100%	/proc
/dev/ad1s1f	23G	18G	3.5G	84%	/var

### show system storage (QFX3500 Switch)

```
user@switch> show system storage
```

Filesystem	Size	Used	Avail	Capacity	Mounted on
/dev/da0s2a	343M	192M	123M	61%	/
devfs	1.0K	1.0K	0B	100%	/dev
/dev/md0	119M	119M	0B	100%	/packages/mnt/jbase
/dev/md1	513M	513M	0B	100%	
/packages/mnt/jkernel-qfx-11.1R1.5					
/dev/md2	37M	37M	0B	100%	
/packages/mnt/jpfe-qfx-e9xxx-11.1R1.5					
/dev/md3	6.0M	6.0M	0B	100%	
/packages/mnt/jdocs-qfx-11.1R1.5					
/dev/md4	216M	216M	0B	100%	
/packages/mnt/jroute-qfx-11.1R1.5					
/dev/md5	59M	59M	0B	100%	
/packages/mnt/jcrypto-qfx-11.1R1.5					
/dev/md6	85M	85M	0B	100%	
/packages/mnt/jswitch-qfx-11.1R1.5					
/dev/md7	63M	8.0K	58M	0%	/tmp
/dev/da0s2f	228M	14M	196M	7%	/var
/dev/da0s3d	590M	3.0M	540M	1%	/var/tmp
/dev/da0s3e	104M	162K	95M	0%	/config
procfs	4.0K	4.0K	0B	100%	/proc

## show system switchover

---

<b>Syntax</b>	show system switchover
<b>Syntax (TX Matrix Router)</b>	show system switchover <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show system switchover <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (MX Series Router)</b>	show system switchover <all-members> <local> <member <i>member-id</i> >
<b>Release Information</b>	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.
<b>Description</b>	Display whether graceful Routing Engine switchover is configured, the state of the kernel replication (ready or synchronizing), any replication errors, and whether the primary and standby Routing Engines are using compatible versions of the kernel database.



**NOTE:** Issue the `show system switchover` command *only* on the backup Routing Engine. This command is *not* supported on the master Routing Engine, because the kernel-replication process daemon does not run on the master Routing Engine. This process runs only on the backup Routing Engine.

Beginning Junos OS Release 9.6, the `show system switchover` command has been deprecated on the master Routing Engine on all routers other than a TX Matrix (switch-card chassis) or a TX Matrix Plus (switch-fabric chassis) router.

However, in a routing matrix, if you issue the `show system switchover` command on the master Routing Engine of the TX Matrix router (or switch-card chassis), the CLI displays graceful switchover information for the master Routing Engine of the T640 routers (or line-card chassis) in the routing matrix. Likewise, if you issue the `show system switchover` command on the master Routing Engine of a TX Matrix Plus router (or switch-fabric chassis), the CLI displays output for the master Routing Engine of T1600 or T4000 routers in the routing matrix.

---

<b>Options</b>	<b>all-chassis</b> —(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display graceful Routing Engine switchover information for all Routing Engines on the TX Matrix router and the T640 routers configured in the routing matrix. On a TX Matrix Plus router, display graceful Routing Engine switchover information for all
----------------	--

Routing Engines on the TX Matrix Plus router and the T1600 or T4000 routers configured in the routing matrix.

**all-lcc**—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display graceful Routing Engine switchover information for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display graceful Routing Engine switchover information for all connected T1600 or T4000 LCCs.

Note that in this instance, packets get dropped. The LCCs perform GRES on their own chassis (GRES cannot be handled by one particular chassis for the entire router) and synchronization is not possible as the LCC plane bringup time varies for each LCC. Therefore, when there is traffic on these planes, there may be a traffic drop.

**all-members**—(MX Series routers only) (Optional) Display graceful Routing Engine switchover information for all Routing Engines on all members of the Virtual Chassis configuration.

**lcc number**—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display graceful Routing Engine switchover information for a specific T640 router connected to the TX Matrix router. On a TX Matrix Plus router, display graceful Routing Engine switchover information for a specific router connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(MX Series routers only) (Optional) Display graceful Routing Engines switchover information for all Routing Engines on the local Virtual Chassis member.

**member member-id**—(MX Series routers only) (Optional) Display graceful Routing Engine switchover information for all Routing Engines on the specified member of the Virtual Chassis configuration. Replace *member-id* with a value of 0 or 1.

**scc**—(TX Matrix router only) (Optional) Display graceful Routing Engine switchover information for the TX Matrix router (or switch-card chassis).

**sfc**—(TX Matrix Plus routers only) (Optional) Display graceful Routing Engine switchover information for the TX Matrix Plus router.

**Additional Information** If you issue the **show system switchover** command on a TX Matrix backup Routing Engine, the command is broadcast to all the T640 backup Routing Engines that are connected to it.

Likewise, if you issue the **show system switchover** command on a TX Matrix Plus backup Routing Engine, the command is broadcast to all the T1600 or T4000 backup Routing Engines that are connected to it.

If you issue the **show system switchover** command on the active Routing Engine in the master router of an MX Series Virtual Chassis, the router displays an error message that graceful Routing Engine switchover (GRES) is not enabled on this member.

Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> <li>• <a href="#">Routing Matrix with a TX Matrix Plus Router Solutions Page</a></li> </ul>
List of Sample Output	<a href="#">show system switchover (Backup Routing Engine) on page 1163</a> <a href="#">show system switchover all-lcc (Routing Matrix) on page 1163</a>
Output Fields	Table 59 on page 1162 describes the output fields for the <b>show system switchover</b> command. Output fields are listed in the approximate order in which they appear.

**Table 59: show system switchover Output Fields**

Field Name	Field Description
Graceful switchover	Display graceful Routing Engine switchover status: <ul style="list-style-type: none"> <li>• <b>On</b>—Indicates <b>graceful-switchover</b> is specified for the <b>routing-options</b> configuration command.</li> <li>• <b>Off</b>—Indicates <b>graceful-switchover</b> is not specified for the <b>routing-options</b> configuration command.</li> </ul>
Configuration database	State of the configuration database: <ul style="list-style-type: none"> <li>• <b>Ready</b>—Configuration database has synchronized.</li> <li>• <b>Synchronizing</b>—Configuration database is synchronizing. Displayed when there are updates within the last 5 seconds.</li> <li>• <b>Synchronize failed</b>—Configuration database synchronize process failed.</li> </ul>
Kernel database	State of the kernel database: <ul style="list-style-type: none"> <li>• <b>Ready</b>—Kernel database has synchronized.</li> <li>• <b>Synchronizing</b>—Kernel database is synchronizing. Displayed when there are updates within the last 5 seconds.</li> <li>• <b>Version incompatible</b>—The primary and standby Routing Engines are running incompatible kernel database versions.</li> <li>• <b>Replication error</b>—An error occurred when the state was replicated from the primary Routing Engine. Inspect <b>Steady State</b> for possible causes, or notify Juniper Networks customer support.</li> </ul>
Peer state	Routing Engine peer state: <ul style="list-style-type: none"> <li>• <b>Steady State</b>—Peer completed switchover transition.</li> <li>• <b>Peer Connected</b>—Peer in switchover transition.</li> </ul>

## Sample Output

### show system switchover (Backup Routing Engine)

```
user@host> show system switchover
Graceful switchover: On
Configuration database: Ready
Kernel database: Ready
Peer state: Steady State
```

### show system switchover all-lcc (Routing Matrix)

```
user@host> show system switchover all-lcc
```

```
lcc0-re0:
```

```
-----
Multichassis replication: On
Configuration database: Ready
Kernel database: Ready
Peer state: Steady State
```

```
lcc2-re0:
```

```
-----
Multichassis replication: On
Configuration database: Ready
Kernel database: Ready
Peer state: Steady State
```

## show system uptime

---

<b>Syntax</b>	show system uptime
<b>Syntax (EX Series Switches)</b>	show system uptime <all-members> <local> <member <i>member-id</i> >
<b>Syntax (QFX Series)</b>	show system uptime <director-group <i>name</i> > <infrastructure <i>name</i> > <interconnect-device <i>name</i> > <node-group <i>name</i> >
<b>Syntax (TX Matrix Router)</b>	show system uptime <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show system uptime <detail> <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (MX Series Router)</b>	show system uptime <all-members> <invoke-on> <local> <member <i>member-id</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> option introduced for the TX Matrix Plus router in JUNOS Release 9.6. Command introduced in Junos OS Release 11.1 for the QFX Series.
<b>Description</b>	Display the current time and information about how long the router or switch, router or switch software, and routing protocols have been running.
<b>Options</b>	<b>none</b> —Show time since the system rebooted and processes started.  <b>all-chassis</b> —(TX Matrix routers and TX Matrix Plus routers only) (Optional) Show time since the system rebooted and processes started on all the routers in the chassis.  <b>all-lcc</b> —(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, show time since the system rebooted and processes started for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, show time since the system rebooted and processes started for all connected T1600 or T4000 LCCs.  <b>all-members</b> —(EX4200 switches and MX Series routers only) (Optional) Show time since the system rebooted and processes started on all members of the Virtual Chassis configuration.



**director-group *name***—(QFabric systems only) (Optional) Show time since the system rebooted and processes started on the Director group.

**infrastructure *name***—(QFabric systems only) (Optional) Show time since the system rebooted and processes started on the fabric control Routing Engine and fabric manager Routing Engine.

**interconnect-device *name***—(QFabric systems only) (Optional) Show time since the system rebooted and processes started on the Interconnect device.

**invoke-on**—(MX Series routers only) (Optional) Display the time since the system rebooted and processes started on the master Routing Engine, backup Routing Engine, or both, on a router with two Routing Engines.

**lcc *number***—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, show time since the system rebooted and processes started for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, show time since the system rebooted and processes started for a specific router that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(EX4200 switches and MX Series routers only) (Optional) Show time since the system rebooted and processes started on the local Virtual Chassis member.

**member *member-id***—(EX4200 switches and MX Series routers only) (Optional) Show time since the system rebooted and processes started on the specified member of the Virtual Chassis configuration. For EX4200 switches, replace *member-id* with a value from 0 through 9. For an MX Series Virtual Chassis, replace *member-id* with a value of 0 or 1.

**node-group *name***—(QFabric systems only) (Optional) Show time since the system rebooted and processes started on the Node group.

**scc**—(TX Matrix routers only) (Optional) Show time since the system rebooted and processes started for the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Show time since the system rebooted and processes started for the TX Matrix Plus router. Replace *number* with 0.

**Additional Information** By default, when you issue the **show system uptime** command on the master Routing Engine of a TX Matrix router or a TX Matrix Plus router, the command is broadcast to all the master Routing Engines of the LCCs connected to it in the routing matrix. Likewise, if you issue the same command on the backup Routing Engine of a TX Matrix or a TX Matrix Plus router, the command is broadcast to all backup Routing Engines of the LCCs that are connected to it in the routing matrix.

**Required Privilege Level** view

**Related Documentation**

- [Monitoring System Process Information](#)
- [Monitoring System Properties](#)
- [10-Gigabit Ethernet LAN/WAN PIC with XFP \(T640 Router\)](#)
- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output**

[show system uptime on page 1166](#)  
[show system uptime all-lcc \(TX Matrix Router\) on page 1167](#)  
[show system uptime all-lcc \(TX Matrix Plus Router\) on page 1167](#)  
[show system uptime \(QFX Series\) on page 1168](#)

**Output Fields** [Table 60 on page 1166](#) describes the output fields for the **show system uptime** command. Output fields are listed in the approximate order in which they appear.

**Table 60: show system uptime Output Fields**

Field Name	Field Description
Current time	Current system time in UTC.
System booted	Date and time when the Routing Engine on the router or switch was last booted and how long it has been running.
Protocols started	Date and time when the routing protocols were last started and how long they have been running.
Last configured	Date and time when a configuration was last committed. Also shows the name of the user who issued the last <b>commit</b> command.
time and up	Current time, in the local time zone, and how long the router or switch has been operational.
users	Number of users logged in to the router or switch.
load averages	Load averages for the last 1 minute, 5 minutes, and 15 minutes.

## Sample Output

### show system uptime

```
user@host> show system uptime
Current time:      1998-10-13 19:45:47 UTC
System booted:    1998-10-12 20:51:41 UTC (22:54:06 ago)
```

```

Protocols started: 1998-10-13 19:33:45 UTC (00:12:02 ago)
Last configured: 1998-10-13 19:33:45 UTC (00:12:02 ago) by abc
12:45PM up 22:54, 2 users, load averages: 0.07, 0.02, 0.01

```

#### show system uptime all-lcc (TX Matrix Router)

```

user@host> show system uptime all-lcc
lcc0-re0:
-----
Current time: 2004-09-13 09:55:35 PDT
System booted: 2004-09-13 03:13:55 PDT (06:41:40 ago)
Last configured: 2004-09-13 03:17:48 PDT (06:37:47 ago) by root
9:55AM PDT up 6:42, 1 user, load averages: 0.02, 0.03, 0.00
lcc2-re0:
-----
Current time: 2004-09-13 09:55:35 PDT
System booted: 2004-09-12 03:23:43 PDT (1d 06:31 ago)
Last configured: 2004-09-13 03:05:36 PDT (06:49:59 ago) by root
9:55AM PDT up 1 day, 6:32, 1 user, load averages: 0.02, 0.01, 0.00

```

#### show system uptime all-lcc (TX Matrix Plus Router)

```

user@host> show system uptime all-lcc
sfc0-re0:
-----
Current time: 2009-05-25 00:24:30 PDT
System booted: 2009-05-24 06:39:33 PDT (17:44:57 ago)
Protocols started: 2009-05-24 06:40:30 PDT (17:44:00 ago)
Last configured: 2009-05-24 06:33:27 PDT (17:51:03 ago) by gregdo
12:24AM up 17:45, 2 users, load averages: 0.07, 0.05, 0.01

lcc0-re0:
-----
Current time: 2009-05-25 00:24:30 PDT
System booted: 2009-05-24 06:39:46 PDT (17:44:44 ago)
error: the routing subsystem is not running
Last configured: 2009-05-24 06:40:47 PDT (17:43:43 ago) by root
12:24AM up 17:45, 0 users, load averages: 0.00, 0.00, 0.00

lcc1-re0:
-----
Current time: 2009-05-25 00:24:30 PDT
System booted: 2009-05-24 06:39:38 PDT (17:44:52 ago)
error: the routing subsystem is not running
Last configured: 2009-05-24 06:40:18 PDT (17:44:12 ago) by root
12:24AM up 17:45, 0 users, load averages: 0.00, 0.00, 0.00

lcc2-re0:
-----
Current time: 2009-05-25 00:24:30 PDT
System booted: 2009-05-24 06:39:48 PDT (17:44:42 ago)
error: the routing subsystem is not running
Last configured: 2009-05-24 06:40:44 PDT (17:43:46 ago) by root
12:24AM up 17:45, 0 users, load averages: 0.00, 0.00, 0.00

lcc3-re0:
-----
Current time: 2009-05-25 00:24:30 PDT
System booted: 2009-05-24 06:39:44 PDT (17:44:46 ago)
error: the routing subsystem is not running

```

```
Last configured: 2009-05-24 06:40:08 PDT (17:44:22 ago) by root  
12:24AM up 17:45, 0 users, load averages: 0.00, 0.00, 0.00
```

#### show system uptime (QFX Series)

```
user@switch> show system uptime  
Current time: 2010-08-27 03:12:30 PDT  
System booted: 2010-08-13 17:11:54 PDT (1w6d 10:00 ago)  
Protocols started: 2010-08-13 17:13:56 PDT (1w6d 09:58 ago)  
Last configured: 2010-08-26 05:54:00 PDT (21:18:30 ago) by regress  
3:12AM up 13 days, 10:01, 3 users, load averages: 0.00, 0.00, 0.00
```

## show system users

<b>Syntax</b>	show system users <no-resolve>
<b>Syntax (TX Matrix Router)</b>	show system users <all-chassis   all-lcc   lccnumber   scc> <no-resolve>
<b>Syntax (TX Matrix Plus Router)</b>	show system users <detail> <all-chassis   all-lcc   lcc number   sfc number> <no-resolve>
<b>Syntax (MX Series Router)</b>	show system users <all-members> <local> <member member-id> <no-resolve>
<b>Release Information</b>	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.
<b>Description</b>	List information about the users who are currently logged in to the router or switch.



**NOTE:** The `show system users` command lists the information about administrative users that are logged in to a router or switch using the CLI, J-Web, or an SSH client. The output does not list information about web users or automated users that are logged in from a remote client application using Junos XML APIs, such as NETCONF.

<b>Options</b>	<p><b>none</b>—List information about the users who are currently logged in to the router or switch.</p> <p><b>all-chassis</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Show users currently logged in to all the routers in the chassis.</p> <p><b>all-lcc</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, show users currently logged in to all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, show users currently logged in to all connected T1600 or T4000 LCCs.</p> <p><b>all-members</b>—(MX Series routers only) (Optional) Display users currently logged in to all members of the Virtual Chassis configuration.</p> <p><b>lcc number</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, show users currently logged in to a specific T640 router that is</p>
----------------	--

connected to the TX Matrix router. On a TX Matrix Plus router, show users currently logged in to a specific router that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(MX Series routers only) (Optional) Display users currently logged in to the local Virtual Chassis member.

**member *member-id***—(MX Series routers only) (Optional) Display users currently logged in to the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value of 0 or 1.

**no-resolve**—(Optional) Do not attempt to resolve IP addresses to hostnames.

**scc**—(TX Matrix routers only) (Optional) Show users currently logged in to the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Show users currently logged in to the TX Matrix Plus router. Replace ***number*** with 0.

**Additional Information** By default, when you issue the **show system users** command on the master Routing Engine of a TX Matrix router or a TX Matrix Plus router, the command is broadcast to all the master Routing Engines of the LCCs connected to it in the routing matrix. Likewise, if you issue the same command on the backup Routing Engine of a TX Matrix or a TX Matrix Plus router, the command is broadcast to all backup Routing Engines of the LCCs that are connected to it in the routing matrix.

**Required Privilege Level** view

**Related Documentation**

- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output** [show system users on page 1171](#)  
[show system users lcc no-resolve \(TX Matrix, TX Matrix Plus Router\) on page 1171](#)  
[show system users \(TX Matrix Plus Router\) on page 1171](#)  
[show system users \(QFX Series\) on page 1172](#)  
[show system users no-resolve \(QFX Series\) on page 1172](#)

**Output Fields** [Table 61 on page 1171](#) describes the output fields for the **show system users** command. Output fields are listed in the approximate order in which they appear.

Table 61: show system users Output Fields

Field Name	Field Description
<b>time and up</b>	Current time, in the local time zone, and how long the router or switch has been operational.
<b>users</b>	Number of users logged in to the router or switch.
<b>load averages</b>	Load averages for the last 1 minute, 5 minutes, and 15 minutes.
<b>USER</b>	Username.
<b>TTY</b>	Terminal through which the user is logged in.
<b>FROM</b>	System from which the user has logged in. A hyphen indicates that the user is logged in through the console.
<b>LOGIN@</b>	Time when the user logged in.
<b>IDLE</b>	How long the user has been idle.
<b>WHAT</b>	Processes that the user is running.

## Sample Output

### show system users

```

user@host> show system users
 7:30PM up 4 days, 2:26, 2 users, load averages: 0.07, 0.02, 0.01
USER   TTY FROM                LOGIN@  IDLE WHAT
root   d0  -                   Fri05PM 4days -csh (csh)
blue   p0  leve15.company.net 7:30PM  - cli

```

### show system users lcc no-resolve (TX Matrix, TX Matrix Plus Router)

```

user@host> show system users lcc 2 no-resolve

lcc2-re0:
-----
10:34AM PDT up 1 day, 7:11, 5 users, load averages: 0.03, 0.01, 0.00
USER   TTY   FROM                LOGIN@  IDLE WHAT
root   d0    -                   3:21AM  7:12 /bin/csh
regress p0    scc-re0             10:15AM  - telnet hostA
regress p1    scc-re0             10:16AM  - telnet hostA
regress p2    scc-re0             10:19AM  - telnet hostA
regress p3    scc-re0             10:24AM  - telnet hostA

```

### show system users (TX Matrix Plus Router)

```

user@host> show system users

sfc0-re0:
-----
 1:41AM up 26 mins, 3 users, load averages: 0.08, 0.04, 0.03
USER   TTY   FROM                LOGIN@  IDLE WHAT
regress p0    10.209.208.123      1:18AM  21 cli
regress p1    172.17.29.207       1:37AM  2 cli

```

```

regress p2          172.17.28.19          1:40AM      - cli

lcc0-re0:
-----
1:41AM up 26 mins, 0 users, load averages: 0.00, 0.00, 0.03

lcc1-re0:
-----
1:41AM up 26 mins, 0 users, load averages: 0.00, 0.02, 0.03

lcc2-re0:
-----
1:41AM up 26 mins, 0 users, load averages: 0.16, 0.06, 0.02

lcc3-re0:
-----
1:41AM up 26 mins, 0 users, load averages: 0.12, 0.04, 0.04

regress@aj> show system users
sfc0-re0:
-----
1:42AM up 28 mins, 4 users, load averages: 0.02, 0.03, 0.02
USER   TTY   FROM                               LOGIN@  IDLE WHAT
regress p0    pssraj-t61.jnpr.net              1:18AM   22 cli
regress p1    eng-shell14.juniper.net          1:37AM   - cli
regress p2    bigpink.juniper.net              1:40AM   - cli
regress p3    sv-cutty-01.englab.juniper.net    1:42AM   - -csh (csh)

lcc0-re0:
-----
1:42AM up 28 mins, 0 users, load averages: 0.02, 0.01, 0.03

lcc1-re0:
-----
1:42AM up 28 mins, 0 users, load averages: 0.07, 0.04, 0.03

lcc2-re0:
-----
1:42AM up 27 mins, 0 users, load averages: 0.07, 0.06, 0.02

lcc3-re0:
-----
1:42AM up 28 mins, 0 users, load averages: 0.05, 0.04, 0.04

```

### show system users (QFX Series)

```

user@switch> show system users
USER   TTY   FROM                LOGIN@  IDLE WHAT
tlewis p0     172.22.18.117       2:54AM   39 -cli (cli)
tlewis p1     172.22.18.117       3:01AM   - -cli (cli)
tcheng p2     172.22.17.197       3:08AM   11 -cli (cli)

```

### show system users no-resolve (QFX Series)

```

user@switch> show system users no-resolve
USER   TTY   FROM                LOGIN@  IDLE WHAT
tlewis p0     172.22.18.117       2:54AM   39 -cli (cli)
tlewis p1     172.22.18.117       3:01AM   - -cli (cli)
tcheng p2     172.22.17.197       3:08AM   11 -cli (cli)

```



## show system virtual-memory

<b>Syntax</b>	show system virtual-memory
<b>Syntax (EX Series)</b>	show system virtual-memory <all-members> <local> <member <i>member-id</i> >
<b>Syntax (TX Matrix Router)</b>	show system virtual-memory <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show system virtual-memory <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (MX Series Router)</b>	show system virtual-memory <all-members> <local> <member <i>member-id</i> >
<b>Syntax (QFX Series)</b>	show system virtual-memory <infrastructure <i>name</i> > <interconnect-device <i>name</i> > <node-group <i>name</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> 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.
<b>Description</b>	Display the usage of Junos OS kernel memory listed first by size of allocation and then by type of usage. Use the <b>show system virtual-memory</b> command for troubleshooting with Juniper Networks Customer Support.
<b>Options</b>	<p><b>none</b>—Display kernel dynamic memory usage information.</p> <p><b>all-chassis</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display kernel dynamic memory usage information for all chassis.</p> <p><b>all-lcc</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display kernel dynamic memory usage information for all T640 routers connected to the TX Matrix router. On a TX Matrix Plus router, display kernel dynamic memory usage information for all connected T1600 or T4000 LCCs.</p> <p><b>all-members</b>—(EX4200 switches and MX Series routers only) (Optional) Display kernel dynamic memory usage information for all members of the Virtual Chassis configuration.</p> <p><b>infrastructure <i>name</i></b>—(QFabric systems only) (Optional) Display kernel dynamic memory usage information for the fabric control Routing Engine and fabric manager Routing Engine.</p>

**interconnect-device *name***—(QFabric systems only) (Optional) Display kernel dynamic memory usage information for the Interconnect device.

**lcc *number***—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display kernel dynamic memory usage information for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display kernel dynamic memory usage information for a specific router that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(EX4200 switches and MX Series routers only) (Optional) Display kernel dynamic memory usage information for the local Virtual Chassis member.

**member *member-id***—(EX4200 switches and MX Series routers only) (Optional) Display kernel dynamic memory usage information for the specified member of the Virtual Chassis configuration. For EX4200 switches, replace *member-id* with a value from 0 through 9. For an MX Series Virtual Chassis, replace *member-id* with a value of 0 or 1.

**node-group *name***—(QFabric systems only) (Optional) Display kernel dynamic memory usage information for the Node group.

**scc**—(TX Matrix routers only) (Optional) Display kernel dynamic memory usage information for the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Display kernel dynamic memory usage information for the TX Matrix Plus router. Replace *number* with 0.

**Additional Information** By default, when you issue the **show system virtual-memory** command on the master Routing Engine of a TX Matrix router or a TX Matrix Plus router, the command is broadcast to all the master Routing Engines of the LCCs connected to it in the routing matrix. Likewise, if you issue the same command on the backup Routing Engine of a TX Matrix or a TX Matrix Plus router, the command is broadcast to all backup Routing Engines of the LCCs that are connected to it in the routing matrix.



**NOTE:** The `show system virtual-memory` command with the `| display XML` pipe option now displays XML output for the command in the parent tags: `<vmstat-memstat-malloc>`, `<vmstat-memstat-zone>`, `<vmstat-sumstat>`, `<vmstat-intr>`, and `<vmstat-kernel-state>` with each child element as a separate XML tag. In Junos OS Releases 10.1 and earlier, the `| display XML` option for this command does not have an XML API element and the entire output is displayed in a single `<output>` tag element.

Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"><li>• <a href="#">Routing Matrix with a TX Matrix Plus Router Solutions Page</a></li></ul>
List of Sample Output	<a href="#">show system virtual-memory on page 1177</a> <a href="#">show system virtual-memory scc (TX Matrix Router) on page 1181</a> <a href="#">show system virtual-memory sfc (TX Matrix Plus Router) on page 1182</a> <a href="#">show system virtual-memory   display xml on page 1185</a> <a href="#">show system virtual-memory (QFX Series) on page 1208</a>
Output Fields	<a href="#">Table 62 on page 1176</a> lists the output fields for the <code>show system virtual-memory</code> command. Output fields are listed in the approximate order in which they appear.

Table 62: show system virtual-memory Output Fields

Field Name	Field Description
<b>Memory statistics by bucket size</b>	
<b>Size</b>	Memory block size (bytes). The kernel memory allocator appropriates blocks of memory whose size is exactly a power of 2.
<b>In Use</b>	Number of memory blocks of this size that are in use (bytes).
<b>Free</b>	Number of memory blocks of this size that are free (bytes).
<b>Requests</b>	Number of memory allocation requests made.
<b>HighWater</b>	Maximum value the free list can have. Once the system starts reclaiming physical memory, it continues until the free list is increased to this value.
<b>Couldfree</b>	Total number of times that the free elements for a bucket size exceed the high-water mark for that bucket size.
<b>Memory usage type by bucket size</b>	
<b>Size</b>	Memory block size (bytes).
<b>Type(s)</b>	Kernel modules that are using these memory blocks. For a definition of each type, refer to a FreeBSD book.
<b>Memory statistics by type</b>	
<b>Type</b>	Kernel module that is using dynamic memory.
<b>InUse</b>	Number of memory blocks used by this type. The number is rounded up.
<b>MemUse</b>	Amount of memory in use, in kilobytes (KB).
<b>HighUse</b>	Maximum memory ever used by this type.
<b>Limit</b>	Maximum memory that can be allocated to this type.
<b>Requests</b>	Total number of dynamic memory allocation requests this type has made.
<b>Type Limit</b>	Number of times requests were blocked for reaching the maximum limit.
<b>Kern Limit</b>	Number of times requests were blocked for the kernel map.
<b>Size(s)</b>	Memory block sizes this type is using.
<b>Memory Totals</b>	
<b>In Use</b>	Total kernel dynamic memory in use (bytes, rounded up).
<b>Free</b>	Total kernel dynamic memory free (bytes, rounded up).

Table 62: show system virtual-memory Output Fields (*continued*)

Field Name	Field Description
<b>Requests</b>	Total number of memory allocation requests.
<b>ITEM</b>	Kernel module that is using memory.
<b>Size</b>	Memory block size (bytes).
<b>Limit</b>	Maximum memory that can be allocated to this type.
<b>Used</b>	Number of memory blocks used by this type. The number is rounded up.
<b>Free</b>	Number of memory blocks available to this type.
<b>Requests</b>	Total number of memory allocation requests this type has made.
<b>interrupt</b>	Timer events and scheduling interruptions.
<b>total</b>	Total number of interruptions for each type.
<b>rate</b>	Interruption rate.
<b>Total</b>	Total for all interruptions.

## Sample Output

### show system virtual-memory

```

user@host> show system virtual-memory
Memory statistics by bucket size
Size    In Use    Free    Requests  HighWater  Couldfree
16      906      118     154876    1280       0
32      455      313     209956    640        0
64      4412     260     75380     320        20
128     3200     32      19361     160        81
256     1510     10      8844      80         4
512     446      2        5085      40         0
1K      18       2        5901      20         0
2K     1128     2        4445      10        1368
4K      185      1         456       5          0
8K       5       1        2653      5          0
16K     181      0         233       5          0
32K       2      0        1848      5          0
64K      20      0         22        5          0
128K      5      0          5        5          0
256K      2      0          2        5          0
512K      1      0          1        5          0

Memory usage type by bucket size
Size    Type(s)
16    uc_devlist, nexusdev, iftable, temp, devbuf, atexit, COS, BPF,
      DEVFS mount, DEVFS node, vnodes, mount, pcb, soname, proc-args, kld,
      MD disk, rman, ATA generic, bus, sysctl, ippool, pfestat, ifstate,

```

```

pfe_ipc, mkey, rtable, ifmaddr, ipfw, rnode
32 atkbddev, dirrem, mkdir, diradd, freefile, freefrag, indirdep,
bmsafemap, newblk, temp, devbuf, COS, vnodes, cluster_save buffer,
pcb, soname, proc-args, sigio, kld, Gzip trees, taskqueue, SWAP,
eventhandler, bus, sysctl, uidinfo, subproc, pgrp, pfestat, itable32,
ifstate, pfe_ipc, mkey, rtable, ifmaddr, ipfw, rnode, rtnexthop
64 isadev, iftable, MFS node, allocindir, allocdirect, pagedep, temp,
devbuf, lockf, COS, NULLFS hash, DEVFS name, vnodes,
cluster_save buffer, vfscache, pcb, soname, proc-args, file,
AR driver, AD driver, Gzip trees, rman, eventhandler, bus, sysctl,
subproc, pfestat, pic, ifstate, pfe_ipc, mkey, ifaddr, rtable, ipfw
128 ZONE, freeblks, inodedep, temp, devbuf, zombie, COS, DEVFS node,
vnodes, mount, vfscache, pcb, soname, proc-args, ttys, dev_t,
timecounter, kld, Gzip trees, ISOFS node, bus, uidinfo, cred,
session, pic, itable16, ifstate, pfe_ipc, rtable, ifstat, metrics,
rtnexthop, iffamily
256 iflogical, iftable, MFS node, FFS node, newblk, temp, devbuf,
NFS daemon, vnodes, proc-args, kqueue, file desc, Gzip trees, bus,
subproc, itable16, ifstate, pfe_ipc, sysctl, rtnexthop
512 UFS mount, temp, devbuf, mount, BIO buffer, ptys, ttys, AR driver,
Gzip trees, ISOFS mount, msg, ioctlops, ATA generic, bus, proc,
pfestat, lr, ifstate, pfe_ipc, rtable, ipfw, ifstat, rtnexthop
1K iftable, temp, devbuf, NQ NFS Lease, kqueue, kld, AD driver,
Gzip trees, sem, MD disk, bus, ifstate, pfe_ipc, ipfw
2K uc_devlist, UFS mount, temp, devbuf, BIO buffer, pcb, AR driver,
Gzip trees, ioctlops, bus, ipfw, ifstat, rcache
4K memdesc, iftable, UFS mount, temp, devbuf, kld, Gzip trees, sem, msg
8K temp, devbuf, syncache, Gzip trees
16K indirdep, temp, devbuf, shm, msg
32K pagedep, kld, Gzip trees
64K VM pgdata, devbuf, MSDOSFS mount
128K UFS ihash, inodedep, NFS hash, kld, ISOFS mount
256K mbuf, vfscache
512K SWAP

```

Memory statistics by type					Type	Kern		
Type	InUse	MemUse	HighUse	Limit	Requests	Limit	Limit	Size(s)
isadev	13	1K	1K127753K	13	0	0	0	64
atkbddev	2	1K	1K127753K	2	0	0	0	32
uc_devlist	24	3K	3K127753K	24	0	0	0	16,2K
nexusdev	3	1K	1K127753K	3	0	0	0	16
memdesc	1	4K	4K127753K	1	0	0	0	4K
mbuf	1	152K	152K127753K	1	0	0	0	256K
iflogical	6	2K	2K127753K	6	0	0	0	256
iftable	17	9K	9K127753K	18	0	0	0	16,64,256,1K,4K
ZONE	15	2K	2K127753K	15	0	0	0	128
VM pgdata	1	64K	64K127753K	1	0	0	0	64K
UFS mount	12	26K	26K127753K	12	0	0	0	512,2K,4K
UFS ihash	1	128K	128K127753K	1	0	0	0	128K
MFS node	6	2K	3K127753K	35	0	0	0	64,256
FFS node	906	227K	227K127753K	1352	0	0	0	256
dirrem	0	0K	4K127753K	500	0	0	0	32
mkdir	0	0K	1K127753K	38	0	0	0	32
diradd	0	0K	6K127753K	521	0	0	0	32
freefile	0	0K	4K127753K	374	0	0	0	32
freeblks	0	0K	8K127753K	219	0	0	0	128
freefrag	0	0K	1K127753K	193	0	0	0	32
allocindir	0	0K	25K127753K	1518	0	0	0	64
indirdep	0	0K	17K127753K	76	0	0	0	32,16K
allocdirect	0	0K	10K127753K	760	0	0	0	64
bmsafemap	0	0K	1K127753K	72	0	0	0	32

newblk	1	1K	1K127753K	2279	0	0	32,256
inodedep	1	128K	175K127753K	2367	0	0	128,128K
pagedep	1	32K	33K127753K	47	0	0	64,32K
temp	1239	92K	96K127753K	8364	0	0	16,32,64K
devbuf	1413	5527K	5527K127753K	1535	0	0	16,32,64,128,256
lockf	38	3K	3K127753K	2906	0	0	64
atexit	1	1K	1K127753K	1	0	0	16
zombie	0	0K	2K127753K	3850	0	0	128
NFS hash	1	128K	128K127753K	1	0	0	128K
NQNFS Lease	1	1K	1K127753K	1	0	0	1K
NFS daemon	1	1K	1K127753K	1	0	0	256
syncache	1	8K	8K127753K	1	0	0	8K
COS	353	44K	44K127753K	353	0	0	16,32,64,128
BPF	189	3K	3K127753K	189	0	0	16
MSDOSFS mount	1	64K	64K127753K	1	0	0	64K
NULLFS hash	1	1K	1K127753K	1	0	0	64
DEVFS mount	2	1K	1K127753K	2	0	0	16
DEVFS name	487	31K	31K127753K	487	0	0	64
DEVFS node	471	58K	58K127753K	479	0	0	16,128
vnodes	28	7K	7K127753K	429	0	0	16,32,64,128,256
mount	15	8K	8K127753K	18	0	0	16,128,512
cluster_save buffer	0	0K	1K127753K	55	0	0	32,64
vfscache	1898	376K	376K127753K	3228	0	0	64,128,256K
BIO buffer	49	98K	398K127753K	495	0	0	512,2K
pcb	159	16K	17K127753K	399	0	0	16,32,64,128,2K
soname	82	10K	10K127753K	42847	0	0	16,32,64,128
proc-args	57	2K	3K127753K	2105	0	0	16,32,64,128,256
ptys	32	16K	16K127753K	32	0	0	512
ttys	254	33K	33K127753K	522	0	0	128,512
kqueue	5	3K	4K127753K	23	0	0	256,1K
sigio	1	1K	1K127753K	27	0	0	32
file	383	24K	24K127753K	16060	0	0	64
file desc	76	19K	20K127753K	3968	0	0	256
shm	1	12K	12K127753K	1	0	0	16K
dev_t	286	36K	36K127753K	286	0	0	128
timecounter	10	2K	2K127753K	10	0	0	128
kld	11	117K	122K127753K	34	0	0	16,32,128,1K,4K
AR driver	1	1K	3K127753K	5	0	0	64,512,2K
AD driver	2	2K	3K127753K	2755	0	0	64,1K
Gzip trees	0	0K	46K127753K	133848	0	0	32,64,128,256
ISOFS node	1136	142K	142K127753K	1189	0	0	128
ISOFS mount	9	132K	132K127753K	10	0	0	512,128K
sem	3	6K	6K127753K	3	0	0	1K,4K
MD disk	2	2K	2K127753K	2	0	0	16,1K
msg	4	25K	25K127753K	4	0	0	512,4K,16K
rman	59	4K	4K127753K	461	0	0	16,64
ioctlops	0	0K	2K127753K	992	0	0	512,2K
taskqueue	2	1K	1K127753K	2	0	0	32
SWAP	2	413K	413K127753K	2	0	0	32,512K
ATA generic	6	3K	3K127753K	6	0	0	16,512
eventhandler	17	1K	1K127753K	17	0	0	32,64
bus	340	30K	31K127753K	794	0	0	16,32,64,128,256
sysctl	0	0K	1K127753K	130262	0	0	16,32,64
uidinfo	4	1K	1K127753K	10	0	0	32,128
cred	22	3K	3K127753K	3450	0	0	128
subproc	156	10K	10K127753K	7882	0	0	32,64,256
proc	2	1K	1K127753K	2	0	0	512
session	12	2K	2K127753K	34	0	0	128
pgrp	16	1K	1K127753K	45	0	0	32
ippool	1	1K	1K127753K	1	0	0	16
pfestat	0	0K	1K127753K	47349	0	0	16,32,64,512

pic	5	1K	1K127753K	5	0	0	64,128
lr	1	1K	1K127753K	1	0	0	512
itable32	110	4K	4K127753K	110	0	0	32
itable16	161	26K	26K127753K	161	0	0	128,256
ifstate	694	159K	160K127753K	1735	0	0	16,32,64,128,1K
pfe_ipc	0	0K	1K127753K	56218	0	0	16,32,64,128,1K
mkey	250	4K	4K127753K	824	0	0	16,32,64
ifaddr	9	1K	1K127753K	9	0	0	64
sysctl	0	0K	1K127753K	30	0	0	256
rtable	49	6K	6K127753K	307	0	0	16,32,64,128,512
ifmaddr	22	1K	1K127753K	22	0	0	16,32
ipfw	23	10K	10K127753K	48	0	0	16,32,64,512,2K
ifstat	698	805K	805K127753K	698	0	0	128,512,2K
rcache	4	8K	8K127753K	4	0	0	2K
rnode	27	1K	1K127753K	285	0	0	16,32
metrics	1	1K	1K127753K	3	0	0	128
rtnexthop	57	9K	9K127753K	312	0	0	32,128,256,512
iffamily	12	2K	2K127753K	12	0	0	128

Memory Totals: In Use Free Requests  
9311K 54K 489068

ITEM	SIZE	LIMIT	USED	FREE	REQUESTS
PIPE:	192,	0,	4,	81,	4422
SWAPMETA:	160,	95814,	0,	0,	0
unpcb:	160,	0,	114,	36,	279
ripcb:	192,	25330,	5,	37,	5
syncache:	128,	15359,	0,	64,	5
tcpcb:	576,	25330,	23,	12,	32
udpcb:	192,	25330,	14,	28,	255
socket:	256,	25330,	246,	26,	819
KNOTE:	96,	0,	27,	57,	71
NFSNODE:	352,	0,	0,	0,	0
NFSMOUNT:	544,	0,	0,	0,	0
VNODE:	224,	0,	2778,	43,	2778
NAMEI:	1024,	0,	0,	8,	40725
VMSPACE:	192,	0,	57,	71,	3906
PROC:	448,	0,	73,	17,	3923
DP fakepg:	64,	0,	0,	0,	0
PV ENTRY:	28,	499566,	44530,	152053,	1525141
MAP ENTRY:	48,	0,	1439,	134,	351075
KMAP ENTRY:	48,	35645,	179,	119,	10904
MAP:	108,	0,	7,	3,	7
VM OBJECT:	92,	0,	2575,	109,	66912

792644 cpu context switches  
9863474 device interrupts  
286510 software interrupts  
390851 traps  
3596829 system calls  
16 kernel threads created  
3880 fork() calls  
27 vfork() calls  
0 rfork() calls  
0 swap pager pageins  
0 swap pager pages paged in  
0 swap pager pageouts  
0 swap pager pages paged out  
380 vnode pager pageins  
395 vnode pager pages paged in  
122 vnode pager pageouts



```

1476 vnode pager pages paged out
    0 page daemon wakeups
    0 pages examined by the page daemon
101 pages reactivated
161722 copy-on-write faults
    0 copy-on-write optimized faults
84623 zero fill pages zeroed
83063 zero fill pages prezeroed
    7 intransit blocking page faults
535606 total VM faults taken
    0 pages affected by kernel thread creation
238254 pages affected by fork()
    2535 pages affected by vfork()
    0 pages affected by rfork()
283379 pages freed
    0 pages freed by daemon
190091 pages freed by exiting processes
17458 pages active
29166 pages inactive
    0 pages in VM cache
10395 pages wired down
134610 pages free
    4096 bytes per page
183419 total name lookups
    cache hits (90% pos + 7% neg) system 0% per-directory
    deletions 0%, falsehits 0%, toolong 0%

interrupt          total          rate
ata0 irq14         113338           3
mux irq7           727643          21
fxp1 irq10        1178671          34
sio0 irq4           833             0
clk irq0          3439769          99
rtc irq8          4403221         127
Total             9863475         286

Kernel direct memory map:
    4423 pages used
    4057340 pages maximum

```

*Note:* Kernel direct memory map only displays for 64 bit platform.

### show system virtual-memory scc (TX Matrix Router)

```
user@host> show system virtual-memory scc
```

```

Memory statistics by bucket size
Size  In Use  Free  Requests  HighWater  Couldfree
16    898    126   749493    1280       0
32    2018   1310  980643    640       632
64    3490   13342 935420    320       5365
...

Memory usage type by bucket size
Size  Type(s)
16    uc_devlist, COS, BPF, DEVFS mount, DEVFS node, vnodes, mount, pcb,
      soname, rman, bus, sysctl, ifstate, pfe_ipc, mkey, socket, rtable,
      ifmaddr, ipfw, rnode, iftable, temp, devbuf, atexit, proc-args, kld,
      MD disk
32    atkbddev, Gzip trees, dirrem, mkdir, diradd, freefile, freefrag,
      indirdep, bmsafemap, newblk, tseg_qent, COS, vnodes,

```

...

```

Memory statistics by type
      Type InUse MemUse HighUse Limit Requests Limit Limit Size(s)
      isadev 12 1K 1K166400K 12 0 0 64
      atkbdev 2 1K 1K166400K 2 0 0 32
      uc_devlist 24 3K 3K166400K 24 0 0 16,2K
      ....

```

```

Memory Totals: In Use      Free      Requests
                6091K      1554K      2897122

```

### show system virtual-memory sfc (TX Matrix Plus Router)

```

user@host> show system virtual-memory sfc 0
sfc0-re0:

```

```

-----
      Type InUse MemUse HighUse Requests Size(s)
CAM dev queue 1 1K - 1 64
  entropy 1024 64K - 1024 64
  linker 487 6272K - 1163 16,32,64,4096,32768,131072
  USB 127 10K - 127 16,32,64,128,256,1024,2048
  lockf 46 3K - 98418 64
  USBdev 10 2K - 34 16,128,2048,16384
ifstateSLLNode 0 0K - 1096 16
  devbuf 21243 15683K - 21810
16,32,64,128,256,512,1024,2048,4096,8192,16384,32768,65536,131072
  temp 1283 151K - 2483472
16,32,64,128,256,512,2048,4096,8192,16384,32768,65536,131072
  ip6ndp 0 0K - 4 64
  in6ifmulti 1 1K - 1 64
  in6grentry 1 1K - 1 64
  iflogical 20 5K - 29 2048
  iffamilly 45 6K - 69 32,1024,2048
  rtnexthop 266 46K - 608013 32,256,512,1024,2048,4096
  metrics 31 4K - 54 256
  rnode 212 4K - 607848 16,32
  rcache 4 8K - 4 65536
  iflist 0 0K - 6 16,64
  ifdevice 11 8K - 17 16,32768
  ifstat 424 472K - 427 512,16384,65536
  ipfw 42 23K - 145
16,32,64,128,256,512,1024,16384,32768,65536,131072
  ifmaddr 415 11K - 415 16,32
  rtable 329 28K - 608066 16,32,64,128,1024,16384
  sysctl 0 0K - 887976 16,32,64,4096,16384,32768
  ifaddr 64 5K - 70 32,64,128
  mkey 331 6K - 12528 16,128
  pfe_ipc 0 0K - 7299115
16,32,64,128,256,512,1024,2048,4096,8192,16384,32768,65536,131072
  ifstate 1245054 70088K - 3040437
16,32,64,128,256,512,1024,2048,4096,8192,16384,32768
  idxbucket 1 1K - 1 16
  itable16 5069 1250K - 5103 1024,4096
  itable32 157 10K - 157 64
  itable64 2 1K - 2 128
  lr 1 1K - 4 16384
  pic 37 6K - 37 64,16384
  pfestat 0 0K - 6220 32,64,128,256,131072
  gencfg 1486 424K - 2614 16,32,64,256,512,16384,32768,65536

```

```

        jsr      2      1K      -      22  16
        idl      1      4K      -      165
32, 64, 128, 256, 512, 1024, 2048, 8192, 16384, 32768, 65536, 131072
        rtmsg    0      0K      -      16  131072
        module  250     16K      -      250  64, 128
        mtx_pool 1       8K      -       1  64, 128
        DEVFS3   113    13K      -      114  256
        DEVFS1   106    24K      -      106  2048
        pgrp     15     1K      -      8600 64
        session  11     2K      -      2829 512
        proc      2     1K      -       2  16384
        subproc  296    572K     -     24689 2048, 131072
        cred      38     5K      -    619244 256
        plimit   18     4K      -     21311 2048
        uidinfo   3     1K      -       10  32, 512
        sysctluid 2701    82K     -     2701  16, 32, 64
        sysctltmp 0       0K      -     15572  16, 32, 64, 1024
        umtx     171    11K      -      171  64
        SWAP      2    277K      -       2  64
        bus      779   125K     -     3072  16, 32, 64, 128, 32768
        bus-sc    67     62K     -     1477
16, 32, 64, 512, 1024, 2048, 8192, 16384, 65536, 131072
        devstat   8     17K      -       8  16, 131072
        eventhandler 46     2K      -      47  32, 128
        kobj      93   186K      -     111  65536
        DEVFS      8     1K      -       9  16, 64
        rman     106     7K      -      490  16, 32, 64
        sbuf       0     0K      -     28234  16, 32, 32768, 131072

```

...

lcc0-re0:

```

-----
      Type InUse MemUse HighUse Requests Size(s)
CAM dev queue    1     1K      -       1  64
      entropy  1024    64K      -    1024  64
      linker   487   6272K     -    1163  16, 32, 64, 4096, 32768, 131072
      USB     127    10K      -     127  16, 32, 64, 128, 256, 1024, 2048
      lockf    23     2K      -   169585  64
      USBdev   10     2K      -       34  16, 128, 2048, 16384
      devbuf   5128  10760K     -     5310
16, 32, 64, 128, 256, 512, 1024, 2048, 4096, 8192, 16384, 32768, 65536, 131072
      temp    1285    151K     -    10770
16, 32, 64, 128, 256, 512, 2048, 4096, 8192, 16384, 32768, 65536, 131072
      ip6ndp    0     0K      -       4  64
      iflogical 20     5K      -      29  2048
      iffamilly 45     6K      -      69  32, 1024, 2048
      rtnexthop 189    29K      -  1211988  32, 256, 512, 1024, 2048, 4096
      metrics   11     2K      -       16  256
      rnode    135     3K      -    606391  16, 32
      rcache     4     8K      -       4  65536
      iflist     0     0K      -       6  16, 64
      ifdevice  11     8K      -      17  16, 32768
      ifstat   412   471K      -     415  512, 16384, 65536
      ipfw      42    23K      -       91
16, 32, 64, 128, 256, 512, 1024, 16384, 32768, 65536, 131072
      ifmaddr  415    11K      -      415  16, 32
      rtable   225    20K      -    606584  16, 32, 64, 128, 1024, 16384
      sysctl     0     0K      -  2302479  16, 32, 64
      ifaddr    53     4K      -       69  32, 64, 128
      mkey     133     3K      -     8974  16, 128
      pfe_ipc    0     0K      -   19035108
16, 32, 64, 128, 512, 1024, 2048, 8192, 16384, 32768, 65536, 131072

```

ifstate	710270	42176K	-	9583703	
16,32,64,128,256,512,1024,2048,8192,16384,32768					
idxbucket	1	1K	-	1	16
itable16	5045	1245K	-	1825178	1024,4096
itable32	157	10K	-	157	64
itable64	2	1K	-	2	128
lir	1	1K	-	4	16384
pic	37	6K	-	37	64,16384
pfestat	0	0K	-	1682	32,64,128,256,131072
gencfg	1486	424K	-	2812	16,32,64,256,512,16384,32768,65536
jsr	0	0K	-	22	16
idl	0	0K	-	4	32768,131072
rtmsg	0	0K	-	3	131072
module	250	16K	-	250	64,128
mtx_pool	1	8K	-	1	64,128
DEVFS3	108	12K	-	109	256
DEVFS1	101	23K	-	101	2048
pgrp	5	1K	-	917	64
session	5	1K	-	917	512
proc	2	1K	-	2	16384
subproc	217	441K	-	4867	2048,131072
cred	21	3K	-	48719	256
plimit	9	2K	-	5255	2048
uidinfo	2	1K	-	2	32,512
sysctluid	2786	85K	-	2786	16,32,64
sysctltmp	0	0K	-	1833	16,32,64,1024
umtx	126	8K	-	126	64
SWAP	2	277K	-	2	64
bus	780	125K	-	2734	16,32,64,128,32768
bus-sc	69	69K	-	1194	
16,32,64,512,1024,2048,8192,16384,65536,131072					
devstat	8	17K	-	8	16,131072
eventhandler	45	2K	-	46	32,128
kobj	93	186K	-	111	65536
DEVFS	8	1K	-	9	16,64
rman	94	6K	-	477	16,32,64
sbuf	0	0K	-	532	16,32,32768,131072
NULLFS hash	1	1K	-	1	64
taskqueue	5	1K	-	5	64
turnstiles	127	8K	-	127	64
Unitno	6	1K	-	44	16,64
ioctlops	0	0K	-	1771718	16,32,64,128,8192,16384,65536,131072
iov	0	0K	-	79425	16,64,128,256,512,1024,2048,131072
msg	4	25K	-	4	32768,131072
sem	4	7K	-	4	16384,32768,131072
shm	2	13K	-	4	32768
ttys	93	16K	-	195	512,32768
soname	31	3K	-	389284	16,32,64,256
pcb	101	16K	-	4374	
16,32,64,128,1024,2048,4096,16384,65536					
BIO buffer	40	80K	-	750	65536
vfscache	1	512K	-	1	65536
cluster_save buffer	0	OK	-	55	32,64
VFS hash	1	256K	-	1	32,64
vnodes	1	1K	-	1	512
mount	266	21K	-	481	16,32,64,128,256,4096,32768
vnodemarker	0	0K	-	2497	16384
pfs_nodes	25	3K	-	25	128
pfs_vncache	144	5K	-	386	32
STP	1	1K	-	1	64

```

      GEOM      173      15K      -      1068
16,32,64,128,256,512,2048,16384,32768,131072
      syncache    1      8K      -      1
16,32,64,128,256,512,2048,16384,32768,131072
      tlv_stat    0      0K      -      223
16,32,64,128,256,512,2048,16384,32768,131072
      NFS daemon  1      8K      -      1
16,32,64,128,256,512,2048,16384,32768,131072
      p1003.1b    1      1K      -      1  16
      MD disk     9      18K     -      9  65536
      ata_generic 2      2K      -      25  16,16384,32768
      ISOFS mount  7      1K      -      13  512
      ISOFS node  1439    135K    -      1453 128
      CAM SIM      1      1K      -      1  64
      CAM XPT      6      1K      -      9  16,64,16384
      CAM periph   1      1K      -      1  128
      ad_driver    2      1K      -      2  256
      pagedep      1      64K     -      105 64
      inodedep     1      256K    -      552 256
      newblk       1      1K      -      327 64,4096
      bmsafemap    0      0K      -      19  64
      allocdirect  0      0K      -      326 128
      freefrag     0      0K      -      31  32
      freeblks     0      0K      -      103 2048
      freefile     0      0K      -      175 32
      diradd       0      0K      -      590 64
      mkdir       0      0K      -      166 32
      dirrem       0      0K      -      382 32
      savedino     0      0K      -      283 512
      UFS mount    15      36K     -      15  2048,65536,131072
      ata_dma      6      1K      -      6  256
      UMAHash      1      4K      -      5  4096,16384,32768,65536,131072
      cdev         26      3K      -      26  256
      file desc    111     25K     -      5199 16,1024,2048,16384
      VM pgdata    2      65K     -      2  64
      sigio        1      1K      -      27  32
      kenv         30      5K      -      33  16,32,64,131072
      atkbddev     2      1K      -      2  32
      kqueue       0      0K      -      88  1024,4096,32768
      proc-args    28      2K      -      3970 32,64,128,256,512,1024
      isadev       23      2K      -      23  64
      zombie       1      1K      -      4651 128
      ithread      92      7K      -      92  16,64,256
      legacydrv    3      1K      -      3  16
      memdesc      1      4K      -      1  131072
      nexusdev     2      1K      -      2  16
      CAM queue    3      1K      -      3  16
      KTRACE       100     10K     -      100 128
      kbdmux       5      9K      -      5  128,2048,65536,131072
ITEM      SIZE      LIMIT      USED      FREE  REQUESTS
UMA Kegs:  136,      0,      71,      1,      71
...
```

### show system virtual-memory | display xml

```

user@host> show system virtual-memory | display xml
<rpc-reply xmlns:junos="http://xml.juniper.net/junos/10.2R1/junos">
  <system-virtual-memory-information>
    <vmstat-memstat-malloc>
      <memstat-name>CAM dev queue</memstat-name>
      <inuse>1</inuse>
    
```

```
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>1</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>entropy</memstat-name>
<inuse>1024</inuse>
<memuse>64</memuse>
<high-use>--</high-use>
<memstat-req>1024</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>linker</memstat-name>
<inuse>481</inuse>
<memuse>1871</memuse>
<high-use>--</high-use>
<memstat-req>1145</memstat-req>
<memstat-size>16,32,64,4096,32768,131072</memstat-size>
<memstat-name>lockf</memstat-name>
<inuse>56</inuse>
<memuse>4</memuse>
<high-use>--</high-use>
<memstat-req>5998</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>devbuf</memstat-name>
<inuse>2094</inuse>
<memuse>3877</memuse>
<high-use>--</high-use>
<memstat-req>2099</memstat-req>

<memstat-size>16,32,64,128,512,1024,4096,8192,16384,32768,65536,131072</memstat-size>

<memstat-name>temp</memstat-name>
<inuse>21</inuse>
<memuse>66</memuse>
<high-use>--</high-use>
<memstat-req>3127</memstat-req>

<memstat-size>16,32,64,128,256,512,2048,4096,8192,16384,32768,65536,131072</memstat-size>

<memstat-name>ip6ndp</memstat-name>
<inuse>0</inuse>
<memuse>0</memuse>
<high-use>--</high-use>
<memstat-req>4</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>in6ifmulti</memstat-name>
<inuse>1</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>1</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>in6grenty</memstat-name>
<inuse>1</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>1</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>iflogical</memstat-name>
<inuse>13</inuse>
<memuse>3</memuse>
<high-use>--</high-use>
<memstat-req>13</memstat-req>
```

```

<memstat-size>64,2048</memstat-size>
<memstat-name>iffamily</memstat-name>
<inuse>28</inuse>
<memuse>4</memuse>
<high-use>--</high-use>
<memstat-req>28</memstat-req>
<memstat-size>32,1024,2048</memstat-size>
<memstat-name>rtnexthop</memstat-name>
<inuse>127</inuse>
<memuse>18</memuse>
<high-use>--</high-use>
<memstat-req>129</memstat-req>
<memstat-size>32,256,512,1024,2048,4096</memstat-size>
<memstat-name>metrics</memstat-name>
<inuse>3</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>5</memstat-req>
<memstat-size>256</memstat-size>
<memstat-name>inifmulti</memstat-name>
<inuse>3</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>3</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>ingrentry</memstat-name>
<inuse>6</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>6</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>rnode</memstat-name>
<inuse>68</inuse>
<memuse>2</memuse>
<high-use>--</high-use>
<memstat-req>76</memstat-req>
<memstat-size>16,32</memstat-size>
<memstat-name>rcache</memstat-name>
<inuse>4</inuse>
<memuse>8</memuse>
<high-use>--</high-use>
<memstat-req>4</memstat-req>
<memstat-size>65536</memstat-size>
<memstat-name>ifdevice</memstat-name>
<inuse>4</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>4</memstat-req>
<memstat-size>16</memstat-size>
<memstat-name>ifstat</memstat-name>
<inuse>40</inuse>
<memuse>22</memuse>
<high-use>--</high-use>
<memstat-req>40</memstat-req>
<memstat-size>512,16384,32768</memstat-size>
<memstat-name>ipfw</memstat-name>
<inuse>42</inuse>
<memuse>23</memuse>
<high-use>--</high-use>
<memstat-req>91</memstat-req>

```

```
<memstat-size>16,32,64,128,256,512,1024,16384,32768,65536,131072</memstat-size>
  <memstat-name>ifmaddr</memstat-name>
  <inuse>103</inuse>
  <memuse>3</memuse>
  <high-use>--</high-use>
  <memstat-req>103</memstat-req>
  <memstat-size>16,32</memstat-size>
  <memstat-name>rtable</memstat-name>
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    <intr-cnt>1140</intr-cnt>
    <intr-rate>0</intr-rate>
    <intr-name>irq8: rtc         </intr-name>
    <intr-cnt>159164</intr-cnt>
    <intr-rate>127</intr-rate>
    <intr-name>irq9: cbb1 fxp0   </intr-name>
    <intr-cnt>28490</intr-cnt>
    <intr-rate>22</intr-rate>
    <intr-name>irq10: fxp1       </intr-name>
    <intr-cnt>20593</intr-cnt>
    <intr-rate>16</intr-rate>
    <intr-name>irq14: ata0       </intr-name>
    <intr-cnt>5031</intr-cnt>
    <intr-rate>4</intr-rate>
    <intr-name>Total</intr-name>
    <intr-cnt>1457873</intr-cnt>
    <intr-rate>1171</intr-rate>
</vmstat-intr>
<vm-kernel-state>
    <vm-kmem-map-free>248524800</vm-kmem-map-free>
</vm-kernel-state>
<kernel-direct-mm-size-information>
    <vm-directmm-size-used>4644</vm-directmm-size-used>
    <vm-directmm-size-max>4057334</vm-directmm-size-max>
</kernel-direct-mm-size-information>
</system-virtual-memory-information>
<cli>
    <banner></banner>
</cli>
</rpc-reply>

```

*Note:* <kernel-direct-mm-size-information> only displays for 64 bit platform.

**show system virtual-memory (QFX Series)**

```

user@switch> show system virtual-memory | display xml
<rpc-reply xmlns:junos="http://xml.juniper.net/junos/11.1R1/junos">
  <system-virtual-memory-information>
    <vmstat-memstat-malloc>
      <memstat-name>CAM dev queue</memstat-name>
      <inuse>1</inuse>
      <memuse>1</memuse>
      <high-use>-</high-use>
      <memstat-req>1</memstat-req>
      <memstat-size>64</memstat-size>
      <memstat-name>entropy</memstat-name>
      <inuse>1024</inuse>
      <memuse>64</memuse>
      <high-use>-</high-use>
      <memstat-req>1024</memstat-req>
      <memstat-size>64</memstat-size>
      <memstat-name>linker</memstat-name>
      <inuse>481</inuse>
      <memuse>1871</memuse>
      <high-use>-</high-use>
      <memstat-req>1145</memstat-req>
      <memstat-size>16, 32, 64, 4096, 32768, 131072</memstat-size>
      <memstat-name>lockf</memstat-name>
      <inuse>56</inuse>
      <memuse>4</memuse>
      <high-use>-</high-use>
      <memstat-req>5998</memstat-req>
      <memstat-size>64</memstat-size>
      <memstat-name>devbuf</memstat-name>
      <inuse>2094</inuse>
      <memuse>3877</memuse>
      <high-use>-</high-use>
      <memstat-req>2099</memstat-req>

      <memstat-size>16, 32, 64, 128, 512, 1024, 4096, 8192, 16384, 32768, 65536, 131072</memstat-size>

      <memstat-name>temp</memstat-name>
      <inuse>21</inuse>
      <memuse>66</memuse>
      <high-use>-</high-use>
      <memstat-req>3127</memstat-req>

      <memstat-size>16, 32, 64, 128, 256, 512, 2048, 4096, 8192, 16384, 32768, 65536, 131072</memstat-size>

      <memstat-name>ip6ndp</memstat-name>
      <inuse>0</inuse>
      <memuse>0</memuse>
      <high-use>-</high-use>
      <memstat-req>4</memstat-req>
      <memstat-size>64</memstat-size>
      <memstat-name>in6ifmulti</memstat-name>
      <inuse>1</inuse>
      <memuse>1</memuse>
      <high-use>-</high-use>
      <memstat-req>1</memstat-req>
      <memstat-size>64</memstat-size>
      <memstat-name>in6grentry</memstat-name>
      <inuse>1</inuse>
      <memuse>1</memuse>

```

```

<high-use>--</high-use>
<memstat-req>1</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>iflogical</memstat-name>
<inuse>13</inuse>
<memuse>3</memuse>
<high-use>--</high-use>
<memstat-req>13</memstat-req>
<memstat-size>64,2048</memstat-size>
<memstat-name>iffamily</memstat-name>
<inuse>28</inuse>
<memuse>4</memuse>
<high-use>--</high-use>
<memstat-req>28</memstat-req>
<memstat-size>32,1024,2048</memstat-size>
<memstat-name>rtnextthop</memstat-name>
<inuse>127</inuse>
<memuse>18</memuse>
<high-use>--</high-use>
<memstat-req>129</memstat-req>
<memstat-size>32,256,512,1024,2048,4096</memstat-size>
<memstat-name>metrics</memstat-name>
<inuse>3</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>5</memstat-req>
<memstat-size>256</memstat-size>
<memstat-name>inifmulti</memstat-name>
<inuse>3</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>3</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>ingrentry</memstat-name>
<inuse>6</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>6</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>rnode</memstat-name>
<inuse>68</inuse>
<memuse>2</memuse>
<high-use>--</high-use>
<memstat-req>76</memstat-req>
<memstat-size>16,32</memstat-size>
<memstat-name>rcache</memstat-name>
<inuse>4</inuse>
<memuse>8</memuse>
<high-use>--</high-use>
<memstat-req>4</memstat-req>
<memstat-size>65536</memstat-size>
<memstat-name>ifdevice</memstat-name>
<inuse>4</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>4</memstat-req>
<memstat-size>16</memstat-size>
<memstat-name>ifstat</memstat-name>
<inuse>40</inuse>
<memuse>22</memuse>
<high-use>--</high-use>

```

```
<memstat-req>40</memstat-req>
<memstat-size>512,16384,32768</memstat-size>
<memstat-name>ipfw</memstat-name>
<inuse>42</inuse>
<memuse>23</memuse>
<high-use>--</high-use>
<memstat-req>91</memstat-req>

<memstat-size>16,32,64,128,256,512,1024,16384,32768,65536,131072</memstat-size>
<memstat-name>ifmaddr</memstat-name>
<inuse>103</inuse>
<memuse>3</memuse>
<high-use>--</high-use>
<memstat-req>103</memstat-req>
<memstat-size>16,32</memstat-size>
<memstat-name>rtable</memstat-name>
<inuse>129</inuse>
<memuse>14</memuse>
<high-use>--</high-use>
<memstat-req>139</memstat-req>
<memstat-size>16,32,64,128,1024,16384</memstat-size>
<memstat-name>sysctl</memstat-name>
<inuse>0</inuse>
<memuse>0</memuse>
<high-use>--</high-use>
<memstat-req>14847</memstat-req>
<memstat-size>16,32,64,4096,16384,32768</memstat-size>
<memstat-name>ifaddr</memstat-name>
<inuse>29</inuse>
<memuse>3</memuse>
<high-use>--</high-use>
<memstat-req>29</memstat-req>
<memstat-size>64,128</memstat-size>
<memstat-name>mkey</memstat-name>
<inuse>345</inuse>
<memuse>6</memuse>
<high-use>--</high-use>
<memstat-req>2527</memstat-req>
<memstat-size>16,128</memstat-size>
<memstat-name>pfe_ipc</memstat-name>
<inuse>0</inuse>
<memuse>0</memuse>
<high-use>--</high-use>
<memstat-req>1422</memstat-req>

<memstat-size>16,32,64,128,512,1024,2048,8192,16384,32768,65536,131072</memstat-size>

<memstat-name>ifstate</memstat-name>
<inuse>594</inuse>
<memuse>51</memuse>
<high-use>--</high-use>
<memstat-req>655</memstat-req>

<memstat-size>16,32,64,128,256,1024,2048,4096,16384,32768</memstat-size>
<memstat-name>itable16</memstat-name>
<inuse>276</inuse>
<memuse>52</memuse>
<high-use>--</high-use>
<memstat-req>294</memstat-req>
<memstat-size>1024,4096</memstat-size>
<memstat-name>itable32</memstat-name>
```

```

<inuse>160</inuse>
<memuse>10</memuse>
<high-use>--</high-use>
<memstat-req>160</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>itable64</memstat-name>
<inuse>2</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>2</memstat-req>
<memstat-size>128</memstat-size>
<memstat-name>lr</memstat-name>
<inuse>1</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>1</memstat-req>
<memstat-size>16384</memstat-size>
<memstat-name>pic</memstat-name>
<inuse>5</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>5</memstat-req>
<memstat-size>64,512</memstat-size>
<memstat-name>pfestat</memstat-name>
<inuse>0</inuse>
<memuse>0</memuse>
<high-use>--</high-use>
<memstat-req>162</memstat-req>
<memstat-size>16,32,128,256,16384</memstat-size>
<memstat-name>gencfg</memstat-name>
<inuse>224</inuse>
<memuse>56</memuse>
<high-use>--</high-use>
<memstat-req>540</memstat-req>
<memstat-size>16,32,64,256,512,32768,65536</memstat-size>
<memstat-name>jsr</memstat-name>
<inuse>2</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>4</memstat-req>
<memstat-size>16</memstat-size>
<memstat-name>idl</memstat-name>
<inuse>0</inuse>
<memuse>0</memuse>
<high-use>--</high-use>
<memstat-req>13</memstat-req>
<memstat-size>16,32,64,128,256,4096,16384,32768,131072</memstat-size>

<memstat-name>rtsmsg</memstat-name>
<inuse>0</inuse>
<memuse>0</memuse>
<high-use>--</high-use>
<memstat-req>2</memstat-req>
<memstat-size>131072</memstat-size>
<memstat-name>module</memstat-name>
<inuse>249</inuse>
<memuse>16</memuse>
<high-use>--</high-use>
<memstat-req>249</memstat-req>
<memstat-size>64,128</memstat-size>
<memstat-name>mtx_pool</memstat-name>

```

```
<inuse>1</inuse>
<memuse>8</memuse>
<high-use>--</high-use>
<memstat-req>1</memstat-req>
<memstat-size>64,128</memstat-size>
<memstat-name>DEVFS3</memstat-name>
<inuse>109</inuse>
<memuse>12</memuse>
<high-use>--</high-use>
<memstat-req>117</memstat-req>
<memstat-size>256</memstat-size>
<memstat-name>DEVFS1</memstat-name>
<inuse>102</inuse>
<memuse>23</memuse>
<high-use>--</high-use>
<memstat-req>109</memstat-req>
<memstat-size>2048</memstat-size>
<memstat-name>pgrp</memstat-name>
<inuse>12</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>21</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>session</memstat-name>
<inuse>8</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>15</memstat-req>
<memstat-size>512</memstat-size>
<memstat-name>proc</memstat-name>
<inuse>2</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>2</memstat-req>
<memstat-size>16384</memstat-size>
<memstat-name>subproc</memstat-name>
<inuse>244</inuse>
<memuse>496</memuse>
<high-use>--</high-use>
<memstat-req>1522</memstat-req>
<memstat-size>2048,131072</memstat-size>
<memstat-name>cred</memstat-name>
<inuse>30</inuse>
<memuse>4</memuse>
<high-use>--</high-use>
<memstat-req>11409</memstat-req>
<memstat-size>256</memstat-size>
<memstat-name>plimit</memstat-name>
<inuse>17</inuse>
<memuse>4</memuse>
<high-use>--</high-use>
<memstat-req>133</memstat-req>
<memstat-size>2048</memstat-size>
<memstat-name>uidinfo</memstat-name>
<inuse>3</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>6</memstat-req>
<memstat-size>32,512</memstat-size>
<memstat-name>sysctluid</memstat-name>
<inuse>1117</inuse>
```



```

<memuse>34</memuse>
<high-use>--</high-use>
<memstat-req>1117</memstat-req>
<memstat-size>16,32,64</memstat-size>
<memstat-name>sysctltmp</memstat-name>
<inuse>0</inuse>
<memuse>0</memuse>
<high-use>--</high-use>
<memstat-req>743</memstat-req>
<memstat-size>16,32,64,1024</memstat-size>
<memstat-name>umtx</memstat-name>
<inuse>144</inuse>
<memuse>9</memuse>
<high-use>--</high-use>
<memstat-req>144</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>SWAP</memstat-name>
<inuse>2</inuse>
<memuse>209</memuse>
<high-use>--</high-use>
<memstat-req>2</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>bus</memstat-name>
<inuse>496</inuse>
<memuse>55</memuse>
<high-use>--</high-use>
<memstat-req>1196</memstat-req>
<memstat-size>16,32,64,128,32768</memstat-size>
<memstat-name>bus-sc</memstat-name>
<inuse>23</inuse>
<memuse>33</memuse>
<high-use>--</high-use>
<memstat-req>335</memstat-req>

<memstat-size>16,32,64,512,1024,2048,8192,16384,65536,131072</memstat-size>
<memstat-name>devstat</memstat-name>
<inuse>10</inuse>
<memuse>21</memuse>
<high-use>--</high-use>
<memstat-req>10</memstat-req>
<memstat-size>16,131072</memstat-size>
<memstat-name>eventhandler</memstat-name>
<inuse>35</inuse>
<memuse>2</memuse>
<high-use>--</high-use>
<memstat-req>36</memstat-req>
<memstat-size>32,128</memstat-size>
<memstat-name>kobj</memstat-name>
<inuse>93</inuse>
<memuse>186</memuse>
<high-use>--</high-use>
<memstat-req>111</memstat-req>
<memstat-size>65536</memstat-size>
<memstat-name>DEVFS</memstat-name>
<inuse>8</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>9</memstat-req>
<memstat-size>16,64</memstat-size>
<memstat-name>rman</memstat-name>
<inuse>71</inuse>

```

```
<memuse>5</memuse>
<high-use>--</high-use>
<memstat-req>433</memstat-req>
<memstat-size>16,32,64</memstat-size>
<memstat-name>sbuf</memstat-name>
<inuse>0</inuse>
<memuse>0</memuse>
<high-use>--</high-use>
<memstat-req>522</memstat-req>
<memstat-size>16,32,32768,131072</memstat-size>
<memstat-name>NULLFS hash</memstat-name>
<inuse>1</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>1</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>taskqueue</memstat-name>
<inuse>5</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>5</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>turnstiles</memstat-name>
<inuse>145</inuse>
<memuse>10</memuse>
<high-use>--</high-use>
<memstat-req>145</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>Unitno</memstat-name>
<inuse>8</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>44</memstat-req>
<memstat-size>16,64</memstat-size>
<memstat-name>iocltops</memstat-name>
<inuse>0</inuse>
<memuse>0</memuse>
<high-use>--</high-use>
<memstat-req>27622</memstat-req>
<memstat-size>16,64,8192,16384,131072</memstat-size>
<memstat-name>iov</memstat-name>
<inuse>0</inuse>
<memuse>0</memuse>
<high-use>--</high-use>
<memstat-req>18578</memstat-req>
<memstat-size>16,64,128,256,512,1024,2048,131072</memstat-size>
<memstat-name>msg</memstat-name>
<inuse>4</inuse>
<memuse>25</memuse>
<high-use>--</high-use>
<memstat-req>4</memstat-req>
<memstat-size>32768,131072</memstat-size>
<memstat-name>sem</memstat-name>
<inuse>4</inuse>
<memuse>7</memuse>
<high-use>--</high-use>
<memstat-req>4</memstat-req>
<memstat-size>16384,32768,131072</memstat-size>
<memstat-name>shm</memstat-name>
<inuse>9</inuse>
<memuse>20</memuse>
```

```

<high-use>--</high-use>
<memstat-req>14</memstat-req>
<memstat-size>32768</memstat-size>
<memstat-name>ttys</memstat-name>
<inuse>321</inuse>
<memuse>61</memuse>
<high-use>--</high-use>
<memstat-req>528</memstat-req>
<memstat-size>512,32768</memstat-size>
<memstat-name>ptys</memstat-name>
<inuse>1</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>1</memstat-req>
<memstat-size>128</memstat-size>
<memstat-name>mbuf_tag</memstat-name>
<inuse>0</inuse>
<memuse>0</memuse>
<high-use>--</high-use>
<memstat-req>23383</memstat-req>
<memstat-size>16</memstat-size>
<memstat-name>soname</memstat-name>
<inuse>115</inuse>
<memuse>12</memuse>
<high-use>--</high-use>
<memstat-req>24712</memstat-req>
<memstat-size>16,32,64,256</memstat-size>
<memstat-name>pcb</memstat-name>
<inuse>216</inuse>
<memuse>33</memuse>
<high-use>--</high-use>
<memstat-req>484</memstat-req>

<memstat-size>16,32,64,128,1024,2048,4096,16384,32768,65536</memstat-size>
<memstat-name>BIO buffer</memstat-name>
<inuse>43</inuse>
<memuse>86</memuse>
<high-use>--</high-use>
<memstat-req>405</memstat-req>
<memstat-size>65536</memstat-size>
<memstat-name>vfscache</memstat-name>
<inuse>1</inuse>
<memuse>256</memuse>
<high-use>--</high-use>
<memstat-req>1</memstat-req>
<memstat-size>65536</memstat-size>
<memstat-name>cluster_save buffer</memstat-name>
<inuse>0</inuse>
<memuse>0</memuse>
<high-use>--</high-use>
<memstat-req>2</memstat-req>
<memstat-size>32,64</memstat-size>
<memstat-name>VFS hash</memstat-name>
<inuse>1</inuse>
<memuse>128</memuse>
<high-use>--</high-use>
<memstat-req>1</memstat-req>
<memstat-size>32,64</memstat-size>
<memstat-name>vnodes</memstat-name>
<inuse>1</inuse>
<memuse>1</memuse>

```

```
<high-use>--</high-use>
<memstat-req>1</memstat-req>
<memstat-size>512</memstat-size>
<memstat-name>mount</memstat-name>
<inuse>290</inuse>
<memuse>23</memuse>
<high-use>--</high-use>
<memstat-req>535</memstat-req>
<memstat-size>16,32,64,128,256,4096,32768</memstat-size>
<memstat-name>vnodemarker</memstat-name>
<inuse>0</inuse>
<memuse>0</memuse>
<high-use>--</high-use>
<memstat-req>498</memstat-req>
<memstat-size>16384</memstat-size>
<memstat-name>pfs_nodes</memstat-name>
<inuse>25</inuse>
<memuse>3</memuse>
<high-use>--</high-use>
<memstat-req>25</memstat-req>
<memstat-size>128</memstat-size>
<memstat-name>pfs_vncache</memstat-name>
<inuse>27</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>53</memstat-req>
<memstat-size>32</memstat-size>
<memstat-name>STP</memstat-name>
<inuse>1</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>1</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>GEOM</memstat-name>
<inuse>146</inuse>
<memuse>11</memuse>
<high-use>--</high-use>
<memstat-req>1042</memstat-req>

<memstat-size>16,32,64,128,256,512,2048,16384,32768,131072</memstat-size>
<memstat-name>syncache</memstat-name>
<inuse>1</inuse>
<memuse>8</memuse>
<high-use>--</high-use>
<memstat-req>1</memstat-req>

<memstat-size>16,32,64,128,256,512,2048,16384,32768,131072</memstat-size>
<memstat-name>tlv_stat</memstat-name>
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```

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<count-limit>0</count-limit>
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<zone-name>KNOTE:</zone-name>
<zone-size>72</zone-size>
<count-limit>0</count-limit>
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<free>64</free>
<zone-req>3311</zone-req>
<zone-name>socket:</zone-name>
<zone-size>412</zone-size>
<count-limit>25191</count-limit>
<used>343</used>
<free>8</free>
<zone-req>2524</zone-req>
<zone-name>unpcb:</zone-name>
<zone-size>140</zone-size>
<count-limit>25200</count-limit>
<used>170</used>
<free>26</free>
<zone-req>2157</zone-req>
<zone-name>ipq:</zone-name>
<zone-size>52</zone-size>
<count-limit>216</count-limit>
<used>0</used>
<free>0</free>
<zone-req>0</zone-req>
<zone-name>udpcb:</zone-name>
<zone-size>232</zone-size>
<count-limit>25194</count-limit>
<used>19</used>
<free>32</free>
<zone-req>31</zone-req>
<zone-name>inpcb:</zone-name>
<zone-size>232</zone-size>
<count-limit>25194</count-limit>
<used>40</used>
<free>28</free>
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<zone-name>tcpcb:</zone-name>
<zone-size>520</zone-size>
<count-limit>25193</count-limit>
<used>40</used>
<free>16</free>
<zone-req>105</zone-req>
<zone-name>tcptw:</zone-name>
<zone-size>56</zone-size>
<count-limit>5092</count-limit>
<used>0</used>
<free>0</free>
<zone-req>0</zone-req>
<zone-name>syncache:</zone-name>
<zone-size>128</zone-size>
<count-limit>15360</count-limit>
<used>0</used>
<free>60</free>
<zone-req>55</zone-req>
<zone-name>tcpreass:</zone-name>
<zone-size>20</zone-size>
<count-limit>1690</count-limit>

```

```
<used>0</used>
<free>0</free>
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<zone-size>20</zone-size>
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<count-limit>25194</count-limit>
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<zone-size>276</zone-size>
<count-limit>94948</count-limit>
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<free>0</free>
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<count-limit>0</count-limit>
<used>1146</used>
<free>72</free>
<zone-req>1306</zone-req>
<zone-name>FFS1 dinode:</zone-name>
<zone-size>128</zone-size>
<count-limit>0</count-limit>
<used>1146</used>
<free>24</free>
<zone-req>1306</zone-req>
<zone-name>FFS2 dinode:</zone-name>
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<used>0</used>
<free>0</free>
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</vmstat-memstat-zone>
<vmstat-sumstat>
  <cpu-context-switch>934906</cpu-context-switch>
  <dev-intr>1707986</dev-intr>
  <soft-intr>33819</soft-intr>
  <traps>203604</traps>
  <sys-calls>1200636</sys-calls>
  <kernel-thrds>60</kernel-thrds>
  <fork-calls>1313</fork-calls>
  <vfork-calls>21</vfork-calls>
  <rfork-calls>0</rfork-calls>
  <swap-pageins>0</swap-pageins>
  <swap-pagedin>0</swap-pagedin>
  <swap-pageouts>0</swap-pageouts>
  <swap-pagedout>0</swap-pagedout>
  <vnode-pageins>23094</vnode-pageins>
  <vnode-pagedin>23119</vnode-pagedin>
  <vnode-pageouts>226</vnode-pageouts>
  <vnode-pagedout>3143</vnode-pagedout>
  <page-daemon-wakeup>0</page-daemon-wakeup>
  <page-daemon-examined-pages>0</page-daemon-examined-pages>
  <pages-reactivated>8821</pages-reactivated>
```



```

<copy-on-write-faults>48364</copy-on-write-faults>
<copy-on-write-optimized-faults>31</copy-on-write-optimized-faults>
<zero-fill-pages-zeroed>74665</zero-fill-pages-zeroed>
<zero-fill-pages-prezeroed>70061</zero-fill-pages-prezeroed>
<transit-blocking-page-faults>85</transit-blocking-page-faults>
<total-vm-faults>191824</total-vm-faults>

<pages-affected-by-kernel-thrd-creat>0</pages-affected-by-kernel-thrd-creat>
<pages-affected-by-fork>95343</pages-affected-by-fork>
<pages-affected-by-vfork>3526</pages-affected-by-vfork>
<pages-affected-by-rfork>0</pages-affected-by-rfork>
<pages-freed>221502</pages-freed>
<pages-freed-by-daemon>0</pages-freed-by-daemon>
<pages-freed-by-exiting-proc>75630</pages-freed-by-exiting-proc>
<pages-active>45826</pages-active>
<pages-inactive>13227</pages-inactive>
<pages-in-vm-cache>49278</pages-in-vm-cache>
<pages-wired-down>10640</pages-wired-down>
<pages-free>70706</pages-free>
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<peak-swap-pages-used>0</peak-swap-pages-used>
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<positive-cache-hits>92</positive-cache-hits>
<negative-cache-hits>5</negative-cache-hits>
<pass2>0</pass2>
<cache-deletions>0</cache-deletions>
<cache-falsehits>0</cache-falsehits>
<toolong>0</toolong>
</vmstat-sumstat>
<vmstat-intr>
  <intr-name>irq0: clk      </intr-name>
  <intr-cnt>1243455</intr-cnt>
  <intr-rate>999</intr-rate>
  <intr-name>irq4: sio0     </intr-name>
  <intr-cnt>1140</intr-cnt>
  <intr-rate>0</intr-rate>
  <intr-name>irq8: rtc      </intr-name>
  <intr-cnt>159164</intr-cnt>
  <intr-rate>127</intr-rate>
  <intr-name>irq9: cbb1 fxp0 </intr-name>
  <intr-cnt>28490</intr-cnt>
  <intr-rate>22</intr-rate>
  <intr-name>irq10: fxp1    </intr-name>
  <intr-cnt>20593</intr-cnt>
  <intr-rate>16</intr-rate>
  <intr-name>irq14: ata0    </intr-name>
  <intr-cnt>5031</intr-cnt>
  <intr-rate>4</intr-rate>
  <intr-name>Total</intr-name>
  <intr-cnt>1457873</intr-cnt>
  <intr-rate>1171</intr-rate>
</vmstat-intr>
<vm-kernel-state>
  <vm-kmem-map-free>248524800</vm-kmem-map-free>
</vm-kernel-state>
</system-virtual-memory-information>
<cli>
  <banner></banner>

```

```
</cli>  
</rpc-reply>
```

## show version invoke-on

<b>Syntax</b>	show version invoke-on (all-routing-engines   other-routing-engine)
<b>Syntax (MX Series Router)</b>	show version invoke-on (all-routing-engines   other-routing-engine) <all-members> <local> <member <i>member-id</i> >
<b>Release Information</b>	Command introduced before JUNOS Release 7.4.
<b>Description</b>	Display the hostname and version information about the software running on a router with two Routing Engines.
<b>Options</b>	<p><b>all-routing-engines</b>—Display the hostnames and version information about the software running on all master and backup Routing Engines on a routing matrix based on the TX Matrix or TX Matrix Plus router or on a router that has dual Routing Engines.</p> <p><b>other-routing-engine</b>—Display the hostnames and version information about the software running on the other Routing Engine. For example, if you issue this command on the master Routing Engine on an M320 router, the JUNOS Software displays the hostname and version information on the backup Routing Engine. On a routing matrix based on the TX Matrix or TX Matrix Plus router, if you issue this command on the TX Matrix or TX Matrix Plus router's master Routing Engine, the JUNOS Software displays all the hostnames and version information on all the backup Routing Engines.</p> <p><b>all-members</b>—(MX Series routers only) (Optional) Display the hostnames and version information about the software running on all master and backup Routing Engines on all members of the Virtual Chassis configuration. Specify the <b>all-members</b> option before the <b>invoke-on</b> keyword.</p> <p><b>local</b>—(MX Series routers only) (Optional) Display the hostnames and version information about the software running on all master and backup Routing Engines on the local Virtual Chassis member. Specify the <b>local</b> option before the <b>invoke-on</b> keyword.</p> <p><b>member <i>member-id</i></b>—(MX Series routers only) (Optional) Display the hostnames and version information about the software running on all master and backup Routing Engines on the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value of 0 or 1. Specify the <b>member <i>member-id</i></b> option before the <b>invoke-on</b> keyword.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<a href="#">show version invoke-on all-routing-engines (TX Matrix Router) on page 1232</a> <a href="#">show version invoke-on other-routing-engine (TX Matrix Router) on page 1234</a> <a href="#">show version invoke-on all-routing-engines (TX Matrix Plus Router) on page 1235</a> <a href="#">show version invoke-on other-routing-engine (TX Matrix Plus Router) on page 1241</a> <a href="#">show version invoke-on all-routing-engines (TX Matrix Plus Router with 3D SIBs) on page 1242</a>

[show version invoke-on other-routing-engine \(TX Matrix Plus Router with 3D SIBs\) on page 1249](#)

## Sample Output

[show version invoke-on all-routing-engines \(TX Matrix Router\)](#)

```
user@host> show version invoke-on all-routing-engines
scc-re0:
-----
Hostname: bob
Model: TX Matrix
JUNOS Base OS boot [7.1-20041024.0]
JUNOS Base OS Software Suite [7.1-20041024.0]
JUNOS Kernel Software Suite [7.1-20041024.0]
JUNOS Packet Forwarding Engine Support (T-Series) [7.1-20041024.0]
JUNOS Routing Software Suite [7.1-20041024.0]
JUNOS Online Documentation [7.1-20041024.0]
JUNOS Crypto Software Suite [7.1-20041024.0]
JUNOS Support Tools Package [7.1-20041025.1]

scc-re1:
-----
Hostname: bob1
Model: TX Matrix
JUNOS Base OS boot [7.1-20041024.0]
JUNOS Base OS Software Suite [7.1-20041024.0]
JUNOS Kernel Software Suite [7.1-20041024.0]
JUNOS Packet Forwarding Engine Support (T-Series) [7.1-20041024.0]
JUNOS Routing Software Suite [7.1-20041024.0]
JUNOS Online Documentation [7.1-20041024.0]
JUNOS Crypto Software Suite [7.1-20041024.0]
JUNOS Support Tools Package [7.1-20041025.1]

lcc0-re0:
-----
Hostname: cas
Model: t640
JUNOS Base OS boot [7.1-20041024.0]
JUNOS Base OS Software Suite [7.1-20041024.0]
JUNOS Kernel Software Suite [7.1-20041024.0]
JUNOS Packet Forwarding Engine Support (T-Series) [7.1-20041024.0]
JUNOS Routing Software Suite [7.1-20041024.0]
JUNOS Online Documentation [7.1-20041024.0]
JUNOS Crypto Software Suite [7.1-20041024.0]

lcc0-re1:
-----
Hostname: cas1-lcc0
Model: t640
JUNOS Base OS boot [7.1-20041024.0]
JUNOS Base OS Software Suite [7.1-20041024.0]
JUNOS Kernel Software Suite [7.1-20041024.0]
JUNOS Packet Forwarding Engine Support (T-Series) [7.1-20041024.0]
JUNOS Routing Software Suite [7.1-20041024.0]
JUNOS Online Documentation [7.1-20041024.0]
JUNOS Crypto Software Suite [7.1-20041024.0]

lcc1-re0:
-----
Hostname: jas
```

```

Model: t640
JUNOS Base OS boot [7.1-20041024.0]
JUNOS Base OS Software Suite [7.1-20041024.0]
JUNOS Kernel Software Suite [7.1-20041024.0]
JUNOS Packet Forwarding Engine Support (T-Series) [7.1-20041024.0]
JUNOS Routing Software Suite [7.1-20041024.0]
JUNOS Online Documentation [7.1-20041024.0]
JUNOS Crypto Software Suite [7.1-20041024.0]

```

```
lcc1-re1:
```

```

-----
Hostname: jas1
Model: t640
JUNOS Base OS boot [7.1-20041024.0]
JUNOS Base OS Software Suite [7.1-20041024.0]
JUNOS Kernel Software Suite [7.1-20041024.0]
JUNOS Packet Forwarding Engine Support (T-Series) [7.1-20041024.0]
JUNOS Routing Software Suite [7.1-20041024.0]
JUNOS Online Documentation [7.1-20041024.0]
JUNOS Crypto Software Suite [7.1-20041024.0]

```

```
lcc2-re0:
```

```

-----
Hostname: dew
Model: t640
JUNOS Base OS boot [7.1-20041024.0]
JUNOS Base OS Software Suite [7.1-20041024.0]
JUNOS Kernel Software Suite [7.1-20041024.0]
JUNOS Packet Forwarding Engine Support (T-Series) [7.1-20041024.0]
JUNOS Routing Software Suite [7.1-20041024.0]
JUNOS Online Documentation [7.1-20041024.0]
JUNOS Crypto Software Suite [7.1-20041024.0]

```

```
lcc2-re1:
```

```

-----
Hostname: dew1
Model: t640
JUNOS Base OS boot [7.1-20041024.0]
JUNOS Base OS Software Suite [7.1-20041024.0]
JUNOS Kernel Software Suite [7.1-20041024.0]
JUNOS Packet Forwarding Engine Support (T-Series) [7.1-20041024.0]
JUNOS Routing Software Suite [7.1-20041024.0]
JUNOS Online Documentation [7.1-20041024.0]
JUNOS Crypto Software Suite [7.1-20041024.0]

```

```
lcc3-re0:
```

```

-----
Hostname: wa
Model: t640
JUNOS Base OS boot [7.1-20041024.0]
JUNOS Base OS Software Suite [7.1-20041024.0]
JUNOS Kernel Software Suite [7.1-20041024.0]
JUNOS Packet Forwarding Engine Support (T-Series) [7.1-20041024.0]
JUNOS Routing Software Suite [7.1-20041024.0]
JUNOS Online Documentation [7.1-20041024.0]
JUNOS Crypto Software Suite [7.1-20041024.0]

```

```
lcc3-re1:
```

```

-----
Hostname: wa1
Model: t640

```

```
JUNOS Base OS boot [7.1-20041024.0]
JUNOS Base OS Software Suite [7.1-20041025.1]
JUNOS Kernel Software Suite [7.1-20041024.0]
JUNOS Packet Forwarding Engine Support (T-Series) [7.1-20041024.0]
JUNOS Routing Software Suite [7.1-20041024.0]
JUNOS Online Documentation [7.1-20041024.0]
JUNOS Crypto Software Suite [7.1-20041024.0]
```

#### show version invoke-on other-routing-engine (TX Matrix Router)

```
user@host> show version invoke-on other-routing-engine
scc-re1:
```

```
-----
Hostname: bob1
Model: TX Matrix
JUNOS Base OS boot [7.1-20041024.0]
JUNOS Base OS Software Suite [7.1-20041024.0]
JUNOS Kernel Software Suite [7.1-20041024.0]
JUNOS Packet Forwarding Engine Support (T-Series) [7.1-20041024.0]
JUNOS Routing Software Suite [7.1-20041024.0]
JUNOS Online Documentation [7.1-20041024.0]
JUNOS Crypto Software Suite [7.1-20041024.0]
JUNOS Support Tools Package [7.1-20041025.1]
```

```
lcc0-re1:
```

```
-----
Hostname: cas1-lcc0
Model: t640
JUNOS Base OS boot [7.1-20041024.0]
JUNOS Base OS Software Suite [7.1-20041024.0]
JUNOS Kernel Software Suite [7.1-20041024.0]
JUNOS Packet Forwarding Engine Support (T-Series) [7.1-20041024.0]
JUNOS Routing Software Suite [7.1-20041024.0]
JUNOS Online Documentation [7.1-20041024.0]
JUNOS Crypto Software Suite [7.1-20041024.0]
```

```
lcc1-re1:
```

```
-----
Hostname: jas1
Model: t640
JUNOS Base OS boot [7.1-20041024.0]
JUNOS Base OS Software Suite [7.1-20041024.0]
JUNOS Kernel Software Suite [7.1-20041024.0]
JUNOS Packet Forwarding Engine Support (T-Series) [7.1-20041024.0]
JUNOS Routing Software Suite [7.1-20041024.0]
JUNOS Online Documentation [7.1-20041024.0]
JUNOS Crypto Software Suite [7.1-20041024.0]
```

```
lcc2-re1:
```

```
-----
Hostname: dew1
Model: t640
JUNOS Base OS boot [7.1-20041024.0]
JUNOS Base OS Software Suite [7.1-20041024.0]
JUNOS Kernel Software Suite [7.1-20041024.0]
JUNOS Packet Forwarding Engine Support (T-Series) [7.1-20041024.0]
JUNOS Routing Software Suite [7.1-20041024.0]
JUNOS Online Documentation [7.1-20041024.0]
JUNOS Crypto Software Suite [7.1-20041024.0]
```

```
lcc3-re1:
```

```
-----
Hostname: wa1
```

```

Model: t640
JUNOS Base OS boot [7.1-20041024.0]
JUNOS Base OS Software Suite [7.1-20041025.1]
JUNOS Kernel Software Suite [7.1-20041024.0]
JUNOS Packet Forwarding Engine Support (T-Series) [7.1-20041024.0]
JUNOS Routing Software Suite [7.1-20041024.0]
JUNOS Online Documentation [7.1-20041024.0]
JUNOS Crypto Software Suite [7.1-20041024.0]

```

### show version invoke-on all-routing-engines (TX Matrix Plus Router)

```

user@host> show version invoke-on all-routing-engines
sfc0-re0:

```

```

-----
Hostname: aj
Model: txp
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]

```

```

lcc0-re0:

```

```

-----
Hostname: lj
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]

```

```

lcc1-re0:

```

```

-----
Hostname: mj
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]

```

JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]  
JUNOS Online Documentation [9.6-20090519.0]  
JUNOS Voice Services Container package [9.6-20090519.0]  
JUNOS Border Gateway Function package [9.6-20090519.0]  
JUNOS Services AACL Container package [9.6-20090519.0]  
JUNOS Services LL-PDF Container package [9.6-20090519.0]  
JUNOS Services Stateful Firewall [9.6-20090519.0]  
JUNOS AppId Services [9.6-20090519.0]  
JUNOS IDP Services [9.6-20090519.0]  
JUNOS Routing Software Suite [9.6-20090519.0]

lcc2-re0:

-----  
Hostname: pj  
Model: t1600  
JUNOS Base OS boot [9.6-20090519.0]  
JUNOS Base OS Software Suite [9.6-20090519.0]  
JUNOS Kernel Software Suite [9.6-20090519.0]  
JUNOS Crypto Software Suite [9.6-20090519.0]  
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]  
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]  
JUNOS Online Documentation [9.6-20090519.0]  
JUNOS Voice Services Container package [9.6-20090519.0]  
JUNOS Border Gateway Function package [9.6-20090519.0]  
JUNOS Services AACL Container package [9.6-20090519.0]  
JUNOS Services LL-PDF Container package [9.6-20090519.0]  
JUNOS Services Stateful Firewall [9.6-20090519.0]  
JUNOS AppId Services [9.6-20090519.0]  
JUNOS IDP Services [9.6-20090519.0]  
JUNOS Routing Software Suite [9.6-20090519.0]

lcc3-re0:

-----  
Hostname: tj  
Model: t1600  
JUNOS Base OS boot [9.6-20090519.0]  
JUNOS Base OS Software Suite [9.6-20090519.0]  
JUNOS Kernel Software Suite [9.6-20090519.0]  
JUNOS Crypto Software Suite [9.6-20090519.0]  
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]  
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]  
JUNOS Online Documentation [9.6-20090519.0]  
JUNOS Voice Services Container package [9.6-20090519.0]  
JUNOS Border Gateway Function package [9.6-20090519.0]  
JUNOS Services AACL Container package [9.6-20090519.0]  
JUNOS Services LL-PDF Container package [9.6-20090519.0]  
JUNOS Services Stateful Firewall [9.6-20090519.0]  
JUNOS AppId Services [9.6-20090519.0]  
JUNOS IDP Services [9.6-20090519.0]  
JUNOS Routing Software Suite [9.6-20090519.0]

sfc0-re1:

-----  
Hostname: aj1  
Model: txp  
JUNOS Base OS boot [9.6-20090519.0]  
JUNOS Base OS Software Suite [9.6-20090519.0]  
JUNOS Kernel Software Suite [9.6-20090519.0]  
JUNOS Crypto Software Suite [9.6-20090519.0]  
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]  
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]



```

JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]

```

```
lcc0-re1:
```

```

-----
Hostname: ljl
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]

```

```
lcc1-re1:
```

```

-----
Hostname: mj1
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]

```

```
lcc2-re1:
```

```

-----
Hostname: pj1
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]

```

JUNOS Voice Services Container package [9.6-20090519.0]  
 JUNOS Border Gateway Function package [9.6-20090519.0]  
 JUNOS Services AACL Container package [9.6-20090519.0]  
 JUNOS Services LL-PDF Container package [9.6-20090519.0]  
 JUNOS Services Stateful Firewall [9.6-20090519.0]  
 JUNOS AppId Services [9.6-20090519.0]  
 JUNOS IDP Services [9.6-20090519.0]  
 JUNOS Routing Software Suite [9.6-20090519.0]

lcc3-re1:

-----  
 Hostname: tj1  
 Model: t1600  
 JUNOS Base OS boot [9.6-20090519.0]  
 JUNOS Base OS Software Suite [9.6-20090519.0]  
 JUNOS Kernel Software Suite [9.6-20090519.0]  
 JUNOS Crypto Software Suite [9.6-20090519.0]  
 JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]  
 JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]  
 JUNOS Online Documentation [9.6-20090519.0]  
 JUNOS Voice Services Container package [9.6-20090519.0]  
 JUNOS Border Gateway Function package [9.6-20090519.0]  
 JUNOS Services AACL Container package [9.6-20090519.0]  
 JUNOS Services LL-PDF Container package [9.6-20090519.0]  
 JUNOS Services Stateful Firewall [9.6-20090519.0]  
 JUNOS AppId Services [9.6-20090519.0]  
 JUNOS IDP Services [9.6-20090519.0]  
 JUNOS Routing Software Suite [9.6-20090519.0]

lcc0-re0:

-----  
 Hostname: lj  
 Model: t1600  
 JUNOS Base OS boot [9.6-20090519.0]  
 JUNOS Base OS Software Suite [9.6-20090519.0]  
 JUNOS Kernel Software Suite [9.6-20090519.0]  
 JUNOS Crypto Software Suite [9.6-20090519.0]  
 JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]  
 JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]  
 JUNOS Online Documentation [9.6-20090519.0]  
 JUNOS Voice Services Container package [9.6-20090519.0]  
 JUNOS Border Gateway Function package [9.6-20090519.0]  
 JUNOS Services AACL Container package [9.6-20090519.0]  
 JUNOS Services LL-PDF Container package [9.6-20090519.0]  
 JUNOS Services Stateful Firewall [9.6-20090519.0]  
 JUNOS AppId Services [9.6-20090519.0]  
 JUNOS IDP Services [9.6-20090519.0]  
 JUNOS Routing Software Suite [9.6-20090519.0]

lcc0-re1:

-----  
 Hostname: lj1  
 Model: t1600  
 JUNOS Base OS boot [9.6-20090519.0]  
 JUNOS Base OS Software Suite [9.6-20090519.0]  
 JUNOS Kernel Software Suite [9.6-20090519.0]  
 JUNOS Crypto Software Suite [9.6-20090519.0]  
 JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]  
 JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]  
 JUNOS Online Documentation [9.6-20090519.0]  
 JUNOS Voice Services Container package [9.6-20090519.0]

```
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]
```

```
lcc1-re0:
```

```
-----
Hostname: mj
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]
```

```
lcc1-re1:
```

```
-----
Hostname: mj1
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]
```

```
lcc2-re0:
```

```
-----
Hostname: pj
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
```

JUNOS Services AACL Container package [9.6-20090519.0]  
JUNOS Services LL-PDF Container package [9.6-20090519.0]  
JUNOS Services Stateful Firewall [9.6-20090519.0]  
JUNOS AppId Services [9.6-20090519.0]  
JUNOS IDP Services [9.6-20090519.0]  
JUNOS Routing Software Suite [9.6-20090519.0]

lcc2-re1:

-----  
Hostname: pj1  
Model: t1600  
JUNOS Base OS boot [9.6-20090519.0]  
JUNOS Base OS Software Suite [9.6-20090519.0]  
JUNOS Kernel Software Suite [9.6-20090519.0]  
JUNOS Crypto Software Suite [9.6-20090519.0]  
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]  
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]  
JUNOS Online Documentation [9.6-20090519.0]  
JUNOS Voice Services Container package [9.6-20090519.0]  
JUNOS Border Gateway Function package [9.6-20090519.0]  
JUNOS Services AACL Container package [9.6-20090519.0]  
JUNOS Services LL-PDF Container package [9.6-20090519.0]  
JUNOS Services Stateful Firewall [9.6-20090519.0]  
JUNOS AppId Services [9.6-20090519.0]  
JUNOS IDP Services [9.6-20090519.0]  
JUNOS Routing Software Suite [9.6-20090519.0]

lcc3-re0:

-----  
Hostname: tj  
Model: t1600  
JUNOS Base OS boot [9.6-20090519.0]  
JUNOS Base OS Software Suite [9.6-20090519.0]  
JUNOS Kernel Software Suite [9.6-20090519.0]  
JUNOS Crypto Software Suite [9.6-20090519.0]  
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]  
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]  
JUNOS Online Documentation [9.6-20090519.0]  
JUNOS Voice Services Container package [9.6-20090519.0]  
JUNOS Border Gateway Function package [9.6-20090519.0]  
JUNOS Services AACL Container package [9.6-20090519.0]  
JUNOS Services LL-PDF Container package [9.6-20090519.0]  
JUNOS Services Stateful Firewall [9.6-20090519.0]  
JUNOS AppId Services [9.6-20090519.0]  
JUNOS IDP Services [9.6-20090519.0]  
JUNOS Routing Software Suite [9.6-20090519.0]

lcc3-re1:

-----  
Hostname: tj1  
Model: t1600  
JUNOS Base OS boot [9.6-20090519.0]  
JUNOS Base OS Software Suite [9.6-20090519.0]  
JUNOS Kernel Software Suite [9.6-20090519.0]  
JUNOS Crypto Software Suite [9.6-20090519.0]  
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]  
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]  
JUNOS Online Documentation [9.6-20090519.0]  
JUNOS Voice Services Container package [9.6-20090519.0]  
JUNOS Border Gateway Function package [9.6-20090519.0]  
JUNOS Services AACL Container package [9.6-20090519.0]

```
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]
```

### show version invoke-on other-routing-engine (TX Matrix Plus Router)

```
user@host> show version invoke-on other-routing-engine
sfc0-re1:
```

```
-----
Hostname: aj1
Model: txp
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]
```

```
lcc0-re1:
```

```
-----
Hostname: lj1
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]
```

```
lcc1-re1:
```

```
-----
Hostname: mj1
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
```

```
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]
```

```
lcc2-re1:
```

```
-----
Hostname: pj1
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]
```

```
lcc3-re1:
```

```
-----
Hostname: tj1
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]
```

### show version invoke-on all-routing-engines (TX Matrix Plus Router with 3D SIBs)

```
user@host> show version invoke-on all-routing-engines
sfc0-re0:
```

```
-----
Hostname: sfc0
Model: txp
JUNOS Base OS boot [13.1]
JUNOS Base OS Software Suite [13.1-20130305.0]
JUNOS Kernel Software Suite [13.1-20130305.0]
JUNOS Crypto Software Suite [13.1-20130305.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1-20130305.0]
JUNOS Packet Forwarding Engine Support (T-Series) [13.1-20130305.0]
```

```

JUNOS Online Documentation [13.1-20130305.0]
JUNOS Services AACL Container package [13.1-20130305.0]
JUNOS Services Application Level Gateways [13.1-20130305.0]
JUNOS AppId Services [13.1-20130305.0]
JUNOS Border Gateway Function package [13.1-20130305.0]
JUNOS Services Captive Portal and Content Delivery Container package
[13.1-20130305.0]
JUNOS Services HTTP Content Management package [13.1-20130305.0]
JUNOS IDP Services [13.1-20130305.0]
JUNOS Services Jflow Container package [13.1-20130305.0]
JUNOS Services LL-PDF Container package [13.1-20130305.0]
JUNOS Services MobileNext Software package [13.1-20130305.0]
JUNOS Services Mobile Subscriber Service Container package [13.1-20130305.0]
JUNOS Services NAT [13.1-20130305.0]
JUNOS Services PTSP Container package [13.1-20130305.0]
JUNOS Services RPM [13.1-20130305.0]
JUNOS Services Stateful Firewall [13.1-20130305.0]
JUNOS Voice Services Container package [13.1-20130305.0]
JUNOS Services Example Container package [13.1-20130305.0]
JUNOS Services Crypto [13.1-20130305.0]
JUNOS Services SSL [13.1-20130305.0]
JUNOS Services IPSec [13.1-20130305.0]
JUNOS Runtime Software Suite [13.1-20130305.0]
JUNOS Routing Software Suite [13.1-20130305.0]

```

sfc0-re1:

```

-----
Hostname: sfc0_alt_re
Model: txp
JUNOS Base OS boot [13.1-20130305.0]
JUNOS Base OS Software Suite [13.1-20130305.0]
JUNOS 64-bit Kernel Software Suite [13.1-20130305.0]
JUNOS Crypto Software Suite [13.1-20130305.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1-20130305.0]
JUNOS Packet Forwarding Engine Support (T-Series) [13.1-20130305.0]
JUNOS Online Documentation [13.1-20130305.0]
JUNOS Services AACL Container package [13.1-20130305.0]
JUNOS Services Application Level Gateways [13.1-20130305.0]
JUNOS AppId Services [13.1-20130305.0]
JUNOS Border Gateway Function package [13.1-20130305.0]
JUNOS Services Captive Portal and Content Delivery Container package
[13.1-20130305.0]
JUNOS Services HTTP Content Management package [13.1-20130305.0]
JUNOS IDP Services [13.1-20130305.0]
JUNOS Services Jflow Container package [13.1-20130305.0]
JUNOS Services LL-PDF Container package [13.1-20130305.0]
JUNOS Services MobileNext Software package [13.1-20130305.0]
JUNOS Services Mobile Subscriber Service Container package [13.1-20130305.0]
JUNOS Services NAT [13.1-20130305.0]
JUNOS Services PTSP Container package [13.1-20130305.0]
JUNOS Services RPM [13.1-20130305.0]
JUNOS Services Stateful Firewall [13.1-20130305.0]
JUNOS Voice Services Container package [13.1-20130305.0]
JUNOS Services Example Container package [13.1-20130305.0]
JUNOS Services Crypto [13.1-20130305.0]
JUNOS Services SSL [13.1-20130305.0]
JUNOS Services IPSec [13.1-20130305.0]
JUNOS Runtime Software Suite [13.1-20130305.0]
JUNOS Routing Software Suite [13.1-20130305.0]

```

1cc0-re0:

```
-----  
Hostname: lcc0  
Model: t4000  
JUNOS Base OS boot [13.1-20130305.0]  
JUNOS Base OS Software Suite [13.1-20130305.0]  
JUNOS Kernel Software Suite [13.1-20130305.0]  
JUNOS Crypto Software Suite [13.1-20130305.0]  
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1-20130305.0]  
JUNOS Packet Forwarding Engine Support (T-Series) [13.1-20130305.0]  
JUNOS Online Documentation [13.1-20130305.0]  
JUNOS Services AACL Container package [13.1-20130305.0]  
JUNOS Services Application Level Gateways [13.1-20130305.0]  
JUNOS AppId Services [13.1-20130305.0]  
JUNOS Border Gateway Function package [13.1-20130305.0]  
JUNOS Services Captive Portal and Content Delivery Container package  
[13.1-20130305.0]  
JUNOS Services HTTP Content Management package [13.1-20130305.0]  
JUNOS IDP Services [13.1-20130305.0]  
JUNOS Services Jflow Container package [13.1-20130305.0]  
JUNOS Services LL-PDF Container package [13.1-20130305.0]  
JUNOS Services MobileNext Software package [13.1-20130305.0]  
JUNOS Services Mobile Subscriber Service Container package [13.1-20130305.0]  
JUNOS Services NAT [13.1-20130305.0]  
JUNOS Services PTSP Container package [13.1-20130305.0]  
JUNOS Services RPM [13.1-20130305.0]  
JUNOS Services Stateful Firewall [13.1-20130305.0]  
JUNOS Voice Services Container package [13.1-20130305.0]  
JUNOS Services Example Container package [13.1-20130305.0]  
JUNOS Services Crypto [13.1-20130305.0]  
JUNOS Services SSL [13.1-20130305.0]  
JUNOS Services IPSec [13.1-20130305.0]  
JUNOS Runtime Software Suite [13.1-20130305.0]  
JUNOS Routing Software Suite [13.1-20130305.0]
```

lcc0-re1:

```
-----  
Hostname: lcc0_alt_re  
Model: t4000  
JUNOS Base OS boot [13.1-20130305.0]  
JUNOS Base OS Software Suite [13.1-20130305.0]  
JUNOS Kernel Software Suite [13.1-20130305.0]  
JUNOS Crypto Software Suite [13.1-20130305.0]  
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1-20130305.0]  
JUNOS Packet Forwarding Engine Support (T-Series) [13.1-20130305.0]  
JUNOS Online Documentation [13.1-20130305.0]  
JUNOS Services AACL Container package [13.1-20130305.0]  
JUNOS Services Application Level Gateways [13.1-20130305.0]  
JUNOS AppId Services [13.1-20130305.0]  
JUNOS Border Gateway Function package [13.1-20130305.0]  
JUNOS Services Captive Portal and Content Delivery Container package  
[13.1-20130305.0]  
JUNOS Services HTTP Content Management package [13.1-20130305.0]  
JUNOS IDP Services [13.1-20130305.0]  
JUNOS Services Jflow Container package [13.1-20130305.0]  
JUNOS Services LL-PDF Container package [13.1-20130305.0]  
JUNOS Services MobileNext Software package [13.1-20130305.0]  
JUNOS Services Mobile Subscriber Service Container package [13.1-20130305.0]  
JUNOS Services NAT [13.1-20130305.0]  
JUNOS Services PTSP Container package [13.1-20130305.0]  
JUNOS Services RPM [13.1-20130305.0]  
JUNOS Services Stateful Firewall [13.1-20130305.0]
```



```

JUNOS Voice Services Container package [13.1-20130305.0]
JUNOS Services Example Container package [13.1-20130305.0]
JUNOS Services Crypto [13.1-20130305.0]
JUNOS Services SSL [13.1-20130305.0]
JUNOS Services IPSec [13.1-20130305.0]
JUNOS Runtime Software Suite [13.1-20130305.0]
JUNOS Routing Software Suite [13.1-20130305.0]

```

```
lcc2-re0:
```

```

-----
Hostname: lcc2
Model: t4000
JUNOS Base OS boot [13.1-20130305.0]
JUNOS Base OS Software Suite [13.1-20130305.0]
JUNOS Kernel Software Suite [13.1-20130305.0]
JUNOS Crypto Software Suite [13.1-20130305.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1-20130305.0]
JUNOS Packet Forwarding Engine Support (T-Series) [13.1-20130305.0]
JUNOS Online Documentation [13.1-20130305.0]
JUNOS Services AACL Container package [13.1-20130305.0]
JUNOS Services Application Level Gateways [13.1-20130305.0]
JUNOS AppId Services [13.1-20130305.0]
JUNOS Border Gateway Function package [13.1-20130305.0]
JUNOS Services Captive Portal and Content Delivery Container package
[13.1-20130305.0]
JUNOS Services HTTP Content Management package [13.1-20130305.0]
JUNOS IDP Services [13.1-20130305.0]
JUNOS Services Jflow Container package [13.1-20130305.0]
JUNOS Services LL-PDF Container package [13.1-20130305.0]
JUNOS Services MobileNext Software package [13.1-20130305.0]
JUNOS Services Mobile Subscriber Service Container package [13.1-20130305.0]
JUNOS Services NAT [13.1-20130305.0]
JUNOS Services PTSP Container package [13.1-20130305.0]
JUNOS Services RPM [13.1-20130305.0]
JUNOS Services Stateful Firewall [13.1-20130305.0]
JUNOS Voice Services Container package [13.1-20130305.0]
JUNOS Services Example Container package [13.1-20130305.0]
JUNOS Services Crypto [13.1-20130305.0]
JUNOS Services SSL [13.1-20130305.0]
JUNOS Services IPSec [13.1-20130305.0]
JUNOS Runtime Software Suite [13.1-20130305.0]
JUNOS Routing Software Suite [13.1-20130305.0]

```

```
lcc2-re1:
```

```

-----
Hostname: lcc2_alt_re
Model: t4000
JUNOS Base OS boot [13.1-20130305.0]
JUNOS Base OS Software Suite [13.1-20130305.0]
JUNOS Kernel Software Suite [13.1-20130305.0]
JUNOS Crypto Software Suite [13.1-20130305.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1-20130305.0]
JUNOS Packet Forwarding Engine Support (T-Series) [13.1-20130305.0]
JUNOS Online Documentation [13.1-20130305.0]
JUNOS Services AACL Container package [13.1-20130305.0]
JUNOS Services Application Level Gateways [13.1-20130305.0]
JUNOS AppId Services [13.1-20130305.0]
JUNOS Border Gateway Function package [13.1-20130305.0]
JUNOS Services Captive Portal and Content Delivery Container package
[13.1-20130305.0]
JUNOS Services HTTP Content Management package [13.1-20130305.0]

```

```
JUNOS IDP Services [13.1-20130305.0]
JUNOS Services Jflow Container package [13.1-20130305.0]
JUNOS Services LL-PDF Container package [13.1-20130305.0]
JUNOS Services MobileNext Software package [13.1-20130305.0]
JUNOS Services Mobile Subscriber Service Container package [13.1-20130305.0]
JUNOS Services NAT [13.1-20130305.0]
JUNOS Services PTSP Container package [13.1-20130305.0]
JUNOS Services RPM [13.1-20130305.0]
JUNOS Services Stateful Firewall [13.1-20130305.0]
JUNOS Voice Services Container package [13.1-20130305.0]
JUNOS Services Example Container package [13.1-20130305.0]
JUNOS Services Crypto [13.1-20130305.0]
JUNOS Services SSL [13.1-20130305.0]
JUNOS Services IPSec [13.1-20130305.0]
JUNOS Runtime Software Suite [13.1-20130305.0]
JUNOS Routing Software Suite [13.1-20130305.0]
```

lcc4-re0:

```
-----
Hostname: lcc4
Model: t4000
JUNOS Base OS boot [13.1-20130305.0]
JUNOS Base OS Software Suite [13.1-20130305.0]
JUNOS Kernel Software Suite [13.1-20130305.0]
JUNOS Crypto Software Suite [13.1-20130305.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1-20130305.0]
JUNOS Packet Forwarding Engine Support (T-Series) [13.1-20130305.0]
JUNOS Online Documentation [13.1-20130305.0]
JUNOS Services ACL Container package [13.1-20130305.0]
JUNOS Services Application Level Gateways [13.1-20130305.0]
JUNOS AppId Services [13.1-20130305.0]
JUNOS Border Gateway Function package [13.1-20130305.0]
JUNOS Services Captive Portal and Content Delivery Container package
[13.1-20130305.0]
JUNOS Services HTTP Content Management package [13.1-20130305.0]
JUNOS IDP Services [13.1-20130305.0]
JUNOS Services Jflow Container package [13.1-20130305.0]
JUNOS Services LL-PDF Container package [13.1-20130305.0]
JUNOS Services MobileNext Software package [13.1-20130305.0]
JUNOS Services Mobile Subscriber Service Container package [13.1-20130305.0]
JUNOS Services NAT [13.1-20130305.0]
JUNOS Services PTSP Container package [13.1-20130305.0]
JUNOS Services RPM [13.1-20130305.0]
JUNOS Services Stateful Firewall [13.1-20130305.0]
JUNOS Voice Services Container package [13.1-20130305.0]
JUNOS Services Example Container package [13.1-20130305.0]
JUNOS Services Crypto [13.1-20130305.0]
JUNOS Services SSL [13.1-20130305.0]
JUNOS Services IPSec [13.1-20130305.0]
JUNOS Runtime Software Suite [13.1-20130305.0]
JUNOS Routing Software Suite [13.1-20130305.0]
```

lcc4-re1:

```
-----
Hostname: lcc4_alt_re
Model: t4000
JUNOS Base OS boot [13.1-20130305.0]
JUNOS Base OS Software Suite [13.1-20130305.0]
JUNOS Kernel Software Suite [13.1-20130305.0]
JUNOS Crypto Software Suite [13.1-20130305.0]
```

```

JUNOS Packet Forwarding Engine Support (M/T Common) [13.1-20130305.0]
JUNOS Packet Forwarding Engine Support (T-Series) [13.1-20130305.0]
JUNOS Online Documentation [13.1-20130305.0]
JUNOS Services AACL Container package [13.1-20130305.0]
JUNOS Services Application Level Gateways [13.1-20130305.0]
JUNOS AppId Services [13.1-20130305.0]
JUNOS Border Gateway Function package [13.1-20130305.0]
JUNOS Services Captive Portal and Content Delivery Container package
[13.1-20130305.0]
JUNOS Services HTTP Content Management package [13.1-20130305.0]
JUNOS IDP Services [13.1-20130305.0]
JUNOS Services Jflow Container package [13.1-20130305.0]
JUNOS Services LL-PDF Container package [13.1-20130305.0]
JUNOS Services MobileNext Software package [13.1-20130305.0]
JUNOS Services Mobile Subscriber Service Container package [13.1-20130305.0]
JUNOS Services NAT [13.1-20130305.0]
JUNOS Services PTSP Container package [13.1-20130305.0]
JUNOS Services RPM [13.1-20130305.0]
JUNOS Services Stateful Firewall [13.1-20130305.0]
JUNOS Voice Services Container package [13.1-20130305.0]
JUNOS Services Example Container package [13.1-20130305.0]
JUNOS Services Crypto [13.1-20130305.0]
JUNOS Services SSL [13.1-20130305.0]
JUNOS Services IPSec [13.1-20130305.0]
JUNOS Runtime Software Suite [13.1-20130305.0]
JUNOS Routing Software Suite [13.1-20130305.0]

```

```
lcc6-re0:
```

```

-----
Hostname: lcc6
Model: t1600
JUNOS Base OS boot [13.1-20130305.0]
JUNOS Base OS Software Suite [13.1-20130305.0]
JUNOS Kernel Software Suite [13.1-20130305.0]
JUNOS Crypto Software Suite [13.1-20130305.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1-20130305.0]
JUNOS Packet Forwarding Engine Support (T-Series) [13.1-20130305.0]
JUNOS Online Documentation [13.1-20130305.0]
JUNOS Services AACL Container package [13.1-20130305.0]
JUNOS Services Application Level Gateways [13.1-20130305.0]
JUNOS AppId Services [13.1-20130305.0]
JUNOS Border Gateway Function package [13.1-20130305.0]
JUNOS Services Captive Portal and Content Delivery Container package
[13.1-20130305.0]
JUNOS Services HTTP Content Management package [13.1-20130305.0]
JUNOS IDP Services [13.1-20130305.0]
JUNOS Services Jflow Container package [13.1-20130305.0]
JUNOS Services LL-PDF Container package [13.1-20130305.0]
JUNOS Services MobileNext Software package [13.1-20130305.0]
JUNOS Services Mobile Subscriber Service Container package [13.1-20130305.0]
JUNOS Services NAT [13.1-20130305.0]
JUNOS Services PTSP Container package [13.1-20130305.0]
JUNOS Services RPM [13.1-20130305.0]
JUNOS Services Stateful Firewall [13.1-20130305.0]
JUNOS Voice Services Container package [13.1-20130305.0]
JUNOS Services Example Container package [13.1-20130305.0]
JUNOS Services Crypto [13.1-20130305.0]
JUNOS Services SSL [13.1-20130305.0]
JUNOS Services IPSec [13.1-20130305.0]
JUNOS Runtime Software Suite [13.1-20130305.0]

```

## JUNOS Routing Software Suite [13.1-20130305.0]

lcc6-re1:

```
-----  
Hostname: lcc6_alt_re  
Model: t1600  
JUNOS Base OS boot [13.1-20130305.0]  
JUNOS Base OS Software Suite [13.1-20130305.0]  
JUNOS Kernel Software Suite [13.1-20130305.0]  
JUNOS Crypto Software Suite [13.1-20130305.0]  
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1-20130305.0]  
JUNOS Packet Forwarding Engine Support (T-Series) [13.1-20130305.0]  
JUNOS Online Documentation [13.1-20130305.0]  
JUNOS Services ACL Container package [13.1-20130305.0]  
JUNOS Services Application Level Gateways [13.1-20130305.0]  
JUNOS AppId Services [13.1-20130305.0]  
JUNOS Border Gateway Function package [13.1-20130305.0]  
JUNOS Services Captive Portal and Content Delivery Container package  
[13.1-20130305.0]  
JUNOS Services HTTP Content Management package [13.1-20130305.0]  
JUNOS IDP Services [13.1-20130305.0]  
JUNOS Services Jflow Container package [13.1-20130305.0]  
JUNOS Services LL-PDF Container package [13.1-20130305.0]  
JUNOS Services MobileNext Software package [13.1-20130305.0]  
JUNOS Services Mobile Subscriber Service Container package [13.1-20130305.0]  
JUNOS Services NAT [13.1-20130305.0]  
JUNOS Services PTSP Container package [13.1-20130305.0]  
JUNOS Services RPM [13.1-20130305.0]  
JUNOS Services Stateful Firewall [13.1-20130305.0]  
JUNOS Voice Services Container package [13.1-20130305.0]  
JUNOS Services Example Container package [13.1-20130305.0]  
JUNOS Services Crypto [13.1-20130305.0]  
JUNOS Services SSL [13.1-20130305.0]  
JUNOS Services IPSec [13.1-20130305.0]  
JUNOS Runtime Software Suite [13.1-20130305.0]  
JUNOS Routing Software Suite [13.1-20130305.0]
```

lcc7-re0:

```
-----  
Hostname: lcc7  
Model: t1600  
JUNOS Base OS boot [13.1-20130305.0]  
JUNOS Base OS Software Suite [13.1-20130305.0]  
JUNOS Kernel Software Suite [13.1-20130305.0]  
JUNOS Crypto Software Suite [13.1-20130305.0]  
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1-20130305.0]  
JUNOS Packet Forwarding Engine Support (T-Series) [13.1-20130305.0]  
JUNOS Online Documentation [13.1-20130305.0]  
JUNOS Services ACL Container package [13.1-20130305.0]  
JUNOS Services Application Level Gateways [13.1-20130305.0]  
JUNOS AppId Services [13.1-20130305.0]  
JUNOS Border Gateway Function package [13.1-20130305.0]  
JUNOS Services Captive Portal and Content Delivery Container package  
[13.1-20130305.0]  
JUNOS Services HTTP Content Management package [13.1-20130305.0]  
JUNOS IDP Services [13.1-20130305.0]  
JUNOS Services Jflow Container package [13.1-20130305.0]  
JUNOS Services LL-PDF Container package [13.1-20130305.0]  
JUNOS Services MobileNext Software package [13.1-20130305.0]  
JUNOS Services Mobile Subscriber Service Container package [13.1-20130305.0]
```

```

JUNOS Services NAT [13.1-20130305.0]
JUNOS Services PTSP Container package [13.1-20130305.0]
JUNOS Services RPM [13.1-20130305.0]
JUNOS Services Stateful Firewall [13.1-20130305.0]
JUNOS Voice Services Container package [13.1-20130305.0]
JUNOS Services Example Container package [13.1-20130305.0]
JUNOS Services Crypto [13.1-20130305.0]
JUNOS Services SSL [13.1-20130305.0]
JUNOS Services IPSec [13.1-20130305.0]
JUNOS Runtime Software Suite [13.1-20130305.0]
JUNOS Routing Software Suite [13.1-20130305.0]

```

```
lcc7-re1:
```

```

-----
Hostname: lcc7_alt_re
Model: t1600
JUNOS Base OS boot [13.1-20130305.0]
JUNOS Base OS Software Suite [13.1-20130305.0]
JUNOS Kernel Software Suite [13.1-20130305.0]
JUNOS Crypto Software Suite [13.1-20130305.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1-20130305.0]
JUNOS Packet Forwarding Engine Support (T-Series) [13.1-20130305.0]
JUNOS Online Documentation [13.1-20130305.0]
JUNOS Services ACL Container package [13.1-20130305.0]
JUNOS Services Application Level Gateways [13.1-20130305.0]
JUNOS AppId Services [13.1-20130305.0]
JUNOS Border Gateway Function package [13.1-20130305.0]
JUNOS Services Captive Portal and Content Delivery Container package
[13.1-20130305.0]
JUNOS Services HTTP Content Management package [13.1-20130305.0]
JUNOS IDP Services [13.1-20130305.0]
JUNOS Services Jflow Container package [13.1-20130305.0]
JUNOS Services LL-PDF Container package [13.1-20130305.0]
JUNOS Services MobileNext Software package [13.1-20130305.0]
JUNOS Services Mobile Subscriber Service Container package [13.1-20130305.0]
JUNOS Services NAT [13.1-20130305.0]
JUNOS Services PTSP Container package [13.1-20130305.0]
JUNOS Services RPM [13.1-20130305.0]
JUNOS Services Stateful Firewall [13.1-20130305.0]
JUNOS Voice Services Container package [13.1-20130305.0]
JUNOS Services Example Container package [13.1-20130305.0]
JUNOS Services Crypto [13.1-20130305.0]
JUNOS Services SSL [13.1-20130305.0]
JUNOS Services IPSec [13.1-20130305.0]
JUNOS Runtime Software Suite [13.1-20130305.0]
JUNOS Routing Software Suite [13.1-20130305.0]

```

#### show version invoke-on other-routing-engine (TX Matrix Plus Router with 3D SIBs)

```
user@host> show version invoke-on other-routing-engine
```

```
sfc0-re1:
```

```

-----
Hostname: sfc0_alt_re
Model: txp
JUNOS Base OS boot [13.1-20130305.0]
JUNOS Base OS Software Suite [13.1-20130305.0]
JUNOS 64-bit Kernel Software Suite [13.1-20130305.0]
JUNOS Crypto Software Suite [13.1-20130305.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1-20130305.0]
JUNOS Packet Forwarding Engine Support (T-Series) [13.1-20130305.0]

```

JUNOS Online Documentation [13.1-20130305.0]  
 JUNOS Services ACL Container package [13.1-20130305.0]  
 JUNOS Services Application Level Gateways [13.1-20130305.0]  
 JUNOS AppId Services [13.1-20130305.0]  
 JUNOS Border Gateway Function package [13.1-20130305.0]  
 JUNOS Services Captive Portal and Content Delivery Container package [13.1-20130305.0]  
 JUNOS Services HTTP Content Management package [13.1-20130305.0]  
 JUNOS IDP Services [13.1-20130305.0]  
 JUNOS Services Jflow Container package [13.1-20130305.0]  
 JUNOS Services LL-PDF Container package [13.1-20130305.0]  
 JUNOS Services MobileNext Software package [13.1-20130305.0]  
 JUNOS Services Mobile Subscriber Service Container package [13.1-20130305.0]  
 JUNOS Services NAT [13.1-20130305.0]  
 JUNOS Services PTSP Container package [13.1-20130305.0]  
 JUNOS Services RPM [13.1-20130305.0]  
 JUNOS Services Stateful Firewall [13.1-20130305.0]  
 JUNOS Voice Services Container package [13.1-20130305.0]  
 JUNOS Services Example Container package [13.1-20130305.0]  
 JUNOS Services Crypto [13.1-20130305.0]  
 JUNOS Services SSL [13.1-20130305.0]  
 JUNOS Services IPSec [13.1-20130305.0]  
 JUNOS Runtime Software Suite [13.1-20130305.0]  
 JUNOS Routing Software Suite [13.1-20130305.0]

lcc0-re1:

-----

Hostname: lcc0\_alt\_re  
 Model: t4000  
 JUNOS Base OS boot [13.1-20130305.0]  
 JUNOS Base OS Software Suite [13.1-20130305.0]  
 JUNOS Kernel Software Suite [13.1-20130305.0]  
 JUNOS Crypto Software Suite [13.1-20130305.0]  
 JUNOS Packet Forwarding Engine Support (M/T Common) [13.1-20130305.0]  
 JUNOS Packet Forwarding Engine Support (T-Series) [13.1-20130305.0]  
 JUNOS Online Documentation [13.1-20130305.0]  
 JUNOS Services ACL Container package [13.1-20130305.0]  
 JUNOS Services Application Level Gateways [13.1-20130305.0]  
 JUNOS AppId Services [13.1-20130305.0]  
 JUNOS Border Gateway Function package [13.1-20130305.0]  
 JUNOS Services Captive Portal and Content Delivery Container package [13.1-20130305.0]  
 JUNOS Services HTTP Content Management package [13.1-20130305.0]  
 JUNOS IDP Services [13.1-20130305.0]  
 JUNOS Services Jflow Container package [13.1-20130305.0]  
 JUNOS Services LL-PDF Container package [13.1-20130305.0]  
 JUNOS Services MobileNext Software package [13.1-20130305.0]  
 JUNOS Services Mobile Subscriber Service Container package [13.1-20130305.0]  
 JUNOS Services NAT [13.1-20130305.0]  
 JUNOS Services PTSP Container package [13.1-20130305.0]  
 JUNOS Services RPM [13.1-20130305.0]  
 JUNOS Services Stateful Firewall [13.1-20130305.0]  
 JUNOS Voice Services Container package [13.1-20130305.0]  
 JUNOS Services Example Container package [13.1-20130305.0]  
 JUNOS Services Crypto [13.1-20130305.0]  
 JUNOS Services SSL [13.1-20130305.0]  
 JUNOS Services IPSec [13.1-20130305.0]  
 JUNOS Runtime Software Suite [13.1-20130305.0]  
 JUNOS Routing Software Suite [13.1-20130305.0]

```
lcc2-re1:
```

```
-----
Hostname: lcc2_alt_re
Model: t4000
JUNOS Base OS boot [13.1-20130305.0]
JUNOS Base OS Software Suite [13.1-20130305.0]
JUNOS Kernel Software Suite [13.1-20130305.0]
JUNOS Crypto Software Suite [13.1-20130305.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1-20130305.0]
JUNOS Packet Forwarding Engine Support (T-Series) [13.1-20130305.0]
JUNOS Online Documentation [13.1-20130305.0]
JUNOS Services AACL Container package [13.1-20130305.0]
JUNOS Services Application Level Gateways [13.1-20130305.0]
JUNOS AppId Services [13.1-20130305.0]
JUNOS Border Gateway Function package [13.1-20130305.0]
JUNOS Services Captive Portal and Content Delivery Container package
[13.1-20130305.0]
JUNOS Services HTTP Content Management package [13.1-20130305.0]
JUNOS IDP Services [13.1-20130305.0]
JUNOS Services Jflow Container package [13.1-20130305.0]
JUNOS Services LL-PDF Container package [13.1-20130305.0]
JUNOS Services MobileNext Software package [13.1-20130305.0]
JUNOS Services Mobile Subscriber Service Container package [13.1-20130305.0]
JUNOS Services NAT [13.1-20130305.0]
JUNOS Services PTSP Container package [13.1-20130305.0]
JUNOS Services RPM [13.1-20130305.0]
JUNOS Services Stateful Firewall [13.1-20130305.0]
JUNOS Voice Services Container package [13.1-20130305.0]
JUNOS Services Example Container package [13.1-20130305.0]
JUNOS Services Crypto [13.1-20130305.0]
JUNOS Services SSL [13.1-20130305.0]
JUNOS Services IPSec [13.1-20130305.0]
JUNOS Runtime Software Suite [13.1-20130305.0]
JUNOS Routing Software Suite [13.1-20130305.0]
```

```
lcc4-re1:
```

```
-----
Hostname: lcc4_alt_re
Model: t4000
JUNOS Base OS boot [13.1-20130305.0]
JUNOS Base OS Software Suite [13.1-20130305.0]
JUNOS Kernel Software Suite [13.1-20130305.0]
JUNOS Crypto Software Suite [13.1-20130305.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1-20130305.0]
JUNOS Packet Forwarding Engine Support (T-Series) [13.1-20130305.0]
JUNOS Online Documentation [13.1-20130305.0]
JUNOS Services AACL Container package [13.1-20130305.0]
JUNOS Services Application Level Gateways [13.1-20130305.0]
JUNOS AppId Services [13.1-20130305.0]
JUNOS Border Gateway Function package [13.1-20130305.0]
JUNOS Services Captive Portal and Content Delivery Container package
[13.1-20130305.0]
JUNOS Services HTTP Content Management package [13.1-20130305.0]
JUNOS IDP Services [13.1-20130305.0]
JUNOS Services Jflow Container package [13.1-20130305.0]
JUNOS Services LL-PDF Container package [13.1-20130305.0]
JUNOS Services MobileNext Software package [13.1-20130305.0]
JUNOS Services Mobile Subscriber Service Container package [13.1-20130305.0]
JUNOS Services NAT [13.1-20130305.0]
JUNOS Services PTSP Container package [13.1-20130305.0]
```

JUNOS Services RPM [13.1-20130305.0]  
JUNOS Services Stateful Firewall [13.1-20130305.0]  
JUNOS Voice Services Container package [13.1-20130305.0]  
JUNOS Services Example Container package [13.1-20130305.0]  
JUNOS Services Crypto [13.1-20130305.0]  
JUNOS Services SSL [13.1-20130305.0]  
JUNOS Services IPSec [13.1-20130305.0]  
JUNOS Runtime Software Suite [13.1-20130305.0]  
JUNOS Routing Software Suite [13.1-20130305.0]

lcc6-re1:

-----  
Hostname: lcc6\_alt\_re  
Model: t1600  
JUNOS Base OS boot [13.1-20130305.0]  
JUNOS Base OS Software Suite [13.1-20130305.0]  
JUNOS Kernel Software Suite [13.1-20130305.0]  
JUNOS Crypto Software Suite [13.1-20130305.0]  
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1-20130305.0]  
JUNOS Packet Forwarding Engine Support (T-Series) [13.1-20130305.0]  
JUNOS Online Documentation [13.1-20130305.0]  
JUNOS Services AACL Container package [13.1-20130305.0]  
JUNOS Services Application Level Gateways [13.1-20130305.0]  
JUNOS AppId Services [13.1-20130305.0]  
JUNOS Border Gateway Function package [13.1-20130305.0]  
JUNOS Services Captive Portal and Content Delivery Container package [13.1-20130305.0]  
JUNOS Services HTTP Content Management package [13.1-20130305.0]  
JUNOS IDP Services [13.1-20130305.0]  
JUNOS Services Jflow Container package [13.1-20130305.0]  
JUNOS Services LL-PDF Container package [13.1-20130305.0]  
JUNOS Services MobileNext Software package [13.1-20130305.0]  
JUNOS Services Mobile Subscriber Service Container package [13.1-20130305.0]  
JUNOS Services NAT [13.1-20130305.0]  
JUNOS Services PTSP Container package [13.1-20130305.0]  
JUNOS Services RPM [13.1-20130305.0]  
JUNOS Services Stateful Firewall [13.1-20130305.0]  
JUNOS Voice Services Container package [13.1-20130305.0]  
JUNOS Services Example Container package [13.1-20130305.0]  
JUNOS Services Crypto [13.1-20130305.0]  
JUNOS Services SSL [13.1-20130305.0]  
JUNOS Services IPSec [13.1-20130305.0]  
JUNOS Runtime Software Suite [13.1-20130305.0]  
JUNOS Routing Software Suite [13.1-20130305.0]

lcc7-re1:

-----  
Hostname: lcc7\_alt\_re  
Model: t1600  
JUNOS Base OS boot [13.1-20130305.0]  
JUNOS Base OS Software Suite [13.1-20130305.0]  
JUNOS Kernel Software Suite [13.1-20130305.0]  
JUNOS Crypto Software Suite [13.1-20130305.0]  
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1-20130305.0]  
JUNOS Packet Forwarding Engine Support (T-Series) [13.1-20130305.0]  
JUNOS Online Documentation [13.1-20130305.0]  
JUNOS Services AACL Container package [13.1-20130305.0]  
JUNOS Services Application Level Gateways [13.1-20130305.0]  
JUNOS AppId Services [13.1-20130305.0]  
JUNOS Border Gateway Function package [13.1-20130305.0]



JUNOS Services Captive Portal and Content Delivery Container package [13.1-20130305.0]  
JUNOS Services HTTP Content Management package [13.1-20130305.0]  
JUNOS IDP Services [13.1-20130305.0]  
JUNOS Services Jflow Container package [13.1-20130305.0]  
JUNOS Services LL-PDF Container package [13.1-20130305.0]  
JUNOS Services MobileNext Software package [13.1-20130305.0]  
JUNOS Services Mobile Subscriber Service Container package [13.1-20130305.0]  
JUNOS Services NAT [13.1-20130305.0]  
JUNOS Services PTSP Container package [13.1-20130305.0]  
JUNOS Services RPM [13.1-20130305.0]  
JUNOS Services Stateful Firewall [13.1-20130305.0]  
JUNOS Voice Services Container package [13.1-20130305.0]  
JUNOS Services Example Container package [13.1-20130305.0]  
JUNOS Services Crypto [13.1-20130305.0]  
JUNOS Services SSL [13.1-20130305.0]  
JUNOS Services IPSec [13.1-20130305.0]  
JUNOS Runtime Software Suite [13.1-20130305.0]  
JUNOS Routing Software Suite [13.1-20130305.0]



## PART 4

# Troubleshooting

- [Troubleshooting Tips on page 1257](#)



## Troubleshooting Tips

- [Troubleshooting: Software Upgrade Failure Due to Insufficient Free Disk Space on a Routing Matrix with a TX Matrix Plus Router on page 1257](#)
- [Troubleshooting: Software Upgrade Failure Due to Insufficient Available DRAM on a Routing Matrix with a TX Matrix Plus Router on page 1265](#)
- [Troubleshooting: Software Upgrade Failure Due to Mixed Software Versions on a Routing Matrix with a TX Matrix Plus Router on page 1265](#)
- [Troubleshooting: Offline SIBs on TX Matrix Plus Router on page 1269](#)
- [Troubleshooting: Offline LCCs in a Routing Matrix with a TX Matrix Plus Router on page 1284](#)
- [Troubleshooting: LCC in Amnesiac Mode on page 1289](#)

### Troubleshooting: Software Upgrade Failure Due to Insufficient Free Disk Space on a Routing Matrix with a TX Matrix Plus Router

---

**Problem** In a routing matrix with a TX Matrix Plus router, a successful upgrade of the Junos OS requires sufficient free disk space on all Routing Engines of the TX Matrix Plus router and connected T1600 or T4000 routers.

If the amount of free disk space on a Routing Engine is insufficient to install the Junos OS, you might receive a warning that the `/var` filesystem is low on free disk space, similar to the following message:

```
WARNING: The /var filesystem is low on free disk space.  
WARNING: This package requires 1075136k free, but there  
WARNING: is only 666502k available.
```

**Cause** The amount of free disk space necessary to upgrade a Routing Engine with a new version of the Junos OS can vary from one release to another. Check the *Junos OS Release Notes* for the software version you are installing.

To determine the amount of free disk space on each Routing Engine in the routing matrix, issue the `show system storage` command on the master Routing Engine and also on the backup Routing Engine on the TX Matrix Plus router.



**NOTE:** When you issue the `show system storage` command on a master Routing Engine of a TX Matrix Plus router, the command is broadcast to the master Routing Engines (only) on all T1600 or T4000 routers in the routing matrix. Similarly, when you issue the `show system storage` command on a backup Routing Engine of a TX Matrix Plus router, the command is broadcast to the backup Routing Engines (only) on all T1600 or T4000 routers in the routing matrix.

The following example shows sample output for the `show system storage` command when it is issued on the master Routing Engine in slot 0 on the TX Matrix Plus router:

```
root@sfc0> show system storage
sfc0-re0:
```

Filesystem	Size	Used	Avail	Capacity	Mounted on
/dev/ad0s1a	3.3G	370M	2.7G	12%	/
devfs	1.0K	1.0K	0B	100%	/dev
/dev/md0	65M	65M	0B	100%	/packages/mnt/jbase
/dev/md1	41M	41M	0B	100%	
/packages/mnt/jkernel64-13.1R1.0					
/dev/md2	147M	147M	0B	100%	
/packages/mnt/jpfe-T-13.1R1.0					
/dev/md3	5.3M	5.3M	0B	100%	
/packages/mnt/jdocs-13.1R1.0					
/dev/md4	115M	115M	0B	100%	
/packages/mnt/jroute-13.1R1.0					
/dev/md5	29M	29M	0B	100%	
/packages/mnt/jcrypto64-13.1R1.0					
/dev/md6	65M	65M	0B	100%	
/packages/mnt/jpfe-common-13.1R1.0					
/dev/md7	428M	428M	0B	100%	
/packages/mnt/jruntime-13.1R1.0					
/dev/md8	24M	24M	0B	100%	
/packages/mnt/jruntime64-13.1R1.0					
/dev/md9	2.0G	8.0K	1.8G	0%	/tmp
/dev/md10	2.0G	11M	1.8G	1%	/mfs
/dev/ad0s1e	376M	26K	346M	0%	/config
procfs	4.0K	4.0K	0B	100%	/proc
/dev/ad1s1f	55G	27G	23G	54%	/var

```
lcc0-re0:
```

Filesystem	Size	Used	Avail	Capacity	Mounted on
/dev/ad0s1a	3.3G	370M	2.7G	12%	/
devfs	1.0K	1.0K	0B	100%	/dev
/dev/md0	65M	65M	0B	100%	/packages/mnt/jbase
/dev/md1	41M	41M	0B	100%	
/packages/mnt/jkernel64-13.1R1.0					
/dev/md2	147M	147M	0B	100%	
/packages/mnt/jpfe-T-13.1R1.0					
/dev/md3	5.3M	5.3M	0B	100%	
/packages/mnt/jdocs-13.1R1.0					
/dev/md4	115M	115M	0B	100%	
/packages/mnt/jroute-13.1R1.0					
/dev/md5	29M	29M	0B	100%	
/packages/mnt/jcrypto64-13.1R1.0					

```

/dev/md6                65M      65M      0B      100%
/packages/mnt/jpfe-common-13.1R1.0
/dev/md7                428M     428M      0B      100%
/packages/mnt/jruntime-13.1R1.0
/dev/md8                24M      24M      0B      100%
/packages/mnt/jruntime64-13.1R1.0
/dev/md9                3.2G     14K      2.9G     0% /tmp
/dev/md10               3.2G    438K      2.9G     0% /mfs
---(more)---

/dev/ad0s1e             375M     3.9M     341M      1% /config
procfs                 4.0K     4.0K      0B      100% /proc
/dev/ad1s1f            52G      30G      18G      63% /var

```

lcc2-re0:

```

-----
Filesystem              Size      Used      Avail  Capacity  Mounted on
/dev/ad0s1a             3.3G     370M     2.7G     12%      /
devfs                  1.0K     1.0K      0B      100%    /dev
/dev/md0                65M      65M      0B      100%    /packages/mnt/jbase
/dev/md1                41M      41M      0B      100%
/packages/mnt/jkernel64-13.1R1.0
/dev/md2                147M     147M      0B      100%
/packages/mnt/jpfe-T-13.1R1.0
/dev/md3                5.3M      5.3M      0B      100%
/packages/mnt/jdocs-13.1R1.0
/dev/md4                115M     115M      0B      100%
/packages/mnt/jroute-13.1R1.0
/dev/md5                29M      29M      0B      100%
/packages/mnt/jcrypto64-13.1R1.0
/dev/md6                65M      65M      0B      100%
/packages/mnt/jpfe-common-13.1R1.0
/dev/md7                428M     428M      0B      100%
/packages/mnt/jruntime-13.1R1.0
/dev/md8                24M      24M      0B      100%
/packages/mnt/jruntime64-13.1R1.0
/dev/md9                3.2G     14K      2.9G     0% /tmp
/dev/md10               3.2G    432K      2.9G     0% /mfs
/dev/ad0s1e             376M     14K      346M      0% /config
procfs                 4.0K     4.0K      0B      100% /proc
/dev/ad1s1f            53G      27G      22G      56% /var

```

lcc4-re0:

```

-----
Filesystem              Size      Used      Avail  Capacity  Mounted on
/dev/ad0s1a             3.3G     370M     2.7G     12%      /
devfs                  1.0K     1.0K      0B      100%    /dev
/dev/md0                65M      65M      0B      100%    /packages/mnt/jbase
/dev/md1                41M      41M      0B      100%
/packages/mnt/jkernel64-13.1R1.0
/dev/md2                147M     147M      0B      100%
/packages/mnt/jpfe-T-13.1R1.0
/dev/md3                5.3M     5.3M      0B      100%
/packages/mnt/jdocs-13.1R1.0
/dev/md4                115M     115M      0B      100%
/packages/mnt/jroute-13.1R1.0
/dev/md5                29M      29M      0B      100%
/packages/mnt/jcrypto64-13.1R1.0
/dev/md6                65M      65M      0B      100%
/packages/mnt/jpfe-common-13.1R1.0
---(more 60%)---

```

/dev/md7	428M	428M	0B	100%	
/packages/mnt/jruntime-13.1R1.0					
/dev/md8	24M	24M	0B	100%	
/packages/mnt/jruntime64-13.1R1.0					
/dev/md9	2.0G	14K	1.8G	0%	/tmp
/dev/md10	2.0G	432K	1.8G	0%	/mfs
/dev/ad0s1e	376M	14K	346M	0%	/config
procfs	4.0K	4.0K	0B	100%	/proc
/dev/ad1s1f	55G	27G	23G	54%	/var

lcc6-re0:

Filesystem	Size	Used	Avail	Capacity	Mounted on
/dev/ad0s1a	3.3G	370M	2.7G	12%	/
devfs	1.0K	1.0K	0B	100%	/dev
/dev/md0	65M	65M	0B	100%	/packages/mnt/jbase
/dev/md1	41M	41M	0B	100%	
/packages/mnt/jkernel64-13.1R1.0					
/dev/md2	147M	147M	0B	100%	
/packages/mnt/jpfe-T-13.1R1.0					
/dev/md3	5.3M	5.3M	0B	100%	
/packages/mnt/jdocs-13.1R1.0					
/dev/md4	115M	115M	0B	100%	
/packages/mnt/jroute-13.1R1.0					
/dev/md5	29M	29M	0B	100%	
/packages/mnt/jcrypto64-13.1R1.0					
/dev/md6	65M	65M	0B	100%	
/packages/mnt/jpfe-common-13.1R1.0					
/dev/md7	428M	428M	0B	100%	
/packages/mnt/jruntime-13.1R1.0					
/dev/md8	24M	24M	0B	100%	
/packages/mnt/jruntime64-13.1R1.0					
/dev/md9	2.0G	14K	1.8G	0%	/tmp
/dev/md10	2.0G	432K	1.8G	0%	/mfs
/dev/ad0s1e	376M	14K	346M	0%	/config
procfs	4.0K	4.0K	0B	100%	/proc
/dev/ad1s1f	55G	25G	25G	50%	/var

lcc7-re0:

Filesystem	Size	Used	Avail	Capacity	Mounted on
/dev/ad0s1a	3.3G	370M	2.7G	12%	/
devfs	1.0K	1.0K	0B	100%	/dev
/dev/md0	65M	65M	0B	100%	/packages/mnt/jbase
/dev/md1	41M	41M	0B	100%	
/packages/mnt/jkernel64-13.1R1.0					
/dev/md2	147M	147M	0B	100%	
/packages/mnt/jpfe-T-13.1R1.0					
---(more 90%)---					
/dev/md3	5.3M	5.3M	0B	100%	
/packages/mnt/jdocs-13.1R1.0					
/dev/md4	115M	115M	0B	100%	
/packages/mnt/jroute-13.1R1.0					
/dev/md5	29M	29M	0B	100%	
/packages/mnt/jcrypto64-13.1R1.0					
/dev/md6	65M	65M	0B	100%	
/packages/mnt/jpfe-common-13.1R1.0					
/dev/md7	428M	428M	0B	100%	
/packages/mnt/jruntime-13.1R1.0					



/dev/md8	24M	24M	0B	100%	
/packages/mnt/jruntime64-13.1R1.0					
/dev/md9	2.0G	14K	1.8G	0%	/tmp
/dev/md10	2.0G	438K	1.8G	0%	/mfs
/dev/ad0s1e	376M	14K	346M	0%	/config
procfs	4.0K	4.0K	0B	100%	/proc
/dev/ad1s1f	55G	26G	25G	51%	/var

**Solution** To resolve the issue of insufficient free disk space on a Routing Engine to perform a Junos OS upgrade on that router, perform the following steps:

1. To free up space in the file system, you can log in to a particular Routing Engine and then issue the `request system storage cleanup` command. This command deletes rotating log files in `/var/log` that are not current, temporary files in `/var/tmp` that have not been modified within the last two days, and all crash files in `/var/crash`. The command output first lists the files proposed for deletion and then prompts you to proceed to delete these storage cleanup candidates.



**NOTE:** Although the command prompts you before deleting files, you can issue the command with the `dry-run` option, which causes the command to only list the cleanup candidates without offering to remove them.

The following example shows sample output for the `request system storage cleanup` command with the `dry-run` option included:

```
root@sfc0> request system storage cleanup dry-run
Currently rotating log files, please wait.
This operation can take up to a minute.
```

List of files to delete:

Size	Date	Name
1287.5K	Nov 21 23:57	/var/log/bgp.0.gz
1060.6K	Nov 21 23:37	/var/log/bgp.1.gz
1061.9K	Nov 21 23:37	/var/log/bgp.2.gz
1053.0K	Nov 21 23:10	/var/log/bgp.3.gz
152.5K	Dec 2 20:37	/var/log/chassisd.0.gz
164.0K	Nov 29 22:27	/var/log/chassisd.1.gz
169.4K	Nov 27 20:07	/var/log/chassisd.2.gz
167.0K	Nov 26 22:45	/var/log/chassisd.3.gz
39.8K	Dec 2 20:39	/var/log/dcd.0.gz
47.4K	Nov 24 19:27	/var/log/dcd.1.gz
46.9K	Jun 9 22:15	/var/log/filter.0.gz
54.4K	Jun 9 18:00	/var/log/filter.1.gz
56.6K	Jun 9 17:15	/var/log/filter.2.gz
56.2K	Jun 9 16:30	/var/log/filter.3.gz
53.4K	Jun 9 15:45	/var/log/filter.4.gz
53.8K	Jun 9 15:00	/var/log/filter.5.gz
55.9K	Jun 9 14:15	/var/log/filter.6.gz
56.0K	Jun 9 13:30	/var/log/filter.7.gz
56.7K	Jun 9 12:45	/var/log/filter.8.gz
55.6K	Jun 9 12:00	/var/log/filter.9.gz
794B	Nov 26 01:10	/var/log/install.0.gz
786B	Nov 25 02:27	/var/log/install.1.gz
775B	Oct 30 20:02	/var/log/install.10.gz
790B	Oct 30 08:02	/var/log/install.11.gz
785B	Oct 28 21:06	/var/log/install.12.gz
775B	Oct 26 10:30	/var/log/install.13.gz
789B	Oct 26 04:35	/var/log/install.14.gz
786B	Oct 19 07:32	/var/log/install.15.gz
821B	Oct 19 02:41	/var/log/install.16.gz
887B	Oct 18 07:27	/var/log/install.17.gz
791B	Oct 17 07:26	/var/log/install.18.gz
791B	Nov 22 19:18	/var/log/install.2.gz

...output\_truncated...

```
7157B May 31 2012
/var/tmp/pa4746.01/jinstall64-12.2-20120607.0-domestic-signed.x4746/jinstall64_pkg/packages/certs.pem
231B Jun 7 15:01
/var/tmp/pa4746.01/jinstall64-12.2-20120607.0-domestic-signed.x4746/jinstall64_pkg/pkg/manifest
7157B Jun 7 12:21
/var/tmp/pa4746.01/jinstall64-12.2-20120607.0-domestic-signed.x4746/jinstall64_pkg/pkg/manifest.certs
41B Jun 7 15:01
/var/tmp/pa4746.01/jinstall64-12.2-20120607.0-domestic-signed.x4746/jinstall64_pkg/pkg/manifest.sha1
11.4M Jun 7 17:19
/var/tmp/pa4746.01/jinstall64-12.2-20120607.0-domestic-signed.x4746/jinstall64_pkg/bootstrap-install-12.2-20120607.0.tar
Delete these files ? [yes,no] (no)
```

2. You can use the following file management operational commands to display information about the directories and files on a Routing Engine, but you must include the chassis and Routing Engine specifiers in the pathname:
  - To display detailed information about a file or directory contents, issue the **file list** command with the **detail** option.
  - To display the contents of a file, issue the **file show** command.
  - To compare the contents of two files, issue the **file compare** command.
3. In addition to or instead of using the **request system storage cleanup** command to delete unnecessary files, you can use the following file management commands to delete or move files on a Routing Engine, but you must include the chassis and Routing Engine specifiers in the pathname:
  - To delete files, issue the **file delete** command.
  - To copy files, issue the **file copy** command.
  - To rename files, issue the **file rename** command.

If you elect to use the **request system storage cleanup** command to automatically delete files, issue the command without the **dry-run** option, and then type **yes** when the CLI prompts to proceed with deleting the candidate files. The following truncated example shows sample output for the **request system storage cleanup** command:

4. After sufficient free disk space is available on the Routing Engines on which you are upgrading the Junos OS, attempt the upgrade procedure again.

#### Related Documentation

- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
- [Roadmap for Configuring the Routing Matrix on page 31](#)
- [Example Configuration for the Routing Matrix on page 47](#)
- [Upgrading the Junos OS on the Routing Matrix on page 155](#)
- [Troubleshooting: Upgrade Failure Due to Insufficient DRAM on page 1265](#)
- [Troubleshooting: Upgrade Failure Due to Mixed Software on page 1265](#)

## Troubleshooting: Software Upgrade Failure Due to Insufficient Available DRAM on a Routing Matrix with a TX Matrix Plus Router

**Problem** In a routing matrix with a TX Matrix Plus router, a successful upgrade of the Junos OS requires sufficient available DRAM on all Routing Engines of the TX Matrix Plus router and connected T1600 routers.

**Cause** Failure of a Junos OS upgrade due to insufficient available DRAM on a Routing Engine occurs infrequently. When it does occur, there are various causes and therefore various solutions to the issue.

If you suspect that insufficient available DRAM is preventing a successful upgrade of the Junos OS, contact your technical support representative.

**Solution** If you suspect that insufficient available DRAM is preventing a successful upgrade of the Junos OS, contact your technical support representative.



**NOTE:** It can be useful to issue the `request support information` command before contacting technical support. The command runs several Junos operational commands to obtain detailed information about the system hardware and software. Because the amount of command output is quite large, we recommend that you save the output to a file.

In some cases of insufficient available DRAM, a different or upgraded Routing Engine with a larger amount of DRAM is required. However, most DRAM issues that prevent a successful upgrade can be resolved by removing any superfluous files from the `/root` and `/tmp` directories.

### Related Documentation

- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
- [Roadmap for Configuring the Routing Matrix on page 31](#)
- [Example Configuration for the Routing Matrix on page 47](#)
- [Upgrading the Junos OS on the Routing Matrix on page 155](#)
- [Troubleshooting: Upgrade Failure Due to Insufficient Disk Space on page 1257](#)
- [Troubleshooting: Upgrade Failure Due to Mixed Software on page 1265](#)

## Troubleshooting: Software Upgrade Failure Due to Mixed Software Versions on a Routing Matrix with a TX Matrix Plus Router

**Problem** In a routing matrix with a TX Matrix Plus router, a successful upgrade of the Junos OS requires that all Routing Engines of the SFC and connected LCCs are running the same version of software.

If the software versions on the Routing Engines are not aligned, the software upgrade process will return an error.

**Cause** Different versions of the Junos OS can have incompatible message formats, particularly if graceful routing engine switchover (GRES) is enabled. Because the steps in the upgrade process include changing Routing Engine mastership, running the same version of software is recommended.

To display the hostname and version information about the software running on all routers in a routing matrix, issue the **show version** command with the **invoke-on all-routing-engines** option.

In the following example, a routing matrix consists of a TX Matrix Plus router (**sfc0**) and two connected T1600 routers (**lcc0** and **lcc2**), with all three routers containing redundant host subsystems. The sample output from the **show version** command shows that a different version of the Junos OS is installed on the TX Matrix Plus router's backup Routing Engine (**sfc0-re1**), while all the other Routing Engines have Junos OS Release **9.6R1.0** installed.

In the following sample output, the backup Routing Engine on the TX Matrix Plus router is running a version of Junos OS that is different from the software on the other Routing Engines:

```
root@sfc0> show version invoke-on all-routing-engines
sfc0-re0:
```

```
-----
Hostname: sfc0
Model: txp
JUNOS Base OS boot [9.6-20090713.0]
JUNOS Base OS Software Suite [9.6-20090713.0]
JUNOS Kernel Software Suite [9.6-20090713.0]
JUNOS Crypto Software Suite [9.6-20090713.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090713.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090713.0]
JUNOS Online Documentation [9.6-20090713.0]
JUNOS Voice Services Container package [9.6-20090713.0]
JUNOS Border Gateway Function package [9.6-20090713.0]
JUNOS Services AACL Container package [9.6-20090713.0]
JUNOS Services LL-PDF Container package [9.6-20090713.0]
JUNOS Services Stateful Firewall [9.6-20090713.0]
JUNOS AppId Services [9.6-20090713.0]
JUNOS IDP Services [9.6-20090713.0]
JUNOS Routing Software Suite [9.6-20090713.0]
```

```
lcc0-re0:
```

```
-----
Hostname: mylcc0
Model: t1600
JUNOS Base OS boot [9.6-20090713.0]
JUNOS Base OS Software Suite [9.6-20090713.0]
JUNOS Kernel Software Suite [9.6-20090713.0]
JUNOS Crypto Software Suite [9.6-20090713.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090713.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090713.0]
JUNOS Online Documentation [9.6-20090713.0]
JUNOS Voice Services Container package [9.6-20090713.0]
JUNOS Border Gateway Function package [9.6-20090713.0]
```

```
JUNOS Services AACL Container package [9.6-20090713.0]
JUNOS Services LL-PDF Container package [9.6-20090713.0]
JUNOS Services Stateful Firewall [9.6-20090713.0]
JUNOS AppId Services [9.6-20090713.0]
JUNOS IDP Services [9.6-20090713.0]
JUNOS Routing Software Suite [9.6-20090713.0]
```

#### lcc2-re0:

```
-----
Hostname: mylcc2
Model: t1600
JUNOS Base OS boot [9.6-20090713.0]
JUNOS Base OS Software Suite [9.6-20090713.0]
JUNOS Kernel Software Suite [9.6-20090713.0]
JUNOS Crypto Software Suite [9.6-20090713.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090713.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090713.0]
JUNOS Online Documentation [9.6-20090713.0]
JUNOS Voice Services Container package [9.6-20090713.0]
JUNOS Border Gateway Function package [9.6-20090713.0]
JUNOS Services AACL Container package [9.6-20090713.0]
JUNOS Services LL-PDF Container package [9.6-20090713.0]
JUNOS Services Stateful Firewall [9.6-20090713.0]
JUNOS AppId Services [9.6-20090713.0]
JUNOS IDP Services [9.6-20090713.0]
JUNOS Routing Software Suite [9.6-20090713.0]
```

#### sfc0-re1:

```
-----
Hostname: sfc0_alt_re
Model: txp
JUNOS Base OS boot [1.1-1111111.1]
JUNOS Base OS Software Suite [1.1-1111111.1]
JUNOS Kernel Software Suite [1.1-1111111.1]
JUNOS Crypto Software Suite [1.1-1111111.1]
JUNOS Packet Forwarding Engine Support (M/T Common) [1.1-1111111.1]
JUNOS Packet Forwarding Engine Support (T-Series) [1.1-1111111.1]
JUNOS Online Documentation [1.1-1111111.1]
JUNOS Voice Services Container package [1.1-1111111.1]
JUNOS Border Gateway Function package [1.1-1111111.1]
JUNOS Services AACL Container package [1.1-1111111.1]
JUNOS Services LL-PDF Container package [1.1-1111111.1]
JUNOS Services Stateful Firewall [1.1-1111111.1]
JUNOS AppId Services [1.1-1111111.1]
JUNOS IDP Services [1.1-1111111.1]
JUNOS Routing Software Suite [1.1-1111111.1]
```

#### lcc0-re1:

```
-----
Hostname: mylcc0_alt_re
Model: t1600
JUNOS Base OS boot [9.6-20090713.0]
JUNOS Base OS Software Suite [9.6-20090713.0]
JUNOS Kernel Software Suite [9.6-20090713.0]
JUNOS Crypto Software Suite [9.6-20090713.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090713.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090713.0]
JUNOS Online Documentation [9.6-20090713.0]
JUNOS Voice Services Container package [9.6-20090713.0]
JUNOS Border Gateway Function package [9.6-20090713.0]
JUNOS Services AACL Container package [9.6-20090713.0]
```

```
JUNOS Services LL-PDF Container package [9.6-20090713.0]
JUNOS Services Stateful Firewall [9.6-20090713.0]
JUNOS AppId Services [9.6-20090713.0]
JUNOS IDP Services [9.6-20090713.0]
JUNOS Routing Software Suite [9.6-20090713.0]
```

lcc2-re1:

```
-----
Hostname: mylcc2_alt_re
Model: t1600
JUNOS Base OS boot [9.6-20090713.0]
JUNOS Base OS Software Suite [9.6-20090713.0]
JUNOS Kernel Software Suite [9.6-20090713.0]
JUNOS Crypto Software Suite [9.6-20090713.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090713.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090713.0]
JUNOS Online Documentation [9.6-20090713.0]
JUNOS Voice Services Container package [9.6-20090713.0]
JUNOS Border Gateway Function package [9.6-20090713.0]
JUNOS Services AACL Container package [9.6-20090713.0]
JUNOS Services LL-PDF Container package [9.6-20090713.0]
JUNOS Services Stateful Firewall [9.6-20090713.0]
JUNOS AppId Services [9.6-20090713.0]
JUNOS IDP Services [9.6-20090713.0]
JUNOS Routing Software Suite [9.6-20090713.0]
```

**Solution** To synchronize the Junos OS versions running on the Routing Engines in a routing matrix, perform the following steps on each Routing Engine that has an incorrect version of Junos OS installed:

1. Log in to the Routing Engine that has the incorrect version of Junos OS installed. To log in to a Routing Engine, issue the [request routing-engine login](#) command.

In the example scenario, the backup Routing Engine on the TX Matrix Plus router is running an incorrect version of software. To log in to that Routing Engine, you would enter the following command:

```
root@sfc0> request routing-engine login other-routing-engine

--- JUNOS 1.1-1111111.1 built 1111-11-11 11:11:11 UTC
root@sfc0_alt_re>
```



**NOTE:** Throughout the software upgrade procedure instructions, we assume that the master Routing Engines are in slot 0 and the backup Routing Engines are in slot 1, which is the recommended installation. Therefore, we could issue the [request routing-engine login](#) command with the `re1` option (instead of the `other-routing-engine` option) and obtain the same results.

2. If the appropriate software package or bundle is not already present on the Routing Engine that has the incorrect version of Junos OS installed, copy the software onto the Routing Engine.

For more information, see the *Junos OS Release Notes* and the *Installation and Upgrade Guide*.



3. To install a software package or bundle on the Routing Engine that has the incorrect version of Junos OS installed, use the [request system software add](#) command.
4. When all the Routing Engines in the routing matrix are running the same version of the Junos OS, try the software upgrade procedure again.

**Related Documentation**

- [Overview of a Routing Matrix with a TX Matrix Plus Router on page 3](#)
- [Roadmap for Configuring the Routing Matrix on page 31](#)
- [Example Configuration for the Routing Matrix on page 47](#)
- [Upgrading the Junos OS on the Routing Matrix on page 155](#)
- [Troubleshooting: Upgrade Failure Due to Insufficient Disk Space on page 1257](#)
- [Troubleshooting: Upgrade Failure Due to Insufficient DRAM on page 1265](#)

## Troubleshooting: Offline SIBs on TX Matrix Plus Router

On a TX Matrix Plus router, none of the 3D SIBs are online. The problem might have occurred because of any of the following reasons:

- [Incorrect Software Version Installed on the TX Matrix Plus Router on page 1269](#)
- [Incorrect Front Panel Switch Setting on page 1270](#)
- [SIB Hardware Failure on page 1281](#)
- [Unsupported Hardware or Hardware Fault Alarms on page 1283](#)

### Incorrect Software Version Installed on the TX Matrix Plus Router

**Problem** On a TX Matrix Plus router, none of the 3D SIBs are online.

**Cause** The software version installed on the TX Matrix Plus router (or the switch-fabric chassis (SFC)) is earlier than Junos OS Release 13.1

**Solution** Check whether the software version installed on the SFC is earlier than Junos OS Release 13.1:

1. Execute the **show version** command.

```
user@host> show version
sfc0-re0:
-----
Hostname: SFC
sfModel: txp
JUNOS Base OS boot [13.1-20130210.0]
JUNOS Base OS Software Suite [13.1-20130210.0]
JUNOS 64-bit Kernel Software Suite [13.1-20130210.0]
JUNOS Crypto Software Suite [13.1-20130210.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1-20130210.0]
JUNOS Packet Forwarding Engine Support (T-Series) [13.1-20130210.0]
[Output Truncated]
JUNOS Services SSL [13.1-20130210.0]
JUNOS Services IPSec [13.1-20130210.0]
```

```
JUNOS Runtime Software Suite [13.1-20130210.0]
JUNOS Routing Software Suite [13.1-20130210.0]
JUNOS 64-bit Runtime Software Suite [13.1-20130210.0]
```

```
lcc0-re0:
```

```
-----
Hostname: LCC0
Model: t4000
JUNOS Base OS boot [13.1-20130210.0]
JUNOS Base OS Software Suite [13.1-20130210.0]
JUNOS 64-bit Kernel Software Suite [13.1-20130210.0]
JUNOS Crypto Software Suite [13.1-20130210.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1-20130210.0]
JUNOS Packet Forwarding Engine Support (T-Series) [13.1-20130210.0]
[Output Truncated]
JUNOS Services Stateful Firewall [13.1-20130210.0]
JUNOS Voice Services Container package [13.1-20130210.0]
JUNOS Services Example Container package [13.1-20130210.0]
JUNOS Services Crypto [13.1-20130210.0]
JUNOS Services SSL [13.1-20130210.0]
JUNOS Services IPSec [13.1-20130210.0]
JUNOS Runtime Software Suite [13.1-20130210.0]
JUNOS Routing Software Suite [13.1-20130210.0]
JUNOS 64-bit Runtime Software Suite [13.1-20130210.0]
```

```
lcc4-re0:
```

```
-----
Hostname: LCC4
Model: t4000
JUNOS Base OS boot [13.1-20130210.0]
JUNOS Base OS Software Suite [13.1-20130210.0]
JUNOS 64-bit Kernel Software Suite [13.1-20130210.0]
JUNOS Crypto Software Suite [13.1-20130210.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1-20130210.0]
JUNOS Packet Forwarding Engine Support (T-Series) [13.1-20130210.0]
JUNOS Online Documentation [13.1-20130210.0]
[Output Truncated]
JUNOS Services IPSec [13.1-20130210.0]
JUNOS Runtime Software Suite [13.1-20130210.0]
JUNOS Routing Software Suite [13.1-20130210.0]
JUNOS 64-bit Runtime Software Suite [13.1-20130210.0]
```

2. If the software version is incorrect, then you must install the correct version of Junos OS. For information about downloading the correct version of the software, see *Downloading Software*.

## Incorrect Front Panel Switch Setting

**Problem** On a TX Matrix Plus router, none of the 3D SIBs are online.

**Cause** The front panel switch of the TX Matrix Plus router (or the SFC) is configured incorrectly and the SFC was not rebooted after the configuration of the front panel switch.

**Solution** 1. Check the configuration of the SFC front panel switch by executing the **show chassis craft-interface** command.

```
user@host show chassis craft-interface
```

```
sfc0-re0:
```

```
-----
FPM Display Contents:
```

```
+-----+
|SFC      |
|9 Alarms active|
|R: LCC 4 Major Error|
|R: LCC 0 Major Error|
+-----+
```

```
SFC Front Panel Switch Settings:
```

```
SFC Chassis Number : 00
```

```
Config Size       : 3
```

```
Front Panel System LEDs:
```

```
Routing Engine    0    1
```

```
-----
OK                *    *
Fail              .    .
Master            *    .
```

```
Front Panel Alarm Indicators:
```

```
-----
Red LED          *
Yellow LED       *
Major relay      *
Minor relay      *
```

```
Front Panel F13 SIB LEDs:
```

```
SIB    0    1    2    3    4    5    6    7    8    9   10   11   12   13   14   15
-----
Fail    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .
OK       *    *    .    *    *    .    *    *    *    *    .    *    *    .    .
Active  .    .    .    *    *    .    *    *    *    *    .    *    *    .    .
```

```
PS LEDs:
```

```
PS     0    1
```

```
-----
Red     .    .
Green   *    .
```

```
Fan Tray LEDs:
```

```
FT     0    1    2    3    4    5
```

```
-----
Red     .    .    .    .    .    .
Green   *    *    *    *    *    *
```

```
CB LEDs:
```

```
CB     0    1
```

```
-----
Amber   .    .
Green   *    *
Blue    *    .
[Output Truncated]
```

2. If the switch setting is incorrect, then refer to *Setting the Configuration Size and Switch-Fabric Chassis Number* to correct the switch settings.
3. Reboot the SFC after configuring the front panel switch.

4. Execute the **show chassis hardware** command to check whether the TXP-F13-3D SIB and the TXP-F2-3D SIB are seen in the output of the command.

```
user@host> show chassis hardware
sfc0-re0:
```

```
-----
Hardware inventory:
```

Item	Version	Part number	Serial number	Description
Chassis			JN11D2556AHB	TXP
Midplane	REV 05	710-022574	ABAC5888	SFC Midplane
FPM Display	REV 09	710-024027	EJ8765	TXP FPM Display
CIP 0	REV 12	710-023792	EJ6448	TXP CIP
CIP 1	REV 12	710-023792	EJ6486	TXP CIP
PEM 0	Rev 06	740-027463	XB13490	Power Entry Module
PEM 1	Rev 06	740-027463	XL37611	Power Entry Module
Routing Engine 0	REV 07	740-026942	P737A-002619	RE-DUO-2600
Routing Engine 1	REV 07	740-026942	P737A-002620	RE-DUO-2600
CB 0	REV 15	710-022606	EJ3364	SFC Control Board
CB 1	REV 15	710-022606	EJ3365	SFC Control Board
SPMB 0		BUILTIN		SFC Switch CPU
SPMB 1		BUILTIN		SFC Switch CPU
SIB F13 0	REV 16	750-035002	EN5467	F13 SIB 3D
B Board	REV 06	711-035082	EM9666	F13 SIB 3D Mezz
P Board	REV 06	711-043544	EN5379	F13 SIB 3D Power
Xcvr 9	REV 01	740-047547	XB47FB024	CXP Module
Xcvr 10	REV 01	740-047547	XB34FB03D	CXP Module
Xcvr 15	REV 01	740-047547	XC18FB06L	CXP Module
SIB F13 1	REV 14	750-035002	EN1982	F13 SIB 3D
B Board	REV 06	711-035082	EN1417	F13 SIB 3D Mezz
P Board	REV 05	711-043544	EN1577	F13 SIB 3D Power
Xcvr 0	REV 01	740-047547	XB47FB02S	CXP Module
Xcvr 1	REV 01	740-047547	XC12FB01K	CXP Module
Xcvr 2	REV 01	740-047547	XC02FB047	CXP Module
Xcvr 3	REV 01	740-047547	XB48FB04W	CXP Module
Xcvr 4	REV 01	740-047547	XB47FB02B	CXP Module
Xcvr 5	REV 01	740-047547	XC02FB03X	CXP Module
Xcvr 6	REV 01	740-047547	XC02FB026	CXP Module
Xcvr 7	REV 01	740-047547	XC02FB04T	CXP Module
Xcvr 8	REV 01	740-047547	XC02FB04N	CXP Module
Xcvr 9	REV 01	740-047547	XC02FB02C	CXP Module
Xcvr 10	REV 01	740-047547	XC02FB02X	CXP Module
Xcvr 11	REV 01	740-047547	XC02FB049	CXP Module
Xcvr 12	REV 01	740-047547	XB47FB03C	CXP Module
Xcvr 13	REV 01	740-047547	XB47FB02L	CXP Module
Xcvr 14	REV 01	740-047547	XB42FB0BZ	CXP Module
Xcvr 15	REV 01	740-047547	XB47FB01F	CXP Module
SIB F13 3	REV 07	710-035001	EM9338	F13 SIB 3D
B Board	REV 06	711-035082	EM9647	F13 SIB 3D Mezz
P Board	REV 05	711-043544	EM9700	F13 SIB 3D Power
Xcvr 9	REV 01	740-047547	XC12FB01A	CXP Module
Xcvr 10	REV 01	740-047547	XC12FB01B	CXP Module
Xcvr 14	REV 01	740-047547	XC09FB01C	CXP Module
Xcvr 15	REV 01	740-047547	XC13FB04Z	CXP Module
SIB F13 4	REV 14	750-035002	EN1984	F13 SIB 3D
B Board	REV 06	711-035082	EN1418	F13 SIB 3D Mezz
P Board	REV 05	711-043544	EN1563	F13 SIB 3D Power
Xcvr 0	REV 01	740-047547	XC08FB00C	CXP Module
Xcvr 1	REV 01	740-047547	XC12FB00Z	CXP Module
---(more)---				
Xcvr 2	REV 01	740-047547	XC12FB015	CXP Module
Xcvr 3	REV 01	740-047547	XC12FB02A	CXP Module

Xcvr 4	REV 01	740-047547	XC08FB012	CXP Module
Xcvr 5	REV 01	740-047547	XC13FB04X	CXP Module
Xcvr 6	REV 01	740-047547	XC12FB00L	CXP Module
Xcvr 7	REV 01	740-047547	XC13FB021	CXP Module
Xcvr 8	REV 01	740-047547	XC12FB01T	CXP Module
Xcvr 9	REV 01	740-047547	XC12FB01Z	CXP Module
Xcvr 10	REV 01	740-047547	XC12FB006	CXP Module
Xcvr 11	REV 01	740-047547	XC12FB01V	CXP Module
Xcvr 12	REV 01	740-047547	XC12FB028	CXP Module
Xcvr 13	REV 01	740-047547	XB47FB031	CXP Module
Xcvr 14	REV 01	740-047547	XC13FB05E	CXP Module
Xcvr 15	REV 01	740-047547	XB48FB049	CXP Module
SIB F13 6	REV 10	750-035002	EM6721	F13 SIB 3D
B Board	REV 06	711-035082	EM5982	F13 SIB 3D Mezz
P Board	REV 05	711-043544	EM4965	F13 SIB 3D Power
Xcvr 9	REV 01	740-047547	XB48FB05W	CXP Module
Xcvr 10	REV 01	740-047547	XC02FB042	CXP Module
Xcvr 14	REV 01	740-047547	XC20FB06N	CXP Module
Xcvr 15	REV 01	740-047547	XC20FB05Z	CXP Module
SIB F13 7	REV 16	750-035002	EN5499	F13 SIB 3D
B Board	REV 07	711-035082	EN5094	F13 SIB 3D Mezz
P Board	REV 06	711-043544	EN5359	F13 SIB 3D Power
Xcvr 0	REV 01	740-047547	XC02FB04A	CXP Module
Xcvr 1	REV 01	740-047547	XC08FB00D	CXP Module
Xcvr 2	REV 01	740-047547	XB34FB02P	CXP Module
Xcvr 3	REV 01	740-047547	XC02FB035	CXP Module
Xcvr 5	REV 01	740-047547	XC02FB05B	CXP Module
Xcvr 7	REV 01	740-047547	XB34FB029	CXP Module
Xcvr 8	REV 01	740-047547	XC02FB03A	CXP Module
Xcvr 11	REV 01	740-047547	XC18FB03Z	CXP Module
Xcvr 15	REV 01	740-047547	XC18FB05K	CXP Module
SIB F13 8	REV 10	750-035002	EM6720	F13 SIB 3D
B Board	REV 06	711-035082	EM5984	F13 SIB 3D Mezz
P Board	REV 05	711-043544	EM4980	F13 SIB 3D Power
Xcvr 9	REV 01	740-047547	XC13FB04W	CXP Module
Xcvr 10	REV 01	740-047547	XC13FB05H	CXP Module
Xcvr 14	REV 01	740-047547	XC18FB01K	CXP Module
Xcvr 15	REV 01	740-047547	XC18FB060	CXP Module
SIB F13 9	REV 16	750-035002	EN5463	F13 SIB 3D
B Board	REV 07	711-035082	EN5114	F13 SIB 3D Mezz
P Board	REV 06	711-043544	EN5384	F13 SIB 3D Power
Xcvr 0	REV 01	740-047547	XC13FB02P	CXP Module
Xcvr 1	REV 01	740-047547	XC08FB01J	CXP Module
Xcvr 2	REV 01	740-047547	XB42FB03S	CXP Module
Xcvr 3	REV 01	740-047547	XB42FB03V	CXP Module
Xcvr 4	REV 01	740-047547	XC09FB02A	CXP Module
Xcvr 5	REV 01	740-047547	XB47FB02D	CXP Module
Xcvr 6	REV 01	740-047547	XB47FB02V	CXP Module
Xcvr 7	REV 01	740-047547	XB42FB06Z	CXP Module
Xcvr 8	REV 01	740-047547	XB42FB0C3	CXP Module
Xcvr 9	REV 01	740-047547	XB47FB01J	CXP Module
Xcvr 10	REV 01	740-047547	XB48FB05F	CXP Module
---(more 20%)---				
Xcvr 11	REV 01	740-047547	XB47FB02W	CXP Module
Xcvr 12	REV 01	740-047547	XB42FB09H	CXP Module
Xcvr 13	REV 01	740-047547	XB42FB03W	CXP Module
Xcvr 14	REV 01	740-047547	XC02FB02V	CXP Module
Xcvr 15	REV 01	740-047547	XB42FB06Y	CXP Module
SIB F13 11	REV 10	750-035002	EM6725	F13 SIB 3D
B Board	REV 06	711-035082	EM5986	F13 SIB 3D Mezz
P Board	REV 05	711-043544	EM4981	F13 SIB 3D Power

Xcvr 9	REV 01	740-047547	XC02FB037	CXP Module
Xcvr 10	REV 01	740-047547	XC18FB05H	CXP Module
Xcvr 14	REV 01	740-047547	XC18FB052	CXP Module
Xcvr 15	REV 01	740-047547	XC02FB04Y	CXP Module
SIB F13 12	REV 07	750-035002	EK8246	F13 SIB 3D
B Board	REV 04	711-035082	EK9514	F13 SIB 3D Mezz
P Board	REV 04	711-043544	EK8769	F13 SIB 3D Power
Xcvr 0	REV 01	740-047547	XC02FB043	CXP Module
Xcvr 1	REV 01	740-047547	XC09FB00M	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB09J	CXP Module
Xcvr 3	REV 01	740-047547	XC02FB01R	CXP Module
Xcvr 5	REV 01	740-047547	XC02FB02U	CXP Module
Xcvr 6	REV 01	740-047547	XB34FB00D	CXP Module
Xcvr 7	REV 01	740-047547	XC18FB04M	CXP Module
Xcvr 8	REV 01	740-047547	XC02FB02H	CXP Module
Xcvr 11	REV 01	740-047547	XB48FB011	CXP Module
Xcvr 12	REV 01	740-047547	XC18FB06W	CXP Module
Xcvr 15	REV 01	740-047547	XC02FB01Y	CXP Module
SIB F2S 0/0	REV 06	750-034978	EM5268	F2S SIB 3D
B Board	REV 02	711-034979	EM5315	F2S SIB 3D Mezz
SIB F2S 0/2	REV 06	750-034978	EM5267	F2S SIB 3D
B Board	REV 02	711-034979	EM5319	F2S SIB 3D Mezz
SIB F2S 0/4	REV 06	750-034978	EM5250	F2S SIB 3D
B Board	REV 02	711-034979	EM5325	F2S SIB 3D Mezz
SIB F2S 0/6	REV 06	750-034978	EM5248	F2S SIB 3D
B Board	REV 02	711-034979	EM5331	F2S SIB 3D Mezz
SIB F2S 1/0	REV 06	750-034978	EM5235	F2S SIB 3D
B Board	REV 02	711-034979	EM5312	F2S SIB 3D Mezz
SIB F2S 1/2	REV 06	750-034978	EM5269	F2S SIB 3D
B Board	REV 02	711-034979	EM5317	F2S SIB 3D Mezz
SIB F2S 1/4	REV 06	750-034978	EM5265	F2S SIB 3D
B Board	REV 02	711-034979	EM5333	F2S SIB 3D Mezz
SIB F2S 1/6	REV 07	750-034978	EM8245	F2S SIB 3D
B Board	REV 02	711-034979	EM7083	F2S SIB 3D Mezz
SIB F2S 2/0	REV 06	750-034978	EM5270	F2S SIB 3D
B Board	REV 02	711-034979	EM5324	F2S SIB 3D Mezz
SIB F2S 2/2	REV 06	750-034978	EM5258	F2S SIB 3D
B Board	REV 02	711-034979	EM5318	F2S SIB 3D Mezz
SIB F2S 2/4	REV 06	750-034978	EM5263	F2S SIB 3D
B Board	REV 02	711-034979	EM5299	F2S SIB 3D Mezz
SIB F2S 2/6	REV 06	750-034978	EM5245	F2S SIB 3D
B Board	REV 02	711-034979	EM5330	F2S SIB 3D Mezz
SIB F2S 3/0	REV 06	750-034978	EM5266	F2S SIB 3D
B Board	REV 02	711-034979	EM5292	F2S SIB 3D Mezz
SIB F2S 3/2	REV 06	750-034978	EM5261	F2S SIB 3D
B Board	REV 02	711-034979	EM5322	F2S SIB 3D Mezz
---(more 31%)---				
SIB F2S 3/4	REV 06	750-034978	EM5246	F2S SIB 3D
B Board	REV 02	711-034979	EM5326	F2S SIB 3D Mezz
SIB F2S 3/6	REV 03	750-034978	EK7394	F2S SIB 3D
B Board	REV 01	711-034979	EK7242	F2S SIB 3D Mezz
SIB F2S 4/0	REV 06	750-034978	EM5277	F2S SIB 3D
B Board	REV 02	711-034979	EM5320	F2S SIB 3D Mezz
SIB F2S 4/2	REV 06	750-034978	EM5243	F2S SIB 3D
B Board	REV 02	711-034979	EM5307	F2S SIB 3D Mezz
SIB F2S 4/4	REV 07	750-034978	EM8232	F2S SIB 3D
B Board	REV 02	711-034979	EM7070	F2S SIB 3D Mezz
SIB F2S 4/6	REV 07	750-034978	EM8185	F2S SIB 3D
B Board	REV 02	711-034979	EM7084	F2S SIB 3D Mezz
Fan Tray 0	REV 10	760-024497	EJ0192	Front Fan Tray
Fan Tray 1	REV 10	760-024497	EJ0128	Front Fan Tray

Fan Tray 2	REV 10	760-024502	EJ0141	Rear Fan Tray
Fan Tray 3	REV 10	760-024502	EJ0142	Rear Fan Tray
Fan Tray 4	REV 10	760-024502	EJ0154	Rear Fan Tray
Fan Tray 5	REV 10	760-024502	EK1120	Rear Fan Tray

lcc0-re0:

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Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN11B92A4AHA	T4000
Midplane	REV 01	710-027486	ACAJ0296	T-series Backplane
FPM GBUS	REV 13	710-002901	BBAV7082	T640 FPM Board
FPM Display	REV 06	711-034244	BBAV7104	T4000 FPM Display
CIP	REV 06	710-002895	BBAT3196	T-series CIP
PEM 0	REV 05	740-036442	1G022060132	Power Entry Module
6x60				
SCG 0	REV 08	710-027617	BBAN4344	T640 Sonet Clock Gen.
SCG 1	REV 08	710-027617	BBAP5208	T640 Sonet Clock Gen.
Routing Engine 0	REV 10	740-026941	P737F-004500	RE-DUO-1800
Routing Engine 1	REV 10	740-026941	P737F-004318	RE-DUO-1800
CB 0	REV 11	710-022597	EK9478	LCC Control Board
CB 1	REV 11	710-022597	EK9462	LCC Control Board
FPC 0	REV 05	710-033871	BBAP9425	FPC Type 4-ES
CPU	REV 11	710-016744	BBAP8735	ST-PMB2
PIC 0	REV 17	750-017405	BBAC7298	4x 10GE (LAN/WAN) XFP
Xcvr 1		NON-JNPR	A8603H9	XFP-10G-SR
PIC 1	REV 17	750-026962	EK7579	10x10GE(LAN/WAN) SFPP
Xcvr 1	REV 01	740-031980	1X3363A01383	SFP+-10G-SR
MMB 0	REV 07	710-025563	BBAT0023	ST-MMB2
MMB 1	REV 07	710-025563	BBAT0034	ST-MMB2
FPC 5	REV 30	750-045173	EK1167	FPC Type 5-3D
CPU	REV 12	711-030686	EJ8594	SNG PMB
PIC 0	REV 10	750-034624	BBAN4101	12x10GE (LAN/WAN)
SFPP				
Xcvr 1	REV 01	740-031981	AMDOW90	SFP+-10G-LR
Xcvr 5	REV 01	740-031980	AJJ01NB	SFP+-10G-SR
LMB 0	REV 05	711-034381	EG6351	Type-0 LMB
LMB 1	REV 04	711-035774	EJ8508	Type-1 LMB
LMB 2	REV 05	711-034381	EG6372	Type-0 LMB
FPC 6	REV 05	750-010153	EF4932	FPC Type 5-3D
CPU	REV 06	711-030686	EF4180	SNG PMB
PIC 1	REV 10	750-034624	EF6820	12x10GE (LAN/WAN)
SFPP				
Xcvr 1	REV 01	740-031980	B11B03860	SFP+-10G-SR
LMB 0	REV 04	711-034381	EF3758	Type-0 LMB
LMB 1	REV 03	711-035774	EF3811	Type-1 LMB
LMB 2	REV 04	711-034381	EF3790	Type-0 LMB
SPMB 0	REV 05	710-023321	EK5745	LCC Switch CPU
SPMB 1	REV 05	710-023321	EK5703	LCC Switch CPU
SIB 0	REV 06	750-041657	EM8085	LCC SIB 3D
B Board	REV 03	711-042424	EM7223	LCC SIB 3D Mezz
Xcvr 1	REV 01	740-047547	XC08FB002	CXP Module
Xcvr 2	REV 01	740-047547	XC09FB01R	CXP Module
Xcvr 7	REV 01	740-047547	XC08FB057	CXP Module
SIB 1	REV 12	750-041657	EN4519	LCC SIB 3D
B Board	REV 05	711-042424	EN4179	LCC SIB 3D Mezz
Xcvr 1	REV 01	740-047547	XC02FB045	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB03R	CXP Module

Xcvr 6	REV 01	740-047547	XC18FB04U	CXP Module
Xcvr 7	REV 01	740-047547	XC02FB01V	CXP Module
SIB 2	REV 06	750-041657	EM5518	LCC SIB 3D
B Board	REV 03	711-042424	EM4677	LCC SIB 3D Mezz
Xcvr 1	REV 01	740-047547	XC08FB01H	CXP Module
Xcvr 2	REV 01	740-047547	XC09FB09X	CXP Module
Xcvr 6	REV 01	740-047547	XC13FB06F	CXP Module
Xcvr 7	REV 01	740-047547	XC13FB013	CXP Module
SIB 3	REV 10	750-041657	EN1178	LCC SIB 3D
B Board	REV 04	711-042424	EN1147	LCC SIB 3D Mezz
Xcvr 1	REV 01	740-047547	XC13FB01V	CXP Module
Xcvr 2	REV 01	740-047547	XC13FB01D	CXP Module
Xcvr 6	REV 01	740-047547	XC08FB025	CXP Module
Xcvr 7	REV 01	740-047547	XC13FB011	CXP Module
SIB 4	REV 10	750-041657	EN1180	LCC SIB 3D
B Board	REV 04	711-042424	EN1149	LCC SIB 3D Mezz
Xcvr 1	REV 01	740-047547	XC02FB02P	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB04D	CXP Module
Xcvr 6	REV 01	740-047547	XC20FB023	CXP Module
Xcvr 7	REV 01	740-047547	XC20FB07F	CXP Module
Fan Tray 0				Front Top Fan Tray
-- Rev 2				
Fan Tray 1				Front Bottom Fan Tray
-- Rev 2				
Fan Tray 2				Rear Fan Tray -- Rev
4				

lcc2-re0:

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Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN11B92A4AHA	T4000
Midplane	REV 01	710-027486	ACAJ0296	T-series Backplane
FPM GBUS	REV 13	710-002901	BBAV7082	T640 FPM Board
FPM Display	REV 06	711-034244	BBAV7104	T4000 FPM Display
CIP	REV 06	710-002895	BBAT3196	T-series CIP
PEM 0	REV 05	740-036442	1G022060132	Power Entry Module
6x60				
SCG 0	REV 08	710-027617	BBAN4344	T640 Sonet Clock Gen.
SCG 1	REV 08	710-027617	BBAP5208	T640 Sonet Clock Gen.
Routing Engine 0	REV 10	740-026941	P737F-004500	RE-DUO-1800
Routing Engine 1	REV 10	740-026941	P737F-004318	RE-DUO-1800
CB 0	REV 11	710-022597	EK9478	LCC Control Board
CB 1	REV 11	710-022597	EK9462	LCC Control Board
FPC 0	REV 05	710-033871	BBAP9425	FPC Type 4-ES
CPU	REV 11	710-016744	BBAP8735	ST-PMB2
PIC 0	REV 17	750-017405	BBAC7298	4x 10GE (LAN/WAN) XFP
Xcvr 1		NON-JNPR	A8603H9	XFP-10G-SR
PIC 1	REV 17	750-026962	EK7579	10x10GE(LAN/WAN) SFPP
Xcvr 1	REV 01	740-031980	1X3363A01383	SFP+-10G-SR
MMB 0	REV 07	710-025563	BBAT0023	ST-MMB2
MMB 1	REV 07	710-025563	BBAT0034	ST-MMB2
FPC 5	REV 30	750-045173	EK1167	FPC Type 5-3D
CPU	REV 12	711-030686	EJ8594	SNG PMB
PIC 0	REV 10	750-034624	BBAN4101	12x10GE (LAN/WAN)
SFPP				
Xcvr 1	REV 01	740-031981	AMDOW90	SFP+-10G-LR
Xcvr 5	REV 01	740-031980	AJJ01NB	SFP+-10G-SR



LMB 0	REV 05	711-034381	EG6351	Type-0 LMB
LMB 1	REV 04	711-035774	EJ8508	Type-1 LMB
LMB 2	REV 05	711-034381	EG6372	Type-0 LMB
FPC 6	REV 05	750-010153	EF4932	FPC Type 5-3D
CPU	REV 06	711-030686	EF4180	SNG PMB
PIC 1	REV 10	750-034624	EF6820	12x10GE (LAN/WAN)
SFPP				
Xcvr 1	REV 01	740-031980	B11B03860	SFP+-10G-SR
LMB 0	REV 04	711-034381	EF3758	Type-0 LMB
LMB 1	REV 03	711-035774	EF3811	Type-1 LMB
LMB 2	REV 04	711-034381	EF3790	Type-0 LMB
SPMB 0	REV 05	710-023321	EK5745	LCC Switch CPU
SPMB 1	REV 05	710-023321	EK5703	LCC Switch CPU
SIB 0	REV 06	750-041657	EM8085	LCC SIB 3D
B Board	REV 03	711-042424	EM7223	LCC SIB 3D Mezz
Xcvr 1	REV 01	740-047547	XC08FB002	CXP Module
Xcvr 2	REV 01	740-047547	XC09FB01R	CXP Module
Xcvr 7	REV 01	740-047547	XC08FB057	CXP Module
SIB 1	REV 12	750-041657	EN4519	LCC SIB 3D
B Board	REV 05	711-042424	EN4179	LCC SIB 3D Mezz
Xcvr 1	REV 01	740-047547	XC02FB045	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB03R	CXP Module
Xcvr 6	REV 01	740-047547	XC18FB04U	CXP Module
Xcvr 7	REV 01	740-047547	XC02FB01V	CXP Module
SIB 2	REV 06	750-041657	EM5518	LCC SIB 3D
B Board	REV 03	711-042424	EM4677	LCC SIB 3D Mezz
Xcvr 1	REV 01	740-047547	XC08FB01H	CXP Module
Xcvr 2	REV 01	740-047547	XC09FB09X	CXP Module
Xcvr 6	REV 01	740-047547	XC13FB06F	CXP Module
Xcvr 7	REV 01	740-047547	XC13FB013	CXP Module
SIB 3	REV 10	750-041657	EN1178	LCC SIB 3D
B Board	REV 04	711-042424	EN1147	LCC SIB 3D Mezz
Xcvr 1	REV 01	740-047547	XC13FB01V	CXP Module
Xcvr 2	REV 01	740-047547	XC13FB01D	CXP Module
Xcvr 6	REV 01	740-047547	XC08FB025	CXP Module
Xcvr 7	REV 01	740-047547	XC13FB011	CXP Module
SIB 4	REV 10	750-041657	EN1180	LCC SIB 3D
B Board	REV 04	711-042424	EN1149	LCC SIB 3D Mezz
Xcvr 1	REV 01	740-047547	XC02FB02P	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB04D	CXP Module
Xcvr 6	REV 01	740-047547	XC20FB023	CXP Module
Xcvr 7	REV 01	740-047547	XC20FB07F	CXP Module
Fan Tray 0				Front Top Fan Tray
-- Rev 2				
Fan Tray 1				Front Bottom Fan Tray
-- Rev 2				
Fan Tray 2				Rear Fan Tray -- Rev
4				

lcc4-re0:

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Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN11B92A4AHA	T4000
Midplane	REV 01	710-027486	ACAJ0296	T-series Backplane
FPM GBUS	REV 13	710-002901	BBAV7082	T640 FPM Board
FPM Display	REV 06	711-034244	BBAV7104	T4000 FPM Display
CIP	REV 06	710-002895	BBAT3196	T-series CIP
PEM 0	REV 05	740-036442	1G022060132	Power Entry Module
6x60				

SCG 0	REV 08	710-027617	BBAN4344	T640 Sonet Clock Gen.
SCG 1	REV 08	710-027617	BBAP5208	T640 Sonet Clock Gen.
Routing Engine 0	REV 10	740-026941	P737F-004500	RE-DUO-1800
Routing Engine 1	REV 10	740-026941	P737F-004318	RE-DUO-1800
CB 0	REV 11	710-022597	EK9478	LCC Control Board
CB 1	REV 11	710-022597	EK9462	LCC Control Board
FPC 0	REV 05	710-033871	BBAP9425	FPC Type 4-ES
CPU	REV 11	710-016744	BBAP8735	ST-PMB2
PIC 0	REV 17	750-017405	BBAC7298	4x 10GE (LAN/WAN) XFP
Xcvr 1		NON-JNPR	A8603H9	XFP-10G-SR
PIC 1	REV 17	750-026962	EK7579	10x10GE(LAN/WAN) SFPP
Xcvr 1	REV 01	740-031980	1X3363A01383	SFP+-10G-SR
MMB 0	REV 07	710-025563	BBAT0023	ST-MMB2
MMB 1	REV 07	710-025563	BBAT0034	ST-MMB2
FPC 5	REV 30	750-045173	EK1167	FPC Type 5-3D
CPU	REV 12	711-030686	EJ8594	SNG PMB
PIC 0	REV 10	750-034624	BBAN4101	12x10GE (LAN/WAN)
SFPP				
Xcvr 1	REV 01	740-031981	AMDOW90	SFP+-10G-LR
Xcvr 5	REV 01	740-031980	AJJ01NB	SFP+-10G-SR
LMB 0	REV 05	711-034381	EG6351	Type-0 LMB
LMB 1	REV 04	711-035774	EJ8508	Type-1 LMB
LMB 2	REV 05	711-034381	EG6372	Type-0 LMB
FPC 6	REV 05	750-010153	EF4932	FPC Type 5-3D
CPU	REV 06	711-030686	EF4180	SNG PMB
PIC 1	REV 10	750-034624	EF6820	12x10GE (LAN/WAN)
SFPP				
Xcvr 1	REV 01	740-031980	B11B03860	SFP+-10G-SR
LMB 0	REV 04	711-034381	EF3758	Type-0 LMB
LMB 1	REV 03	711-035774	EF3811	Type-1 LMB
LMB 2	REV 04	711-034381	EF3790	Type-0 LMB
SPMB 0	REV 05	710-023321	EK5745	LCC Switch CPU
SPMB 1	REV 05	710-023321	EK5703	LCC Switch CPU
SIB 0	REV 06	750-041657	EM8085	LCC SIB 3D
B Board	REV 03	711-042424	EM7223	LCC SIB 3D Mezz
Xcvr 1	REV 01	740-047547	XC08FB002	CXP Module
Xcvr 2	REV 01	740-047547	XC09FB01R	CXP Module
Xcvr 7	REV 01	740-047547	XC08FB057	CXP Module
SIB 1	REV 12	750-041657	EN4519	LCC SIB 3D
B Board	REV 05	711-042424	EN4179	LCC SIB 3D Mezz
Xcvr 1	REV 01	740-047547	XC02FB045	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB03R	CXP Module
Xcvr 6	REV 01	740-047547	XC18FB04U	CXP Module
Xcvr 7	REV 01	740-047547	XC02FB01V	CXP Module
SIB 2	REV 06	750-041657	EM5518	LCC SIB 3D
B Board	REV 03	711-042424	EM4677	LCC SIB 3D Mezz
Xcvr 1	REV 01	740-047547	XC08FB01H	CXP Module
Xcvr 2	REV 01	740-047547	XC09FB09X	CXP Module
Xcvr 6	REV 01	740-047547	XC13FB06F	CXP Module
Xcvr 7	REV 01	740-047547	XC13FB013	CXP Module
SIB 3	REV 10	750-041657	EN1178	LCC SIB 3D
B Board	REV 04	711-042424	EN1147	LCC SIB 3D Mezz
Xcvr 1	REV 01	740-047547	XC13FB01V	CXP Module
Xcvr 2	REV 01	740-047547	XC13FB01D	CXP Module
Xcvr 6	REV 01	740-047547	XC08FB025	CXP Module
Xcvr 7	REV 01	740-047547	XC13FB011	CXP Module
SIB 4	REV 10	750-041657	EN1180	LCC SIB 3D
B Board	REV 04	711-042424	EN1149	LCC SIB 3D Mezz

Xcvr 1	REV 01	740-047547	XC02FB02P	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB04D	CXP Module
Xcvr 6	REV 01	740-047547	XC20FB023	CXP Module
Xcvr 7	REV 01	740-047547	XC20FB07F	CXP Module
Fan Tray 0				Front Top Fan Tray
-- Rev 2				
Fan Tray 1				Front Bottom Fan Tray
-- Rev 2				
Fan Tray 2				Rear Fan Tray -- Rev
4				

lcc6-re0:

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Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN11BD4ECAHA	T1600
Midplane	REV 01	710-027486	ACA11216	T-series Backplane
FPM GBUS	REV 13	710-002901	BBAT0376	T640 FPM Board
FPM Display	REV 04	710-021387	BBAP7634	T1600 FPM Display
CIP	REV 06	710-002895	BBAP7917	T-series CIP
PEM 0	REV 04	740-036442	1G021480073	Power Entry Module
6x60				
SCG 0	REV 18	710-003423	BBAP9086	T640 Sonet Clock Gen.
SCG 1	REV 18	710-003423	BBAT3108	T640 Sonet Clock Gen.
Routing Engine 0	REV 08	740-026941	P737F-003986	RE-DUO-1800
Routing Engine 1	REV 08	740-026941	P737F-003993	RE-DUO-1800
CB 0	REV 11	710-022597	EK6760	LCC Control Board
CB 1	REV 11	710-022597	EK6758	LCC Control Board
FPC 1	REV 04	710-021534	DR1742	FPC Type 1-ES
CPU	REV 08	710-016744	DP9421	ST-PMB2
PIC 0	REV 08	750-005395	JP3156	1x Tunnel
PIC 1	REV 13	750-012266	WS9451	4x 1GE(LAN), IQ2
PIC 2	REV 06	750-003872	JL5745	4x E1, RJ48
PIC 3	REV 10	750-001895	WA3041	1x OC-12 SONET, MM
MMB 0	REV 04	710-016036	DR0624	ST-MMB2
FPC 2	REV 10	710-021540	DZ4209	FPC Type 2-ES
CPU	REV 10	710-016744	DZ4594	ST-PMB2
PIC 1	REV 13	750-011800	ZN2255	8x 1GE(LAN), IQ2
MMB 0	REV 07	710-025563	BBAM9086	ST-MMB2
FPC 3	REV 05	710-033871	BBAP9390	FPC Type 4-ES
CPU	REV 11	710-016744	BBAP9850	ST-PMB2
PIC 0	REV 17	750-026962	EJ8842	10x10GE(LAN/WAN) SFPP
Xcvr 0	REV 01	740-031980	B11J04058	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	123363A01245	SFP+-10G-SR
Xcvr 8	REV 01	740-021308	UE401TG	SFP+-10G-SR
MMB 0	REV 07	710-025563	BBAT0048	ST-MMB2
MMB 1	REV 07	710-025563	BBAT2408	ST-MMB2
FPC 4	REV 05	710-033873	EK5114	FPC Type 3-ES
CPU	REV 11	710-016744	EK0348	ST-PMB2
PIC 1	REV 09	750-024784	BBAP2509	1x 10GE(LAN/WAN) IQ2E
Xcvr 0		NON-JNPR	CB42BK055	XFP-10G-SR
MMB 0	REV 07	710-025563	EK6128	ST-MMB2
SPMB 0	REV 05	710-023321	EK8679	LCC Switch CPU
SPMB 1	REV 05	710-023321	EK8616	LCC Switch CPU
SIB 0	REV 06	750-041657	EM5548	LCC SIB 3D
B Board	REV 03	711-042424	EM4691	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XC02FB01L	CXP Module

Xcvr 2	REV 01	740-047547	XB48FB06V	CXP Module
Xcvr 4	REV 01	740-047547	XB47FB03J	CXP Module
Xcvr 6	REV 01	740-047547	XB44FB00H	CXP Module
SIB 1	REV 06	750-041657	EM5523	LCC SIB 3D
B Board	REV 03	711-042424	EM4721	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XC12FB025	CXP Module
Xcvr 2	REV 01	740-047547	XC13FB04P	CXP Module
Xcvr 4	REV 01	740-047547	XC08FB02T	CXP Module
Xcvr 6	REV 01	740-047547	XC08FB010	CXP Module
SIB 2	REV 06	750-041657	EM5514	LCC SIB 3D
B Board	REV 03	711-042424	EM4689	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XC08FB01N	CXP Module
Xcvr 2	REV 01	740-047547	XC02FB059	CXP Module
Xcvr 4	REV 01	740-047547	XC02FB029	CXP Module
Xcvr 6	REV 01	740-047547	XC18FB063	CXP Module
SIB 3	REV 06	750-041657	EM5554	LCC SIB 3D
B Board	REV 03	711-042424	EM4717	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XC09FB004	CXP Module
Xcvr 2	REV 01	740-047547	XC08FB01U	CXP Module
Xcvr 4	REV 01	740-047547	XC02FB027	CXP Module
Xcvr 6	REV 01	740-047547	XB42FB028	CXP Module
SIB 4	REV 10	750-041657	EN1184	LCC SIB 3D
B Board	REV 04	711-042424	EN1151	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XC08FB05Y	CXP Module
Xcvr 2	REV 01	740-047547	XC02FB038	CXP Module
Xcvr 4	REV 01	740-047547	XC18FB042	CXP Module
Xcvr 6	REV 01	740-047547	XC18FB044	CXP Module
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray -- Rev
4				

lcc7-re0:

-----  
Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN11BE104AHA	T1600
Midplane	REV 01	710-027486	ACAJ1225	T-series Backplane
FPM GBUS	REV 13	710-002901	BBAP6481	T640 FPM Board
FPM Display	REV 04	710-021387	BBAP8115	T1600 FPM Display
CIP	REV 06	710-002895	BBAP7925	T-series CIP
PEM 0	REV 05	740-036442	1G022010091	Power Entry Module
6x60				
PEM 1	REV 05	740-036442	1G022120574	Power Entry Module
6x60				
SCG 0	REV 18	710-003423	BBAP9102	T640 Sonet Clock Gen.
SCG 1	REV 18	710-003423	BBAT3106	T640 Sonet Clock Gen.
Routing Engine 0	REV 07	740-026941	P737F-003338	RE-DUO-1800
Routing Engine 1	REV 07	740-026941	P737F-003406	RE-DUO-1800
CB 0	REV 11	710-022597	EJ1564	LCC Control Board
CB 1	REV 11	710-022597	EJ7748	LCC Control Board
FPC 1	REV 05	710-033871	BBAT0361	FPC Type 4-ES
CPU	REV 11	710-016744	BBAT2798	ST-PMB2
PIC 0	REV 17	750-026962	EK3263	10x10GE(LAN/WAN) SFP
Xcvr 0	REV 01	740-031980	123363A01119	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AJJ032U	SFP+-10G-SR
MMB 0	REV 07	710-025563	BBAP8489	ST-MMB2
MMB 1	REV 07	710-025563	BBAP8488	ST-MMB2
FPC 4	REV 05	710-033873	EK5027	FPC Type 3-ES

CPU	REV 11	710-016744	EK4660	ST-PMB2
PIC 0	REV 08	750-024784	BBAE5895	1x 10GE(LAN/WAN) IQ2E
Xcvr 0		NON-JNPR	CB01BK01G	XFP-10G-SR
MMB 0	REV 07	710-025563	EK2855	ST-MMB2
SPMB 0	REV 05	710-023321	EH9178	LCC Switch CPU
SPMB 1	REV 05	710-023321	EJ7689	LCC Switch CPU
SIB 0	REV 06	750-041657	EM5567	LCC SIB 3D
B Board	REV 03	711-042424	EM4680	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB47FB01H	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB06U	CXP Module
Xcvr 4	REV 01	740-047547	XB42FB0A1	CXP Module
Xcvr 6	REV 01	740-047547	XB47FB012	CXP Module
SIB 1	REV 06	750-041657	EM5565	LCC SIB 3D
B Board	REV 03	711-042424	EM4698	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XC08FB055	CXP Module
Xcvr 2	REV 01	740-047547	XC08FB03T	CXP Module
Xcvr 4	REV 01	740-047547	XC13FB05K	CXP Module
Xcvr 6	REV 01	740-047547	XB42FB06D	CXP Module
SIB 2	REV 06	750-041657	EM5533	LCC SIB 3D
B Board	REV 03	711-042424	EM4722	LCC SIB 3D Mezz
Xcvr 2	REV 01	740-047547	XC02FB046	CXP Module
Xcvr 6	REV 01	740-047547	XC18FB06N	CXP Module
SIB 3	REV 06	750-041657	EM5559	LCC SIB 3D
B Board	REV 03	711-042424	EM4686	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB47FB03L	CXP Module
Xcvr 2	REV 01	740-047547	XB42FB02N	CXP Module
Xcvr 4	REV 01	740-047547	XC12FB00W	CXP Module
Xcvr 6	REV 01	740-047547	XC13FB06E	CXP Module
SIB 4	REV 06	750-041657	EM5527	LCC SIB 3D
B Board	REV 03	711-042424	EM4675	LCC SIB 3D Mezz
Xcvr 2	REV 01	740-047547	XC02FB053	CXP Module
Xcvr 6	REV 01	740-047547	XC02FB030	CXP Module
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray -- Rev
4				

## SIB Hardware Failure

**Problem** On a TX Matrix Plus router, none of the 3D SIBs are online.

**Cause** A 3D SIB hardware failure can cause the 3D SIBs on a TX Matrix Plus router to go offline.

**Solution** An error LED glows to indicate that a SIB is offline because of a hardware fault.

- To view the state of the SIB, execute the **show chassis sibs** command.

```
user@host> show chassis sibs
```

```
sfc0-re0:
```

Slot	State	Type	Cable errors	Link errors	Destination
errors	Uptime				
0	Spare	SIB F13	NONE	NONE	NONE
1	Spare	SIB F13	NONE	NONE	NONE
2	Invalid		NONE	NONE	NONE

3	Online	SIB F13	NONE	NONE	NONE
	2 hours, 26 minutes, 29 seconds				
4	Online	SIB F13	NONE	NONE	NONE
	2 hours, 26 minutes, 12 seconds				
5	Invalid		NONE	NONE	NONE
6	Online	SIB F13	NONE	NONE	NONE
	2 hours, 25 minutes, 35 seconds				
7	Online	SIB F13	NONE	NONE	NONE
	2 hours, 25 minutes, 18 seconds				
8	Online	SIB F13	NONE	NONE	NONE
	2 hours, 24 minutes, 40 seconds				
9	Online	SIB F13	NONE	NONE	NONE
	2 hours, 24 minutes, 22 seconds				
10	Invalid		NONE	NONE	NONE
11	Online	SIB F13	NONE	NONE	NONE
	2 hours, 23 minutes, 46 seconds				
12	Online	SIB F13	NONE	NONE	NONE
	2 hours, 23 minutes, 29 seconds				
13	Invalid		NONE	NONE	NONE
14	Invalid		NONE	NONE	NONE
15	Invalid		NONE	NONE	NONE
0/0	Spare	SIB F2S	-n/a-	NONE	NONE
0/2	Spare	SIB F2S	-n/a-	NONE	NONE
0/4	Spare	SIB F2S	-n/a-	NONE	NONE
0/6	Spare	SIB F2S	-n/a-	NONE	NONE
1/0	Online	SIB F2S	-n/a-	NONE	NONE
	2 hours, 27 minutes, 3 seconds				
1/2	Online	SIB F2S	-n/a-	NONE	NONE
	2 hours, 27 minutes, 1 second				
1/4	Online	SIB F2S	-n/a-	NONE	NONE
	2 hours, 26 minutes, 59 seconds				
1/6	Online	SIB F2S	-n/a-	NONE	NONE
	2 hours, 26 minutes, 57 seconds				
2/0	Online	SIB F2S	-n/a-	NONE	NONE
	2 hours, 26 minutes, 10 seconds				
2/2	Online	SIB F2S	-n/a-	NONE	NONE
	2 hours, 26 minutes, 8 seconds				
2/4	Online	SIB F2S	-n/a-	NONE	NONE
	2 hours, 26 minutes, 6 seconds				
2/6	Online	SIB F2S	-n/a-	NONE	NONE
	2 hours, 26 minutes, 4 seconds				
3/0	Online	SIB F2S	-n/a-	NONE	NONE
	2 hours, 25 minutes, 16 seconds				
3/2	Online	SIB F2S	-n/a-	NONE	NONE
	2 hours, 25 minutes, 14 seconds				
3/4	Online	SIB F2S	-n/a-	NONE	NONE
	2 hours, 25 minutes, 12 seconds				
3/6	Online	SIB F2S	-n/a-	NONE	NONE
	2 hours, 25 minutes, 10 seconds				
4/0	Online	SIB F2S	-n/a-	NONE	NONE
	2 hours, 24 minutes, 21 seconds				
4/2	Online	SIB F2S	-n/a-	NONE	NONE
	2 hours, 24 minutes, 19 seconds				
4/4	Online	SIB F2S	-n/a-	NONE	NONE
	2 hours, 24 minutes, 17 seconds				
4/6	Online	SIB F2S	-n/a-	NONE	NONE
	2 hours, 24 minutes, 15 seconds				

1cc0-re0:

```

-----
Slot  State          Cable errors  Link errors  Destination errors  Uptime
0      Spare          NONE         NONE         NONE
1      Online         NONE         NONE         NONE         2 hours,
26 minutes, 58 seconds
2      Online         NONE         NONE         NONE         2 hours,
26 minutes, 51 seconds
3      Online         NONE         NONE         NONE         2 hours,
26 minutes, 43 seconds
4      Online         NONE         NONE         NONE         2 hours,
26 minutes, 36 seconds

```

[Output Truncated]

lcc4-re0:

```

-----
Slot  State          Cable errors  Link errors  Destination errors  Uptime
0      Spare          NONE         NONE         NONE
1      Online         NONE         2           NONE         2 hours,
26 minutes, 58 seconds
2      Online         NONE         NONE         NONE         2 hours,
26 minutes, 50 seconds
3      Online         NONE         NONE         NONE         2 hours,
26 minutes, 42 seconds
4      Online         NONE         NONE         NONE         2 hours,
26 minutes, 35 seconds

```

use "show chassis fabric fpcs" and "show chassis fabric sibs" for more details

- To rectify any hardware fault, remove and reinsert the SIB and then execute the **request chassis sib online lcc *number* slot *slot-number*** command to bring the SIB online.
- If the problem persists even after reinserting the SIB, then isolate the SIB and contact JTAC. For more information, refer to [TX Matrix Plus Router Hardware Guide](#)

## Unsupported Hardware or Hardware Fault Alarms

**Problem** On a TX Matrix Plus router, none of the 3D SIBs are online.

**Cause** The 3D SIBs on a TX Matrix Plus router can go offline if there are any unsupported hardware or a hardware fault.

**Solution** Check whether the output lists any unsupported hardware or hardware fault alarms.

- To view alarms, execute the **show chassis alarms** command.

```

user@host> show chassis alarms
sfc0-re0:

```

```

-----
9 alarms currently active
Alarm time      Class  Description
2013-02-17 21:29:36 PST  Minor  Check SIB F13 1 CXP 14 Fbr Cb1
2013-02-17 21:29:36 PST  Minor  Check SIB F13 1 CXP 12 Fbr Cb1
2013-02-17 21:29:36 PST  Minor  Check SIB F13 1 CXP 10 Fbr Cb1
2013-02-17 21:29:36 PST  Minor  Check SIB F13 1 CXP 8 Fbr Cb1
2013-02-17 21:21:41 PST  Minor  SIB F13 0 CXP 11 Unsupported Optics
2013-02-17 21:16:58 PST  Major  LCC 4 Major Errors
2013-02-17 21:16:58 PST  Major  LCC 0 Major Errors
2013-02-17 21:16:48 PST  Minor  LCC 4 Minor Errors

```

```
2013-02-17 21:16:45 PST Minor PEM 1 Absent
```

```
[Output Truncated]
```

```
1cc4-re0:
```

```
-----  
4 alarms currently active
```

Alarm time	Class	Description
2013-02-17 21:22:52 PST	Minor	SIB 1 XC HSL Link Error
2013-02-17 21:17:34 PST	Major	Front Bottom Fan Tray Improper for Platform
2013-02-17 21:17:34 PST	Major	Front Top Fan Tray Improper for Platform
2013-02-17 21:16:58 PST	Major	PEM 0 Not OK

2. To solve the errors listed in the output, refer to *TX Matrix Plus Alarm Messages Overview*.

#### Related Documentation

- [show version](#)
- [show chassis craft-interface on page 245](#)
- [show chassis hardware on page 629](#)
- [show chassis alarms on page 231](#)
- [show chassis sibs on page 803](#)
- [request chassis sib on page 220](#)

---

## Troubleshooting: Offline LCCs in a Routing Matrix with a TX Matrix Plus Router

The LCCs connected to a TX Matrix Plus router with 3D SIBs can be offline because of the following reasons:

- [Faulty Connection Between LCC Control Plane and the CIP on page 1284](#)
- [LCCs Configured in Single-Chassis Mode on page 1285](#)
- [LCC Mode Set to empty on page 1285](#)
- [LCC Configured Offline on page 1286](#)
- [LCC Routing Engine or CB Incompatible with the TX Matrix Plus SFC on page 1286](#)
- [Unsupported Hardware or Hardware Fault Alarms on page 1288](#)

### Faulty Connection Between LCC Control Plane and the CIP

**Problem** In a routing matrix, the LCCs connected to a TX Matrix Plus router with 3D SIBs are offline.

**Cause** The connection between the LCC control planes and the Connector Interface Panels (CIPs) is faulty, which results in offline LCCs.

**Solution** Check whether the connection between the LCCs' control planes and the CIPs is all right.

1. To check the connection between the LCCs' control planes and the CIPs, execute the **show chassis cip** command.

```
user@host> show chassis cip
```



```
sfc0-cip0
Eswitch Port Type Connected-to Link Speed Duplex Auto-Neg
0 5 XE SFC0 Down 0 Full Off
1 0 GE LCC0 Up 1000Mbps Full On
1 2 GE LCC1 Down 0 Half On
1 4 GE LCC2 Up 1000Mbps Full On
1 6 GE LCC3 Down 0 Half On
1 8 GE LCC4 Up 1000Mbps Full On
1 10 GE LCC5 Down 0 Half On
1 12 GE LCC6 Down 0 Half On
1 14 GE LCC7 Up 1000Mbps Full On
1 16 GE GE17 Down 0 Half On
1 17 GE GE16 Down 0 Half On
```

2. If the output displays that the LCC Ethernet cable is not connected, then check the cable connection between the LCC CB SFC 0 slot and SFC CIP LCC *number*. If the cable is not connected, then connect the cable. If the cables are connected, then check the link LEDs. If the link LEDs are not glowing, then replace the Ethernet cable.

## LCCs Configured in Single-Chassis Mode

**Problem** In a routing matrix, the LCCs connected to a TX Matrix Plus router with 3D SIBs are offline.

**Cause** The LCCs might be offline if they are configured in single-chassis mode.

**Solution** Check the LCC Control Board (LCC-CB) switch setting.

1. Check whether the switch on the LCC-CB is set to **M** (multichassis mode). If the switch is set to **S** (single-chassis mode), then change the switch setting to **M**.



**NOTE:** You must set the switch on both the Control Boards (CB-0 and CB-1) to **M**.

2. After changing the switch setting, reboot the LCC.
3. To set the LCC mode for the LCCs, refer to [lcc-mode](#).



**NOTE:** After you set the `lcc-mode`, there will be a few seconds' delay before the LCC state changes to online.

## LCC Mode Set to empty

**Problem** In a routing matrix, the LCCs connected to a TX Matrix Plus router with 3D SIBs are offline.

**Cause** When the value of `lcc-mode` for an LCC is set to **empty**, that LCC is in offline state.

**Solution** Check whether the LCC mode is configured as **empty**.

1. To verify the LCC mode, execute the **show chassis lcc-mode** command.

```
user@host> show chassis lcc-mode
```

Slot	LCC-mode
0	T4000
1	EMPTY
2	T1600
3	T1600
4	EMPTY
5	EMPTY
6	T1600
7	T1600

2. To set the LCC mode for the LCCs that display the mode as **EMPTY** in the output with an appropriate value (**T1600** or **T4000**), see [lcc-mode](#).

## LCC Configured Offline

**Problem** In a routing matrix, the LCCs connected to a TX Matrix Plus router with 3D SIBs are offline.

**Cause** An LCC appears offline when its state is configured as **offline**.

**Solution** Check the state of the LCC.

1. To view the state, execute the **show chassis lccs** command.

```
user@host> show chassis lccs
```

Slot	State	Uptime
0	Online	1 hour, 8 minutes, 24 seconds
1	Empty	
2	Online	1 hour, 8 minutes, 24 seconds
3	Empty	
4	Online	1 hour, 8 minutes, 26 seconds
5	Empty	
6	Empty	
7	Online	1 hour, 8 minutes, 24 seconds

2. If the state of the LCC is **offline**, then log in to the LCC in configuration mode and set the state to **online-expected**. For more information, see [online-expected](#).

## LCC Routing Engine or CB Incompatible with the TX Matrix Plus SFC

**Problem** In a routing matrix, the LCCs connected to a TX Matrix Plus router with 3D SIBs are offline.

**Cause** The LCC Routing Engine or Control Board (CB) is not compatible with the TX Matrix Plus switch-fabric chassis (SFC).

**Solution** Check whether the LCC Routing Engine or Control Board is compatible with the TX Matrix Plus router (SFC).

1. To verify the compatibility between the LCC Routing Engine or Control Board and the TX Matrix Plus router, execute the **show chassis hardware** command on the LCC Routing Engine.

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

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN11BDF86AHA	T4000
Midplane	REV 01	710-027486	ACAJ0790	T-series Backplane
FPM GBUS	REV 13	710-002901	BBAN4957	T640 FPM Board
FPM Display	REV 04	710-021387	BBAN9086	T1600 FPM Display
CIP	REV 06	710-002895	BBAP4614	T-series CIP
PEM 0	REV 05	740-036442	1G022010126	Power Entry Module
6x60				
PEM 1	REV 05	740-036442	1G022060157	Power Entry Module
6x60				
SCG 0	REV 18	710-003423	BBAP5981	T640 Sonet Clock Gen.
SCG 1	REV 18	710-003423	BBAP6026	T640 Sonet Clock Gen.
Routing Engine 0	REV 10	740-026941	P737F-004540	RE-DUO-1800
Routing Engine 1	REV 07	740-026941	P737F-003165	RE-DUO-1800
CB 0	REV 11	710-022597	EJ6396	LCC Control Board
CB 1	REV 11	710-022597	EJ6436	LCC Control Board
FPC 0	REV 01	750-045173	BBAV1252	FPC Type 5-3D
CPU	REV 10	711-030686	BBAN6642	SNG PMB
PIC 0	REV 17	750-034624	BBAT9952	12x10GE (LAN/WAN)
SFPP				
Xcvr 0	REV 01	740-031980	ALMOA6Q	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	193363A01440	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	ALMOH52	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	1X3363A01231	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	AJJ0388	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	193363A01229	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	ALMO9H1	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	1X3363A01358	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	B11J04894	SFP+-10G-SR
Xcvr 9	REV 01	740-031980	193363A01282	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	AJDOQCR	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	ALMO9BC	SFP+-10G-SR
[Output Truncated]				
SIB 3	REV 07	750-041657	EM8020	LCC SIB 3D
B Board	REV 03	711-042424	EM7199	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-048813	XC48FE000	CXP Module
Xcvr 1	REV 01	740-048813	XC48FE00H	CXP Module
Xcvr 2	REV 01	740-048813	XC46FE064	CXP Module
Xcvr 3	REV 01	740-048813	XC48FE00N	CXP Module
Xcvr 4	REV 01	740-048813	XC48FE00A	CXP Module
Xcvr 5	REV 01	740-048813	XC48FE00K	CXP Module
Xcvr 6	REV 01	740-048813	XC48FE02F	CXP Module
Xcvr 7	REV 01	740-048813	XC48FE00G	CXP Module
SIB 4	REV 06	750-041657	EM5515	LCC SIB 3D
B Board	REV 03	711-042424	EM4697	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-048813	XC46FE04V	CXP Module
Xcvr 1	REV 01	740-048813	XC46FE05U	CXP Module
Xcvr 2	REV 01	740-048813	XC46FE059	CXP Module
Xcvr 3	REV 01	740-048813	XC48FE01T	CXP Module
Xcvr 4	REV 01	740-048813	XC48FE01Y	CXP Module

Xcvr 5	REV 01	740-048813	XC46FE062	CXP Module
Xcvr 6	REV 01	740-048813	XC48FE01S	CXP Module
Xcvr 7	REV 01	740-048813	XC46FE06H	CXP Module
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray -- Rev
4				

- When upgrading a T640 LCC to a T1600 LCC or a T4000 LCC, you might have an error and the values for the following output parameter might differ from the sample shown above:

- Routing Engine 0
- Routing Engine 1
- CB 0
- CB 1

If the values differ, then to rectify the error, refer to the *T1600 Router Upgrade Guide* or the *T4000 Router Upgrade Guide*.

## Unsupported Hardware or Hardware Fault Alarms

**Problem** In a routing matrix, the LCCs connected to a TX Matrix Plus router with 3D SIBs are offline.

**Cause** If there are any unsupported hardware or there is a hardware fault, then the LCC can go offline.

**Solution** Check whether the output lists any unsupported hardware or hardware fault alarms.

- To view alarms, execute the **show chassis alarms** command.

```
user@host> show chassis alarms
sfc0-re0:
-----
9 alarms currently active
Alarm time      Class Description
2013-02-17 21:29:36 PST Minor Check SIB F13 1 CXP 14 Fbr Cbl
2013-02-17 21:29:36 PST Minor Check SIB F13 1 CXP 12 Fbr Cbl
2013-02-17 21:29:36 PST Minor Check SIB F13 1 CXP 10 Fbr Cbl
2013-02-17 21:29:36 PST Minor Check SIB F13 1 CXP 8 Fbr Cbl
2013-02-17 21:21:41 PST Minor SIB F13 0 CXP 11 Unsupported Optics
2013-02-17 21:16:58 PST Major LCC 4 Major Errors
2013-02-17 21:16:58 PST Major LCC 0 Major Errors
2013-02-17 21:16:48 PST Minor LCC 4 Minor Errors
2013-02-17 21:16:45 PST Minor PEM 1 Absent

[Output Truncated]

lcc4-re0:
-----
4 alarms currently active
Alarm time      Class Description
2013-02-17 21:22:52 PST Minor SIB 1 XC HSL Link Error
2013-02-17 21:17:34 PST Major Front Bottom Fan Tray Improper for Platform
2013-02-17 21:17:34 PST Major Front Top Fan Tray Improper for Platform
2013-02-17 21:16:58 PST Major PEM 0 Not OK
```

2. To solve the errors listed in the output, refer to *TX Matrix Plus Alarm Messages Overview*.

- Related Documentation**
- [show chassis cip on page 243](#)
  - [show chassis cip on page 243](#)
  - [show chassis hardware on page 629](#)
  - [show chassis alarms on page 231](#)
  - *Setting the Chassis ID on the LCC-CB*

## Troubleshooting: LCC in Amnesiac Mode

In a routing matrix with a TX Matrix Plus router and 3D SIBs, one or more LCCs are in amnesiac mode. LCCs can be in amnesiac mode because of the following reasons:

- [LCC Groups lcc number-re0 and lcc number-re1 Not Configured on page 1289](#)
- [SFC Configuration Not Synchronized with LCC Configuration on page 1290](#)
- [Incompatibility Between LCC Routing Engine or Control Board and the TX Matrix Plus Router \(SFC\) on page 1290](#)
- [Unsupported Hardware or Hardware Fault Alarms on page 1292](#)

### LCC Groups lcc number-re0 and lcc number-re1 Not Configured

**Problem** In a routing matrix with a TX Matrix Plus router (or the switch-fabric chassis (SFC)) and 3D SIBs, one or more LCCs are in amnesiac mode.

**Cause** The LCC groups **lcc number-re0** and **lcc number-re1** are not configured at the **[edit groups]** hierarchy level.

**Solution** Check whether the LCC groups are listed in the existing configuration.

1. Execute the **show configuration groups** command to see whether the LCC groups are listed in the existing configuration.

```
user@host> show configuration groups ?
Possible completions:
<[Enter]>          Execute this command
<group_name>      Group name
global            Group name
lcc0-re0          Group name
lcc0-re1          Group name
lcc2-re0          Group name
lcc2-re1          Group name
lcc3-re0          Group name
lcc3-re1          Group name
lcc4-re0          Group name
lcc4-re1          Group name
lcc5-re0          Group name
lcc5-re1          Group name
lcc6-re0          Group name
lcc6-re1          Group name
lcc7-re0          Group name
```

lcc7-re1	Group name
maximum-MTU	Group name
mtu	Group name
re0	Group name
re1	Group name
	Pipe through a command

2. If an LCC group is missing, then configure the group in configuration mode and perform the other required configurations.

```
[edit]
user@host# set groups lcc7-re1
```

3. Commit the configuration.

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

4. Exit configuration mode.

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

## SFC Configuration Not Synchronized with LCC Configuration

**Problem** In a routing matrix with a TX Matrix Plus router and 3D SIBs, one or more LCCs are in amnesiac mode.

**Cause** If the SFC configuration is not synchronized with the LCC configuration, then the LCCs can be in amnesiac mode.

**Solution** Check whether the SFC and LCC configurations are synchronized.

1. To check whether the configurations are synchronized between the SFC and the LCCs, execute the **show configuration version** command on both the SFC and the LCCs. If the commit time is the same in both the output, then the configurations are synchronized.

```
user@host> show configuration version
## Last commit: 2013-02-19 10:03:37 PST by userid
version "13.1I20130125_0953_xxx [xxx]";
```

```
user@host> show configuration version
## Last commit: 2013-02-19 10:03:37 PST by userid
version "13.2I20130218_1838_xxx [xxx]";
```

2. If the commit time in the output of the LCCs is different from that in the output of the SFC, then log in to the SFC Routing Engine in configuration mode and execute the **commit synchronize** statement to synchronize the configuration on the SFC and the LCCs.

## Incompatibility Between LCC Routing Engine or Control Board and the TX Matrix Plus Router (SFC)

**Problem** In a routing matrix with a TX Matrix Plus router and 3D SIBs, one or more LCCs are in amnesiac mode.

**Cause** LCC Routing Engines or Control Boards (CBs) are not compatible with the SFC.

**Solution** Check whether the LCC Routing Engines or Control Boards are compatible with the TX Matrix Plus router (SFC).

1. To verify the compatibility between an LCC Routing Engine or Control Board and the TX Matrix Plus router, execute the **show chassis hardware** command on the LCC Routing Engine.

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

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN11BDF86AHA	T4000
Midplane	REV 01	710-027486	ACAJ0790	T-series Backplane
FPM GBUS	REV 13	710-002901	BBAN4957	T640 FPM Board
FPM Display	REV 04	710-021387	BBAN9086	T1600 FPM Display
CIP	REV 06	710-002895	BBAP4614	T-series CIP
PEM 0	REV 05	740-036442	1G022010126	Power Entry Module
6x60				
PEM 1	REV 05	740-036442	1G022060157	Power Entry Module
6x60				
SCG 0	REV 18	710-003423	BBAP5981	T640 Sonet Clock Gen.
SCG 1	REV 18	710-003423	BBAP6026	T640 Sonet Clock Gen.
Routing Engine 0	REV 10	740-026941	P737F-004540	RE-DUO-1800
Routing Engine 1	REV 07	740-026941	P737F-003165	RE-DUO-1800
CB 0	REV 11	710-022597	EJ6396	LCC Control Board
CB 1	REV 11	710-022597	EJ6436	LCC Control Board
FPC 0	REV 01	750-045173	BBAV1252	FPC Type 5-3D
CPU	REV 10	711-030686	BBAN6642	SNG PMB
PIC 0	REV 17	750-034624	BBAT9952	12x10GE (LAN/WAN)
SFPP				
Xcvr 0	REV 01	740-031980	ALM0A6Q	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	193363A01440	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	ALM0H52	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	1X3363A01231	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	AJJ0388	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	193363A01229	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	ALM09H1	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	1X3363A01358	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	B11J04894	SFP+-10G-SR
Xcvr 9	REV 01	740-031980	193363A01282	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	AJD0QCR	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	ALM09BC	SFP+-10G-SR
[Output Truncated]				
SIB 3	REV 07	750-041657	EM8020	LCC SIB 3D
B Board	REV 03	711-042424	EM7199	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-048813	XC48FE000	CXP Module
Xcvr 1	REV 01	740-048813	XC48FE00H	CXP Module
Xcvr 2	REV 01	740-048813	XC46FE064	CXP Module
Xcvr 3	REV 01	740-048813	XC48FE00N	CXP Module
Xcvr 4	REV 01	740-048813	XC48FE00A	CXP Module
Xcvr 5	REV 01	740-048813	XC48FE00K	CXP Module
Xcvr 6	REV 01	740-048813	XC48FE02F	CXP Module
Xcvr 7	REV 01	740-048813	XC48FE00G	CXP Module
SIB 4	REV 06	750-041657	EM5515	LCC SIB 3D
B Board	REV 03	711-042424	EM4697	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-048813	XC46FE04V	CXP Module
Xcvr 1	REV 01	740-048813	XC46FE05U	CXP Module
Xcvr 2	REV 01	740-048813	XC46FE059	CXP Module

Xcvr 3	REV 01	740-048813	XC48FE01T	CXP Module
Xcvr 4	REV 01	740-048813	XC48FE01Y	CXP Module
Xcvr 5	REV 01	740-048813	XC46FE062	CXP Module
Xcvr 6	REV 01	740-048813	XC48FE01S	CXP Module
Xcvr 7	REV 01	740-048813	XC46FE06H	CXP Module
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray -- Rev
4				

- When upgrading a T640 LCC to a T1600 LCC or T4000 LCC, you might observe an error and the values for the following output parameters might differ from the sample shown above:

- Routing Engine 0
- Routing Engine 1
- CB 0
- CB 1

If the values differ, then refer to the *T1600 Router Upgrade Guide* or *T4000 Router Upgrade Guide* to rectify the error.

## Unsupported Hardware or Hardware Fault Alarms

**Problem** In a routing matrix with a TX Matrix Plus router and 3D SIBs, one or more LCCs are in amnesiac mode.

**Cause** If there are any unsupported hardware or there is a hardware fault in the routing matrix, then the LCCs can be in amnesiac mode.

**Solution** Check whether the output lists any unsupported hardware or hardware fault alarms.

- To view alarms, execute the **show chassis alarms** command.

```
user@host> show chassis alarms
sfc0-re0:
-----
9 alarms currently active
Alarm time          Class Description
2013-02-17 21:29:36 PST Minor Check SIB F13 1 CXP 14 Fbr Cbl
2013-02-17 21:29:36 PST Minor Check SIB F13 1 CXP 12 Fbr Cbl
2013-02-17 21:29:36 PST Minor Check SIB F13 1 CXP 10 Fbr Cbl
2013-02-17 21:29:36 PST Minor Check SIB F13 1 CXP 8 Fbr Cbl
2013-02-17 21:21:41 PST Minor SIB F13 0 CXP 11 Unsupported Optics
2013-02-17 21:16:58 PST Major LCC 4 Major Errors
2013-02-17 21:16:58 PST Major LCC 0 Major Errors
2013-02-17 21:16:48 PST Minor LCC 4 Minor Errors
2013-02-17 21:16:45 PST Minor PEM 1 Absent

[Output Truncated]

lcc4-re0:
-----
4 alarms currently active
Alarm time          Class Description
```



```
2013-02-17 21:22:52 PST Minor SIB 1 XC HSL Link Error
2013-02-17 21:17:34 PST Major Front Bottom Fan Tray Improper for Platform
2013-02-17 21:17:34 PST Major Front Top Fan Tray Improper for Platform
2013-02-17 21:16:58 PST Major PEM 0 Not OK
```

2. To solve the errors listed in the output, refer to *TX Matrix Plus Alarm Messages Overview*.

**Related  
Documentation**

- *show configuration*
- *groups*
- [show chassis hardware on page 629](#)
- [show chassis alarms on page 231](#)
- [show system core-dumps on page 955](#)



## PART 5

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