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Junos<sup>®</sup> OS

# System Basics and Services Command Reference

Release

11.1



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Published: 2011-03-04

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Release 11.1

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#### Revision History

January 2011—R1 Junos OS 11.1

The information in this document is current as of the date listed in the revision history.

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# About This Guide

This preface provides the following guidelines for using the *Junos OS System Basics and Services Command Reference*:

- Junos OS Documentation and Release Notes on page xxiii
- Objectives on page xxiii
- Audience on page xxiv
- Supported Platforms on page xxv
- Using the Indexes on page xxv
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## Junos OS Documentation and Release Notes

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For a list of related Junos OS documentation, see <http://www.juniper.net/techpubs/software/junos/>.

If the information in the latest release notes differs from the information in the documentation, follow the *Junos OS Release Notes*.

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

Juniper Networks supports a technical book program to publish books by Juniper Networks engineers and subject matter experts with book publishers around the world. These books go beyond the technical documentation to explore the nuances of network architecture, deployment, and administration using the Junos operating system (Junos OS) and Juniper Networks devices. In addition, the Juniper Networks Technical Library, published in conjunction with O'Reilly Media, explores improving network security, reliability, and availability using Junos OS configuration techniques. All the books are for sale at technical bookstores and book outlets around the world. The current list can be viewed at <http://www.juniper.net/books>.

## Objectives

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This guide provides descriptions of the Junos OS commands that you use to monitor and troubleshoot basic system operations and services on the router.

For additional commands, see these references:

- *Junos OS Routing Protocols and Policies Command Reference*
- *Junos OS Interfaces Command Reference*



**NOTE:** For additional information about the Junos OS—either corrections to or information that might have been omitted from this guide—see the software release notes at <http://www.juniper.net/>.

For information about configuration statements and guidelines related to the commands described in this reference, see the following configuration guides:

- *Junos OS CLI User Guide*—Describes how to use the Junos OS command-line interface (CLI) to configure, monitor, and manage Juniper Networks routers.
- *Junos OS Installation and Upgrade Guide*—Provides a description of Junos OS components and packaging, and includes detailed information about how to initially configure, reinstall, and upgrade the Junos system software.
- *Junos OS System Basics Configuration Guide*—Describes Juniper Networks routers, and provides information about how to configure basic system parameters, supported protocols and software processes, authentication, and a variety of utilities for managing your router on the network.
- *Junos OS Services Interfaces Configuration Guide*—Includes configuration statements and guidelines for real-time performance monitoring (RPM) and all services, such as Compressed Real-Time Transport Protocol (CRTP), Data Link Switching (DLSw), flow collection and monitoring, and stateful firewall filters.
- *Junos OS Class of Service Configuration Guide*—Includes configuration statements and guidelines for class of service (CoS) features.
- *Junos OS Network Interfaces Configuration Guide*—Includes configuration statements and guidelines for bit error rate test (BERT) parameters and Automatic Protection Switching (APS).
- *Junos OS Network Management Configuration Guide*—Includes configuration statements and guidelines for accounting parameters and the Simple Network Management Protocol (SNMP).

For information about related tasks performed by network operations center (NOC) personnel, see the following Network Operations Guides:

- *Junos Hardware Network Operations Guide*
- *Junos Baseline Network Operations Guide*

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## Audience

This guide is designed for network administrators who are configuring and monitoring a Juniper Networks M Series, MX Series, T Series, EX Series, or J Series router or switch.

To use this guide, you need a broad understanding of networks in general, the Internet in particular, networking principles, and network configuration. You must also be familiar with one or more of the following Internet routing protocols:

- Border Gateway Protocol (BGP)
- Distance Vector Multicast Routing Protocol (DVMRP)
- Intermediate System-to-Intermediate System (IS-IS)
- Internet Control Message Protocol (ICMP) router discovery
- Internet Group Management Protocol (IGMP)
- Multiprotocol Label Switching (MPLS)
- Open Shortest Path First (OSPF)
- Protocol-Independent Multicast (PIM)
- Resource Reservation Protocol (RSVP)
- Routing Information Protocol (RIP)
- Simple Network Management Protocol (SNMP)

Personnel operating the equipment must be trained and competent; must not conduct themselves in a careless, willfully negligent, or hostile manner; and must abide by the instructions provided by the documentation.

## Supported Platforms

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For the features described in this manual, the Junos OS currently supports the following platforms:

- J Series
- M Series
- MX Series
- T Series
- EX Series

## Using the Indexes

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This reference contains two indexes: a standard index with topic entries, and an index of commands.

## Documentation Conventions

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

Table 1: Notice Icons

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

Table 2 on page xxvi 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:  <code>user@host&gt; configure</code>
Fixed-width text like this	Represents output that appears on the terminal screen.	<code>user@host&gt; show chassis alarms</code> <code>No alarms currently active</code>
<i>Italic text like this</i>	<ul style="list-style-type: none"> <li>Introduces 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:  <code>[edit]</code> <code>root@# set system domain-name <i>domain-name</i></code>
Text like this	Represents names of configuration statements, commands, files, and directories; interface names; configuration hierarchy levels; or labels on routing platform components.	<ul style="list-style-type: none"> <li>To configure a stub area, include the <b>stub</b> statement at the <code>[edit protocols ospf area area-id]</code> hierarchy level.</li> <li>The console port is labeled <b>CONSOLE</b>.</li> </ul>
< > (angle brackets)	Enclose optional keywords or variables.	<code>stub &lt;default-metric <i>metric</i>&gt;;</code>

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

Convention	Description	Examples
(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</i>   <i>string2</i>   <i>string3</i> )
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	<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 [</b> <b>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>J-Web GUI Conventions</b>		
<b>Bold text like this</b>	Represents J-Web 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 J-Web selections.	In the configuration editor hierarchy, select <b>Protocols&gt;Ospf</b> .

## Documentation Feedback

We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation. You can send your comments to [techpubs-comments@juniper.net](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

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> .
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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

# Monitoring and Testing Tools

- Connectivity Operational Mode Commands on page 3
- Interface Diagnostics Operational Mode Commands on page 31
- RADIUS Diagnostics Operational Mode Commands on page 51
- Real-Time Performance Monitoring Operational Mode Commands on page 59
- Real-Time Router Monitoring Operational Mode Commands on page 75



## CHAPTER 1

# Connectivity Operational Mode Commands

Table 3 on page 3 summarizes the command-line interface (CLI) commands you can use to perform and monitor connectivity functions. Commands are listed in alphabetical order.

**Table 3: Connectivity Operational Mode Commands**

Task	Command
Check host reachability and network connectivity.	<b>ping</b>
Check the reachability of a remote Asynchronous Transfer Mode (ATM) node.	<b>ping atm</b>
Check the operability of a remote Connectionless Network Service (CLNS) node.	<b>ping clns</b>
Check the operability of a Layer 2 circuit.	<b>ping mpls l2circuit</b>
Check the operability of a Layer 2 virtual private network (VPN).	<b>ping mpls l2vpn</b>
Check the operability of a Layer 3 VPN.	<b>ping mpls l3vpn</b>
Check the operability of a MPLS connection.	<b>ping mpls ldp</b>
Check the operability of MPLS label-switched path (LSP) endpoint connections.	<b>ping mpls lsp-end-point</b>
Check the operability of MPLS RSVP-signaled LSP connections.	<b>ping mpls rsvp</b>
Check the operability of virtual private LAN service (VPLS) connections.	<b>ping vpls instance</b>



**NOTE:** For information about related tasks performed by network operations center (NOC) personnel, see the *Junos Baseline Network Operations Guide*.

## ping

---

**Syntax**    `ping host`  
              `<bypass-routing>`  
              `<count requests>`  
              `<detail>`  
              `<do-not-fragment>`  
              `<inet | inet6>`  
              `<interface source-interface>`  
              `<interval seconds>`  
              `<logical-system (all | logical-system-name)>`  
              `<loose-source value>`  
              `<no-resolve>`  
              `<pattern string>`  
              `<rapid>`  
              `<record-route>`  
              `<routing-instance routing-instance-name>`  
              `<size bytes>`  
              `<source source-address>`  
              `<strict >`  
              `<strict-source value.>`  
              `<tos type-of-service>`  
              `<ttl value>`  
              `<verbose>`  
              `<wait seconds>`

**Syntax (QFX Series)**    `ping host`  
                              `<bypass-routing>`  
                              `<count requests>`  
                              `<detail>`  
                              `<do-not-fragment>`  
                              `<inet>`  
                              `<interface source-interface>`  
                              `<interval seconds>`  
                              `<loose-source value>`  
                              `<mac-address mac-address>`  
                              `<no-resolve>`  
                              `<pattern string>`  
                              `<rapid>`  
                              `<record-route>`  
                              `<routing-instance routing-instance-name>`  
                              `<size bytes>`  
                              `<source source-address>`  
                              `<strict>`  
                              `< strict-source value>`  
                              `<tos type-of-service>`  
                              `<ttl value>`  
                              `<verbose>`  
                              `<vpls instance>>`  
                              `<wait seconds>`

**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** Check host reachability and network connectivity. The **ping** command sends Internet Control Message Protocol (ICMP) ECHO\_REQUEST messages to elicit ICMP ECHO\_RESPONSE messages from the specified host. Type Ctrl+c to interrupt a ping command.

**Options** *host*—IP address or hostname of the remote system to ping.

*bypass-routing*—(Optional) Bypass the normal routing tables and send ping requests directly to a system on an attached network. If the system is not on a directly attached network, an error is returned. Use this option to ping a local system through an interface that has no route through it.

*count requests*—(Optional) Number of ping requests to send. The range of values is 1 through 2,000,000,000. The default value is an unlimited number of requests.

*detail*—(Optional) Include in the output the interface on which the ping reply was received.

*do-not-fragment*—(Optional) Set the do-not-fragment (DF) bit in the IP header of the ping packets.

*inet*—(Optional) Ping Packet Forwarding Engine IPv4 routes.

*inet6*—(Optional) Ping Packet Forwarding Engine IPv6 routes.

*interface source-interface*—(Optional) Interface to use to send the ping requests.

*interval seconds*—(Optional) How often to send ping requests. The range of values, in seconds, is 1 through infinity. The default value is 1.

*loose-source value*—(Optional) Intermediate loose source route entry (IPv4). Open a set of values.

*mac-address mac-address*—(Optional) Ping the physical or hardware address of the remote system you are trying to reach.

*no-resolve*—(Optional) Do not attempt to determine the hostname that corresponds to the IP address.

*pattern string*—(Optional) Specify a hexadecimal fill pattern to include in the ping packet.

*rapid*—(Optional) Send ping requests rapidly. The results are reported in a single message, not in individual messages for each ping request. By default, five ping requests are sent before the results are reported. To change the number of requests, include the count option.

*record-route*—(Optional) Record and report the packet's path (IPv4).

*routing-instance routing-instance-name*—(Optional) Name of the routing instance for the ping attempt.

*size bytes*—(Optional) Size of ping request packets. The range of values, in bytes, is 0 through 65,468. The default value is 56, which is effectively 64 bytes because 8 bytes of ICMP header data are added to the packet.

*source source-address*—(Optional) IP address of the outgoing interface. This address is sent in the IP source address field of the ping request. If this option is not specified, the default address is usually the loopback interface (**lo.0**).

*strict*—(Optional) Use the strict source route option (IPv4).

*strict-source value*—(Optional) Intermediate strict source route entry (IPv4). Open a set of values.

*tos type-of-service*—(Optional) Set the type-of-service (ToS) field in the IP header of the ping packets. The range of values is **0** through **255**.

*ttl value*—(Optional) Time-to-live (TTL) value to include in the ping request (IPv6). The range of values is **0** through **255**.

*verbose*—(Optional) Display detailed output.

*vpls instance-name*—(Optional) Ping the instance to which this VPLS belongs.

*wait seconds*—(Optional) Delay, in seconds, after sending the last packet. If this option is not specified, the default delay is **10** seconds. If this option is used without the count option, a default count of **5** packets is used.

**Required Privilege Level**

network

**Related Documentation**

- Configuring the Junos OS ICMPv4 Rate Limit for ICMPv4 Routing Engine Messages

**List of Sample Output**

**ping hostname on page 6**  
**ping hostname size count on page 6**  
**ping hostname rapid on page 7**

**Output Fields**

When you enter this command, you are provided feedback on the status of your request. An exclamation point (!) indicates that an echo reply was received. A period (.) indicates that an echo reply was not received within the timeout period. An x indicates that an echo reply was received with an error code. These packets are not counted in the received packets count. They are accounted for separately.

## Sample Output

**ping hostname**

```
user@host> ping skye
PING skye.net (192.168.169.254): 56 data bytes
64 bytes from 192.168.169.254: icmp_seq=0 ttl=253 time=1.028 ms
64 bytes from 192.168.169.254: icmp_seq=1 ttl=253 time=1.053 ms
64 bytes from 192.168.169.254: icmp_seq=2 ttl=253 time=1.025 ms
64 bytes from 192.168.169.254: icmp_seq=3 ttl=253 time=1.098 ms
64 bytes from 192.168.169.254: icmp_seq=4 ttl=253 time=1.032 ms
64 bytes from 192.168.169.254: icmp_seq=5 ttl=253 time=1.044 ms
^C [abort]
```

**ping hostname  
size count**

```
user@host> ping skye size 200 count 5
PING skye.net (192.168.169.254): 200 data bytes
208 bytes from 192.168.169.254: icmp_seq=0 ttl=253 time=1.759 ms
```

```
208 bytes from 192.168.169.254: icmp_seq=1 ttl=253 time=2.075 ms
208 bytes from 192.168.169.254: icmp_seq=2 ttl=253 time=1.843 ms
208 bytes from 192.168.169.254: icmp_seq=3 ttl=253 time=1.803 ms
208 bytes from 192.168.169.254: icmp_seq=4 ttl=253 time=17.898 ms
```

```
--- skye.net ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max = 1.759/5.075/17.898 ms
```

**ping hostname rapid**

```
user@host> ping skye rapid
PING skye.net (192.168.169.254): 56 data bytes
!!!!
--- skye.net ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max/stddev = 0.956/0.974/1.025/0.026 ms
```

## ping atm

---

<b>Syntax</b>	<code>ping atm interface <i>interface-name</i> vci <i>vci</i></code> <code>&lt;brief&gt;</code> <code>&lt;count <i>count</i>&gt;</code> <code>&lt;end-to-end   segment&gt;</code> <code>&lt;interval <i>seconds</i>&gt;</code> <code>&lt;sequence-number <i>sequence-number</i>&gt;</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Check the reachability of a remote Asynchronous Transfer Mode (ATM) node. All packets are 53 bytes. Type Ctrl+c to interrupt a <b>ping atm</b> command.
<b>Options</b>	<p><code>interface <i>interface-name</i></code>—Interface to use to send the ATM ping requests. For ATM 1 and ATM 2 interfaces, you must include a logical unit number in the interface name</p> <p><code>vci <i>vci</i></code>—ATM point-to-point virtual circuit identifier. It can be a virtual circuit identifier (<b>vci</b>) or a virtual private identifier (<b>vpi.vci</b>).</p> <p><code>brief</code>—(Optional) Display only the ATM ping summary statistics. These are displayed after you type Ctrl+c to interrupt the <b>ping atm</b> command.</p> <p><code>count <i>count</i></code>—(Optional) Number of ping requests to send. The range of values is <b>0</b> through <b>10,000</b>. The default value is an unlimited number of requests.</p> <p><code>end-to-end</code>—(Optional) Cells are sent to the end node. This is the default.</p> <p><code>segment</code>—(Optional) Cells are sent only to the intermediate node.</p> <p><code>interval <i>seconds</i></code>—(Optional) How often to send ping requests. The range of values, in seconds, is 1 through <b>10,000</b>. The default value is 1.</p> <p><code>sequence-number <i>sequence-number</i></code>—(Optional) Starting sequence number (correlation tag). The range of values is <b>0</b> through <b>65,468</b>. The default value is 1.</p>
<b>Required Privilege Level</b>	network
<b>List of Sample Output</b>	<b>ping atm on page 9</b>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request. An exclamation point (!) indicates that an echo reply was received. A period (.) indicates that an echo reply was not received within the timeout period. An x indicates that an echo reply was received with an error code these packets are not counted in the received packets count. They are accounted for separately.



## Sample Output

```
ping atm    user@host> ping atm interface at-4/0/1.0 vci 0.33
53 byte oam cell received on (vpi=0 vci=33): seq=1
53 byte oam cell received on (vpi=0 vci=33): seq=2
^C[abort]
--- atmping statistics ---
5 cells transmitted, 5 cells received, 0% cell loss
```

## ping clns

---

**Syntax**    `ping clns host`  
              `<brief>`  
              `<count requests>`  
              `<detail>`  
              `<do-not-fragment>`  
              `<interval seconds>`  
              `<no-resolve>`  
              `<pattern string>`  
              `<rapid>`  
              `<routing-instance routing-instance-name>`  
              `<size bytes>`  
              `<source source-address>`  
              `<ttl value>`  
              `<verbose>`  
              `<wait seconds>`

**Release Information**    Command introduced before Junos OS Release 7.4.

**Description**    Check the reachability of a remote Connectionless Network Service (CLNS) node. Type Ctrl+c to interrupt a **ping clns** command.

**Options**    *host*—IP address or hostname of the remote system to ping.

*brief*—(Optional) Display brief information.

*count requests*—(Optional) Number of ping requests to send. The range of values is 1 through 2,000,000,000. The default is an unlimited number of requests.

*detail*—(Optional) Include in the output the interface on which the ping reply was received.

*do-not-fragment*—(Optional) Set the do-not-fragment (DF) bit in the IP header of the ping packets.

*interval seconds*—(Optional) How often to send ping requests. The range of values, in seconds, is 1 through infinity. The default value is 1.

*no-resolve*—(Optional) Do not attempt to determine the hostname that corresponds to the IP address.

*pattern string*—(Optional) Specify a hexadecimal fill pattern to include in the ping packet.

*rapid*—(Optional) Send ping requests rapidly. The results are reported in a single message, not in individual messages for each ping request. By default, five ping requests are sent before the results are reported. To change the number of request, include the *count* option.

*routing-instance routing-instance-name* —(Optional) Name of the routing instance for the ping attempt.

*size bytes*—(Optional) Size of ping request packets. The range of values, in bytes, is **0** through **65,468**. The default value is **56**, which is effectively 64 bytes because 8 bytes of ICMP header data are added to the packet.

*source source-address*—(Optional) IP address of the outgoing interface. This address is sent in the IP source address field of the ping request. If this option is not specified, the default address is usually the loopback interface.

*ttl value*—(Optional) Time-to-live (TTL) value to include in the ping request (IPv6). The range of values is **0** through **255**.

*verbose*—(Optional) Display detailed output.

*wait seconds*—(Optional) Delay, in seconds, after sending the last packet. If this option is not specified, the default delay is **10** seconds. If this option is used without the count option, a default count of **5** packets is used.

**Required Privilege Level** network

**List of Sample Output** ping clns on page 11

**Output Fields** When you enter this command, you are provided feedback on the status of your request. An exclamation point (!) indicates that an echo reply was received. A period (.) indicates that an echo reply was not received within the timeout period. An x indicates that an echo reply was received with an error code these packets are not counted in the received packets count. They are accounted for separately.

## Sample Output

```
ping clns user@host> ping clns 47.0005.9000.f800.0000.0108.0001.1921.6812.4058.00
PING 47.0005.9000.f800.0000.0108.0001.1921.6812.4058.00
(47.0005.9000.f800.0000.0108.0001.1921.6812.4058.00): 55 data bytes
64 bytes from 47.0005.9000.f800.0000.0108.0001.1921.6812.4058.00: seq=0 ttl=30
time=15.051 ms
64 bytes from 47.0005.9000.f800.0000.0108.0001.1921.6812.4058.00: seq=1 ttl=30
time=10.370 ms
64 bytes from 47.0005.9000.f800.0000.0108.0001.1921.6812.4058.00: seq=2 ttl=30
time=10.367 ms
--- ping statistics ---
3 packets transmitted, 3 packets received, 0% packet loss
round-trip min/avg/max/stddev = 10.367/11.929/15.051/2.207 ms
```

## ping mpls l2circuit

**Syntax** ping mpls l2circuit (interface *interface-name* | virtual-circuit *virtual-circuit-id* neighbor *address*)  
 <count *count*>  
 <destination *address*>  
 <detail>  
 <exp *forwarding-class*>  
 <logical-system (all | *logical-system-name*)>  
 reply-mode (application-level-control-channel | ip-udp | no-reply)  
 <size *bytes*>  
 <source *source-address*>  
 <sweep>  
 <v1>

**Release Information** Command introduced before Junos OS Release 7.4.  
 Command introduced in Junos OS Release 9.0 for EX Series switches.  
 The **size** and **sweep** options were introduced in Junos OS Release 9.6.  
 The **reply-mode** option and its suboptions are introduced in Junos OS Release 10.4R1.

**Description** Check the operability of the MPLS Layer 2 circuit connections. Type Ctrl+c to interrupt a ping mpls l2circuit command.

**Options** count *count*—(Optional) Number of ping requests to send. If **count** is not specified, five ping requests are sent. The range of values is 1 through 1,000,000. The default value is 5.

destination *address*—(Optional) Specify an address other than the default (127.0.0.1/32) for the ping echo requests. The address can be anything within the 127/8 subnet.

detail—(Optional) Display detailed information about the echo requests sent and received.

exp *forwarding-class*—(Optional) Value of the forwarding class for the MPLS ping packets.

interface *interface-name*—Ping an interface configured for the Layer 2 circuit on the egress provider edge (PE) router.

logical-system (all | *logical-system-name*)—(Optional) Perform this operation on all logical systems or on the specified logical system.

reply-mode—(Optional) Reply mode for the ping request. This option has the following suboptions:

application-level-control-channel—Reply using an application level control channel.

ip-udp—Reply using an IPv4 or IPv6 UDP packet.

no-reply—Do not reply to the ping request.



**NOTE:** The reply-mode option and its suboptions application-level-control-channel, ip-udp, and no-reply are also available in Junos OS Release 10.2R4 and 10.3R2.

*size bytes*—(Optional) Size of the label-switched path (LSP) ping request packet (96 through 65468 bytes). Packets are 4-byte aligned. For example, If you enter a size of 97, 98, 99, or 100, the router or switch uses a size value of 100 bytes. If you enter a packet size that is smaller than the minimum size, an error message is displayed reminding you of the 96-byte minimum.

*source source-address*—(Optional) IP address of the outgoing interface. This address is sent in the IP source address field of the ping request. If this option is not specified, the default address is usually the loopback interface (**lo.0**).

*sweep*—(Optional) Automatically determine the size of the maximum transmission unit (MTU).

*vl*—(Optional) Use the type 9 Layer 2 circuit type, length, and value (TLV).

*virtual-circuit virtual-circuit-id neighbor address*—Ping the virtual circuit identifier on the egress PE router or switch and the specified neighbor, testing the integrity of the Layer 2 circuit between the ingress and egress PE routers or switches.

**Additional Information** You must configure MPLS at the **[edit protocols mpls]** hierarchy level on the egress PE router or switch (the router or switch receiving the MPLS echo packets) to ping a Layer 2 circuit.

In asymmetric MTU scenarios, the echo response may be dropped. For example, if the MTU from System A to System B is 1000 bytes, the MTU from System B to System A is 500 bytes, and the ping request packet size is 1000 bytes, the echo response is dropped because the PAD TLV is included in the echo response, making it too large.

**Required Privilege Level** network

**List of Sample Output** [ping mpls l2circuit interface on page 13](#)  
[ping mpls l2circuit virtual-circuit detail on page 13](#)  
[ping mpls l2circuit interface <interface-name> reply-mode on page 14](#)

**Output Fields** When you enter this command, you are provided feedback on the status of your request. An exclamation point (!) indicates that an echo reply was received. A period (.) indicates that an echo reply was not received within the timeout period. An x indicates that an echo reply was received with an error code. Packets with an error code are not counted in the received packets count. They are accounted for separately.

## Sample Output

**ping mpls l2circuit interface** user@host> ping mpls l2circuit interface so-1/0/0.1  
 Request for seq 1, to interface 69, labels <100000, 100208>, packet size 100  
 Reply for seq 1, return code: Egress-ok, time: 0.439 ms

**ping mpls l2circuit virtual-circuit detail** user@host> ping mpls l2circuit virtual-circuit 200 neighbor 10.255.245.122/32 detail  
 Request for seq 1, to interface 68, labels <100048, 100128>, packet size 100  
 Reply for seq 1, return code: Egress-ok time: 0.539 ms

```
ping mpls l2circuit interface lt-1/2/0.21 reply-mode application-level-control-channel
interface
<interface-name>
reply-mode
```

user@host> ping mpls l2circuit interface lt-1/2/0.21 reply-mode application-level-control-channel  
!!!!!  
--- lsping statistics ---  
5 packets transmitted, 5 packets received, 0% packet loss

## ping mpls l2vpn

<b>Syntax</b>	<p>ping mpls l2vpn (instance <i>instance-name</i> local-site-id <i>local-site-id-number</i> remote-site-id <i>remote-site-id-number</i>   interface <i>interface-name</i>)</p> <p>&lt;bottom-label-ttl&gt;</p> <p>&lt;count <i>count</i>&gt;</p> <p>&lt;destination <i>address</i>&gt;</p> <p>&lt;detail&gt;</p> <p>&lt;exp <i>forwarding-class</i>&gt;</p> <p>&lt;logical-system (all   <i>logical-system-name</i>)&gt;</p> <p>reply-mode (application-level-control-channel   ip-udp   no-reply)</p> <p>&lt;size <i>bytes</i>&gt;</p> <p>&lt;source <i>source-address</i>&gt;</p> <p>&lt;sweep&gt;</p>
<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>The <b>size</b> and <b>sweep</b> options were introduced in Junos OS Release 9.6.</p> <p>The <b>reply-mode</b> option and its suboptions are introduced in Junos OS Release 10.4R1.</p>
<b>Description</b>	<p>Check the operability of MPLS Layer 2 virtual private network (VPN) connections. Type Ctrl+c to interrupt a <b>ping mpls l2vpn</b> command.</p>
<b>Options</b>	<p>bottom-label-ttl—(Optional) Display the time-to-live value for the bottom label in the label stack.</p> <p>count <i>count</i>—(Optional) Number of ping requests to send. If <b>count</b> is not specified, five ping requests are sent. The range of values is 1 through 1,000,000. The default value is 5.</p> <p>destination <i>address</i>—(Optional) Specify an address other than the default (127.0.0.1/32) for the ping echo requests. The address can be anything within the 127/8 subnet.</p> <p>detail—(Optional) Display detailed information about the echo requests sent and received.</p> <p>exp <i>forwarding-class</i>—(Optional) Value of the forwarding class for the MPLS ping packets.</p> <p>instance <i>instance-name</i> local-site-id <i>local-site-id-number</i> remote-site-id <i>remote-site-id-number</i>—Ping a combination of the Layer 2 VPN routing instance name, the local site identifier, and the remote site identifier, testing the integrity of the Layer 2 VPN circuit (specified by the identifiers) between the ingress and egress provider edge (PE) routers or switches.</p> <p>interface <i>interface-name</i>—Ping an interface configured for the Layer 2 VPN on the egress PE router or switch.</p> <p>logical-system (all   <i>logical-system-name</i>)—(Optional) Perform this operation on all logical systems or on the specified logical system.</p> <p>reply-mode—(Optional) Reply mode for the ping request. This option has the following suboptions:</p> <p>application-level-control-channel—Reply using an application level control channel.</p>

**ip-udp**—Reply using an IPv4 or IPv6 UDP packet.

**no-reply**—Do not reply to the ping request.

The **reply-mode** option and its suboptions **application-level-control-channel**, **ip-udp**, and **no-reply** are also available in Junos OS Release 10.2R4 and 10.3R2.

**size bytes**—(Optional) Size of the label-switched path (LSP) ping request packet (96 through 65468 bytes). Packets are 4-byte aligned. For example, If you enter a size of 97, 98, 99, or 100, the router or switch uses a size value of 100 bytes. If you enter a packet size that is smaller than the minimum size, an error message is displayed reminding you of the 96-byte minimum.

**source source-address**—(Optional) IP address of the outgoing interface. This address is sent in the IP source address field of the ping request. If this option is not specified, the default address is usually the loopback interface (**lo.0**).

**sweep**—(Optional) Automatically determine the size of the maximum transmission unit (MTU).

**Additional Information** You must configure MPLS at the **[edit protocols mpls]** hierarchy level on the egress PE router or switch (the router or switch receiving the MPLS echo packets) to ping a Layer 2 circuit.

In asymmetric MTU scenarios, the echo response may be dropped. For example, if the MTU from System A to System B is 1000 bytes, the MTU from System B to System A is 500 bytes, and the ping request packet size is 1000 bytes, the echo response is dropped because the PAD TLV is included in the echo response, making it too large.

**Required Privilege Level**

network

**List of Sample Output**

**ping mpls l2vpn instance on page 16**  
**ping mpls l2vpn instance detail on page 16**  
**ping mpls l2vpn interface <interface-name> reply-mode on page 17**

**Output Fields**

When you enter this command, you are provided feedback on the status of your request. An exclamation point (!) indicates that an echo reply was received. A period (.) indicates that an echo reply was not received within the timeout period. An x indicates that an echo reply was received with an error code these packets are not counted in the received packets count. They are accounted for separately.

## Sample Output

**ping mpls l2vpn instance**

```
user@host> ping mpls l2vpn instance vpn1 remote-site-id 1 local-site-id 2
!!!!
--- lsping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
```

**ping mpls l2vpn instance detail**

```
user@host> ping mpls l2vpn instance vpn1 remote-site-id 1 local-site-id 2 detail
Request for seq 1, to interface 68, labels <800001, 100176>
Reply for seq 1, return code: Egress-ok
Request for seq 2, to interface 68, labels <800001, 100176>
```



```
Reply for seq 2, return code: Egress-ok
Request for seq 3, to interface 68, labels <800001, 100176>
Reply for seq 3, return code: Egress-ok
Request for seq 4, to interface 68, labels <800001, 100176>
Reply for seq 4, return code: Egress-ok
Request for seq 5, to interface 68, labels <800001, 100176>
Reply for seq 5, return code: Egress-ok
```

```
--- lsping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
```

```
ping mpls l2vpn user@host> ping mpls l2vpn interface lt-1/2/0.21 reply-mode ip-udp
interface !!!!!
<interface-name> --- lsping statistics ---
reply-mode 5 packets transmitted, 5 packets received, 0% packet loss
```

## ping mpls l3vpn

---

**Syntax** ping mpls l3vpn prefix *prefix-name*  
<*l3vpn-name*>  
<bottom-label-ttl>  
<count *count*>  
<destination *address*>  
<detail>  
<exp *forwarding-class*>  
<logical-system (all | *logical-system-name*)>  
<size *bytes*>  
<source *source-address*>  
<sweep>

**Release Information** Command introduced before Junos OS Release 7.4.  
Command introduced in Junos OS Release 9.0 for EX Series switches.  
The **size** and **sweep** options were introduced in Junos OS Release 9.6.

**Description** Check the operability of a MPLS Layer 3 virtual private network (VPN) connection. Type Ctrl+c to interrupt a **ping mpls l3vpn** command.

**Options** bottom-label-ttl—(Optional) Display the time-to-live value for the bottom label in the label stack.

count *count*—(Optional) Number of ping requests to send. If **count** is not specified, five ping requests are sent. The range of values is 1 through **1,000,000**. The default value is **5**.

destination *address*—(Optional) Specify an address other than the default (**127.0.0.1/32**) for the ping echo requests. The address can be anything within the **127/8** subnet.

detail—(Optional) Display detailed information about the echo requests sent and received.

exp *forwarding-class*—(Optional) Value of the forwarding class for the MPLS ping packets.

*l3vpn-name*—(Optional) Layer 3 VPN name.

logical-system (all | *logical-system-name*)—(Optional) Perform this operation on all logical systems or on the specified logical system.

prefix *prefix-name*—Ping to test whether a prefix is present in a provider edge (PE) router's or switch's VPN routing and forwarding (VRF) table, by means of a Layer 3 VPN destination prefix. This option does not test the connection between a PE router or switch and a customer edge (CE) router or switch.

size *bytes*—(Optional) Size of the label-switched path (LSP) ping request packet (**96** through **65468** bytes). Packets are 4-byte aligned. For example, If you enter a size of 97, 98, 99, or 100, the router or switch uses a size value of 100 bytes. If you enter a packet size that is smaller than the minimum size, an error message is displayed reminding you of the 96-byte minimum.

*source source-address*—(Optional) IP address of the outgoing interface. This address is sent in the IP source address field of the ping request. If this option is not specified, the default address is usually the loopback interface (**lo.0**).

*sweep*—(Optional) Automatically determine the size of the maximum transmission unit (MTU).

<b>Additional Information</b>	<p>You must configure MPLS at the <b>[edit protocols mpls]</b> hierarchy level on the egress PE router or switch (the router or switch receiving the MPLS echo packets) to ping a Layer 2 circuit.</p> <p>In asymmetric MTU scenarios, the echo response may be dropped. For example, if the MTU from System A to System B is 1000 bytes, the MTU from System B to System A is 500 bytes, and the ping request packet size is 1000 bytes, the echo response is dropped because the PAD TLV is included in the echo response, making it too large.</p>
<b>Required Privilege Level</b>	network
<b>List of Sample Output</b>	<p><b>ping mpls l3vpn on page 19</b></p> <p><b>ping mpls l3vpn detail on page 19</b></p>
<b>Output Fields</b>	<p>When you enter this command, you are provided feedback on the status of your request. An exclamation point (!) indicates that an echo reply was received. A period (.) indicates that an echo reply was not received within the timeout period. An x indicates that an echo reply was received with an error code these packets are not counted in the received packets count. They are accounted for separately.</p>

## Sample Output

<b>ping mpls l3vpn</b>	<pre>user@host&gt; ping mpls l3vpn vpn1 prefix 10.255.245.122/32 !!!!! --- lsping statistics --- 5 packets transmitted, 5 packets received, 0% packet loss</pre>
<b>ping mpls l3vpn detail</b>	<pre>user@host&gt; ping mpls l3vpn vpn1 prefix 10.255.245.122/32 detail Request for seq 1, to interface 68, labels &lt;100128, 100112&gt; Reply for seq 1, return code: Egress-ok Request for seq 2, to interface 68, labels &lt;100128, 100112&gt; Reply for seq 2, return code: Egress-ok Request for seq 3, to interface 68, labels &lt;100128, 100112&gt; Reply for seq 3, return code: Egress-ok Request for seq 4, to interface 68, labels &lt;100128, 100112&gt; Reply for seq 4, return code: Egress-ok Request for seq 5, to interface 68, labels &lt;100128, 100112&gt; Reply for seq 5, return code: Egress-ok --- lsping statistics --- 5 packets transmitted, 5 packets received, 0% packet loss</pre>

## ping mpls ldp

---

**Syntax**    ping mpls ldp *fec*  
             <count *count*>  
             <destination *address*>  
             <detail>  
             <exp *forwarding-class*>  
             <instance *routing-instance-name*>  
             <logical-system (all | *logical-system-name*)>  
             <size *bytes*>  
             <source *source-address*>  
             <sweep>

**Release Information**    Command introduced before Junos OS Release 7.4.  
                             Command introduced in Junos OS Release 9.0 for EX Series switches.  
                             The **size** and **sweep** options were introduced in Junos OS Release 9.6.  
                             The **instance** option was introduced in Junos OS Release 10.0.

**Description**    Check the operability of MPLS LDP-signaled label-switched path (LSP) connections.  
                     Type Ctrl+c to interrupt a **ping mpls** command.

**Options**    count *count*—(Optional) Number of ping requests to send. If **count** is not specified, five ping requests are sent. The range of values is 1 through **1,000,000**. The default value is **5**.

             destination *address*—(Optional) Specify an address other than the default (**127.0.0.1/32**) for the ping echo requests. The address can be anything within the **127/8** subnet.

             detail—(Optional) Display detailed information about the echo requests sent and received.

             exp *forwarding-class*—(Optional) Value of the forwarding class for the MPLS ping packets.

*fec*—Ping an LDP-signaled LSP using the forwarding equivalence class (FEC) prefix and length.

             instance *routing-instance-name*—(Optional) Allows you to ping a combination of the routing instance and forwarding equivalence class (FEC) associated with an LSP.

             logical-system (all | *logical-system-name*)—(Optional) Perform this operation on all logical systems or on the specified logical system.

             size *bytes*—(Optional) Size of the label-switched path (LSP) ping request packet (**88** through **65468** bytes). Packets are 4-byte aligned. For example, If you enter a size of 89, 90, 91, or 92, the router or switch uses a size value of 92 bytes. If you enter a packet size that is smaller than the minimum size, an error message is displayed reminding you of the 88-byte minimum.

             source *source-address*—(Optional) IP address of the outgoing interface. This address is sent in the IP source address field of the ping request. If this option is not specified, the default address is usually the loopback interface (**lo.0**).

sweep—(Optional) Automatically determine the size of the maximum transmission unit (MTU).

**Additional Information** If the LSP changes, the label and interface information displayed when you issued the **ping** command continues to be used. You must configure MPLS at the **[edit protocols mpls]** hierarchy level on the remote router or switch to ping an LSP terminating there. You must configure MPLS even if you intend to ping only LDP forwarding equivalence classes (FECs).

You can configure the ping interval for the **ping mpls ldp** command by specifying a new time in seconds using the **lsp-ping-interval** statement at the **[edit protocols ldp oam]** hierarchy level. For more information, see the *Junos OS MPLS Applications Configuration Guide*.

In asymmetric MTU scenarios, the echo response may be dropped. For example, if the MTU from System A to System B is 1000 bytes, the MTU from System B to System A is 500 bytes, and the ping request packet size is 1000 bytes, the echo response is dropped because the PAD TLV is included in the echo response, making it too large.

**Required Privilege Level** network

**List of Sample Output** **ping mpls ldp fec count on page 21**

**Output Fields** When you enter this command, you are provided feedback on the status of your request. An exclamation point (!) indicates that an echo reply was received. A period (.) indicates that an echo reply was not received within the timeout period. An x indicates that an echo reply was received with an error code. Packets with error codes are not counted in the received packets count. They are accounted for separately.

## Sample Output

```
ping mpls ldp fec count user@host> ping mpls ldp 10.255.245.222 count 10
!!!xxx...x--- 1sping statistics ---10 packets transmitted, 3 packets received,
70% packet loss 4 packets received with error status, not counted as received.
```

## ping mpls lsp-end-point

---

<b>Syntax</b>	<code>ping mpls lsp-end-point <i>prefix-name</i></code> <code>&lt;count <i>count</i>&gt;</code> <code>&lt;destination <i>address</i>&gt;</code> <code>&lt;detail&gt;</code> <code>&lt;exp <i>forwarding-class</i>&gt;</code> <code>&lt;instance <i>routing-instance-name</i>&gt;</code> <code>&lt;logical-system (all   <i>logical-system-name</i>)&gt;</code> <code>&lt;size <i>bytes</i>&gt;</code> <code>&lt;source <i>source-address</i>&gt;</code> <code>&lt;sweep&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. The <b>size</b> and <b>sweep</b> options were introduced in Junos OS Release 9.6. The <b>instance</b> option was introduced in Junos OS Release 10.0.
<b>Description</b>	Check the operability of MPLS label-switched path (LSP) endpoint connections. Type Ctrl+c to interrupt a <b>ping mpls</b> command.
<b>Options</b>	<p><code>count <i>count</i></code>—(Optional) Number of ping requests to send. If <b>count</b> is not specified, five ping requests are sent. The range of values is 1 through <b>1,000,000</b>. The default value is <b>5</b>.</p> <p><code>destination <i>address</i></code>—(Optional) Specify an address other than the default (<b>127.0.0.1/32</b>) for the ping echo requests. The address can be anything within the <b>127/8</b> subnet.</p> <p><code>detail</code>—(Optional) Display detailed information about the echo requests sent and received.</p> <p><code>exp <i>forwarding-class</i></code>—(Optional) Value of the forwarding class for the MPLS ping packets.</p> <p><code>instance <i>routing-instance-name</i></code>—(Optional) Ping a combination of the routing instance and forwarding equivalence class (FEC) associated with an LSP connection.</p> <p><code>logical-system (all   <i>logical-system-name</i>)</code>—(Optional) Perform this operation on all logical systems or on the specified logical system.</p> <p><code><i>prefix-name</i></code>—LDP forwarding equivalence class (FEC) prefix or RSVP LSP endpoint address.</p> <p><code>size <i>bytes</i></code>—(Optional) Size of the LSP ping request packet. If the endpoint is LDP-based, the minimum size of the packet is <b>88</b> bytes. If the endpoint is RSVP-based, the minimum size of the packet is <b>100</b> bytes. The maximum size in either case is <b>65468</b> bytes.</p> <p><code>source <i>source-address</i></code>—(Optional) IP address of the outgoing interface. This address is sent in the IP source address field of the ping request. If this option is not specified, the default address is usually the loopback interface (<b>lo.0</b>).</p> <p><code>sweep</code>—(Optional) Automatically determine the size of the maximum transmission unit (MTU).</p>

**Additional Information** If the LSP changes, the label and interface information displayed when you issued the **ping** command continues to be used. You must configure MPLS at the **[edit protocols mpls]** hierarchy level on the remote router or switch to ping an LSP terminating there. You must configure MPLS even if you intend to ping only LDP forwarding equivalence classes (FECs).

In asymmetric MTU scenarios, the echo response may be dropped. For example, if the MTU from System A to System B is 1000 bytes, the MTU from System B to System A is 500 bytes, and the ping request packet size is 1000 bytes, the echo response is dropped because the PAD TLV is included in the echo response, making it too large.

**Required Privilege Level** network

**List of Sample Output** **ping mpls lsp-end-point detail on page 23**

**Output Fields** When you enter this command, you are provided feedback on the status of your request. An exclamation point (!) indicates that an echo reply was received. A period (.) indicates that an echo reply was not received within the timeout period. An x indicates that an echo reply was received with an error code these packets are not counted in the received packets count. They are accounted for separately.

## Sample Output

```

ping mpls
lsp-end-point detail
user@host> ping mpls lsp-end-point 10.255.245.119 detail
Route to end point address is via LDP FEC
Request for seq 1, to interface 67, label 100032
Reply for seq 1, return code: Egress-ok
Request for seq 2, to interface 67, label 100032
Reply for seq 2, return code: Egress-ok
Request for seq 3, to interface 67, label 100032
Reply for seq 3, return code: Egress-ok
Request for seq 4, to interface 67, label 100032
Reply for seq 4, return code: Egress-ok
Request for seq 5, to interface 67, label 100032
Reply for seq 5, return code: Egress-ok
--- lsping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss

```

## ping mpls rsvp

**Syntax** ping mpls rsvp  
 <lsp-name>  
 <count count>  
 <destination address>  
 <detail>  
 <dynamic-bypass>  
 <egress egress-address>  
 <exp forwarding-class>  
 <interface interface-name>  
 <logical-system (all | logical-system-name)>  
 <manual-bypass>  
 <multipoint>  
 <size bytes>  
 <source source-address>  
 <standby standby-path-name>  
 <sweep>

**Release Information** Command introduced before Junos OS Release 7.4.  
 Command introduced in Junos OS Release 9.0 for EX Series switches.  
 The **egress** and **multipoint** options were introduced in Junos OS Release 9.2.  
 The **size** and **sweep** options were introduced in Junos OS Release 9.6.  
 The **dynamic-bypass** and **manual-bypass** options were introduced in Junos OS Release 10.2.

**Description** Check the operability of MPLS RSVP-signaled label-switched path (LSP) connections. Type Ctrl+c to interrupt a **ping mpls** command.

**Options** count *count*—(Optional) Number of ping requests to send. If **count** is not specified, five ping requests are sent. The range of values is 1 through 1,000,000. The default value is 5.

destination *address*—(Optional) Specify an address other than the default (127.0.0.1/32) for the ping echo requests. The address can be anything within the 127/8 subnet.

detail—(Optional) Display detailed information about the echo requests sent and received.



**NOTE:** When using the **detail** option, the reported time is based on the system time configured on the local and remote routers. Differences in these system times can result in inaccurate one way ping trip times being reported.

In practice, it is difficult to synchronize the system times of independent Juniper Networks routers with sufficient accuracy to provide a meaningful time value for the **detail** option (even when synchronized using NTP).

dynamic-bypass—(Optional) Ping dynamically generated bypass LSPs, used for protecting other LSPs.



*egress egress-address*—(Optional) Only the specified egress router or switch responds to the ping request.

*exp forwarding-class*—(Optional) Value of the forwarding class for the MPLS ping packets.

*interface*—(Optional) Specify the name of the interface protected by the manual bypass LSP. This option is only available when you have also used the **manual-bypass** option.

*logical-system (all | logical-system-name)*—(Optional) Perform this operation on all logical systems or on the specified logical system.

*lsp-name*—Ping an RSVP-signaled LSP using an LSP name.

**manual-bypass**—(Optional) Ping manually configured bypass LSPs, used for protecting other LSPs. For this option, you must also specify the interface protected by the manual bypass LSP using the **interface** option.

**multipoint**—(Optional) Send ping requests to each of the egress routers or switches participating in a point-to-multipoint LSP. You can also include the **egress** option to ping a specific egress router or switch participating in a point-to-multipoint LSP.

*size bytes*—(Optional) Size of the LSP ping request packet (100 through 65468 bytes). Packets are 4-byte aligned. For example, if you enter a size of 101, 102, 103, or 104, the router or switch uses a size value of 104 bytes. If you enter a packet size that is smaller than the minimum size, an error message is displayed reminding you of the 100-byte minimum.

*source source-address*—(Optional) IP address of the outgoing interface. This address is sent in the IP source address field of the ping request. If this option is not specified, the default address is usually the loopback interface.

*standby standby-path-name*—(Optional) Name of the standby path.

**sweep**—(Optional) Automatically determine the size of the maximum transmission unit (MTU).

**Additional Information** If the LSP changes, the label and interface information displayed when you issued the **ping** command continues to be used. You must configure MPLS at the **[edit protocols mpls]** hierarchy level on the remote router or switch to ping an LSP terminating there. You must configure MPLS even if you intend to ping only LDP forwarding equivalence classes (FECs).

In asymmetric MTU scenarios, the echo response may be dropped. For example, if the MTU from System A to System B is 1000 bytes, the MTU from System B to System A is 500 bytes, and the ping request packet size is 1000 bytes, the echo response is dropped because the PAD TLV is included in the echo response, making it too large.

**Required Privilege Level** network

**List of Sample Output** **ping mpls rsvp (Echo Reply Received) on page 26**  
**ping mpls rsvp (Echo Reply with Error Code) on page 26**

ping mpls rsvp detail on page 26

ping mpls rsvp multipoint egress detail count on page 26

ping mpls rsvp multipoint detail count on page 26

ping mpls rsvp destination detail count size on page 27

ping mpls rsvp destination detail sweep size on page 27

**Output Fields** When you enter this command, you are provided feedback on the status of your request. An exclamation point (!) indicates that an echo reply was received. A period (.) indicates that an echo reply was not received within the timeout period. An x indicates that an echo reply was received with an error code these packets are not counted in the received packets count. They are accounted for separately.

## Sample Output

<b>ping mpls rsvp (Echo Reply Received)</b>	<pre> user@host&gt; ping mpls rsvp test1 !!!!!--- lsping statistics ---5 packets transmitted, 5 packets received, 0% packet loss </pre>
<b>ping mpls rsvp (Echo Reply with Error Code)</b>	<pre> user@host&gt; ping mpls rsvp test2 !!xxx--- lsping statistics ---5 packets transmitted, 2 packets received, 60% packet loss3 packets received with error status, not counted as received. </pre>
<b>ping mpls rsvp detail</b>	<pre> user@host&gt; ping mpls rsvp to-green detail Request for seq 1, to interface 67, labels &lt;100095, 0, 0&gt; Reply for seq 1, return code: Egress-ok Request for seq 2, to interface 67, labels &lt;100095, 0, 0&gt; Reply for seq 2, return code: Egress-ok </pre>
<b>ping mpls rsvp multipoint egress detail count</b>	<pre> user@host&gt;ping mpls rsvp sample-lsp multipoint egress 192.168.1.3 detail count 1 Request for seq 1, to interface 70, label 299952 Request for seq 1, to interface 70, no label stack. Request for seq 1, to interface 67, no label stack.  Reply for seq 1, egress 192.168.1.3, return code: Egress-ok, time: 0.242 ms Local transmit time: 1205310695s 215737us Remote receive time: 1205310695s 215979us  --- lsping, egress 192.168.1.3 statistics --- 1 packets transmitted, 1 packets received, 0% packet loss </pre>
<b>ping mpls rsvp multipoint detail count</b>	<pre> user@host&gt;ping mpls rsvp sample-lsp multipoint detail count 1 Request for seq 1, to interface 70, label 299952 Request for seq 1, to interface 70, no label stack. Request for seq 1, to interface 67, no label stack.  Reply for seq 1, return code: Unknown TLV, time: 9.877 ms Local transmit time: 1205310615s 347317us Remote receive time: 1205310615s 357194us Reply for seq 1, egress 192.168.1.3, return code: Egress-ok, time: 0.351 ms Local transmit time: 1205310615s 347262us Remote receive time: 1205310615s 347613us Reply for seq 1, egress 192.168.1.13, return code: Egress-ok, time: 0.301 ms Local transmit time: 1205310615s 347167us Remote receive time: 1205310615s 347468us Timeout for seq 1, egress 192.168.1.1 Timeout for seq 1, egress 192.168.1.4 Timeout for seq 1, egress 192.168.1.14 </pre>

```

--- lsping, egress 192.168.1.1 statistics ---
1 packets transmitted, 0 packets received, 100% packet loss

--- lsping, egress 192.168.1.3 statistics ---
1 packets transmitted, 1 packets received, 0% packet loss

--- lsping, egress 192.168.1.4 statistics ---
1 packets transmitted, 0 packets received, 100% packet loss

--- lsping, egress 192.168.1.13 statistics ---
1 packets transmitted, 1 packets received, 0% packet loss

--- lsping, egress 192.168.1.14 statistics ---
1 packets transmitted, 0 packets received, 100% packet loss

```

**ping mpls rsvp destination detail count size**

```

user@host> ping mpls rsvp chaser-access destination 192.168.0.1 detail count 1 size 4468

Request for seq 1, to interface 88, label 299984, packet size 4468
Reply for seq 1, return code: Egress-ok, time: 44.804 ms
    Local transmit time: 2009-03-30 22:05:02 CEST 408.629 ms
    Remote receive time: 2009-03-30 22:05:02 CEST 453.433 ms

--- lsping statistics ---
1 packets transmitted, 1 packets received, 0% packet loss

```

**ping mpls rsvp destination detail sweep size**

```

user@router> ping mpls rsvp chaser-access destination 192.168.0.1 detail sweep size 4500

Request for seq 1, to interface 86, no label stack., packet size 100
Reply for seq 1, return code: Egress-ok, time: -39.264 ms
    Local transmit time: 2009-04-24 14:05:40 CEST 541.423 ms
    Remote receive time: 2009-04-24 14:05:40 CEST 502.159 ms
Request for seq 2, to interface 86, no label stack., packet size 2300
Reply for seq 2, return code: Egress-ok, time: -38.179 ms
    Local transmit time: 2009-04-24 14:05:41 CEST 544.240 ms
    Remote receive time: 2009-04-24 14:05:41 CEST 506.061 ms
Request for seq 3, to interface 86, no label stack., packet size 4500
Timeout for seq 3
Request for seq 4, to interface 86, no label stack., packet size 3400
Reply for seq 4, return code: Egress-ok, time: -37.545 ms
    Local transmit time: 2009-04-24 14:05:45 CEST 549.953 ms
    Remote receive time: 2009-04-24 14:05:45 CEST 512.408 ms
Request for seq 5, to interface 86, no label stack., packet size 3952
Reply for seq 5, return code: Egress-ok, time: -37.176 ms
    Local transmit time: 2009-04-24 14:05:46 CEST 555.881 ms
    Remote receive time: 2009-04-24 14:05:46 CEST 518.705 ms
Request for seq 6, to interface 86, no label stack., packet size 4228
Reply for seq 6, return code: Egress-ok, time: -36.962 ms
    Local transmit time: 2009-04-24 14:05:47 CEST 561.809 ms
    Remote receive time: 2009-04-24 14:05:47 CEST 524.847 ms
Request for seq 7, to interface 86, no label stack., packet size 4368
Reply for seq 7, return code: Egress-ok, time: -36.922 ms
    Local transmit time: 2009-04-24 14:05:48 CEST 568.738 ms
    Remote receive time: 2009-04-24 14:05:48 CEST 531.816 ms
Request for seq 8, to interface 86, no label stack., packet size 4440
Reply for seq 8, return code: Egress-ok, time: -36.855 ms
    Local transmit time: 2009-04-24 14:05:49 CEST 575.669 ms
    Remote receive time: 2009-04-24 14:05:49 CEST 538.814 ms
Request for seq 9, to interface 86, no label stack., packet size 4476
Timeout for seq 9
Request for seq 10, to interface 86, no label stack., packet size 4460
Reply for seq 10, return code: Egress-ok, time: -36.906 ms

```

```
Local transmit time: 2009-04-24 14:05:53 CEST 584.382 ms
Remote receive time: 2009-04-24 14:05:53 CEST 547.476 ms
Request for seq 11, to interface 86, no label stack., packet size 4480
Timeout for seq 11
Request for seq 12, to interface 86, no label stack., packet size 4472
Timeout for seq 12
Request for seq 13, to interface 86, no label stack., packet size 4468
Reply for seq 13, return code: Egress-ok, time: -36.943 ms
Local transmit time: 2009-04-24 14:06:00 CEST 594.884 ms
Remote receive time: 2009-04-24 14:06:00 CEST 557.941 ms
Request for seq 14, to interface 86, no label stack., packet size 4476
Timeout for seq 14
Request for seq 15, to interface 86, no label stack., packet size 4472
Timeout for seq 15

--- lsp ping sweep result---
Maximum Transmission Unit (MTU) is 4468 bytes
```

## ping vpls instance

**Syntax** ping vpls instance *instance-name* destination-mac *address* source-ip *address*  
 <bd-name *name*>  
 <control-plane-response>  
 <count *number*>  
 <detail>  
 <learning-vlan-id *number*>  
 <logical-system *logical-system-name*>

**Release Information** Command introduced in Junos OS Release 9.1.

**Description** Check the operability of virtual private LAN service (VPLS) connections. Type Ctrl+c to interrupt a **ping vpls instance** command.

When you issue a **ping vpls instance** command, a chassis MAC address is drawn from the ingress PE router's pool of MAC addresses and used to create the VPLS ping packet. The ping packet is then forwarded to the egress PE router. When the egress PE router receives the ping packet, it learns the MAC address from the VPLS ping packet. The MAC address is added to the egress PE router's MAC table.

The **ping vpls instance** command relies on the LSP ping and trace infrastructure defined in RFC 4379, *Detecting Multi-Protocol Label Switched (MPLS) Data Plane Failures* and further enhancements defined in Internet draft draft-stokes-vkompella-ppvpn-hvpls-oam-02, *Testing Hierarchical Virtual Private LAN Services*.

**Options** instance *instance-name*—Specify the name of the VPLS routing instance.

destination-mac *address*—Specify a destination MAC address for the ping echo requests.

source ip *address*—IP address of the outgoing interface.

bd-name *name*—(Optional) Name of the bridge domain.

control-plane-response—(Optional) Request VPLS OAM responses using the control plane.

count *number*—(Optional) Number of ping requests to send. If **count** is not specified, five ping requests are sent. The range of values is 1 through 1,000,000. The default value is 5.

detail—(Optional) Display detailed information about the echo requests sent and received.

learning-vlan-id *number*—(Optional) Specify a learning VLAN identifier for the ping echo requests. The range of values is 0 through 4094.

logical-system *logical-system-name*—(Optional) Specify a logical system name for the ping echo requests.

**Additional Information** This statement is only supported on the MX Series routers, the M120 and M320 routers, and the T1600 router.

**Required Privilege Level** network

**List of Sample Output** ping vpls instance on page 30

**Output Fields** When you enter this command, you are provided feedback on the status of your request. An exclamation point (!) indicates that an echo reply was received. A period (.) indicates that an echo reply was not received within the timeout period. An x indicates that an echo reply was received with an error code these packets are not counted in the received packets count. They are accounted for separately.

## Sample Output

```
ping vpls instance user@host> ping vpls instance red destination-mac 00:89:67:1a:23:6f source-ip 10.255.17.138
! -> sample-router:red:ge-4/1/1.0
! -> sample-router:red:ge-4/1/1.0
! -> sample-router:red:ge-4/1/1.0
! -> sample-router:red:ge-4/1/1.0

--- vpls ping statistics ---
4 packets transmitted, 4 packets received, 0% packet loss
```

## CHAPTER 2

# Interface Diagnostics Operational Mode Commands

Table 4 on page 31 summarizes the command-line interface (CLI) commands you can use to run diagnostics on router interfaces. Commands are listed in alphabetical order.

**Table 4: Interface Diagnostics Operational Mode Commands**

Task	Command
Start a bit error rate test (BERT) on a DS0 interface.	<b>test interface ds0-bert-start</b>
Stop a BERT on a DS0 interface.	<b>test interface ds0-bert-stop</b>
Start a BERT on an E1 interface.	<b>test interface e1-bert-start</b>
Stop a BERT on an E1 interface.	<b>test interface e1-bert-stop</b>
Start a BERT on an E3 interface.	<b>test interface e3-bert-start</b>
Stop a BERT on an E3 interface.	<b>test interface e3-bert-stop</b>
Transmit over a facilities data link (FDL) to initiate or terminate a far-end line loopback.	<b>test interface fdl-line-loop</b>
Transmit over an FDL to initiate or terminate a far-end payload loopback.	<b>test interface fdl-payload-loop</b>
Transmit the line loopback activate code word sequence on the interface's far-end alarm and control (FEAC) channel.	<b>test interface feac-loop-initiate</b>
Transmit the line loopback deactivate code word sequence on the interface's FEAC channel.	<b>test interface feac-loop-terminate</b>
Initiate or terminate a far-end line loopback.	<b>test interface inband-line-loop</b>
Initiate or terminate a far-end payload loopback.	<b>test interface inband-payload-loop</b>

Table 4: Interface Diagnostics Operational Mode Commands (*continued*)

Task	Command
Restart auto-negotiation on a Fast Ethernet or Gigabit Ethernet interface.	<b>test interface restart-auto-negotiation</b>
Start a BERT on a T1 interface.	<b>test interface t1-bert-start</b>
Stop a BERT on a T1 interface.	<b>test interface t1-bert-stop</b>
Start a BERT on a T3 interface.	<b>test interface t3-bert-start</b>
Stop a BERT on a T3 interface.	<b>test interface t3-bert-stop</b>



**NOTE:** For information about how to configure interface test parameters, see the *Junos Network Interfaces Configuration Guide*. For information about related tasks performed by network operations center (NOC) personnel, see the *Junos Interfaces Network Operations Guide*.



## test interface ds0-bert-start

---

<b>Syntax</b>	test interface ds0-bert-start <i>ds-fpc/pic/port</i>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Start a bit error rate test (BERT) on a DS0 interface.
<b>Options</b>	<i>ds-fpc/pic/port</i> —DS0 interface name.
<b>Additional Information</b>	Before starting a BERT, you must disable the interface. To do so, include the <b>disable</b> statement at the [ <b>edit interfaces <i>interface-name</i></b> ] hierarchy level. You can run a BERT on only one interface per PIC at a time.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>test interface ds0-bert-start on page 33</b>
<b>Output Fields</b>	To display the results of the BERT, use the <b>show interfaces extensive</b> command.

### Sample Output

test interface ds0-bert-start	user@host> test interface ds0-bert-start ds-1/0/0
----------------------------------	---------------------------------------------------

## test interface ds0-bert-stop

---

<b>Syntax</b>	<code>test interface ds0-bert-stop ds-<i>fpc/pic/port</i></code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Stop a bit error rate test (BERT) on a DS0 interface.
<b>Options</b>	<i>ds-fpc/pic/port</i> —DS0 interface name.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>test interface ds0-bert-stop on page 34</b>
<b>Output Fields</b>	To display the results of the BERT, use the <b>show interfaces extensive</b> command.

### Sample Output

```
test interface  user@host> test interface ds0-bert-stop ds-1/0/0
ds0-bert-stop
```

## test interface e1-bert-start

---

<b>Syntax</b>	test interface e1-bert-start <i>interface-name</i>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Start a bit error rate test (BERT) on an E1 interface.
<b>Options</b>	<i>interface-name</i> —Interface name: <b>e1-fpc/pic/port</b> or <b>ce1-fpc/pic/port &lt;:channel&gt;</b>
<b>Additional Information</b>	Before starting a BERT, you must disable the interface. To do this, include the <b>disable</b> statement at the [ <b>edit interfaces <i>interface-name</i></b> ] hierarchy level. You can run a BERT on only one interface per PIC at a time.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>test interface e1-bert-start on page 35</b>
<b>Output Fields</b>	To display the results of the BERT, use the <b>show interfaces extensive</b> command.

### Sample Output

```
test interface e1-bert-start  user@host> test interface e1-bert-start e1-1/0/0
```

## test interface e1-bert-stop

---

<b>Syntax</b>	<code>test interface e1-bert-stop <i>interface-name</i></code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Stop a bit error rate test (BERT) on an E1 interface.
<b>Options</b>	<i>interface-name</i> —Interface name: <code>e1-<i>fpc/pic/port</i></code> or <code>ce1-<i>fpc/pic/port</i> &lt;:<i>channel</i>&gt;</code> .
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>test interface e1-bert-stop on page 36</b>
<b>Output Fields</b>	To display the results of the BERT, use the <b>show interfaces extensive</b> command.

## Sample Output

```
test interface  user@host> test interface e1-bert-stop e1-1/0/0
e1-bert-stop
```

## test interface e3-bert-start

---

<b>Syntax</b>	test interface e3-bert-start <i>e3-fpc/pic/port</i>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Start a bit error rate test (BERT) on an E3 interface.
<b>Options</b>	<i>e3-fpc/pic/port</i> —E3 interface name.
<b>Additional Information</b>	Before starting a BERT, you must disable the interface. To do so, include the <b>disable</b> statement at the [ <b>edit interfaces</b> <i>interface-name</i> ] hierarchy level. You can run a BERT on only one interface per PIC at a time.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>test interface e3-bert-start on page 37</b>
<b>Output Fields</b>	To display the results of the BERT, use the <b>show interfaces extensive</b> command.

### Sample Output

```
test interface user@host> test interface e3-bert-start e3-1/0/0
e3-bert-start
```

## test interface e3-bert-stop

---

<b>Syntax</b>	<code>test interface e3-bert-stop e3-<i>fpc/pic/port</i></code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Stop a bit error rate test (BERT) on an E3 interface.
<b>Options</b>	<i>e3-fpc/pic/port</i> —E3 interface name.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>test interface e3-bert-stop on page 38</b>
<b>Output Fields</b>	To display the results of the BERT, use the <b>show interfaces extensive</b> command.

### Sample Output

```
test interface  user@host> test interface e3-bert-stop e3-1/0/0
e3-bert-stop
```

## test interface fdl-line-loop

**Syntax** `test interface fdl-line-loop (ansi (initiate | terminate) | bellcore (initiate | terminate))  
t1-fpc/pic/port <:channel>`

**Release Information** Command introduced before Junos OS Release 7.4.

**Description** Send commands over the facilities data link (FDL) on a T1 interface to initiate or terminate a far-end line loopback using either an ANSI or Bellcore FDL command code. If the far end of the connection is in C-bit parity mode and it has been configured to accept line loopback requests from the near end, the far end executes the request. See the ANSI T1.107 specification for more details.



**NOTE:** The following restrictions apply to this command:

- If you attach a SmartJack network interface unit on the T1 connection between an M Series router with a channelized DS3 IQ, channelized OC3 IQ, or channelized OC12 IQ interface and a standard T1 interface, and you issue the `test interface fdl-line-loop bellcore initiate` command on the channelized T1 interface, the loopback test might not function correctly.
- On channelized DS3-to-DS1 and multichannel DS3 PICs, this command can only be initiated by T1 interfaces. These types of T1 interfaces cannot accept a request for this test sent by another router.
- This command is not supported on the 4-port T1 PIC.

**Options** `ansi`—ANSI FDL command code.

`bellcore`—Bellcore FDL command code.

`initiate`—Initiate the far-end line loopback.

`terminate`—Terminate the far-end line loopback.

`t1-fpc/pic/port <:channel>`—Name of a T1 interface. The channel number indicates a channelized interface.

**Required Privilege Level** view

**List of Sample Output** `test interface fdl-line-loop` on page 40

**Output Fields** To display the state and the number of times the interface has placed itself into remote loopback, use the `show interfaces extensive` command.

## Sample Output

```
test interface user@host> test interface fdl-line-loop ansi initiate t1-1/0/0
fdl-line-loop
```



## test interface fdl-payload-loop

**Syntax** test interface fdl-payload-loop (ansi (initiate | terminate) | bellcore (initiate | terminate) t1-fpc/pic/port <:channel>)

**Release Information** Command introduced before Junos OS Release 7.4.

**Description** Send commands over the facilities data link (FDL) on a T1 interface to initiate or terminate a far-end payload loopback using either an ANSI or Bellcore FDL command code. If the far end of the connection is in C-bit parity mode and has been configured to accept payload loopback requests from the near end, the far end executes the request. See the ANSI T1.107 specification for more details.



**NOTE:** The following restrictions apply to this command:

- On channelized DS3-to-DS1 and multichannel DS3 PICs, this command can only be initiated by T1 interfaces. These types of T1 interfaces cannot accept a request for this test sent by another router.
- This command is not supported on the 4-port T1 PIC.

**Options** ansi—ANSI FDL command code.

bellcore—Bellcore FDL command code.

initiate—Initiate the far-end payload loopback.

terminate—Terminate the far-end payload loopback.

t1-fpc/pic/port <:channel>—Name of a T1 interface. The channel number indicates a channelized interface.

**Required Privilege Level** view

**List of Sample Output** test interface fdl-payload-loop on page 41


**Output Fields** To display the state and the number of times the interface has placed itself into remote loopback, use the **show interfaces extensive** command.

### Sample Output

```
test interface fdl-payload-loop user@host> test interface fdl-payload-loop ansi initiate t1-1/0/0
```

## test interface feac-loop-initiate

---

<b>Syntax</b>	test interface t3- <i>fpc/pic/port</i> <: <i>channel</i> > feac-loop-initiate
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Have the interface transmit the word sequence for the line loopback activate code on its far-end alarm and control (FEAC) channel. If the far end of the connection is in C-bit parity mode and has been configured to accept remote loopback requests from the near end, the far end places its interface into remote loopback. See the ANSI T1.107 specification for more details.
	<div> <b>NOTE:</b> This command is not supported for T3 interfaces configured on DS3 and channelized OC12 PICs.</div>
<b>Options</b>	t3- <i>fpc/pic/port</i> <: <i>channel</i> >—Name of a T3 interface. The channel number indicates a channelized interface.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	test interface feac-loop-initiate on page 42
<b>Output Fields</b>	To display the state and the number of times the interface has placed itself into remote loopback, use the <b>show interfaces extensive</b> command.

### Sample Output

```
test interface  user@host> test interface feac-loop-initiate t3-1/0/0
feac-loop-initiate
```

## test interface feac-loop-terminate

**Syntax** `test interface t3-fpc/pic/port <:channel> feac-loop-terminate`

**Release Information** Command introduced before Junos OS Release 7.4.

**Description** Have the interface transmit the line loopback deactivate code word sequence on its far-end alarm and control (FEAC) channel. If the far end of the connection is in C-bit parity mode and has been configured to accept remote loopback requests from the near end, the far end clears remote loopback on the interface. See the ANSI T1.107 specification for more details.



**NOTE:** This command is not supported for T3 interfaces configured on DS3 and Channelized OC12 PICs.

**Options** `t3-fpc/pic/port <:channel>`—Name of a T3 interface. The channel number indicates a channelized interface.

**Required Privilege Level** view

**List of Sample Output** [test interface feac-loop-terminate on page 43](#)

**Output Fields** To display the state and the number of times the interface has placed itself into remote loopback, use the **show interfaces extensive** command.

### Sample Output

```
test interface  user@host> test interface feac-loop-terminate t3-1/0/0
feac-loop-terminate
```

## test interface inband-line-loop

---

**Syntax** test interface inband-line-loop (ansi (initiate | terminate) | bellcore (initiate | terminate) t1-fpc/pic/port <:channel>)

**Release Information** Command introduced before Junos OS Release 7.4.

**Description** Send commands on a T1 interface to initiate or terminate a far-end line loopback using either an ANSI or Bellcore FDL command code. If the far end of the connection is in C-bit parity mode and it has been configured to accept line loopback requests from the near end, the far end executes the request.



**NOTE:** The following restrictions apply to this command:

- On channelized DS3-to-DS1 and multichannel DS3 PICs, this command can only be initiated by T1 interfaces. These types of T1 interfaces cannot accept a request for this test sent by another router.
- This command is not supported on the 4-port T1 PIC.

**Options** ansi—ANSI FDL command code.

bellcore—Bellcore FDL command code.

initiate—Initiate the far-end payload loopback.

terminate—Terminate the far-end payload loopback.

t1-fpc/pic/port <:channel>—Name of a T1 interface. The channel number indicates a channelized interface.

**Required Privilege Level** view


**List of Sample Output** test interface inband-line-loop on page 44

**Output Fields** To display the state and the number of times the interface has placed itself into remote loopback, use the **show interfaces extensive** command.

### Sample Output

```
test interface inband-line-loop user@host> test interface inband-line-loop ansi initiate t1-1/0/0
```

## test interface inband-payload-loop

<b>Syntax</b>	test interface inband-payload-loop (ansi (initiate   terminate)   bellcore (initiate   terminate) t1-fpc/pic/port <:channel>)
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Send commands on a T1 interface to initiate or terminate a far-end payload loopback using either an ANSI or Bellcore FDL command code. If the far end of the connection is in C-bit parity mode and has been configured to accept payload loopback requests from the near end, the far end executes the request.
	<div>  <p><b>NOTE:</b> The following restrictions apply to this command:</p> <ul style="list-style-type: none"> <li>On channelized DS3-to-DS1 and multichannel DS3 PICs, this command can only be initiated by T1 interfaces. These types of T1 interfaces cannot accept a request for this test sent by another router.</li> <li>This command is not supported on the 4-port T1 PIC.</li> </ul> </div>
<b>Options</b>	ansi—ANSI FDL command code. bellcore—Bellcore FDL command code. initiate—Initiate the far-end payload loopback. terminate—Terminate the far-end payload loopback. t1-fpc/pic/port <:channel>—Name of a T1 interface. The channel number indicates a channelized interface.
<b>Additional Information</b>	See the ANSI T1.107 specification for more details.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	test interface inband-payload-loop on page 45
<b>Output Fields</b>	To display the state and the number of times the interface has placed itself into remote loopback, use the <b>show interfaces extensive</b> command.

## Sample Output

```
test interface  user@host> test interface inband-payload-loop ansi initiate t1-1/0/0
inband-payload-loop
```

## test interface restart-auto-negotiation

---

<b>Syntax</b>	test interface restart-auto-negotiation <i>interface-name</i>
<b>Release Information</b>	Command introduced in Junos OS Release 7.6. Command introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Restarts auto-negotiation on a Fast Ethernet or Gigabit Ethernet interface.
<b>Options</b>	<i>interface-name</i> —Interface name: <b>fe-fpc/pic/port</b> or <b>ge-fpc/pic/port</b> .
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	test interface restart-auto-negotiation on page 46
<b>Output Fields</b>	Use the <b>show interfaces extensive</b> command to see the state for auto-negotiation.

### Sample Output

```
test interface restart-auto-negotiation user@host> test interface restart-auto-negotiation fe-1/0/0
```

## test interface t1-bert-start

---

<b>Syntax</b>	test interface t1-bert-start <i>interface-name</i>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Start a bit error rate test (BERT) on a T1 interface.
<b>Options</b>	<i>interface-name</i> —Interface name: <b>t1-fpc/pic/port</b> or <b>ct1-fpc/pic/port &lt;:channel&gt;</b> .
<b>Additional Information</b>	Before starting a BERT, you must disable the interface. To do so, include the <b>disable</b> statement at the [ <b>edit interfaces <i>interface-name</i></b> ] hierarchy level. You can run a BERT on only one interface per PIC at a time.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>test interface t1-bert-start on page 47</b>
<b>Output Fields</b>	To display the results of the BERT, use the <b>show interfaces extensive</b> command.

### Sample Output

```
test interface t1-bert-start user@host> test interface t1-bert-start t1-1/0/0
```

## test interface t1-bert-stop

---

<b>Syntax</b>	<code>test interface t1-bert-stop <i>interface-name</i></code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Stop a bit error rate test (BERT) on a T1 interface.
<b>Options</b>	<i>interface-name</i> —Interface name: <b>t1-<i>interface-name</i> fpc/pic/port</b> or <b>ct1-<i>fpc/pic/port</i> &lt;:channel&gt;</b>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>test interface t1-bert-stop on page 48</b>
<b>Output Fields</b>	To display the results of the BERT, use the <b>show interfaces extensive</b> command.

### Sample Output

```
test interface t1-bert-stop user@host> test interface t1-bert-stop t1-1/0/0
```



## test interface t3-bert-start

---

<b>Syntax</b>	test interface t3-bert-start <i>interface-name</i>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Start a bit error rate test (BERT) on a T3 interface.
<b>Options</b>	<i>interface-name</i> —Interface name: <b>t3-fpc/pic/port</b> or <b>ct3-fpc/pic/port &lt;:channel&gt;</b> .
<b>Additional Information</b>	Before starting a BERT, you must disable the interface. To do this, include the <b>disable</b> statement at the [ <b>edit interfaces <i>interface-name</i></b> ] hierarchy level. You can run a BERT on only one interface per PIC at a time.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>test interface t3-bert-start on page 49</b>
<b>Output Fields</b>	To display the results of the BERT, use the <b>show interfaces extensive</b> command.

### Sample Output

```
test interface  user@host> test interface t3-bert-start t3-1/0/0
t3-bert-start
```

## test interface t3-bert-stop

---

<b>Syntax</b>	<code>test interface t3-bert-stop <i>interface-name</i></code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Stop a bit error rate test (BERT) on a T3 interface.
<b>Options</b>	<i>interface-name</i> —Interface name: <code>t3-fpc/pic/port</code> or <code>ct3-fpc/pic/port &lt;:channel&gt;</code> .
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>test interface t3-bert-stop on page 50</b>
<b>Output Fields</b>	To display the results of the BERT, use the <code>show interfaces extensive</code> command.

### Sample Output

```
test interface  user@host> test interface t3-bert-stop t3-1/0/0
t3-bert-stop
```

## CHAPTER 3

# RADIUS Diagnostics Operational Mode Commands

Table 5 on page 51 summarizes RADIUS diagnostics commands that allow you to test RADIUS authentication by verifying a user, password, IP address, profile, and other RADIUS authentication attributes. Commands are listed in alphabetical order.

**Table 5: RADIUS Operational Mode Commands**

Task	Command
Test a RADIUS authentication profile	<b>test access profile</b>
Test RADIUS server authentication	<b>test access radius-server</b>

## test access profile

<b>Syntax</b>	<code>test access profile <i>profile-name</i> user <i>username</i> password <i>password</i> &lt;detail&gt;</code>
<b>Release Information</b>	Command introduced in Junos OS Release 9.1.
<b>Description</b>	Specify a profile to use to get information from a RADIUS server, which includes all the information from the <b>test access radius-server</b> command.
<b>Options</b>	<p><b>detail</b>—(Optional) Show the RADIUS attributes returned by the server.</p> <p><b>profile-name</b>—Access profile name configured.</p> <p><b>password</b>—Password for the username.</p> <p><b>username</b>—User name to be authenticated to the RADIUS server.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p><b>test access profile on page 53</b></p> <p><b>test access profile detail on page 53</b></p>
<b>Output Fields</b>	Table 6 on page 52 lists the output fields for the <b>test access profile</b> command. Output fields are listed in the approximate order in which they appear.

**Table 6: test access profile Output Fields**

Field Name	Field Description
<b>Profile Name</b>	Name of the configured access profile.
<b>Client Username</b>	The user name authenticated by the RADIUS server.
<b>Client Password</b>	The user password authenticated by the RADIUS server.
<b>Num Servers</b>	Number of RADIUS servers in the configured access profile.
<b>Server List</b>	List of RADIUS servers in the configure access profile.
<b>IP Address</b>	The IP address of the RADIUS server authenticated.
<b>UDP Port</b>	The RADIUS server port utilized during the authentication test.
<b>Source Address</b>	The source IP address of the client making the RADIUS request. If no address is shown, it defaults to the address of the outgoing interface.
<b>Timeout</b>	The RADIUS server timeout period.
<b>Retry Count</b>	The number of authentication attempts allowed by the RADIUS server.

Table 6: test access profile Output Fields (*continued*)

Field Name	Field Description
<b>Secret</b>	The shared secret used for authentication with the RADIUS server.
<b>Status</b>	The test result status (Accepted or Rejected) and the number of retransmits utilized during authentication.
<b>Attempts</b>	The number of authentication attempts on the RADIUS server.
<b>Attribute List</b>	The list of returned RADIUS attributes, sorted by the attribute name, and including parameter length and value. See your RADIUS server documentation for attribute descriptions.
<b>(Attribute) Name</b>	The name of the attribute.
<b>(Attribute) Length</b>	The attribute length in bytes.
<b>(Attribute) Value</b>	The attribute value.

## Sample Output

**test access profile** The following example uses the **test access profile** command to access and display basic information about the RADIUS server(s) shown in the resulting output:

```

user@host> test access profile alpha user TEST password TEST
user@host> test access profile alpha user TEST password TEST
Test Radius Profile Access
  Profile Name      : alpha
  Client Username   : TEST
  Client Password   : TEST
  Num Servers       : 5
    Server List
      IP Address    UDP   Source      Timeout  Retry  Count  Secret  Status
      Attempts
1.1.1.1           1812  10.10.10.10  2        1     TEST   Timeout
2
1.2.3.4           1812  Default     1        2     TEST   Timeout
3
192.168.10.10    1812  Default     3        3     TEST   Accepted
1

```

**test access profile detail** The following example uses the **test access profile detail** command to access and display detailed information about the RADIUS server(s) shown in the resulting output:

```

user@host> test access profile alpha user TEST password TEST detail
user@host> test access profile alpha user TEST password TEST detail
Test Radius Profile Access Detailed
  Profile Name      : alpha
  Client Username   : TEST
  Client Password   : TEST
  Num Servers       : 5
    Radius Server List

```

```

IP Address      : 1.2.3.4
UDP Port       : 1812
Source Address  : 192.168.10.10
Timeout        : 2
Retry Count    : 1
Secret         : TEST
Status        : Timeout
Attempts      : 2

```

```

IP Address      : 1.2.3.5
UDP Port       : 1812
Source Address  : Default
Timeout        : 1
Retry Count    : 2
Secret         : TEST
Status        : Timeout
Attempts      : 3

```

```

IP Address      : 192.168.10.10
UDP Port       : 1812
Source Address  : Default
Timeout        : 3
Retry Count    : 3
Secret         : TEST
Status        : Accepted
Attempts      : 1

```

## Attribute List

Name	Length	Value
Class	52	SBR2CLÍ½%¿ð0%¿
Acct-Interim-Interval	4	5
Callback-Id	12	123-456-789
Callback-Number	13	555-555-1212
Class	15	Class information
Filter-Id	4	999
Filter-Id	6	12345
Framed-Compression	4	0
Framed-IP-Address	4	1:2:3:4
Framed-IP-Netmask	4	255:255:255:255
Framed-IPv6-Route	15	1:2:3:4:5:6:7:8
Framed-MTU	4	1024
Framed-Pool	9	pool sbr
Framed-Protocol	4	1
Framed-Route	8	iproute
Framed-Routing	4	0
Vendor-Specific	11	583
Idle-Timeout	4	3
Vendor-Specific	10	a4c
Vendor-Specific	14	a4c
Login-IP-Host	4	10:1:1:1
Login-LAT-Group	10	lat group
Login-LAT-Node	9	lat node
Login-LAT-Port	9	lat port
Login-LAT-Service	12	lat service
Login-Service	4	0
Login-TCP-Port	4	1812
Vendor-Specific	10	137
Vendor-Specific	38	137
Vendor-Specific	10	137
Vendor-Specific	9	137

Vendor-Specific	16	137
Vendor-Specific	10	137
Vendor-Specific	10	137
Vendor-Specific	10	137
Vendor-Specific	9	137
Vendor-Specific	10	137
Vendor-Specific	10	137
Vendor-Specific	10	137
Vendor-Specific	10	137
Password-Retry	4	3
Port-Limit	4	100
Prompt	4	
Reply-Message	18	Radius Server SB
Service-Type	4	2
Session-Timeout	4	10
Termination-Action	4	1
Tunnel-Assignment-ID	4	
Tunnel-Client-Auth-ID	6	
Tunnel-Client-Endpoint	4	
Tunnel-Password	19	
Tunnel-Type	4	12
MS BAP Usage	4	0
MS-CHAP MPPE-Keys	32	-1234567890
MS-CHAP2 Success	3	123456789
MS Filter	10	ms-filter
MS Link Drop Time Limit	4	5
MS Link Utilization Threshold	4	6
MS MPPE Encryption Policy	4	1
MS MPPE Encryption Types	3	-556677889
MS Primary DNS Server	4	1:1:1:1
MS Primary NBNS Server	4	2:2:2:2
MS Secondary DNS Server	4	3:3:3:3
MS Secondary NBNS Server	4	4:4:4:4

## test access radius-server

**Syntax** `test access radius-server address user username password password secret secret  
<authentication-port port>  
<retry number>  
<source-address address>  
<timeout number>`

**Release Information** Command introduced in Junos OS Release 9.1.

**Description** Verify RADIUS server authentication parameters.

**Options** *address*—RADIUS server under test IP address.

*password*—Password for the user.

*secret*—Secret shared with the RADIUS server.

*user*—User name to be authenticated to the RADIUS server.

*authentication-port*—(Optional) RADIUS server authentication port number (1through 65535).

*retry*—(Optional) Retry attempts (1through 10).

*source-address*—(Optional) Use an alternate address as the source address.

*timeout*—(Optional) Request timeout period (1through 90 seconds).

**Required Privilege Level** view

**List of Sample Output** `test access radius-server user password secret` on page 57

**Output Fields** Table 7 on page 56 lists the output fields for the **test access radius-server** command. Output fields are listed in the approximate order in which they appear.

**Table 7: test access radius-server Output Fields**

Field Name	Field Description
<b>Server</b>	The IP address of the RADIUS server authenticated.
<b>UDP port</b>	The RADIUS server port utilized during the authentication test.
<b>Source IP Address</b>	"Default" is shown if the IP address is the same as that of the RADIUS server. Alternatively, an IP address specified for authentication is shown.
<b>Server timeout</b>	The RADIUS server timeout period.
<b>Sever retry count</b>	The number of authentication attempts allowed by the RADIUS server.



Table 7: test access radius-server Output Fields (*continued*)

Field Name	Field Description
<b>Secret</b>	The shared secret used for authentication with the RADIUS server.
<b>Client Username</b>	The user name authenticated by the RADIUS server.
<b>Client Password</b>	The user password authenticated by the RADIUS server.
<b>Status</b>	The test result status ( <b>Accepted</b> or <b>Rejected</b> ) and the number of retransmits utilized during authentication.

## Sample Output

**test access** The following example command tests RADIUS authentication with a specific server (172.28.30.95), user (JOHNDOE), secret (No1Knows), and password (JohnPass); and displays the resulting output:

```
user@host> test access radius-server 172.28.30.95 user JOHNDOE password JohnPass secret No1Knows
```

```
Test Radius Server Access
```

```

Server          : 172.28.30.95
UDP port        : 1812
Source IP Address : Default
Server timeout   : 3
Sever retry count : 3
Secret           : No1Knows
Client Username   : JOHNDOE
Client Password   : JohnPass
Status           : Accepted, retransmits: 0
```



# Real-Time Performance Monitoring Operational Mode Commands

Table 8 on page 59 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot real-time performance monitoring (RPM). Commands are listed in alphabetical order.

**Table 8: RPM Operational Mode Commands**

Task	Command
Clear Two-Way Active Measurement Protocol (TWAMP) connections and associated sessions.	<code>clear services rpm twamp server connection</code>
Show configured probe servers.	<code>show services rpm active-servers</code>
Show the results of the last 50 completed probes for each RPM instance.	<code>show services rpm history-results</code>
Show probe results.	<code>show services rpm probe-results</code>
Show TWAMP connections.	<code>show services rpm twamp server connection</code>
Show TWAMP sessions.	<code>show services rpm twamp server session</code>



**NOTE:** For information about how to configure RPM, see the *Junos OS Services Interfaces Configuration Guide*.

## clear services rpm twamp server connection

---

<b>Syntax</b>	<code>clear services rpm twamp server connection</code> <code>&lt;connection-id&gt;</code>
<b>Release Information</b>	Command introduced in Junos OS Release 9.3.
<b>Description</b>	Clear connections established between the real-time performance monitoring (RPM) Two-Way Active Measurement Protocol (TWAMP) server and control clients. By default all established connections are cleared (along with the sessions on those connections). To clear only a specific connection, specify the connection ID when you issue the command.
<b>Options</b>	<code>connection-id</code> —(Optional) Clear only the specified connection.
<b>Required Privilege Level</b>	clear

## show services rpm active-servers

<b>Syntax</b>	show services rpm active-servers
<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 the protocols and corresponding ports for which a router or switch is configured as a real-time performance monitoring (RPM) server.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show services rpm active-servers on page 61
<b>Output Fields</b>	Table 9 on page 61 lists the output fields for the <b>show services rpm active-servers</b> command. Output fields are listed in the approximate order in which they appear.

**Table 9: show services rpm active-servers Output Fields**

Field Name	Field Description
<b>Protocol</b>	Protocol configured on the receiving probe server. The protocol can be the User Datagram Protocol (UDP) or the Transmission Control Protocol (TCP).
<b>Port</b>	Port configured on the receiving probe server.
<b>Destination interface name</b>	Output interface name for the probes.

## Sample Output

```

show services rpm active-servers user@host> show services rpm active-servers
Protocol: TCP, Port: 50000, Destination interface name: lt-0/0/0.0
Protocol: UDP, Port: 50001, Destination interface name: lt-0/0/0.0

```

## show services rpm history-results

<b>Syntax</b>	show services rpm history-results <brief   detail> <owner <i>owner</i> > <since <i>time</i> > <test <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>Description</b>	Display standard information about the results of the last 50 probes for each real-time performance monitoring (RPM) instance.
<b>Options</b>	<p>none—Display the results of the last 50 probes for all RPM instances.</p> <p>brief   detail—(Optional) Display the specified level of output.</p> <p>owner <i>owner</i>—(Optional) Display information for the specified probe owner.</p> <p>since <i>time</i>—(Optional) Display information from the specified time. Specify time as <i>yyyy-mm-dd.hh:mm:ss</i>.</p> <p>test <i>name</i>—(Optional) Display information for the specified test.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p>show services rpm history-results on page 63</p> <p>show services rpm history-results detail on page 63</p>
<b>Output Fields</b>	Table 10 on page 62 lists the output fields for the <b>show services rpm history-results</b> command. Output fields are listed in the approximate order in which they appear.

**Table 10: show services rpm history-results Output Fields**

Field Name	Field Description	Level of Output
<b>Owner</b>	Probe owner.	All levels
<b>Test</b>	Name of a test for a probe instance.	All levels
<b>Probe received</b>	Timestamp when the probe result was determined.	All levels
<b>Round trip time</b>	Average ping round-trip time (RTT), in microseconds.	All levels
<b>Probe results</b>	<p>Result of a particular probe performed by a remote host. The following information is contained in the results:</p> <ul style="list-style-type: none"> <li><b>Response received</b>—Timestamp when the probe result was determined.</li> <li><b>Rtt</b>—Average ping round-trip time (RTT), in microseconds.</li> </ul>	<b>detail</b>

Table 10: show services rpm history-results Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Results over current test</b>	Displays the results for the current test by probe at the time each probe was completed, as well as the status of the current test at the time the probe was completed.	<b>detail</b>
<b>Probes sent</b>	Number of probes sent with the current test.	<b>detail</b>
<b>Probes received</b>	Number of probe responses received within the current test.	<b>detail</b>
<b>Loss percentage</b>	Percentage of lost probes for the current test.	<b>detail</b>
<b>Measurement</b>	<p>Increment of measurement. Possible values are round-trip time delay and, for the probe type icmp-pin-timestamp, the egress and ingress delay:</p> <ul style="list-style-type: none"> <li>• <b>Minimum</b>—Minimum RTT, ingress delay, or egress delay measured over the course of the current test.</li> <li>• <b>Maximum</b>—Maximum RTT, ingress delay, or egress delay measured over the course of the current test.</li> <li>• <b>Average</b>—Average RTT, ingress delay, or egress delay measured over the course of the current test.</li> <li>• <b>Jitter</b>—Difference, in microseconds, between the maximum and minimum RTT measured over the course of the current test.</li> <li>• <b>Stddev</b>—Standard deviation of the round-trip time, in microseconds, measured over the course of the current test.</li> </ul>	<b>detail</b>

## Sample Output

```

show services rpm history-results user@host> show services rpm history-results
Owner, Test                Probe received                Round trip time
flintstone, 0              Tue Dec 28 15:56:22 2004      158 usec
flintstone, 0              Tue Dec 28 15:56:23 2004      218 usec
flintstone, 0              Tue Dec 28 15:56:24 2004      161 usec
flintstone, 0              Tue Dec 28 15:56:25 2004      184 usec
flintstone, 0              Tue Dec 28 15:56:30 2004      332 usec
flintstone, 0              Tue Dec 28 15:56:31 2004      132 usec
flintstone, 0              Tue Dec 28 15:56:32 2004      226 usec
flintstone, 0              Tue Dec 28 15:56:33 2004      191 usec
flintstone, 0              Tue Dec 28 15:56:34 2004      179 usec
flintstone, 0              Tue Dec 28 15:56:39 2004      217 usec
flintstone, 0              Tue Dec 28 15:56:40 2004      141 usec
flintstone, 0              Tue Dec 28 15:56:41 2004      230 usec
flintstone, 0              Tue Dec 28 15:56:42 2004      248 usec
flintstone, 0              Tue Dec 28 15:56:43 2004      234 usec
flintstone, 0              Tue Dec 28 15:56:48 2004      251 usec
flintstone, 0              Tue Dec 28 15:56:49 2004      134 usec
flintstone, 0              Tue Dec 28 15:56:50 2004      272 usec
flintstone, 0              Tue Dec 28 15:56:51 2004      181 usec
flintstone, 0              Tue Dec 28 15:56:52 2004      216 usec
flintstone, 0              Tue Dec 28 15:56:57 2004      227 usec
flintstone, 0              Tue Dec 28 15:56:58 2004      133 usec

show services rpm history-results detail user@host> show services rpm history-results detail

```

```
Owner: flintstone, Test: 0
Probe results:
  Response received, Tue Dec 28 15:56:39 2004
  Rtt: 217 usec
Results over current test:
  Probes sent: 1, Probes received: 1, Loss percentage: 0
  Measurement: Round trip time
    Minimum: 217 usec, Maximum: 217 usec, Average: 217 usec,
    Jitter: 0 usec, Stddev: 0 usec

Owner: flintstone, Test: 0
Probe results:
  Response received, Tue Dec 28 15:56:40 2004
  Rtt: 141 usec
Results over current test:
  Probes sent: 2, Probes received: 2, Loss percentage: 0
  Measurement: Round trip time
    Minimum: 141 usec, Maximum: 217 usec, Average: 179 usec,
    Jitter: 76 usec, Stddev: 38 usec

Owner: flintstone, Test: 0
Probe results:
  Response received, Tue Dec 28 15:56:41 2004
  Rtt: 230 usec
Results over current test:
  Probes sent: 3, Probes received: 3, Loss percentage: 0
  Measurement: Round trip time
    Minimum: 141 usec, Maximum: 230 usec, Average: 196 usec,
    Jitter: 89 usec, Stddev: 39 usec

Owner: flintstone, Test: 0
Probe results:
  Response received, Tue Dec 28 15:56:42 2004
  Rtt: 248 usec
Results over current test:
  Probes sent: 4, Probes received: 4, Loss percentage: 0
  Measurement: Round trip time
    Minimum: 141 usec, Maximum: 248 usec, Average: 209 usec,
    Jitter: 107 usec, Stddev: 41 usec
```



## show services rpm probe-results

<b>Syntax</b>	show services rpm probe-results <owner <i>owner</i> > <test <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>Description</b>	Display the results of the most recent real-time performance monitoring (RPM) probes.
<b>Options</b>	none—Display all results of the most recent RPM probes.  owner <i>owner</i> —(Optional) Display information for the specified probe owner.  test <i>name</i> —(Optional) Display information for the specified test.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show services rpm probe-results on page 68 show services rpm probe-results (BGP Neighbor Discovery) on page 69
<b>Output Fields</b>	Table 11 on page 65 lists the output fields for the <b>show services rpm probe-results</b> command. Output fields are listed in the approximate order in which they appear.

Table 11: show services rpm probe-results Output Fields

Field Name	Field Description
<b>Owner</b>	Owner name. When you configure the probe owner statement at the <b>[edit services rpm]</b> hierarchy level, this field displays the configured owner name. When you configure BGP neighbor discovery through RPM, the output for this field is <b>Rpm-Bgp-Owner</b> .
<b>Test</b>	Name of a test representing a collection of probes. When you configure the test test-name statement at the <b>[edit services rpm probe owner]</b> hierarchy level, the field displays the configured test name. When you configure BGP neighbor discovery through RPM, the output for this field is <b>Rpm-BGP-Test-<i>n</i></b> , where <i>n</i> is a cumulative number.
<b>Target address</b>	Destination address used for the probes.
<b>Source address</b>	Source address used for the probes.
<b>Probe type</b>	Protocol configured on the receiving probe server: <b>http-get</b> , <b>http-metadata-get</b> , <b>icmp-ping</b> , <b>icmp-ping-timestamp</b> , <b>tcp-ping</b> , <b>udp-ping</b> , or <b>udp-ping-timestamp</b> .
<b>Test size</b>	Number of probes within a test.

Table 11: show services rpm probe-results Output Fields (*continued*)

Field Name	Field Description
<b>Routing Instance Name</b>	<p>(BGP neighbor discovery) Name of the configured (if any) routing instance, logical system name, or both, in which the probe is configured:</p> <ul style="list-style-type: none"> <li>When a routing instance is defined within a logical system, the logical system name is followed by the routing instance name. A slash ( / ) is used to separate the two entities. For example, if the routing instance called <b>R1</b> is configured within the logical system called <b>LS</b>, the name in the output field is <b>LS/R1</b>.</li> <li>When a routing instance is configured but the default logical system is used, the name in the output field is the name of the routing instance.</li> <li>When a logical system is configured but the default routing instance is used, the name in the output field is the name of the logical system followed by <b>default</b>. A slash ( / ) is used to separate the two entities. For example, <b>LS/default</b>.</li> </ul>
<b>Probe results</b>	<p>Raw measurement of a particular probe sample done by a remote host. This data is provided separately from the calculated results. The following information is contained in the raw measurement:</p> <ul style="list-style-type: none"> <li><b>Response received</b>—Timestamp when the probe result was determined.</li> <li><b>Client and server hardware timestamps</b>—If timestamps are configured, an entry appears at this point.</li> <li><b>Rtt</b>—Average ping round-trip time (RTT), in microseconds.</li> <li><b>Egress jitter</b>—Egress jitter, in microseconds.</li> <li><b>Ingress jitter</b>—Ingress jitter, in microseconds.</li> <li><b>Round trip jitter</b>—Round-trip jitter, in microseconds.</li> <li><b>Egress interarrival jitter</b>—Egress interarrival jitter, in microseconds.</li> <li><b>Ingress interarrival jitter</b>—Ingress interarrival jitter, in microseconds.</li> <li><b>Round trip interarrival jitter</b>—Round-trip interarrival jitter, in microseconds.</li> </ul>
<b>Results over current test</b>	<p>Probes are grouped into tests, and the statistics are calculated for each test. If a test contains 10 probes, the average, minimum, and maximum results are calculated from the results of those 10 probes. If the command is issued while the test is in progress, the statistics use information from the completed probes.</p> <ul style="list-style-type: none"> <li><b>Probes sent</b>—Number of probes sent within the current test.</li> <li><b>Probes received</b>—Number of probe responses received within the current test.</li> <li><b>Loss percentage</b>—Percentage of lost probes for the current test.</li> <li><b>Measurement</b>—Measurement type. Possible values are round-trip time, positive round-trip jitter, negative round-trip jitter, egress time, positive egress jitter, negative egress jitter, ingress time, positive ingress jitter, negative ingress jitter, and, for the probe type <b>icmp-ping-timestamp</b>, the egress delay and ingress delay.</li> </ul> <p>For each measurement type, the following individual calculated results are provided:</p> <ul style="list-style-type: none"> <li><b>Samples</b>—Number of probes.</li> <li><b>Minimum</b>—Minimum RTT, ingress delay, or egress delay measured over the course of the current test.</li> <li><b>Maximum</b>—Maximum RTT, ingress delay, or egress delay measured over the course of the current test.</li> <li><b>Average</b>—Average RTT, ingress delay, or egress delay measured over the course of the current test.</li> <li><b>Peak to peak</b>—Peak-to-peak difference, in microseconds.</li> <li><b>Stddev</b>—Standard deviation, in microseconds.</li> <li><b>Sum</b>—Statistical sum.</li> </ul>

Table 11: show services rpm probe-results Output Fields (*continued*)

Field Name	Field Description
<b>Results over last test</b>	<p>Results for the most recently completed test. If the command is issued while the first test is in progress, this information is not displayed</p> <ul style="list-style-type: none"> <li>• <b>Probes sent</b>—Number of probes sent for the most recently completed test.</li> <li>• <b>Probes received</b>—Number of probe responses received for the most recently completed test.</li> <li>• <b>Loss percentage</b>—Percentage of lost probes for the most recently completed test.</li> <li>• <b>Test completed</b>—Time the most recent test was completed.</li> <li>• <b>Measurement</b>—Measurement type. Possible values are round-trip time, positive round-trip jitter, negative round-trip jitter, egress time, positive egress jitter, negative egress jitter, ingress time, positive ingress jitter, negative ingress jitter, and, for the probe type <b>icmp-ping-timestamp</b>, the egress delay and ingress delay.</li> </ul> <p>For each measurement type, the following individual calculated results are provided:</p> <ul style="list-style-type: none"> <li>• <b>Samples</b>—Number of probes.</li> <li>• <b>Minimum</b>—Minimum RTT, ingress delay, or egress delay measured for the most recently completed test.</li> <li>• <b>Maximum</b>—Maximum RTT, ingress delay, or egress delay measured for the most recently completed test.</li> <li>• <b>Average</b>—Average RTT, ingress delay, or egress delay measured for the most recently completed test.</li> <li>• <b>Peak to peak</b>—Peak-to-peak difference, in microseconds.</li> <li>• <b>Stddev</b>—Standard deviation, in microseconds.</li> <li>• <b>Sum</b>—Statistical sum.</li> </ul>
<b>Results over all tests</b>	<p>Displays statistics made for all the probes, independently of the grouping into tests, as well as statistics for the current test.</p> <ul style="list-style-type: none"> <li>• <b>Probes sent</b>—Number of probes sent in all tests.</li> <li>• <b>Probes received</b>—Number of probe responses received in all tests.</li> <li>• <b>Loss percentage</b>—Percentage of lost probes in all tests.</li> <li>• <b>Measurement</b>—Measurement type. Possible values are round-trip time, positive round-trip jitter, negative round-trip jitter, egress time, positive egress jitter, negative egress jitter, ingress time, positive ingress jitter, negative ingress jitter, and, for the probe types <b>icmp-ping-timestamp</b> and <b>udp-ping-timestamp</b>, the egress delay and ingress delay.</li> </ul> <p>For each measurement type, the following individual calculated results are provided:</p> <ul style="list-style-type: none"> <li>• <b>Samples</b>—Number of probes.</li> <li>• <b>Minimum</b>—Minimum RTT, ingress delay, or egress delay measured over the course of the current test.</li> <li>• <b>Maximum</b>—Maximum RTT, ingress delay, or egress delay measured over the course of the current test.</li> <li>• <b>Average</b>—Average RTT, ingress delay, or egress delay measured over the course of the current test.</li> <li>• <b>Peak to peak</b>—Peak-to-peak difference, in microseconds.</li> <li>• <b>Stddev</b>—Standard deviation, in microseconds.</li> <li>• <b>Sum</b>—Statistical sum.</li> </ul>

## Sample Output

```

show services rpm probe-results user@host> show services rpm probe-results
Owner: ADSN-J4300.ADSN-J2300.D2, Test: 75300002
Target address: 172.16.54.172, Source address: 10.206.0.1,
Probe type: udp-ping-timestamp, Test size: 10 probes
Probe results:
  Response received, Tue Feb  6 14:53:15 2007,
  Client and server hardware timestamps
  Rtt: 575 usec, Egress jitter: 5 usec, Ingress jitter: 8 usec,
  Round trip jitter: 12 usec, Egress interarrival jitter: 8 usec,
  Ingress interarrival jitter: 7 usec, Round trip interarrival jitter: 7 usec,

  Round trip interarrival jitter: 669 usec
Results over current test:
  Probes sent: 10, Probes received: 10, Loss percentage: 0
  Measurement: Round trip time
    Samples: 10, Minimum: 805 usec, Maximum: 2859 usec, Average: 1644 usec,
    Peak to peak: 2054 usec, Stddev: 738 usec, Sum: xxxx usec
  Measurement: Positive round trip jitter
    Samples: 5, Minimum: 5 usec, Maximum: 2054 usec, Average: 876 usec,
    Peak to peak: 2049 usec, Stddev: 679 usec, Sum: xxxx usec
  Measurement: Negative round trip jitter
    Samples: 5, Minimum: 5 usec, Maximum: 1812 usec, Average: 926 usec,
    Peak to peak: 1807 usec, Stddev: 665 usec, Sum: xxxx usec
  Measurement: Egress time
    Samples: 10, Minimum: 805 usec, Maximum: 2859 usec, Average: 1644 usec,
    Peak to peak: 2054 usec, Stddev: 738 usec, Sum: xxxx usec
  Measurement: Positive Egress jitter
    Samples: 5, Minimum: 5 usec, Maximum: 2054 usec, Average: 876 usec,
    Peak to peak: 2049 usec, Stddev: 679 usec, Sum: xxxx usec
  Measurement: Negative Egress jitter
    Samples: 5, Minimum: 5 usec, Maximum: 1812 usec, Average: 926 usec,
    Peak to peak: 1807 usec, Stddev: 665 usec, Sum: xxxx usec
  Measurement: Ingress time
    Samples: 10, Minimum: 805 usec, Maximum: 2859 usec, Average: 1644 usec,
    Peak to peak: 2054 usec, Stddev: 738 usec, Sum: xxxx usec
  Measurement: Positive Ingress jitter
    Samples: 5, Minimum: 5 usec, Maximum: 2054 usec, Average: 876 usec,
    Peak to peak: 2049 usec, Stddev: 679 usec, Sum: xxxx usec
  Measurement: Negative Ingress jitter
    Samples: 5, Minimum: 5 usec, Maximum: 1812 usec, Average: 926 usec,
    Peak to peak: 1807 usec, Stddev: 665 usec, Sum: xxxx usec
Results over last test:
  Probes sent: 10, Probes received: 10, Loss percentage: 0
  Test completed on Tue Feb  6 14:53:16 2007
  Measurement: Round trip time
    Samples: 10, Minimum: 805 usec, Maximum: 2859 usec, Average: 1644 usec,
    Peak to peak: 2054 usec, Stddev: 738 usec, Sum: xxxx usec
  Measurement: Positive round trip jitter
    Samples: 5, Minimum: 5 usec, Maximum: 2054 usec, Average: 876 usec,
    Peak to peak: 2049 usec, Stddev: 679 usec, Sum: xxxx usec
  Measurement: Negative round trip jitter
    Samples: 5, Minimum: 5 usec, Maximum: 1812 usec, Average: 926 usec,
    Peak to peak: 1807 usec, Stddev: 665 usec, Sum: xxxx usec
  Measurement: Egress time
    Samples: 10, Minimum: 805 usec, Maximum: 2859 usec, Average: 1644 usec,
    Peak to peak: 2054 usec, Stddev: 738 usec, Sum: xxxx usec
  Measurement: Positive Egress jitter
    Samples: 5, Minimum: 5 usec, Maximum: 2054 usec, Average: 876 usec,
    Peak to peak: 2049 usec, Stddev: 679 usec, Sum: xxxx usec

```

```

Measurement: Negative Egress jitter
  Samples: 5, Minimum: 5 usec, Maximum: 1812 usec, Average: 926 usec,
  Peak to peak: 1807 usec, Stddev: 665 usec, Sum: xxxx usec
Measurement: Ingress time
  Samples: 10, Minimum: 805 usec, Maximum: 2859 usec, Average: 1644 usec,
  Peak to peak: 2054 usec, Stddev: 738 usec, Sum: xxxx usec
Measurement: Positive Ingress jitter
  Samples: 5, Minimum: 5 usec, Maximum: 2054 usec, Average: 876 usec,
  Peak to peak: 2049 usec, Stddev: 679 usec, Sum: xxxx usec
Measurement: Negative Ingress jitter
  Samples: 5, Minimum: 5 usec, Maximum: 1812 usec, Average: 926 usec,
  Peak to peak: 1807 usec, Stddev: 665 usec, Sum: xxxx usec
Results over all tests:
Probes sent: 560, Probes received: 560, Loss percentage: 0
Measurement: Round trip time
  Samples: 560, Minimum: 805 usec, Maximum: 3114 usec, Average: 1756 usec,

  Peak to peak: 2309 usec, Stddev: 519 usec, Sum: xxxx usec
Measurement: Positive round trip jitter
  Samples: 257, Minimum: 0 usec, Maximum: 2054 usec, Average: 597 usec,
  Peak to peak: 2054 usec, Stddev: 427 usec, Sum: xxxx usec
Measurement: Negative round trip jitter
  Samples: 302, Minimum: 1 usec, Maximum: 1812 usec, Average: 511 usec,
  Peak to peak: 1811 usec, Stddev: 408 usec, Sum: xxxx usec
Measurement: Egress time
  Samples: 10, Minimum: 805 usec, Maximum: 2859 usec, Average: 1644 usec,
  Peak to peak: 2054 usec, Stddev: 738 usec, Sum: xxxx usec
Measurement: Positive Egress jitter
  Samples: 5, Minimum: 5 usec, Maximum: 2054 usec, Average: 876 usec,
  Peak to peak: 2049 usec, Stddev: 679 usec, Sum: xxxx usec
Measurement: Negative Egress jitter
  Samples: 5, Minimum: 5 usec, Maximum: 1812 usec, Average: 926 usec,
  Peak to peak: 1807 usec, Stddev: 665 usec, Sum: xxxx usec
Measurement: Ingress time
  Samples: 10, Minimum: 805 usec, Maximum: 2859 usec, Average: 1644 usec,
  Peak to peak: 2054 usec, Stddev: 738 usec, Sum: xxxx usec
Measurement: Positive Ingress jitter
  Samples: 5, Minimum: 5 usec, Maximum: 2054 usec, Average: 876 usec,
  Peak to peak: 2049 usec, Stddev: 679 usec, Sum: xxxx usec
Measurement: Negative Ingress jitter
  Samples: 5, Minimum: 5 usec, Maximum: 1812 usec, Average: 926 usec,
  Peak to peak: 1807 usec, Stddev: 665 usec, Sum: xxxx usec

```

**show services rpm  
probe-results (BGP  
Neighbor Discovery)**

```

user@host> show services rpm probe-results
Owner: Rpm-Bgp-Owner, Test: Rpm-Bgp-Test-1
Target address: 10.209.152.37, Probe type: icmp-ping, Test size: 5 probes
Routing Instance Name: LS1/RI1
Probe results:
  Response received, Fri Oct 28 05:20:23 2005
  Rtt: 662 usec
Results over current test:
  Probes sent: 5, Probes received: 5, Loss percentage: 0
  Measurement: Round trip time
    Minimum: 529 usec, Maximum: 662 usec, Average: 585 usec,
    Jitter: 133 usec, Stddev: 53 usec
Results over all tests:
  Probes sent: 5, Probes received: 5, Loss percentage: 0
  Measurement: Round trip time

```

Minimum: 529 usec, Maximum: 662 usec, Average: 585 usec,  
Jitter: 133 usec, Stddev: 53 usec

## show services rpm twamp server connection

<b>Syntax</b>	<b>show services rpm twamp server connection</b> <i>&lt;connection-id&gt;</i>
<b>Release Information</b>	Command introduced in Junos OS Release 9.3.
<b>Description</b>	Display information about the connections established between the real-time performance monitoring (RPM) Two-Way Active Measurement Protocol (TWAMP) server and control-clients. By default, all established sessions are displayed, unless you specify a session ID when you issue the command.
<b>Options</b>	<i>connection-id</i> —(Optional) Display only information about the specified connection ID.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show services rpm twamp server connection on page 71</b>
<b>Output Fields</b>	Table 12 on page 71 lists the output fields for the <b>show services rpm twamp server connection</b> command. Output fields are listed in the approximate order in which they appear.

**Table 12: show services rpm twamp server connection Output Fields**

Field Name	Field Description
<b>Connection ID</b>	Connection ID that uniquely identifies the connection between the TWAMP server and a particular client.
<b>Client address</b>	Client IP address.
<b>Client port</b>	Client port number.
<b>Server address</b>	Server IP address.
<b>Server port</b>	Server port number.
<b>Session count</b>	Session count.
<b>Auth mode</b>	Authentication mode.

## Sample Output

<b>show services rpm twamp server connection</b>	user@host> <b>show services rpm twamp server connection</b>						
	Connection	Client	Client	Server	Server	Session	Auth
	ID	address	port	address	port	count	mode
	4	1.1.1.1	12345	192.168.219.203	890	16	none
	78	3.22.1.55	345	22.2.2.2	89022	5	none

	234	192.168.219.203	2345	2.2.22.2	3333	16	none
	5	221.4.1.1	82345	2.2.2.2	45909	16	
authenticated	1	192.168.1.1	645	32.2.2.23	2394	16	
encrypted							



## show services rpm twamp server session

**Syntax** `show services rpm twamp server session`  
`<session-id>`

**Release Information** Command introduced in Junos OS Release 9.3.

**Description** Display information about the sessions established between the real-time performance monitoring (RPM) Two-Way Active Measurement Protocol (TWAMP) server and control clients. By default, all established sessions are displayed, unless you specify a session ID when you issue the command.

**Options** `session-id`—(Optional) Display only information about the specified session ID.

**Required Privilege Level** view

**List of Sample Output** `show services rpm twamp server session` on page 73

**Output Fields** Table 13 on page 73 lists the output fields for the `show services rpm twamp server session` command. Output fields are listed in the approximate order in which they appear.

**Table 13: show services rpm twamp server session Output Fields**

Field Name	Field Description
Session ID	Session ID that uniquely identifies the session between the TWAMP server and a particular client.
Connection ID	Connection ID that uniquely identifies the connection between the TWAMP server and a particular client.
Sender address	Sender IP address.
Sender port	Sender port number.
Reflector address	Reflector IP address.
Reflector port	Reflector port number.

## Sample Output

```

show services rpm twamp server session
user@host> show services rpm twamp server session
  Session  Connection  Sender  Sender  Reflector  Reflector
   ID      ID        address  port    address   port
   4        44      1.1.1.1  12345   192.168.219.203   890
   78        44      3.22.1.55   345    22.2.2.2   89022
  234       423    192.168.219.203   2345    2.2.22.2   3333
   5        423    221.4.1.1   82345    2.2.2.2   45909
   1        423    192.168.1.1   645    32.2.2.23   2394

```



# Real-Time Router Monitoring Operational Mode Commands

Table 14 on page 75 summarizes the command-line interface (CLI) commands you can use to monitor files, interfaces, and traffic in real time. Commands are listed in alphabetical order.

**Table 14: Real-Time Router Monitoring Operational Mode Commands**

Task	Command
Start an Ethernet frame delay monitoring session. (MX Series, Ethernet Dense Port Concentrators only)	<b>monitor ethernet delay-measurement</b>
Start an Ethernet frame loss monitoring session. (MX Series, Ethernet Dense Port Concentrators only)	<b>monitor ethernet loss-measurement</b>
Monitor statistics for a physical interface.	<b>monitor interface</b>
Monitor a RSVP label-switched path (LSP).	<b>monitor label-switched-path</b>
Display the status of monitored log and trace files.	<b>monitor list</b>
Start displaying the system log or trace file and additional entries being added to those files.	<b>monitor start</b>
Stop displaying the system log or trace file.	<b>monitor stop</b>
Monitor packet headers transmitted through network interfaces sent from or received by the Routing Engine.	<b>monitor traffic</b>
Display trace information about an IP multicast path.	<b>mtrace</b>
Display trace information about a IP multicast path from a source to the router.	<b>mtrace from-source</b>
Listen passively for IP multicast responses.	<b>mtrace monitor</b>
Display trace information about an IP multicast path from the router to a gateway router.	<b>mtrace to-gateway</b>

**Table 14: Real-Time Router Monitoring Operational Mode Commands** (*continued*)

Task	Command
Determine the route to a network system.	<b>traceroute</b>
Monitor the route to a network system.	<b>traceroute monitor</b>
Monitor the route to a remote host for an MPLS LSP signaled by LDP.	<b>traceroute mpls ldp</b>
Monitor the route to a remote host for an MPLS LSP signaled by RSVP.	<b>traceroute mpls rsvp</b>



**NOTE:** For information about how to configure interface parameters, see the *Junos OS Network Interfaces Configuration Guide*.

For information about how to configure IP multicast parameters, see the *Junos OS Multicast Protocols Configuration Guide*.

For information about related tasks performed by network operations center (NOC) personnel, see the *Junos Baseline Network Operations Guide*.

## monitor ethernet delay-measurement

**Syntax** monitor ethernet delay-measurement  
 maintenance-domain *md-name*  
 maintenance-association *ma-name*  
 (one-way | two-way)  
 (*remote-mac-address* | mep *remote-mep-id*)  
 <count *frame-count*>  
 <wait *interval-seconds*>  
 <priority *802.1p value*>  
 <size>  
 <no-session-id-tlv>  
 <xml>

**Release Information** Command introduced in Junos OS Release 9.5.

**Description** (Interfaces on Ethernet Dense Port Concentrators in MX Series routers only) Start an ITU-T Y.1731 Ethernet frame delay measurement session between the specified local connectivity fault management (CFM) maintenance association end point (MEP) and the specified remote MEP, and display a summary of the frames exchanged in the measurement session. Frame delay measurement statistics are stored at one of the MEPs for later retrieval.



**NOTE:** If you attempt to monitor delays to a nonexistent MAC address, you must type Ctrl +c to explicitly quit the **monitor ethernet delay-measurement** command and return to the CLI command prompt.

To start an Ethernet frame delay measurement session, the router initiates an exchange of frames carrying one-way or two-way frame delay measurement protocol data units (PDUs) between the local and remote MEPs. The frame counts—the types of and number of Ethernet frame delay measurement PDU frames exchanged to measure frame delay times—are displayed as the run-time output of the **monitor ethernet delay-measurement** command and are also stored at both the initiator and receiver MEPs for later retrieval. Ethernet frame delay measurement statistics, described below, are measured and stored at only one of the MEPs:

Frame delay—The difference, in microseconds, between the time a frame is sent and when it is received.

Frame delay variation—The difference, in microseconds, between consecutive frame delay values. Frame delay variation is sometimes called “frame jitter.”

For one-way Ethernet frame delay measurement, only the receiver MEP (on the remote system) collects statistics. For two-way Ethernet frame delay measurement, only the initiator MEP (on the local system) collects statistics.

**Options** maintenance-domain *md-name*—Name of an existing CFM maintenance domain.  
 maintenance-association *ma-name*—Name of an existing CFM maintenance association.

**one-way**—Measurement type is one-way Ethernet frame delay measurement, which is based on the difference between the time at which the initiator MEP sends a one-way delay measurement request (IDM) frame and the time at which the receiver MEP receives the frame.

**two-way**—Measurement type is two-way Ethernet frame delay measurement, which is based on the difference between the time at which the initiator MEP sends a two-way delay measurement message (DMM) frame and the time at which the initiator MEP receives an associated two-way delay measurement reply (DMR) frame from the responder MEP, subtracting the time elapsed at the responder MEP.

**mep remote-mep-id**—Numeric identifier of the peer MEP with which to perform Ethernet frame delay measurement. The discovered MAC address of the peer MEP is used. The range of values is 1 through 8191.

**remote-mac-address**—Unicast MAC address of the peer MEP with which to perform Ethernet frame delay measurement. Specify the MAC address as six hexadecimal bytes in one of the following formats: *nnnn.nnnn.nnnn* or *nn:nn:nn:nn:nn:nn*. For example, **0011.2233.4455** or **00:11:22:33:44:55**. Multicast MAC addresses are not supported.

**count frame-count**—(Optional) Number of frames to send to the specified peer MEP. The range of values is 1 through 65,535 frames. The default value is 10 frames.

**wait interval-seconds**—(Optional) Number of seconds to wait between sending frames. The range of values is from 1 through 255 seconds. The default value is 1 second.

**priority 802.1p value**—(Optional) Priority of the delay measurement request frame supported by both one-way delay measurement and two-way delay measurement. The range of values is from 0 through 7. The default value is zero.

**size**—(Optional) Size of the data TLV to be included in the request frame. The range of values is from 1 through 1400 bytes.

**no-session-id-tlv**—(Optional) Prevent insertion of the session ID TLV in the request frame.

**xml**—(Optional) Allow the output of the command to be displayed in XML format supported by both one-way delay measurement and two-way delay measurement. Note that the only way to get output in XML format is to use the **xml** argument. The **display xml** command does not work.

**Additional Information** To display the frame counts collected at an MEP as the result of this command, see the following command descriptions in the *Junos OS Interfaces Command Reference*:

- **show oam ethernet connectivity-fault-management interfaces detail**
- **show oam ethernet connectivity-fault-management mep-database**
- **show oam ethernet connectivity-fault-management mep-statistics**

To display the statistics collected at an MEP as the result of this command, see the following command descriptions in the *Junos OS Interfaces Command Reference*.

- **show oam ethernet connectivity-fault-management delay-statistics**
- **show oam ethernet connectivity-fault-management mep-statistics**

To clear both the frame counts and the statistics collected for MEPs, use the **clear oam ethernet connectivity-fault-management statistics** command, described in the *Junos OS Interfaces Command Reference*.

For a complete description of Ethernet frame delay measurement, see the *ITU-T Y.1731 Ethernet Service OAM* topics in the *Junos OS Network Interfaces Configuration Guide*.

<b>Required Privilege Level</b>	trace and maintenance
<b>List of Sample Output</b>	<b>monitor ethernet delay-measurement one-way on page 80</b> <b>monitor ethernet delay-measurement two-way on page 80</b> <b>monitor ethernet delay-measurement two-way (Invalid DMR Frames Received) on page 81</b>
<b>Output Fields</b>	<p>The <b>monitor ethernet delay-measurement</b> command displays different output at the CLI, depending on whether you start a one-way or two-way frame delay measurement:</p> <ul style="list-style-type: none"> <li>• Table 15 on page 79 lists the run-time output fields for the <b>monitor ethernet delay-measurement one-way</b> command.</li> <li>• Table 16 on page 80 lists the run-time output fields for the <b>monitor ethernet delay-measurement two-way</b> command.</li> </ul> <p>Output fields are listed in the approximate order in which they appear.</p>

**Table 15: monitor ethernet delay-measurement one-way Output Fields**

Output Field Name	Output Field Description
<b>One-way ETH-DM request to</b>	Unicast MAC address of the remote peer MEP.
<b>Interface</b>	Name of the Ethernet physical, logical, or trunk interface to which the local MEP is attached.
<b>IDM Frames sent</b>	PDU frames sent to the remote MEP in this ETH-DM session.
<b>Packets transmitted</b>	Total number of IDM PDU frames sent to the remote MEP during this measurement session.
<b>Average delay</b>	Average two-way frame delay measured in this session.
<b>Average delay variation</b>	Average frame jitter measured in this session.
<b>Best case delay</b>	Lowest two-way frame delay measured in this session.
<b>Worst case delay</b>	Highest two-way frame delay measured in this session.

Table 15: monitor ethernet delay-measurement one-way Output Fields (*continued*)

Output Field Name	Output Field Description
-------------------	--------------------------

**NOTE:** For one-way delay measurement, these CLI output fields display **NA** ("not applicable") at the initiator MEP because one-way frame delay measurements occur at the receiver MEP.

Table 16: monitor ethernet delay-measurement two-way Output Fields

Output Field Name	Output Field Description
Two-way Ethernet frame delay measurement request to	Unicast MAC address of the remote peer MEP.
Interface	Name of the Ethernet physical, logical, or trunk interface to which the local MEP is attached.
DMR received from	Unicast MAC address of the remote MEP that transmitted this DMR frame in response to a DMM frame.
Delay	Two-way delay, in microseconds, for the initiator-transmitted DMM frame.
Delay variation	Difference, in microseconds, between the current and previous delay values. This is also known as <i>jitter</i> .
Packets transmitted	Total number of DMM PDU frames sent to the remote MEP in this measurement session.
Valid packets received	Total number of DMR PDU frames received from the remote MEP in this measurement session.
Average delay	Average two-way frame delay measured in this session.
Average delay variation	Average frame jitter measured in this session.
Best case delay	Lowest two-way frame delay measured in this session.
Worst case delay	Highest two-way frame delay measured in this session.

## Sample Output

```

monitor ethernet delay-measurement one-way
user@host> monitor ethernet delay-measurement one-way 00:05:85:73:39:4a
maintenance-domain md6 maintenance-association ma6 count 10
One-way ETH-DM request to 00:05:85:73:39:4a, Interface xe-5/0/0.0
1DM Frames sent : 10
--- Delay measurement statistics ---
Packets transmitted: 10
Average delay: NA, Average delay variation: NA
Best case delay: NA, Worst case delay: NA

monitor ethernet delay-measurement two-way
user@host> monitor ethernet delay-measurement two-way 00:05:85:73:39:4a
maintenance-domain md6 maintenance-association ma6 count 10
Two-way ETH-DM request to 00:05:85:73:39:4a, Interface xe-5/0/0.0
DMR received from 00:05:85:73:39:4a Delay: 100 usec Delay variation: 0 usec
DMR received from 00:05:85:73:39:4a Delay: 92 usec Delay variation: 8 usec

```



```
DMR received from 00:05:85:73:39:4a Delay: 92 usec Delay variation: 0 usec
DMR received from 00:05:85:73:39:4a Delay: 111 usec Delay variation: 19 usec
DMR received from 00:05:85:73:39:4a Delay: 110 usec Delay variation: 1 usec
DMR received from 00:05:85:73:39:4a Delay: 119 usec Delay variation: 9 usec
DMR received from 00:05:85:73:39:4a Delay: 122 usec Delay variation: 3 usec
DMR received from 00:05:85:73:39:4a Delay: 92 usec Delay variation: 30 usec
DMR received from 00:05:85:73:39:4a Delay: 92 usec Delay variation: 0 usec
DMR received from 00:05:85:73:39:4a Delay: 108 usec Delay variation: 16 usec
```

```
--- Delay measurement statistics ---
```

```
Packets transmitted: 10, Valid packets received: 10
```

```
Average delay: 103 usec, Average delay variation: 8 usec
```

```
Best case delay: 92 usec, Worst case delay: 122 usec
```

**monitor ethernet  
delay-measurement  
two-way (Invalid DMR  
Frames Received)**

```
user@host> monitor ethernet delay-measurement two-way 00:05:85:73:39:4a
```

```
maintenance-domain md6 maintenance-association ma6 count 10
```

```
Two-way ETH-DM request to 00:05:85:73:39:4a, Interface xe-5/0/0.0
```

```
DMR received from 00:05:85:73:39:4a Delay: 100 usec Delay variation: 0 usec
DMR received from 00:05:85:73:39:4a Delay: 92 usec Delay variation: 8 usec
DMR received from 00:05:85:73:39:4a Delay: 92 usec Delay variation: 0 usec
DMR received from 00:05:85:73:39:4a Delay: 111 usec Delay variation: 19 usec
DMR received from 00:05:85:73:39:4a Delay: 110 usec Delay variation: 1 usec
DMR received from 00:05:85:73:39:4a Delay: 119 usec Delay variation: 9 usec
DMR received from 00:05:85:73:39:4a Delay: 122 usec Delay variation: 3 usec
DMR received from 00:05:85:73:39:4a Delay: 92 usec Delay variation: 30 usec
DMR received from 00:05:85:73:39:4a with invalid timestamp(s).
DMR received from 00:05:85:73:39:4a Delay: 108 usec Delay variation: 16 usec
```

```
--- Delay measurement statistics ---
```

```
Packets transmitted: 10, Valid packets received: 9, Invalid packets received: 1
```

```
Average delay: 105 usec, Average delay variation: 9 usec
```

```
Best case delay: 92 usec, Worst case delay: 122 usec
```

## monitor ethernet loss-measurement

**Syntax** monitor ethernet loss-measurement  
 maintenance-domain *md-name*  
 maintenance-association *ma-name*  
 (*remote-mac-address* | mep *remote-mep-id*)  
 <count *frame-count*>  
 <wait *interval-seconds*>  
 <priority *802.1p value*>  
 <no-session-id-tlv>  
 <xml>

**Release Information** Command introduced in Junos OS Release 11.1.

**Description** (Interfaces on Ethernet Dense Port Concentrators in MX Series routers only) Start an ITU-T Y.1731 Ethernet frame loss measurement session between the specified local connectivity fault management (CFM) maintenance association end point (MEP) and the specified remote MEP, and display a count of transmitted and received data frames between the pair of MEPs. Frame loss measurement statistics are stored at one of the MEPs for later retrieval.



**NOTE:** If you attempt to monitor loss to a nonexistent MAC address, you must type Ctrl + c to explicitly quit the **monitor ethernet loss-measurement** command and return to the CLI command prompt.

To start an Ethernet frame loss measurement session, the router first sends frames with ETH-LM information to a peer MEP and similarly receives frames with ETH-LM information from the peer MEP. Frame loss is calculated by collecting the counter values applicable for ingress and egress service frames where the counters maintain a count of transmitted and received data frames between a pair of MEPs. The loss measurement statistics are retrieved as the output of the **monitor ethernet loss-measurement** command and are also stored at the initiator. The frames counts are stored at both the initiator and the receiver MEPs for later retrieval.

**Options** maintenance-domain *md-name*—Name of an existing CFM maintenance domain.

maintenance-association *ma-name*—Name of an existing CFM maintenance association.

mep *remote-mep-id*—Numeric identifier of the peer MEP with which to perform Ethernet frame loss measurement. The discovered MAC address of the peer MEP is used. The range of values is from 1 through 8192.

*remote-mac-address*—Unicast MAC address of the peer MEP with which to perform Ethernet frame loss measurement. Specify the MAC address as six hexadecimal bytes in one of the following formats: *nnnn.nnnn.nnnn* or *nn:nn:nn:nn:nn:nn* (for example, 0011.2233.4455 or 00:11:22:33:44:55). Multicast MAC addresses are not supported.

`count frame-count`—(Optional) Number of frames to send to the specified peer MEP. The range of values is from 1 through 65535 frames. The default value is 10 frames.

`wait interval-seconds`—(Optional) Number of seconds to wait between sending frames. The range of values is from 1 through 255 seconds. The default value is 1 second.

`priority 802.1p value`—(Optional) Priority of the delay measurement request frame. The range of values is from 0 through 7. The default value is 1 second.

`no-session-id-tlv`—(Optional) Disable the **session id TLV** argument set in the request frame.

`xml`—(Optional) Allow the output of the command to be displayed in XML format.

**Additional Information** To display the frame counts collected at an MEP as the result of this command, see the following command descriptions in the *Junos OS Interfaces Command Reference*:

- `show oam ethernet connectivity-fault-management loss-statistics`
- `show oam ethernet connectivity-fault-management interfaces detail`
- `show oam ethernet connectivity-fault-management mep-database`
- `show oam ethernet connectivity-fault-management mep-statistics`

To display the statistics collected at an MEP as the result of this command, see the following command descriptions in the *Junos OS Interfaces Command Reference*:

- `show oam ethernet connectivity-fault-management delay-statistics`
- `show oam ethernet connectivity-fault-management mep-statistics`

To clear both the frame counts and the statistics collected for MEPs, use the `clear oam ethernet connectivity-fault-management loss-statistics maintenance-domain md-name maintenance-association ma-name` command, as described in the *Junos OS Interfaces Command Reference*.

For a complete description of Ethernet frame loss measurement, see the *ITU-T Y.1731 Ethernet Service OAM* topics in the *Junos OS Network Interfaces Configuration Guide*.

**Required Privilege Level** trace and maintenance

**List of Sample Output** `monitor ethernet loss-measurement (with only CIR counters enabled)` on page 85  
`monitor ethernet loss-measurement (with CIR and EIR counters enabled)` on page 85

**Output Fields** Table 17 on page 84 lists the output fields for the `monitor ethernet loss-measurement` command and their descriptions. Output fields are listed in the approximate order in which they appear.

Table 17: monitor ethernet loss-measurement output fields

Output Field Name	Output Field Description
Ethernet loss delay measurement request to	Unicast MAC address of the remote peer MEP.
Interface	Name of the Ethernet physical, logical, or trunk interface to which the local MEP is attached.
LMR received from	Unicast MAC address of the remote MEP that transmitted this LMR frame in response to a loss measurement message (LMM) frame.
Near-end frame loss	Count of frame loss associated with ingress data frames.
Far-end frame loss	Count of frame loss associated with egress data frames.
Near-end loss ratio	Ratio, expressed as a percentage, of the number of service frames not delivered divided by the total number of service frames during time interval T at the ingress interface.
Far-end loss ratio	Ratio, expressed as a percentage, of the number of service frames not delivered divided by the total number of service frames during time interval T at the egress interface.
LMM packets transmitted	Total number of LMM PDU frames sent to the remote MEP in this measurement session.
LMR packets received	Total number of LMR PDU frames received from the remote MEP in this measurement session.
Average near-end frame loss	Average frame loss measured in this session associated with ingress data frames.
Average near-end loss ratio	Average frame loss ratio measured in this session associated with ingress data frames.
Average far-end frame loss	Average frame loss measured in this session associated with egress data frames.
Average far-end loss ratio	Average frame loss ratio measured in this session associated with egress data frames.
Near-end best case frame loss	Lowest frame loss measured in this session associated with ingress data frames.
Near-end best case loss ratio	Lowest frame loss ratio measured in this session associated with ingress data frames.
Near-end worst case frame loss	Highest frame loss measured in this session associated with ingress data frames.
Near-end worst case loss ratio	Highest frame loss ratio measured in this session associated with ingress data frames.
Far-end best case frame loss	Lowest frame loss measured in this session associated with egress data frames.
Far-end best case loss ratio	Lowest frame loss ratio measured in this session associated with egress data frames.

Table 17: monitor ethernet loss-measurement output fields (*continued*)

Output Field Name	Output Field Description
Far-end worst case frame loss	Highest frame loss measured in this session associated with egress data frames.
Far-end worst case loss ratio	Highest frame loss ratio measured in this session associated with egress data frames.

Note that in the preceding table, the term *number of service frames not delivered* is the difference between the number of service frames arriving at the ingress Ethernet flow point and the number of service frames delivered at the egress Ethernet flow point in a point-to-point Ethernet connection.

## Sample Output

**monitor ethernet loss-measurement (with only CIR counters enabled)**

```
user@host> monitor ethernet loss-measurement 00:05:85:73:39:4a maintenance-domain md6
maintenance-association ma6 count 5
ETH-LM request to 00:05:85:73:39:4a, Interface ge-5/0/0.0
LMR received from 00:05:85:73:39:4a
LMR received from 00:05:85:73:39:4a
Near-end frame loss (CIR) : 4 Far-end frame loss (CIR) : 6
Near-end loss ratio (CIR) : 4% Far-end loss ratio (CIR) : 6%
LMR received from 00:05:85:73:39:4a
Near-end frame loss (CIR) : 6 Far-end frame loss (CIR) : 8
Near-end loss ratio (CIR) : 6% Far-end loss ratio (CIR) : 8%
LMR received from 00:05:85:73:39:4a
Near-end frame loss (CIR) : 2 Far-end frame loss (CIR) : 2
Near-end loss ratio (CIR) : 2% Far-end loss ratio (CIR) : 2%
LMR received from 00:05:85:73:39:4a
Near-end frame loss (CIR) : 6 Far-end frame loss (CIR) : 4
Near-end loss ratio (CIR) : 6% Far-end loss ratio (CIR) : 4%
```

```
--- Loss measurement statistics ---
LMM packets transmitted: 5, LMR packets received: 5
Average near-end frame loss (CIR) : 4.5
Average near-end loss ratio (CIR) : 4.5%
Average far-end frame loss (CIR) : 5
Average far-end loss ratio (CIR) : 5%
Near-end best case frame loss (CIR) : 2
Near-end best case loss ratio (CIR) : 2%
Near-end worst case frame loss (CIR) : 6
Near-end worst case loss ratio (CIR) : 6%
Far-end best case frame loss (CIR) : 2
Far-end best case loss ratio (CIR) : 2%
Far-end worst case frame loss (CIR) : 8
Far-end worst case loss ratio (CIR) : 8%
```

**monitor ethernet loss-measurement (with CIR and EIR counters enabled)**

```
user@host> monitor ethernet loss-measurement 00:05:85:73:39:4a maintenance-domain md6
maintenance-association ma6 count 5
ETH-LM request to 00:05:85:73:39:4a, Interface ge-5/0/0.0
LMR received from 00:05:85:73:39:4a
LMR received from 00:05:85:73:39:4a
Near-end frame loss (CIR) : 2 Far-end frame loss (CIR) : 4
Near-end loss ratio (CIR) : 2% Far-end loss ratio (CIR) : 4%
Near-end frame loss (EIR) : 0 Far-end frame loss (EIR) : 6
```

```

Near-end loss ratio (EIR) : 0%   Far-end loss ratio (EIR) : 6%
LMR received from 00:05:85:73:39:4a
Near-end frame loss (CIR) : 8     Far-end frame loss (CIR) : 5
Near-end loss ratio (CIR) : 8%   Far-end loss ratio (CIR) : 5%
Near-end frame loss (EIR) : 4     Far-end frame loss (EIR) : 1
Near-end loss ratio (EIR) : 4%   Far-end loss ratio (EIR) : 1%
LMR received from 00:05:85:73:39:4a
Near-end frame loss (CIR) : 10    Far-end frame loss (CIR) : 4
Near-end loss ratio (CIR) : 10%  Far-end loss ratio (CIR) : 4%
Near-end frame loss (EIR) : 1     Far-end frame loss (EIR) : 3
Near-end loss ratio (EIR) : 1%   Far-end loss ratio (EIR) : 3%
LMR received from 00:05:85:73:39:4a
Near-end frame loss (CIR) : 6     Far-end frame loss (CIR) : 2
Near-end loss ratio (CIR) : 6%   Far-end loss ratio (CIR) : 2%
Near-end frame loss (EIR) : 8     Far-end frame loss (EIR) : 0
Near-end loss ratio (EIR) : 8%   Far-end loss ratio (EIR) : 0%

```

--- Loss measurement statistics ---

```

LMM packets transmitted: 5,   LMR packets received: 5
Average near-end frame loss (CIR) : 6.5
Average near-end loss ratio (CIR) : 6.5%
Average far-end frame loss (CIR) : 3.75
Average far-end loss ratio (CIR) : 3.75%
Near-end best case frame loss (CIR) : 2
Near-end best case loss ratio (CIR) : 2%
Near-end worst case frame loss (CIR) : 10
Near-end worst case loss ratio (CIR) : 10%
Far-end best case frame loss (CIR) : 2
Far-end best case loss ratio (CIR) : 2%
Far-end worst case frame loss (CIR) : 6
Far-end worst case loss ratio (CIR) : 6%
Average near-end frame loss (EIR) : 3.25
Average near-end loss ratio (EIR) : 3.25%
Average far-end frame loss (EIR) : 2.5
Average far-end loss ratio (EIR) : 2.5%
Near-end best case frame loss (EIR) : 0
Near-end Best case loss ratio (EIR) : 0%
Near-end worst case frame loss (EIR) : 8
Near-end Worst case loss ratio (EIR) : 8%
Far-end best case frame loss (EIR) : 0
Far-end Best case loss ratio (EIR) : 0%
Far-end worst case frame loss (EIR) : 6
Far-end Worst case loss ratio (EIR) : 6%

```

## monitor interface

<b>Syntax</b>	monitor interface <interface-name   traffic <detail>>
<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 real-time statistics about interfaces, updating the statistics every second. Check for and display common interface failures, such as SONET/SDH and T3 alarms, loopbacks detected, and increases in framing errors.
<b>Options</b>	<p>none—Display real-time statistics for all interfaces.</p> <p>interface-name—(Optional) Display real-time statistics for the specified interface.</p> <p>traffic—(Optional) Display traffic data for all active interfaces.</p> <p>detail—(Optional) With traffic option only, display detailed output.</p>
<b>Additional Information</b>	The output of this command shows how much each field has changed since you started the command or since you cleared the counters by using the c key. For a description of the statistical information provided in the output of this command, see the <b>show interfaces extensive</b> command for a particular interface type in the <i>Junos OS Interfaces Command Reference</i> . To control the output of the <b>monitor interface interface-name</b> command while it is running, use the keys listed in Table 18 on page 87. The keys are not case-sensitive.

**Table 18: Output Control Keys for the monitor interface interface-name Command**

Key	Action
c	Clears (returns to zero) the delta counters since <b>monitor interface</b> was started. This does not clear the accumulative counter. To clear the accumulative counter, use the <b>clear interfaces interval</b> command.
f	Freezes the display, halting the display of updated statistics and delta counters.
i	Displays information about a different interface. The command prompts you for the name of a specific interface.
n	Displays information about the next interface. The <b>monitor interface</b> command displays the physical or logical interfaces in the same order as the <b>show interfaces terse</b> command.
q or Esc	Quits the command and returns to the command prompt.
t	Thaws the display, resuming the update of the statistics and delta counters.

To control the output of the **monitor interface traffic** command while it is running, use the keys listed in Table 19 on page 88. The keys are not case-sensitive.

Table 19: Output Control Keys for the monitor interface traffic Command

Key	Action
b	Displays the statistics in units of bytes and bytes per second (bps).
c	Clears (return to 0) the delta counters in the <b>Current Delta</b> column. The statistics counters are not cleared.
d	Displays the <b>Current Delta</b> column (instead of the rate column) in bps or packets per second (pps).
p	Displays the statistics in units of packets and packets per second (pps).
q or Esc	Quits the command and returns to the command prompt.
r	Displays the rate column (instead of the <b>Current Delta</b> column) in bps and pps.

**Required Privilege Level** trace

**List of Sample Output** [monitor interface \(Physical\) on page 89](#)  
[monitor interface \(OTN Interface\) on page 91](#)  
[monitor interface \(Logical\) on page 92](#)  
[monitor interface traffic on page 92](#)  
[monitor interface traffic detail on page 93](#)

**Output Fields** Table 20 on page 88 describes the output fields for the **monitor interface** command. Output fields are listed in the approximate order in which they appear.

Table 20: monitor interface Output Fields

Field Name	Field Description	Level of Output
router1	Hostname of the router.	All levels
Seconds	How long the monitor interface command has been running or how long since you last cleared the counters.	All levels
Time	Current time (UTC).	All levels
Delay x/y/z	Time difference between when the statistics were displayed and the actual clock time. <ul style="list-style-type: none"> <li>x—Time taken for the last polling (in milliseconds).</li> <li>y—Minimum time taken across all pollings (in milliseconds).</li> <li>z—Maximum time taken across all pollings (in milliseconds).</li> </ul>	All levels
Interface	Short description of the interface, including its name, status, and encapsulation.	All levels
Link	State of the link: <b>Up</b> , <b>Down</b> , or <b>Test</b> .	All levels



Table 20: monitor interface Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Current delta</b>	Cumulative number for the counter in question since the time shown in the Seconds field, which is the time since you started the command or last cleared the counters.	All levels
<b>Local Statistics</b>	<p>(Logical interfaces only) Number and rate of bytes and packets destined to the router or switch through the specified interface. When a burst of traffic is received, the value in the output packet rate field might briefly exceed the peak cell rate. It takes awhile (generally, less than 1 second) for this counter to stabilize.:</p> <ul style="list-style-type: none"> <li>• <b>Input bytes</b>—Number of bytes received on the interface.</li> <li>• <b>Output bytes</b>—Number of bytes transmitted on the interface.</li> <li>• <b>Input packets</b>—Number of packets received on the interface.</li> <li>• <b>Output packets</b>—Number of packets transmitted on the interface.</li> </ul>	All levels
<b>Remote Statistics</b>	<p>(Logical interfaces only) Statistics for traffic transiting the router or switch. When a burst of traffic is received, the value in the output packet rate field might briefly exceed the peak cell rate. It takes awhile (generally, less than 1 second) for this counter to stabilize.:</p> <ul style="list-style-type: none"> <li>• <b>Input bytes</b>—Number of bytes received on the interface.</li> <li>• <b>Output bytes</b>—Number of bytes transmitted on the interface.</li> <li>• <b>Input packets</b>—Number of packets received on the interface.</li> <li>• <b>Output packets</b>—Number of packets transmitted on the interface.</li> </ul>	All levels
<b>Traffic statistics</b>	<p>Total number of bytes and packets received and transmitted on the interface. These statistics are the sum of the local and remote statistics. When a burst of traffic is received, the value in the output packet rate field might briefly exceed the peak cell rate. It takes awhile (generally, less than 1 second) for this counter to stabilize.</p> <ul style="list-style-type: none"> <li>• <b>Input bytes</b>—Number of bytes received on the interface.</li> <li>• <b>Output bytes</b>—Number of bytes transmitted on the interface.</li> <li>• <b>Input packets</b>—Number of packets received on the interface.</li> <li>• <b>Output packets</b>—Number of packets transmitted on the interface.</li> </ul>	All levels
<b>Description</b>	With the <b>traffic</b> option, displays the interface description configured at the <b>[edit interfaces <i>interface-name</i>]</b> hierarchy level.	<b>detail</b>

## Sample Output

```

monitor interface so-0/0/0
(Physical) user@host> monitor interface so-0/0/0
router1 Seconds: 19 Time: 15:46:29

Interface: so-0/0/0, Enabled, Link is Up
Encapsulation: PPP, Keepalives, Speed: 0C48
Traffic statistics:
Input packets: 6045 (0 pps) Current Delta [11]
Input bytes: 6290065 (0 bps) [13882]
Output packets: 10376 (0 pps) [10]
Output bytes: 10365540 (0 bps) [9418]
Encapsulation statistics:

```

Input keepalives:	1901	[2]
Output keepalives:	1901	[2]
NCP state: Opened		
LCP state: Opened		
Error statistics:		
Input errors:	0	[0]
Input drops:	0	[0]
Input framing errors:	0	[0]
Policed discards:	0	[0]
L3 incompletes:	0	[0]
L2 channel errors:	0	[0]
L2 mismatch timeouts:	0	[0]
Carrier transitions:	1	[0]
Output errors:	0	[0]
Output drops:	0	[0]
Aged packets:	0	[0]
Active alarms :	None	
Active defects:	None	
SONET error counts/seconds:		
LOS count	1	[0]
LOF count	1	[0]
SEF count	1	[0]
ES-S	0	[0]
SES-S	0	[0]
SONET statistics:		
BIP-B1	458871	[0]
BIP-B2	460072	[0]
REI-L	465610	[0]
BIP-B3	458978	[0]
REI-P	458773	[0]

```

Received SONET overhead:
  F1      : 0x00  J0      : 0x00  K1      : 0x00
  K2      : 0x00  S1      : 0x00  C2      : 0x00
  C2(cmp) : 0x00  F2      : 0x00  Z3      : 0x00
  Z4      : 0x00  S1(cmp) : 0x00
Transmitted SONET overhead:
  F1      : 0x00  J0      : 0x01  K1      : 0x00
  K2      : 0x00  S1      : 0x00  C2      : 0xcf
  F2      : 0x00  Z3      : 0x00  Z4      : 0x00

```

Next='n', Quit='q' or ESC, Freeze='f', Thaw='t', Clear='c', Interface='i'

#### monitor interface (OTN Interface)

```
user@host> monitor interface ge-7/0/0
```

```

Interface: ge-7/0/0, Enabled, Link is Up
Encapsulation: Ethernet, Speed: 10000Mbps
Traffic statistics:
  Input bytes:                0 (0 bps)
  Output bytes:               0 (0 bps)
  Input packets:              0 (0 pps)
  Output packets:             0 (0 pps)
Error statistics:
  Input errors:                0
  Input drops:                 0
  Input framing errors:        0
  Policed discards:           0
  L3 incompletes:              0
  L2 channel errors:           0
  L2 mismatch timeouts:        0
  Carrier transitions:         5
  Output errors:               0
  Output drops:                0
  Aged packets:                0
Active alarms : None
Active defects: None
Input MAC/Filter statistics:
  Unicast packets              0
  Broadcast packets            0
  Multicast packets            0
  Oversized frames             0
  Packet reject count          0
  DA rejects                   0
  SA rejects                   0
Output MAC/Filter Statistics:
  Unicast packets              0
  Broadcast packets            0
  Multicast packets            0
  Packet pad count             0
  Packet error count           0
OTN Link 0
  OTN Alarms: OTU_BDI, OTU_TTIM, ODU_BDI
  OTN Defects: OTU_BDI, OTU_TTIM, ODU_BDI, ODU_TTIM
  OTN OC - Seconds
    LOS                        2
    LOF                        9
  OTN OTU - FEC Statistics
    Corr err ratio             N/A
    Corr bytes                  0
    Uncorr words                0
  OTN OTU - Counters

```

```

BIP                                0
BBE                                0
ES                                 0
SES                                0
UAS                                422
OTN ODU - Counters
BIP                                0
BBE                                0
ES                                 0
SES                                0
UAS                                422
OTN ODU - Received Overhead    APSGCC 0-3:          0

```

```

monitor interface user@host> monitor interface so-1/0/0.0
(Logical)          host name                Seconds: 16                Time: 15:33:39
                                                           Delay: 0/0/1

Interface: so-1/0/0.0, Enabled, Link is Down
Flags: Hardware-Down Point-To-Point SNMP-Traps
Encapsulation: PPP
Local statistics:
Input bytes:                0                                [0]
Output bytes:               0                                [0]
Input packets:              0                                [0]
Output packets:             0                                [0]
Remote statistics:
Input bytes:                0 (0 bps)                        [0]
Output bytes:               0 (0 bps)                        [0]
Input packets:              0 (0 pps)                        [0]
Output packets:             0 (0 pps)                        [0]
Traffic statistics:
Destination address: 192.168.8.193, Local: 192.168.8.21

Next='n', Quit='q' or ESC, Freeze='f', Thaw='t', Clear='c', Interface='i'

```

```

monitor interface user@host> monitor interface traffic
traffic          host name                Seconds: 15                Time: 12:31:09

Interface  Link  Input packets  (pps)  Output packets  (pps)
so-1/0/0   Down    0              (0)    0              (0)
so-1/1/0   Down    0              (0)    0              (0)
so-1/1/1   Down    0              (0)    0              (0)
so-1/1/2   Down    0              (0)    0              (0)
so-1/1/3   Down    0              (0)    0              (0)
t3-1/2/0   Down    0              (0)    0              (0)
t3-1/2/1   Down    0              (0)    0              (0)
t3-1/2/2   Down    0              (0)    0              (0)
t3-1/2/3   Down    0              (0)    0              (0)
so-2/0/0   Up      211035         (1)    36778          (0)
so-2/0/1   Up      192753         (1)    36782          (0)
so-2/0/2   Up      211020         (1)    36779          (0)
so-2/0/3   Up      211029         (1)    36776          (0)
so-2/1/0   Up      189378         (1)    36349          (0)
so-2/1/1   Down    0              (0)    18747          (0)
so-2/1/2   Down    0              (0)    16078          (0)
so-2/1/3   Up      0              (0)    80338          (0)
at-2/3/0   Up      0              (0)    0              (0)
at-2/3/1   Down    0              (0)    0              (0)

Bytes=b, Clear=c, Delta=d, Packets=p, Quit=q or ESC, Rate=r, Up=^U, Down=^D

```

```
monitor interface user@host> monitor interface traffic detail
traffic detail      host name          Seconds: 15          Time: 12:31:09

Interface    Link  Input packets  (pps)  Output packets  (pps)  Description
-----
t1-0/1/1:0  Up    19769          (0)    0               (0)    To-OSAKA-1
...

Bytes=b, Clear=c, Delta=d, Packets=p, Quit=q or ESC, Rate=r, Up=^U, Down=^D
```

## monitor label-switched-path

**Syntax** `monitor label-switched-path lsp-name`

**Release Information** Command introduced before Junos OS Release 7.4.

**Description** Display the real-time status of the specified RSVP label-switched path (LSP).

**Options** *lsp-name*—Name of the LSP.

**Additional Information** You can track the amount of traffic traversing an RSVP LSP and observe its essential parameters, such as uptime, ingress and egress addresses, labels, routes, and ports. Values are typically sampled every second. The display also allows you to scroll to other currently running LSPs. You cannot use this command to display information about static LSPs or LDP-signaled LSPs.

The output of this command shows how much each field has changed since you started the command or since you cleared the counters by using the `c` key. To control the output of the **monitor label-switched-path** command while it is running, use the keys listed in Table 21 on page 94. The keys are not case-sensitive.

**Table 21: Output Control Keys for the monitor label-switched-path Command**

Key	Action
c	Clears the screen and refreshes the display for this LSP.
f	Freezes the display, preventing new information from being displayed.
l	Monitors a different LSP. After you type <code>l</code> , you can type the new LSP name.
n	Displays information about the next LSP (whose name is alphabetically higher than the current LSP name) configured on the router.
p	Goes to the previous LSP (whose name is alphabetically lower than the current LSP name) configured on the router.
q or Esc	Quits the command and returns to the command prompt.
t	Thaws, or restarts, the data display for this LSP.

**Required Privilege Level** trace

**List of Sample Output** **monitor label-switched-path** on page 95

**Output Fields** Table 22 on page 95 describes the output fields for the **monitor label-switched-path** command. Output fields are listed in the approximate order in which they appear.

Table 22: monitor label-switched-path Output Fields

Field Name	Field Description
(1)	Displays the following information: <ul style="list-style-type: none"> <li>• <b>hostname</b>—Name of the router.</li> <li>• <b>Seconds</b>—Time elapsed since this display was started.</li> <li>• <b>Time</b>—Current local time.</li> </ul>
(2)	<b>Delay</b> —Length of the time delay, in milliseconds, required to obtain the information in the monitor display. The first number shows the current sampling delay. The second number shows the shortest delay recorded to date. The third number shows the worst delay recorded to date. This delay can vary substantially depending on the system load.
(3)	Displays the following: <ul style="list-style-type: none"> <li>• <b>To</b>—Destination address of the LSP.</li> <li>• <b>From</b>—Originating address of the LSP.</li> <li>• <b>State</b>—Current state of the LSP: <b>Up</b> or <b>Down</b>.</li> </ul>
(4)	Displays the following: <ul style="list-style-type: none"> <li>• <b>LSPName</b>—Name of the LSP.</li> <li>• <b>Type</b>—Type of LSP: <b>Ingress</b>, <b>Egress</b>, or <b>Transit</b>.</li> </ul>
(5)	Displays the following: <ul style="list-style-type: none"> <li>• <b>Label in</b>—Incoming label of the LSP.</li> <li>• <b>Label out</b>—Outgoing label of the LSP.</li> </ul>
(6)	<b>Port number</b> —Port number for the sending router, the port number for the receiving router, and the protocol ID. For MPLS traffic engineering applications, the protocol ID is always 0.
(7/8)	<b>Record route</b> —All intermediate and egress router addresses for this LSP.
(9/10/11)	Displays traffic statistics: <ul style="list-style-type: none"> <li>• <b>Output packets</b>—Number of packets that have traversed this LSP, and the change (delta) in the number since the last sample, typically 1 second ago.</li> <li>• <b>Output bytes</b>—Number of bytes that have traversed this LSP, and the change (delta) in the number since the last sample, typically 1 second ago.</li> </ul>
(12)	Displays any errors the router encountered while attempting to retrieve information on the LSP.
(13)	Lists the keyboard commands you can use to navigate to other LSPs. For a description of the keyboard commands, see Table 21 on page 94.

## Sample Output

```

monitor user@host> monitor label-switched-path
label-switched-path (1) host                      Seconds: 112           Time: 15:32:22
(2)                                           Delay: 0/0/0
(3) To 10.10.10.16, From 10.10.10.17, state: Up
(4) LSPname: k, type: Ingress

```

```
(5)  Label in: -, Label out: 126000
(6)  Port number: sender 1, receiver 45583, protocol 0
(7)  Record Route: <self> 192.168.224.196
(8)  192.168.224.202 192.168.224.179
(9)  Traffic statistics:                                     Current delta
(10)   Output packets:                                     0                      [0]
(11)   Output bytes:                                       0                      [0]
(12)
(13) Next='n', Prev='p', Quit='q' or ESC, Freeze='f', Thaw='t', Clear='c',
     LSP='l'
```



## monitor list

<b>Syntax</b>	monitor list
<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 the status of monitored log and trace files.
<b>Options</b>	This command has no options.
<b>Additional Information</b>	Log files are generated by the routing protocol process or by system logging. The log files generated by system logging are configured with the <b>syslog</b> statement at the <b>[edit system]</b> hierarchy level and the <b>options</b> statement at the <b>[edit routing-options]</b> hierarchy level. The trace files generated by the routing protocol process are those configured with <b>traceoptions</b> statements at the <b>[edit routing-options]</b> , <b>[edit interfaces]</b> , and <b>[edit protocols protocol]</b> hierarchy levels.
<b>Required Privilege Level</b>	trace
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">monitor start on page 98</a></li> <li>• <a href="#">monitor stop on page 100</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">monitor list on page 97</a>
<b>Output Fields</b>	Table 23 on page 97 describes the output fields for the <b>monitor list</b> command. Output fields are listed in the approximate order in which they appear.

**Table 23: monitor list Output Fields**

Field Name	Field Description
<b>monitor start</b>	Indicates the file is being monitored.
<b>"filename"</b>	Name of the file that is being monitored.
<b>Last changed</b>	Date and time at which the file was last modified.

## Sample Output

```

monitor list user@host> monitor list
monitor start "vrrpd" (Last changed Dec 03:11:06 20)
monitor start "cli-commands" (Last changed Nov 07:3)

```

## monitor start

<b>Syntax</b>	<code>monitor start <i>filename</i></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.
<b>Description</b>	Start displaying the system log or trace file and additional entries being added to those files.
<b>Options</b>	<i>filename</i> —Specific log or trace file.
<b>Additional Information</b>	Log files are generated by the routing protocol process or by system logging. The log files generated by system logging are configured with the <b>syslog</b> statement at the <b>[edit system]</b> hierarchy level and the <b>options</b> statement at the <b>[edit routing-options]</b> hierarchy level. The trace files generated by the routing protocol process are configured with <b>traceoptions</b> statements at the <b>[edit routing-options]</b> , <b>[edit interfaces]</b> , and <b>[edit protocols protocol]</b> hierarchy levels.
<b>Required Privilege Level</b>	trace
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">monitor list on page 97</a></li> <li>• <a href="#">monitor stop on page 100</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">monitor start on page 98</a>
<b>Output Fields</b>	Table 24 on page 98 describes the output fields for the <b>monitor start</b> command. Output fields are listed in the approximate order in which they appear.

**Table 24: monitor start Output Fields**

Field Name	Field Description
<b>***<i>filename</i>***</b>	Name of the file from which entries are being displayed. This line is displayed initially and when the command switches between log files.
<b><i>Date and time</i></b>	Timestamp for the log entry.

## Sample Output

```

monitor start user@host> monitor start system-log
*** system-log***
Jul 20 15:07:34 hang sshd[5845]: log: Generating 768 bit RSA key.
Jul 20 15:07:35 hang sshd[5845]: log: RSA key generation complete.
Jul 20 15:07:35 hang sshd[5845]: log: Connection from 204.69.248.180 port 912
Jul 20 15:07:37 hang sshd[5845]: log: RSA authentication for root accepted.

```

```
Jul 20 15:07:37 hang sshd[5845]: log: ROOT LOGIN as 'root' from trip.jcmax.com
Jul 20 15:07:37 hang sshd[5845]: log: Closing connection to 204.69.248.180
```

## monitor stop

---

<b>Syntax</b>	<code>monitor stop <i>filename</i></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.
<b>Description</b>	Stop displaying the system log or trace file.
<b>Options</b>	<i>filename</i> —Specific log or trace file.
<b>Additional Information</b>	Log files are generated by the routing protocol process or by system logging. The log files generated by system logging are those configured with the <b>syslog</b> statement at the <b>[edit system]</b> hierarchy level and the <b>options</b> statement at the <b>[edit routing-options]</b> hierarchy level. The trace files generated by the routing protocol process are those configured with <b>traceoptions</b> statements at the <b>[edit routing-options]</b> , <b>[edit interfaces]</b> , and <b>[edit protocols <i>protocol</i>]</b> hierarchy levels.
<b>Required Privilege Level</b>	trace
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">monitor list on page 97</a></li><li>• <a href="#">monitor start on page 98</a></li></ul>
<b>List of Sample Output</b>	<a href="#">monitor stop on page 100</a>
<b>Output Fields</b>	This command produces no output.

## Sample Output

```
monitor stop  user@host> monitor stop
```

## monitor traffic

**Syntax**    monitor traffic  
               <brief | detail | extensive>  
               <absolute-sequence>  
               <count *count*>  
               <interface *interface-name*>  
               <layer2-headers>  
               <matching *matching*>  
               <no-domain-names>  
               <no-promiscuous>  
               <no-resolve>  
               <no-timestamp>  
               <print-ascii>  
               <print-hex>  
               <resolve-timeout>  
               <size *size*>

**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 packet headers or packets received and sent from the Routing Engine.



### NOTE:

- Using the **monitor-traffic** command can degrade router or switch performance.
- Delays from DNS resolution can be eliminated by using the **no-resolve** option.

**Options**    none—(Optional) Display packet headers transmitted through **fxp0**. On a TX Matrix Plus router, display packet headers transmitted through **em0**.

brief | detail | extensive—(Optional) Display the specified level of output.

absolute-sequence—(Optional) Display absolute TCP sequence numbers.

count *count*—(Optional) Specify the number of packet headers to display (0 through 1,000,000). The monitor traffic command quits automatically after displaying the number of packets specified.

interface *interface-name*—(Optional) Specify the interface on which the **monitor traffic** command displays packet data. If no interface is specified, the **monitor traffic** command displays packet data arriving on the lowest-numbered interface.

layer2-headers—(Optional) Display the link-level header on each line.

**matching** *matching*—(Optional) Display packet headers that match a regular expression. Use matching expressions to define the level of detail with which the **monitor traffic** command filters and displays packet data.

**no-domain-names**—(Optional) Suppress the display of the domain portion of hostnames. With the **no-domain-names** option enabled, the **monitor traffic** command displays only **team** for the hostname **team.company.net**.

**no-promiscuous**—(Optional) Do not put the interface into promiscuous mode.

**no-resolve**—(Optional) Suppress reverse lookup of the IP addresses.

**no-timestamp**—(Optional) Suppress timestamps on displayed packets.

**print-ascii**—(Optional) Display each packet in ASCII format.

**print-hex**—(Optional) Display each packet, except the link-level header, in hexadecimal format.

**resolve-timeout** *timeout*—(Optional) Amount of time the router or switch waits for each reverse lookup before timing out. You can set the timeout for 1 through 4,294,967,295 seconds. The default is 4 seconds. To display each packet, use the **print-ascii**, **print-hex**, or **extensive** option.

**size** *size*—(Optional) Read but do not display up to the specified number of bytes for each packet. When set to **brief** output, the default packet size is 96 bytes and is adequate for capturing IP, ICMP, UDP, and TCP packet data. When set to **detail** and **extensive** output, the default packet size is 1514. The **monitor traffic** command truncates displayed packets if the matched data exceeds the configured size.

**Additional Information** In the **monitor traffic** command, you can specify an expression to match by using the **matching** option and including the expression in quotation marks:

```
monitor traffic matching "expression"
```

Replace **expression** with one or more of the match conditions listed in Table 25 on page 103.

Table 25: Match Conditions for the monitor traffic Command

Match Type	Condition	Description
Entity	<b>host</b> [ <i>address</i>   <i>hostname</i> ]	Matches packets that contain the specified address or hostname.  The protocol match conditions <b>arp</b> , <b>ip</b> , or <b>rarp</b> , or any of the directional match conditions, can be prepended to the <b>host</b> match condition.
	<b>net</b> <i>address</i>	Matches packets with source or destination addresses containing the specified network address.
	<b>net</b> <i>address</i> <b>mask</b> <i>mask</i>	Matches packets containing the specified network address and subnet mask.
	<b>port</b> [ <i>port-number</i>   <i>port-name</i> ]	Matches packets containing the specified source or destination TCP or UDP port number or port name.  In place of the numeric port address, you can specify a text synonym, such as <b>bgp</b> (179), <b>dhcp</b> (67), or <b>domain</b> (53) (the port numbers are also listed).
Directional	<b>dst</b>	Matches packets going to the specified destination. This match condition can be prepended to any of the entity type match conditions.
	<b>src</b>	Matches packets from a specified source. This match condition can be prepended to any of the entity type match conditions.
	<b>src</b> and <b>dst</b>	Matches packets that contain the specified source and destination addresses. This match condition can be prepended to any of the entity type match conditions.
	<b>src</b> or <b>dst</b>	Matches packets containing either of the specified addresses. This match condition can be prepended to any of the entity type match conditions.
Packet Length	<b>less</b> <i>value</i>	Matches packets shorter than or equal to the specified value, in bytes.
	<b>greater</b> <i>value</i>	Matches packets longer than or equal to the specified value, in bytes.

Table 25: Match Conditions for the monitor traffic Command (*continued*)

Match Type	Condition	Description
Protocol	<b>amt</b>	Matches all AMT packets. Use the extensive level of output to decode the inner IGMP packets in addition to the AMT outer packet.
	<b>arp</b>	Matches all ARP packets.
	<b>ether</b>	Matches all Ethernet packets.
	<b>ether [broadcast   multicast]</b>	Matches broadcast or multicast Ethernet frames. This match condition can be prepended with <b>src</b> and <b>dst</b> .
	<b>ether protocol [address   (arp   ip   rarp)]</b>	Matches packets with the specified Ethernet address or Ethernet packets of the specified protocol type. The <b>ether protocol</b> arguments <b>arp</b> , <b>ip</b> , and <b>rarp</b> are also independent match conditions, so they must be preceded by a backslash (\) when used in the <b>ether protocol</b> match condition.
	<b>icmp</b>	Matches all ICMP packets.
	<b>ip</b>	Matches all IP packets.
	<b>ip [broadcast   multicast]</b>	Matches broadcast or multicast IP packets.
	<b>ip protocol [address   (icmp   igmp   tcp   udp)]</b>	Matches packets with the specified address or protocol type. The <b>ip protocol</b> arguments <b>icmp</b> , <b>tcp</b> , and <b>udp</b> are also independent match conditions, so they must be preceded by a backslash (\) when used in the <b>ip protocol</b> match condition.
	<b>isis</b>	Matches all IS-IS routing messages.
	<b>rarp</b>	Matches all RARP packets.
	<b>tcp</b>	Matches all TCP datagrams.
	<b>udp</b>	Matches all UDP datagrams.

To combine expressions, use the logical operators listed in Table 26 on page 104.

Table 26: Logical Operators for the monitor traffic Command

Logical Operator (Highest to Lowest Precedence)	Description
<b>!</b>	Logical NOT. If the first condition does not match, the next condition is evaluated.



Table 26: Logical Operators for the monitor traffic Command (*continued*)

Logical Operator (Highest to Lowest Precedence)	Description
&&	Logical AND. If the first condition matches, the next condition is evaluated. If the first condition does not match, the next condition is skipped.
	Logical OR. If the first condition matches, the next condition is skipped. If the first condition does not match, the next condition is evaluated.
( )	Group operators to override default precedence order. Parentheses are special characters, each of which must be preceded by a backslash (\).

You can use relational operators to compare arithmetic expressions composed of integer constants, binary operators, a length operator, and special packet data accessors. The arithmetic expression matching condition uses the following syntax:

```
monitor traffic matching "ether[0] & 1 != 0"arithmetic_expression relational_operator arithmetic_expression
```

The packet data accessor uses the following syntax:

```
protocol [byte-offset <size>]
```

The optional *size* field represents the number of bytes examined in the packet header. The available values are 1, 2, or 4 bytes. The following sample command captures all multicast traffic:

```
user@host> monitor traffic matching "ether[0] & 1 != 0"
```

To specify match conditions that have a numeric value, use the arithmetic and relational operators listed in Table 27 on page 106.



**NOTE:** Because the Packet Forwarding Engine removes Layer 2 header information before sending packets to the Routing Engine:

- The **monitor traffic** command cannot apply match conditions to inbound traffic.
- The **monitor traffic interface** command also cannot apply match conditions for Layer 3 and Layer 4 packet data, resulting in the match pipe option (`| match`) for this command for Layer 3 and Layer 4 packets not working either. Therefore, ensure that you specify match conditions as described in this command summary. For more information about match conditions, see Table 25 on page 103.
- The 802.1Q VLAN tag information included in the Layer 2 header is removed from all inbound traffic packets. Because the **monitor traffic interface ae[x]** command for aggregated Ethernet interfaces (such as ae0) only shows inbound traffic data, the command does not show VLAN tag information in the output.

**Table 27: Arithmetic and Relational Operators for the monitor traffic Command**

Arithmetic or Relational Operator	Description
<b>Arithmetic Operator</b>	
+	Addition operator.
-	Subtraction operator.
/	Division operator.
&	Bitwise AND.
*	Bitwise exclusive OR.
	Bitwise inclusive OR.
<b>Relational Operator (Highest to Lowest Precedence)</b>	
<=	If the first expression is less than or equal to the second, the packet matches.
>=	If the first expression is greater than or equal to the second, the packet matches.
<	If the first expression is less than the second, the packet matches.
>	If the first expression is greater than the second, the packet matches.
=	If the compared expressions are equal, the packet matches.
!=	If the compared expressions are unequal, the packet matches.

**Required Privilege Level** trace  
maintenance

**List of Sample Output** [monitor traffic count on page 107](#)  
[monitor traffic detail count on page 107](#)  
[monitor traffic extensive \(Absolute Sequence\) on page 107](#)  
[monitor traffic extensive \(Relative Sequence\) on page 107](#)  
[monitor traffic extensive count on page 107](#)  
[monitor traffic interface on page 108](#)  
[monitor traffic matching on page 108](#)  
[monitor traffic \(TX Matrix Plus Router\) on page 108](#)  
[monitor traffic \(QFX3500 Switch\) on page 109](#)

**Output Fields** When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```

monitor traffic count      user@host> monitor traffic count 2
                             listening on fxp0
                             04:35:49.814125 In my-server.home.net.1295 > my-server.work.net.telnet: . ack
                             4122529478 win 16798 (DF)
                             04:35:49.814185
                             Out my-server.work.net.telnet > my-server.home.net.1295: P
                             1:38(37) ack 0 win 17680 (DF) [tos 0x10]

monitor traffic detail    user@host> monitor traffic detail count 2
count                     listening on fxp0
                             04:38:16.265864 In my-server.home.net.1295 > my-server.work.net.telnet: . ack
                             4122529971 win 17678 (DF) (ttl 121, id 6812)
                             04:38:16.265926
                             Out my-server.work.net.telnet.telnet > my-server.home.net.1295: P 1:38(37) ack 0
                             win 17680 (DF) [tos 0x10] (ttl 6)

monitor traffic           user@host> monitor traffic extensive no-domain-names no-resolve no-timestamp count 20
extensive                 matching "tcp" absolute-sequence
(Absolute Sequence)      listening on fxp0
                             In 207.17.136.193.179 > 192.168.4.227.1024: . 4042780859:4042780859(0)
                             ack 1845421797 win 16384 <nop,nop,timestamp 4935628 965951> [tos 0xc0] (ttl )
                             In 207.17.136.193.179 > 192.168.4.227.1024: P 4042780859:4042780912(53)
                             ack 1845421797 win 16384
                             <nop,nop,timestamp 4935628 965951>:
                             BGP [|BGP UPDAT)
                             In 192.168.4.227.1024 > 207.17.136.193.179:
                             P 1845421797:1845421852(55) ack 4042780912 win 16384 <nop,nop,timestamp 965951
                             4935628>: BGP [|BGP UPDAT)
                             ...

monitor traffic           user@host> monitor traffic extensive no-domain-names no-resolve no-timestamp count 20
extensive                 matching "tcp"
(Relative Sequence)      listening on fxp0
                             In 172.24.248.221.1680 > 192.168.4.210.23: . 396159737:396159737(0)
                             ack 1664980689 win 17574 (DF) (ttl 121, id 50003)
                             Out 192.168.4.210.23 > 172.24.248.221.1680: P 1:40(39)
                             ack 0 win 17680 (DF) [tos 0x10] (ttl 64, id 5394)
                             In 207.17.136.193.179 > 192.168.4.227.1024: P 4042775817:4042775874(57)
                             ack 1845416593 win 16384 <nop,nop,timestamp 4935379 965690>: BGP [|BGP UPDAT)
                             ...

monitor traffic           user@host> monitor traffic extensive count 5 no-domain-names no-resolve
extensive count          listening on fxp013:18:17.406933
                             In 192.168.4.206.2723610880 > 172.17.28.8.2049:
                             40 null (ttl 64, id 38367)13:18:17.407577
                             In 172.17.28.8.2049 > 192.168.4.206.2723610880:
                             reply ok 28 null (ttl 61, id 35495)13:18:17.541140
                             In 0:e0:1e:42:9c:e0 0:e0:1e:42:9c:e0 9000 60:
                             0000 0100 0000 0000
                             0000 0000 0000 0000
                             0000 0000 0000 0000
                             0000 0000 0000 0000
                             0000 0000 0000 0000
                             0000 0000 000013:18:17.591513

```

```

In 172.24.248.156.4139 > 192.168.4.210.23:
3556964918:3556964918(0)
ack 295526518 win 17601 (DF)
(ttl 121, id 14)13:18:17.591568
Out 192.168.4.210.23 >
172.24.248.156.4139: P 1:40(39)
ack 0 win 17680 (DF) [tos 0x10]
(ttl 64, id 52376)

```

**monitor traffic interface**

```

user@host> monitor traffic interface fxp0
listening on fxp0.0
18:17:28.800650 In server.home.net.723 > host1-0.lab.home.net.log
18:17:28.800733 Out host2-0.lab.home.net.login > server.home.net.7
18:17:28.817813 In host30.lab.home.net.syslog > host40.home0
18:17:28.817846 In host30.lab.home.net.syslog > host40.home0
...

```

**monitor traffic matching**

```

user@host> monitor traffic matching "net 192.168.1.0/24"
verbose output suppressed, use <detail> or <extensive> for full protocol decode
Address resolution is ON. Use <no-resolve> to avoid any reverse lookup delay.
Address resolution timeout is 4s.
Listening on fxp0, capture size 96 bytes

Reverse lookup for 192.168.1.255 failed (check DNS reachability).
Other reverse lookup failures will not be reported.
Use no-resolve to avoid reverse lookups on IP addresses.

21:55:54.003511 In IP truncated-ip - 18 bytes missing!
192.168.1.17.netbios-ns > 192.168.1.255.netbios-ns: UDP, length 50
21:55:54.003585 Out IP truncated-ip - 18 bytes missing!
192.168.1.17.netbios-ns > 192.168.1.255.netbios-ns: UDP, length 50
21:55:54.003864 In arp who-has 192.168.1.17 tell 192.168.1.9
...

```

**monitor traffic (TX Matrix Plus Router)**

```

user@host> monitor traffic
verbose output suppressed, use <detail> or <extensive> for full protocol decode
Address resolution is ON. Use <no-resolve> to avoid any reverse lookup delay.
Address resolution timeout is 4s.
Listening on em0, capture size 96 bytes
04:11:59.862121 Out IP truncated-ip - 25 bytes missing!
summit-em0.englab.juniper.net.syslog > sv-log-01.englab.juniper.net.syslog:
SYSLOG kernel.info, length: 57
04:11:59.862303
Out IP truncated-ip - 25 bytes missing!
summit-em0.englab.juniper.net.syslog >
sv-log-02.englab.juniper.net.syslog: SYSLOG kernel.info, length: 57
04:11:59.923948
In IP aj-em0.englab.juniper.net.65235 >
summit-em0.englab.juniper.net.telnet: .
ack 1087492766 win 33304 <nop,nop,timestamp 42366734 993490>
04:11:59.923983 Out IP truncated-ip - 232 bytes missing!
summit-em0.englab.juniper.net.telnet > aj-em0.englab.juniper.net.65235: P
1:241(240) ack 0 win 33304
<nop,nop,timestamp 993590 42366734>
04:12:00.022900
In IP aj-em0.englab.juniper.net.65235 >
summit-em0.englab.juniper.net.telnet: . ack 241 win 33304 <nop,nop,timestamp
42366834 993590>
04:12:00.141204
In IP truncated-ip - 40 bytes missing!

```

```

ipg-lnx-shell11.juniper.net.46182 > summit-em0.englab.juniper.net.telnet: P
2950530356:2950530404(48) ack 485494987 win 63712
<nop,nop,timestamp 1308555294 987086>
04:12:00.141345
Out IP summit-em0.englab.juniper.net.telnet >
ipg-lnx-shell11.juniper.net.46182: P 1:6(5)
ack 48 win 33304
<nop,nop,timestamp 993809 1308555294>
04:12:00.141572
In IP ipg-lnx-shell11.juniper.net.46182 >
summit-em0.englab.juniper.net.telnet: .
ack 6 win 63712
<nop,nop,timestamp 1308555294 993809>
04:12:00.141597
Out IP summit-em0.englab.juniper.net.telnet >
ipg-lnx-shell11.juniper.net.46182: P 6:10(4) ack 48 win 33304
<nop,nop,timestamp 993810 1308555294>
04:12:00.141821
In IP ipg-lnx-shell11.juniper.net.46182 >
summit-em0.englab.juniper.net.telnet: .
ack 10 win 63712 <nop,nop,timestamp 1308555294 993810>
04:12:00.141837 Out IP truncated-ip - 2 bytes missing!
summit-em0.englab.juniper.net.telnet >
ipg-lnx-shell11.juniper.net.46182: P 10:20(10) ack 48 win 33304
<nop,nop,timestamp 993810 1308555294>
04:12:00.142072
In IP ipg-lnx-shell11.juniper.net.46182 >
summit-em0.englab.juniper.net.telnet: . ack 20 win 63712
<nop,nop,timestamp 1308555294 993810>
04:12:00.142089 Out IP summit-em0.englab.juniper.net.telnet >
ipg-lnx-shell11.juniper.net.46182: P 20:28(8) ack 48 win 33304 <nop,nop,timestamp
993810 1308555294>
04:12:00.142321
In IP ipg-lnx-shell11.juniper.net.46182 >
summit-em0.englab.juniper.net.telnet: .
ack 28 win 63712 <nop,nop,timestamp 1308555294 993810>
04:12:00.142337
Out IP truncated-ip - 1 bytes missing!
summit-em0.englab.juniper.net.telnet >
ipg-lnx-shell11.juniper.net.46182: P 28:37(9) ack 48 win 33304 <nop,nop,timestamp
993810 1308555294>
...

```

**monitor traffic**  
(QFX3500 Switch)

```

user@switch> monitor traffic
verbose output suppressed, use <detail> or <extensive> for full protocol decode
Address resolution is ON. Use <no-resolve> to avoid any reverse lookup delay.
Address resolution timeout is 4s.
Listening on me4, capture size 96 bytes
Reverse lookup for 172.22.16.246 failed (check DNS reachability).
Other reverse lookup failures will not be reported.
Use <no-resolve> to avoid reverse lookups on IP addresses.
16:35:32.240873 Out IP truncated-ip - 112 bytes missing!
labqfx-me0.lab4.juniper.net.ssh >
172.22.16.246.telefinder: P 4200727624:4200727756(132) ack 2889954831 win 65535
16:35:32.240900 Out IP truncated-ip - 176 bytes missing!
labqfx-me0.lab4.juniper.net.ssh >
172.22.16.246.telefinder: P 132:328(196) ack 1 win 65535
...

```

## mtrace

<b>Syntax</b>	<code>mtrace source</code> <code>&lt;routing-instance routing-instance-name&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.
<b>Description</b>	Display trace information about an IP multicast path.
<b>Options</b>	<code>source</code> —Source hostname or address.  <code>routing-instance routing-instance-name</code> —(Optional) Trace a particular routing instance.
<b>Additional Information</b>	The <b>mtrace</b> command for multicast traffic is similar to the <b>traceroute</b> command used for unicast traffic. Unlike <b>traceroute</b> , <b>mtrace</b> traces traffic backwards, from the receiver to the source.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>mtrace source on page 111</b>
<b>Output Fields</b>	Table 28 on page 110 describes the output fields for the <b>mtrace</b> command. Output fields are listed in the approximate order in which they appear.

**Table 28: mtrace Output Fields**

Field Name	Field Description
<b>Mtrace from</b>	IP address of the receiver.
<b>to</b>	IP address of the source.
<b>via group</b>	IP address of the multicast group (if any).
<b>Querying full reverse path</b>	Indicates the full reverse path query has begun.
<b>number-of-hops</b>	Number of hops from the source to the named router or switch.
<b>router-name</b>	Name of the router or switch for this hop.
<b>address</b>	Address of the router or switch for this hop.
<b>protocol</b>	Protocol used (for example, PIM).
<b>Round trip time</b>	Average round-trip time, in milliseconds (ms).
<b>total ttl of</b>	Time-to-live (TTL) threshold.

## Sample Output

```
mtrace source user@host> mtrace 192.1.4.2
Mtrace from 192.1.4.2 to 192.1.1.2 via group 0.0.0.0
Querying full reverse path... * *
  0  routerA.lab.mycompany.net (192.1.1.2)
 -1  routerB.lab.mycompany.net (192.1.2.2) PIM thresh^ 1
 -2  routerC.lab.mycompany.net (192.1.3.2) PIM thresh^ 1
 -3  hostA.lab.mycompany.net (192.1.4.2)
Round trip time 2 ms; total ttl of 2 required.
```

## mtrace from-source

---

**Syntax**    mtrace from-source *source source*  
              <brief | detail>  
              <extra-hops *extra-hops*>  
              <group *group*>  
              <interval *interval*>  
              <loop>  
              <max-hops *max-hops*>  
              <max-queries *max-queries*>  
              <multicast-response | unicast-response>  
              <no-resolve>  
              <no-router-alert>  
              <response *response*>  
              <routing-instance *routing-instance-name*>  
              <tll *tll*>  
              <wait-time *wait-time*>

**Release Information**    Command introduced before Junos OS Release 7.4.  
                              Command introduced in Junos OS Release 9.0 for EX Series switches.

**Description**    Display trace information about an IP multicast path from a source to this router or switch. If you specify a group address with this command, the Junos OS returns additional information, such as packet rates and losses.

**Options**    brief | detail—(Optional) Display the specified level of output.

extra-hops *extra-hops*—(Optional) Number of hops to take after reaching a nonresponsive router. You can specify a number between **0** and **255**.

group *group*—(Optional) Group address for which to trace the path. The default group address is **0.0.0.0**.

interval *interval*—(Optional) Number of seconds to wait before gathering statistics again. The default value is **10** seconds.

loop—(Optional) Loop indefinitely, displaying rate and loss statistics.

max-hops *max-hops*—(Optional) Maximum hops to trace toward source. The range of values is **0** through **255**. The default value is **32** hops.

max-queries *max-queries*—(Optional) Maximum number of query attempts for any hop. The range of values is **1** through **32**. The default is **3**.

multicast-response—(Optional) Always request the response using multicast.

no-resolve—(Optional) Do not attempt to display addresses symbolically.

no-router-alert—(Optional) Do not use the router-alert IP option.

response *response*—(Optional) Send trace response to a host or multicast address.

routing-instance *routing-instance-name*—(Optional) Trace a particular routing instance.



*source source*—Source hostname or address.

*tll ttl*—(Optional) IP time-to-live (TTL) value. You can specify a number between **0** and **255**. Local queries to the multicast group use a value of **1**. Otherwise, the default value is **127**.

*unicast-response*—(Optional) Always request the response using unicast.

*wait-time wait-time*—(Optional) Number of seconds to wait for a response. The default value is **3**.

**Required Privilege Level** view

**List of Sample Output** **mtrace from-source** on page 114

**Output Fields** Table 29 on page 113 describes the output fields for the **mtrace from-source** command. Output fields are listed in the approximate order in which they appear.

**Table 29: mtrace from-source Output Fields**

Field Name	Field Description
<b>Mtrace from</b>	IP address of the receiver.
<b>to</b>	IP address of the source.
<b>via group</b>	IP address of the multicast group (if any).
<b>Querying full reverse path</b>	Indicates the full reverse path query has begun.
<i>number-of-hops</i>	Number of hops from the source to the named router or switch.
<i>router-name</i>	Name of the router or switch for this hop.
<i>address</i>	Address of the router or switch for this hop.
<i>protocol</i>	Protocol used (for example, PIM).
<b>Round trip time</b>	Average round-trip time, in milliseconds (ms).
<b>total ttl of</b>	Time-to-live (TTL) threshold.
<b>source</b>	Source address.
<b>Response Dest</b>	Response destination address.
<b>Overall</b>	Average packet rate for all traffic at each hop.
<b>Packet Statistics for Traffic From</b>	Number of packets lost, number of packets sent, percentage of packets lost, and average packet rate at each hop.

Table 29: mtrace from-source Output Fields (*continued*)

Field Name	Field Description
Receiver	IP address receiving the multicast.
Query source	IP address sending the mtrace query.

## Sample Output

```

mtrace from-source user@host> mtrace from-source source 192.1.4.2 group 225.1.1.1
Mtrace from 192.1.4.2 to 192.1.1.2 via group 225.1.1.1
Querying full reverse path... * *
  0 routerA.lab.mycompany.net (192.1.1.2)
 -1 routerB.lab.mycompany.net (192.1.2.2) PIM thresh^ 1
 -2 routerC.lab.mycompany.net (192.1.3.2) PIM thresh^ 1
 -3 hostA.lab.mycompany.net (192.1.4.2)
Round trip time 2 ms; total ttl of 2 required.

Waiting to accumulate statistics...Results after 10 seconds:

Source      Response Dest   Overall   Packet Statistics For Traffic From
192.1.4.2 192.1.1.2  Packet    192.1.4.2 To 225.1.1.1
      v    ___/ rtt    2 ms    Rate    Lost/Sent = Pct  Rate
192.1.2.1
192.1.3.2 routerC.lab.mycompany.net
      v    ^      ttl    2          0/0    = --    0 pps
192.1.4.1
192.1.2.2 routerB.lab.mycompany.net
      v    \__  ttl    3          ?/0          0 pps
192.1.1.2 192.1.1.2
Receiver      Query Source

```

## mtrace monitor

<b>Syntax</b>	mtrace monitor
<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>	Listen passively for IP multicast responses. To exit <b>mtrace monitor</b> , type Ctrl+c.
<b>Options</b>	none—Trace the master instance.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>mtrace monitor on page 116</b>
<b>Output Fields</b>	Table 30 on page 115 describes the output fields for the <b>mtrace monitor</b> command. Output fields are listed in the approximate order in which they appear.

**Table 30: mtrace monitor Output Fields**

Field Name	Field Description
<b>Mtrace query at</b>	Date and time of the query.
<b>by</b>	Address of the host issuing the query.
<b>resp to</b>	Response destination.
<b>qid</b>	Query ID number.
<b>packet from...to</b>	IP address of the query source and default group destination.
<b>from...to</b>	IP address of the multicast source and the response address.
<b>via group</b>	IP address of the group to trace.
<b>mxhop</b>	Maximum hop setting.

## Sample Output

```
mtrace monitor user@host> mtrace monitor
Mtrace query at Oct 22 13:36:14 by 192.1.3.2, resp to 224.0.1.32, qid 74a5b8
packet from 192.1.3.2 to 224.0.0.2
from 192.1.3.2 to 192.1.3.38 via group 224.1.1.1 (mxhop=60)

Mtrace query at Oct 22 13:36:17 by 192.1.3.2, resp to 224.0.1.32, qid 1d07ba
packet from 192.1.3.2 to 224.0.0.2
from 192.1.3.2 to 192.1.3.38 via group 224.1.1.1 (mxhop=60)

Mtrace query at Oct 22 13:36:20 by 192.1.3.2, resp to same, qid 2fea1d
packet from 192.1.3.2 to 224.0.0.2
from 192.1.3.2 to 192.1.3.38 via group 224.1.1.1 (mxhop=60)

Mtrace query at Oct 22 13:36:30 by 192.1.3.2, resp to same, qid 7c88ad
packet from 192.1.3.2 to 224.0.0.2
from 192.1.3.2 to 192.1.3.38 via group 224.1.1.1 (mxhop=60)
```

## mtrace to-gateway

**Syntax** `mtrace to-gateway gateway gateway`  
`<brief | detail>`  
`<extra-hops extra-hops>`  
`<group group>`  
`<interface interface-name>`  
`<interval interval>`  
`<loop>`  
`<max-hops max-hops>`  
`<max-queries max-queries>`  
`<multicast-response | unicast-response>`  
`<no-resolve>`  
`<no-router-alert>`  
`<response response>`  
`<routing-instance routing-instance-name>`  
`<tll ttl>`  
`<unicast-response>`  
`<wait-time wait-time>`

**Release Information** Command introduced before Junos OS Release 7.4.  
 Command introduced in Junos OS Release 9.0 for EX Series switches.

**Description** Display trace information about a multicast path from this router or switch to a gateway router or switch.

**Options** `gateway gateway`—Send the trace query to a gateway multicast address.

`brief | detail`—(Optional) Display the specified level of output.

`extra-hops extra-hops`—(Optional) Number of hops to take after reaching a nonresponsive router or switch. You can specify a number between **0** and **255**.

`group group`—(Optional) Group address for which to trace the path. The default group address is **0.0.0.0**.

`interface interface-name`—(Optional) Source address for sending the trace query.

`interval interval`—(Optional) Number of seconds to wait before gathering statistics again. The default value is **10**.

`loop`—(Optional) Loop indefinitely, displaying rate and loss statistics.

`max-hops max-hops`—(Optional) Maximum hops to trace toward the source. You can specify a number between **0** and **255**. The default value is **32**.

`max-queries max-queries`—(Optional) Maximum number of query attempts for any hop. You can specify a number between **0** and **255**. The default value is **3**.

`multicast-response`—(Optional) Always request the response using multicast.

`no-resolve`—(Optional) Do not attempt to display addresses symbolically.

no-router-alert—(Optional) Do not use the router-alert IP option.

response *response*—(Optional) Send trace response to a host or multicast address.

routing-instance *routing-instance-name*—(Optional) Trace a particular routing instance.

ttl *tll*—(Optional) IP time-to-live value. You can specify a number between 0 and 225.  
Local queries to the multicast group use TTL 1. Otherwise, the default value is 127.

unicast-response—(Optional) Always request the response using unicast.

wait-time *wait-time*—(Optional) Number of seconds to wait for a response. The default value is 3.

**Required Privilege Level** view

**List of Sample Output** mtrace to-gateway on page 118

**Output Fields** Table 31 on page 118 describes the output fields for the **mtrace to-gateway** command. Output fields are listed in the approximate order in which they appear.

**Table 31: mtrace to-gateway Output Fields**

Field Name	Field Description
Mtrace from	IP address of the receiver.
to	IP address of the source.
via group	IP address of the multicast group (if any).
Querying full reverse path	Indicates the full reverse path query has begun.
<i>number-of-hops</i>	Number of hops from the source to the named router or switch.
<i>router-name</i>	Name of the router or switch for this hop.
<i>address</i>	Address of the router or switch for this hop.
<i>protocol</i>	Protocol used (for example, PIM).
Round trip time	Average round-trip time, in milliseconds (ms).
total ttl of	Time-to-live (TTL) threshold.

## Sample Output

**mtrace to-gateway** user@host> mtrace to-gateway gateway 192.1.3.2 group 225.1.1.1 interface 192.1.1.73 brief

```
Mtrace from 192.1.1.73 to 192.1.1.2 via group 225.1.1.1
Querying full reverse path... * *
0 routerA.lab.mycompany.net (192.1.1.2)
```

```
-1 routerA.lab.mycompany.net (192.1.1.2) PIM thresh^ 1
-2 routerB.lab.mycompany.net (192.1.2.2) PIM thresh^ 1
-3 routerC.lab.mycompany.net (192.1.3.2) PIM thresh^ 1
Round trip time 2 ms; total ttl of 3 required.
```

## traceroute

---

**Syntax** `traceroute host`  
    `<as-number-lookup>`  
    `<bypass-routing>`  
    `<clns>`  
    `<gateway address>`  
    `<inet | inet6>`  
    `<interface interface-name>`  
    `<logical system (all | logical-system-name)>`  
    `<mpls (ldp FEC address | rsvp label-switched-path-name)>`  
    `<no-resolve>`  
    `<routing-instance routing-instance-name>`  
    `<source source-address>`  
    `<tos value>`  
    `<ttl value>`  
    `<wait seconds>`

**Syntax (QFX Series)** `traceroute host`  
    `<as-number-lookup>`  
    `<bypass-routing>`  
    `<gateway address>`  
    `<inet>`  
    `<interface interface-name>`  
    `<monitor> host`  
    `<no-resolve>`  
    `<routing-instance routing-instance-name>`  
    `<source source-address>`  
    `<tos value>`  
    `<ttl value>`  
    `<wait seconds>`

**Release Information** Command introduced before Junos OS Release 7.4.  
Command introduced in Junos OS Release 9.0 for EX Series switches.  
**mpls** option introduced in Junos OS Release 9.2.  
Command introduced in Junos OS Release 11.1 for the QFX Series.

**Description** Display the route that packets take to a specified network host. Use **traceroute** as a debugging tool to locate points of failure in a network.

**Options** *host*—IP address or name of remote host.

*as-number-lookup*—(Optional) Display the autonomous system (AS) number of each intermediate hop on the path from the host to the destination.

*bypass-routing*—(Optional) Bypass the normal routing tables and send requests directly to a system on an attached network. If the system is not on a directly attached network, an error is returned. Use this option to display a route to a local system through an interface that has no route through it.

*clns*—(Optional) Trace the route belonging to Connectionless Network Service (CLNS).



*gateway address*—(Optional) Address of a router or switch through which the route transits.

*inet | inet6*—(Optional) Trace the route belonging to IPv4 or IPv6, respectively.

*interface interface-name*—(Optional) Name of the interface over which to send packets.

*logical-system (all | logical-system-name)*—(Optional) Perform this operation on all logical systems or on a particular logical system.

*monitor host*—(Optional) Display real-time monitoring information for the specified host.

*mpls (ldp FEC address | rsvp label-switched-path name)*—(Optional) Analyze the status of LDP-signaled or RSVP-signaled MPLS label-switched paths (LSPs). You can optionally specify the forward equivalence class (FEC) address for the LDP LSP or the LSP name for RSVP. You can also analyze a specific LSP by issuing the **traceroute mpls rsvp lsp-name** command. You can only analyze IPv4 point-to-point LSPs. IPv6 is not supported.

*no-resolve*—(Optional) Do not attempt to determine the hostname that corresponds to the IP address.

*routing-instance routing-instance-name*—(Optional) Name of the routing instance for the traceroute attempt.

*source source-address*—(Optional) Source address of the outgoing traceroute packets.

*tos value*—(Optional) Value to include in the IP type-of-service (ToS) field. The range of values is 0 through 255.

*ttl value*—(Optional) Maximum time-to-live value to include in the traceroute request. The range of values is 0 through 128.

*wait seconds*—(Optional) Maximum time to wait for a response to the traceroute request.

**Required Privilege Level** network

**Related Documentation** • [traceroute monitor on page 124](#)

**List of Sample Output** [traceroute on page 122](#)  
[traceroute as-number-lookup host on page 122](#)  
[traceroute no-resolve on page 122](#)  
[traceroute \(Between CE Routers, Layer 3 VPN\) on page 122](#)  
[traceroute \(Through an MPLS LSP\) on page 122](#)

**Output Fields** Table 32 on page 122 describes the output fields for the **traceroute** command. Output fields are listed in the approximate order in which they appear.

Table 32: traceroute Output Fields

Field Name	Field Description
<b>traceroute to</b>	IP address of the receiver.
<b>hops max</b>	Maximum number of hops allowed.
<b>byte packets</b>	Size of packets being sent.
<b>number-of-hops</b>	Number of hops from the source to the named router or switch.
<b>router-name</b>	Name of the router or switch for this hop.
<b>address</b>	Address of the router or switch for this hop.
<b>Round trip time</b>	Average round-trip time, in milliseconds (ms).

## Sample Output

```

traceroute      user@host> traceroute santacruz
traceroute to green.company.net (10.156.169.254), 30 hops max, 40 byte packets
 1 blue23 (10.168.1.254)  2.370 ms  2.853 ms  0.367 ms
 2 red14 (10.168.255.250) 0.778 ms  2.937 ms  0.446 ms
 3 yellow (10.156.169.254) 7.737 ms  89.905 ms  0.834 ms

traceroute      user@host> traceroute as-number-lookup 10.100.1.1
as-number-lookup traceroute to 10.100.1.1 (10.100.1.1), 30 hops max, 40 byte packets
host             1 10.39.1.1 (10.39.1.1) 0.779 ms  0.728 ms  0.562 ms
                  2 10.39.1.6 (10.39.1.6) [AS 32] 0.657 ms  0.611 ms  0.617 ms
                  3 10.100.1.1 (10.100.1.1) [AS 10, 40, 50] 0.880 ms  0.808 ms  0.774 ms

traceroute no-resolve user@host> traceroute santacruz no-resolve
traceroute to green.company.net (10.156.169.254), 30 hops max, 40 byte packets
 1 10.168.1.254 0.458 ms  0.370 ms  0.365 ms
 2 10.168.255.250 0.474 ms  0.450 ms  0.444 ms
 3 10.156.169.254 0.931 ms  0.876 ms  0.862 ms

traceroute (Between user@host> traceroute vpn09
CE Routers, Layer 3 traceroute to vpn09.skybank.net (10.255.14.179), 30 hops max, 40
VPN)                byte packets
                  1 10.39.10.21 (10.39.10.21) 0.598 ms  0.500 ms  0.461 ms
                  2 10.39.1.13 (10.39.1.13) 0.796 ms  0.775 ms  0.806 ms
                     MPLS Label=100006 CoS=0 TTL=1 S=1
                  3 vpn09.skybank.net (10.255.14.179) 0.783 ms  0.716 ms  0.686

traceroute      user@host> traceroute mpls1
(Through an MPLS traceroute to 10.168.1.224 (10.168.1.224), 30 hops max, 40 byte packets
LSP)           1 mpls1-sr0.company.net (10.168.200.101) 0.555 ms  0.393 ms  0.367 ms
                     MPLS Label=1024 CoS=0 TTL=1

```

```
2  mpls5-to0.company.net (10.168.1.224)  0.420 ms  0.394 ms  0.401 ms
```

## traceroute monitor

<b>Syntax</b>	<pre>traceroute monitor <i>host</i> &lt;count <i>value</i>&gt; &lt;inet   inet 6&gt; &lt;interval <i>seconds</i>&gt; &lt;no resolve&gt; &lt;size <i>value</i>&gt; &lt;source <i>source-address</i>&gt; &lt;summary&gt;</pre>
<b>Syntax (QFX Series)</b>	<pre>traceroute monitor <i>host</i> &lt;count <i>value</i>&gt; &lt;inet&gt; &lt;interval <i>seconds</i>&gt; &lt;no resolve&gt; &lt;size <i>value</i>&gt; &lt;source <i>source-address</i>&gt; &lt;summary&gt;</pre>
<b>Release Information</b>	<p>Command introduced in Junos OS Release 8.0</p> <p>Command introduced in Junos OS Release 11.1 for the QFX Series.</p>
<b>Description</b>	Display live monitoring of each hop in the route that packets take to a specified network host. Use as a debugging tool to locate points of failure in a network.
<b>Options</b>	<p><i>host</i>—IP address or name of remote host.</p> <p><i>count value</i>—Number of ping requests, in packets, to send in summary mode. The default value is <b>10</b>.</p> <p><i>inet   inet6</i>—(Optional) Trace the route belonging to IPv4 or IPv6, respectively.</p> <p><i>interval seconds</i>—(Optional) Number of seconds to wait before sending ping requests. The default value is <b>1</b>.</p> <p><i>no resolve</i>—(Optional) Do not attempt to display addresses symbolically.</p> <p><i>size value</i>—(Optional) Receive the specified number of bytes for each packet. The range is <b>0</b> through <b>65468</b> bytes. The default value is <b>64</b>.</p> <p><i>source source-address</i>—(Optional) Source address of the outgoing ping packets.</p> <p><i>summary</i>—(Optional) Generate and display a summary of live monitoring of each hop on the route that packets take to a specified network host.</p>
<b>Required Privilege Level</b>	network
<b>List of Sample Output</b>	<b>traceroute monitor on page 125</b>
<b>Output Fields</b>	Table 33 on page 125 describes the output fields for the <b>traceroute monitor</b> command. Output fields are listed in the approximate order in which they appear.

Table 33: traceroute monitor Output Fields

Field Name	Field Description
<b>Host</b>	Hostname or IP address of the router at each hop.
<b>Loss%</b>	Percent of packet loss. The number of ping responses divided by the number of ping requests, specified as a percentage.
<b>Snt</b>	Number of ping requests sent to the router at this hop.
<b>Last</b>	Most recent round-trip time, in milliseconds, to the router at this hop.
<b>Avg</b>	Average round-trip time, in milliseconds, to the router at this hop.
<b>Best</b>	Shortest round-trip time, in milliseconds, to the router at this hop.
<b>Wrst</b>	Longest round-trip time, in milliseconds, to the router at this hop.
<b>StDev</b>	Standard deviation of round-trip times, in milliseconds, to the router at this hop.

## Sample Output

```
traceroute monitor user@host> traceroute monitor 10.16.0.1
```

	Loss%	Snt	Last	Avg	Best	Wrst	StDev
Host							
1. 10.17.41.254	0.0%	17	0.7	1.0	0.6	5.4	1.2
2. secret.net	0.0%	17	0.6	1.0	0.6	6.6	1.4
3. top-secret.net	0.0%	17	0.6	0.6	0.6	0.6	0.0

## traceroute mpls ldp

---

**Syntax**    `traceroute mpls <ldp> fec`  
              `<destination>`  
              `<detail>`  
              `<exp>`  
              `<fanout>`  
              `<logical-system>`  
              `<no-resolve>`  
              `<paths>`  
              `<retries>`  
              `<routing-instance>`  
              `<source>`  
              `<ttl>`  
              `<update>`  
              `<wait>`

**Release Information**    Command introduced in Junos OS Release 8.4.

**Description**    Trace route to a remote host for an MPLS label-switched path signaled by the LDP. Use **traceroute mpls ldp** as a debugging tool to locate MPLS label-switched path forwarding issues in a network. (Currently supported for IPv4 packets only.)

**Options**    *fec*—Specify the IP address and optional prefix of the forwarding equivalence class (FEC).  
  
              *destination*—(Optional) Specify the destination address to use when sending probes.  
  
              *detail*—(Optional) Display detailed output.  
  
              *exp*—(Optional) Specify the class-of-service to use when sending probes. The range of values is **0** through **7**. The default value is **7**.  
  
              *fanout*—(Optional) Specify the maximum number of nexthops to search per node. The range of values is **1** through **16**. The default value is **16**.  
  
              *logical-system*—(Optional) Specify the name of the logical system for the traceroute attempt.  
  
              *no-resolve*—(Optional) Specify not to resolve the hostname that corresponds to the IP address.  
  
              *paths*—(Optional) Specify the number of paths to search. The range of values is **1** through **255**. The default value is **16**.  
  
              *retries*—(Optional) Specify the number of times to resend probe. values. The range of values is **1** through **9**. The default value is **3**.  
  
              *routing-instance* *routing-instance-name*—(Optional) Specify the name of the routing instance for the traceroute attempt.  
  
              *source* *source-address*—(Optional) Specify the source address of the outgoing traceroute packets.

**ttl value**—(Optional) Specify the maximum time-to-live value to include in the traceroute request, in seconds. The range of values is **1** through **125** and the default value is **64**.

**wait seconds**—(Optional) Specify the number of seconds to wait before resending a probe. The range of values is **5** through **15** and the default value is **10** seconds.

**Required Privilege Level** network

**List of Sample Output** **traceroute mpls ldp** on page 128  
**traceroute mpls ldp detail** on page 128

**Output Fields** Table 34 on page 127 describes the output fields for the **traceroute mpls ldp fec** command and the **traceroute mpls ldp fec detail** commands. Output fields are listed in the approximate order in which they appear.

**Table 34: traceroute mpls ldp Output Fields**

Field Name	Field Description	Level of Output
Probe options	Probe options specified in the <b>traceroute mpls ldp fec</b> command.	all levels
ttl	Time to live value of the labeled packet.	none specified
Label	Outgoing label used for forwarding the packet along the label-switched paths.	none specified
Protocol	Signaling protocol used. For this command, it is LDP.	none specified
Address	Address of the next hop.	none specified
Previous Hop	Address of the previous hop. Previous hop address of the first hop is <b>null</b> .	none specified
Probe status	Forwarding status from the first hop to the last-hop label-switching router (egress point in the label-switched paths).	none specified
Hop	Address of the hops in the label-switched path from the first hop to the last hop. Depth indicates the level of the hop.	<b>detail</b>
Parent	Address of the previous hop. Parent value for the first hop is <b>null</b> .	<b>detail</b>
Return Code	Return code for reporting the result of processing the echo request by the receiver.	<b>detail</b>
Response time	Time for the echo request to reach the receiver.	<b>detail</b>
Multipath type	Labels or addresses used by the specified multipath type. If multipaths are not used, the value is <b>none</b> .	<b>detail</b>

Table 34: traceroute mpls ldp Output Fields (*continued*)

Field Name	Field Description	Level of Output
Label Stack	Label stack used to forward the packet.	<b>detail</b>

## Sample Output

```

traceroute mpls ldp user@router> traceroute mpls ldp 4.4.4.4

Probe options: ttl 64, retries 3, wait 10, paths 16, exp 7, fanout 16
ttl  Label Protocol Address Previous Hop Probe Status
  1   100016 LDP      24.24.24.1 (null)      Success
  2   100000 LDP      20.20.20.2 24.24.24.1 Success
  3         3 LDP      22.22.22.4 20.20.20.2 Egress

Path 1 via fe-0/3/3.101 destination 127.0.0.64

traceroute mpls ldp user@router> traceroute mpls ldp 4.4.4.4 detail
detail

Probe Options: ttl 64, retries 3, wait 10, paths 3, exp 7
Hop 24.24.24.1 Depth 1
  Parent (null)
  Return code: Label switched at stack-depth 1
  Response time 165.93 msec
  Multipath type: IP bitmask
    Address Range 1: 127.0.0.0 ~ 127.0.3.255
  Label Stack:
    Label 1 Value 100032 Protocol LDP

Hop 20.20.20.2 Depth 2
  Parent 24.24.24.1
  Return code: Upstream interface index unknown label-switched at stack-depth
1
  Response time 19.05 msec
  Multipath type: IP bitmask
    Address Range 1: 127.0.0.0 ~ 127.0.3.255
  Label Stack:
    Label 1 Value 100000 Protocol LDP

Hop 22.22.22.4 Depth 3
  Parent 20.20.20.2
  Return code: Egress-ok at stack-depth 1
  Response time 0.79 msec
  Multipath type: None
  Label Stack:
    Label 1 Value 3 Protocol LDP

```



## traceroute mpls rsvp

**Syntax** `traceroute mpls <rsvp> lsp-name`  
`<detail>`  
`<exp>`  
`<logical-system>`  
`<no-resolve>`  
`<retries>`  
`<source source-address>`

**Release Information** Command introduced in Junos OS Release 9.2.

**Description** Trace route to a remote host for an MPLS LSP signaled by RSVP. Use **traceroute mpls rsvp** as a debugging tool to locate MPLS label-switched path (LSP) forwarding issues in a network. (Currently supported for IPv4 packets only.)

**Options** *lsp-name*—Specify the name of the LSP to be traced.

*detail*—(Optional) Display detailed output.

*exp*—(Optional) Specify the class-of-service to use when sending probes. The range of values is 0 through 7. The default value is 7.

*logical-system*—(Optional) Specify the name of the logical system for the traceroute attempt.

*no-resolve*—(Optional) Specify not to resolve the hostname that corresponds to the IP address.

*retries*—(Optional) Specify the number of times to resend probe. The range of values is 1 through 9. The default value is 3.

*source source-address*—(Optional) Specify the source address of the outgoing traceroute packets.

**Required Privilege Level** network

**List of Sample Output** **traceroute mpls rsvp on page 130**  
**traceroute mpls rsvp detail on page 131**

**Output Fields** Table 35 on page 129 describes the output fields for the **traceroute mpls rsvp *lsp-name*** and **traceroute mpls rsvp *lsp-name* detail** commands. Output fields are listed in the approximate order in which they appear.

**Table 35: traceroute mpls rsvp Output Fields**

Field Name	Field Description	Level of Output
Probe options	Probe options specified in the <b>traceroute mpls rsvp <i>lsp-name</i></b> command.	all levels
ttl	Time to live value of the labeled packet.	none specified

Table 35: traceroute mpls rsvp Output Fields (*continued*)

Field Name	Field Description	Level of Output
Label	MPLS label used to forward the packets along the LSP.	none specified
Protocol	Signaling protocol used. For this command, it is RSVP-TE.	none specified
Address	Address of the next hop.	none specified
Previous Hop	Address of the previous hop. Previous hop address of the first hop is <b>null</b> .	none specified
Probe status	Forwarding status from the first hop to the last-hop label-switching router (egress point in the label-switched paths).	none specified
Hop	Address of the hops in the label-switched path from the first hop to the last hop. Depth indicates the level of the hop.	<b>detail</b>
Parent	Address of the previous hop. Parent value for the first hop is <b>null</b> .	<b>detail</b>
Return Code	Return code for reporting the result of processing the echo request by the receiver.	<b>detail</b>
Sender timestamp	Display the timestamp when the MPLS echo request is sent to the next hop.	<b>detail</b>
Receiver timestamp	Timestamp when the echo request from the previous hop is received and acknowledged with an echo response by the next hop.	<b>detail</b>
Response time	Time for the echo request to reach the receiver.	<b>detail</b>
MTU	Size of the largest packet that includes the label stack forwarded to the next hop.	<b>detail</b>
Multipath type	Labels or addresses used by the specified multipath type. If multipaths are not used, the value is <b>none</b> .	<b>detail</b>
Label stack	Label stack used to forward the packet.	<b>detail</b>

## Sample Output

```
traceroute mpls rsvp user@host> traceroute mpls rsvp lsp-chicago-atlanta
```

```
Probe options: retries 3, exp 7
```

ttl	Label	Protocol	Address	Previous Hop	Probe Status
1	299792	RSVP-TE	192.168.1.2	(null)	Success
2	299803	RSVP-TE	192.168.2.3	192.168.1.2	Success

3	3	RSVP-TE	192.168.3.4	192.168.2.3	Egress
---	---	---------	-------------	-------------	--------

Path 1 via ge-0/0/0.1 destination 127.0.0.64

```
tracroute mpls rsvp user@host> tracroute mpls rsvp lsp-chicago-atlanta detail
detail Probe options: retries 3, exp 7
```

```
Hop 192.168.1.2 Depth 1
  Probe status: Success
  Parent: (null)
  Return code: Label-switched at stack-depth 1
  Sender timestamp: 2008-04-17 09:35:27 EDT 400.88 msec
  Receiver timestamp: 2008-04-17 09:35:27 EDT 427.87 msec
  Response time: 26.99 msec
  MTU: Unknown
  Multipath type: IP bitmask
    Address Range 1: 127.0.0.64 ~ 127.0.0.127
  Label Stack:
    Label 1 Value 299792 Protocol RSVP-TE
```

```
Hop 192.168.2.3 Depth 2
  Probe status: Success
  Parent: 192.168.1.2
  Return code: Upstream interface index unknown label-switched at stack-depth
1
  Sender timestamp: 2008-04-17 09:35:27 EDT 522.13 msec
  Receiver timestamp: 2008-04-17 09:35:27 EDT 548.69 msec
  Response time: 26.55 msec
  MTU: 1518
  Multipath type: IP bitmask
    Address Range 1: 127.0.0.64 ~ 127.0.0.127
  Label Stack:
    Label 1 Value 299803 Protocol RSVP-TE
```



## PART 2

# System Management

- Accounting Operational Mode Commands on page 135
- Chassis Operational Mode Commands on page 157
- Command-Line Interface Operational Mode Commands on page 531
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## CHAPTER 6

# Accounting Operational Mode Commands

Table 36 on page 135 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot the Link Layer Discovery Protocol (LLDP) protocol. Commands are listed in alphabetical order.

**Table 36: Accounting Operational Mode Commands**

Task	Command
Clear LLDP neighbor information.	<code>clear lldp neighbor</code>
Clear LLDP statistics.	<code>clear lldp statistics</code>
Display basic LLDP information.	<code>show lldp</code>
Display LLDP local information.	<code>show lldp local-information</code>
Display LLDP neighbor information.	<code>show lldp neighbors</code>
Display LLDP remote global statistics.	<code>show lldp remote-global-statistics</code>
Display LLDP statistics.	<code>show lldp statistics</code>
Display accounting profile information.	<code>show accounting profile</code>
Display accounting records for the specified accounting profile.	<code>show accounting records</code>

## clear lldp neighbor

---

<b>Syntax</b>	<code>clear lldp neighbor</code> <code>&lt;interface <i>interface-name</i>&gt;</code>
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	On MX Series routers, clear information regarding all Link Layer Discovery Protocol (LLDP) neighbors or LLDP neighbors of the specified interface.
<b>Options</b>	<code>interface <i>interface-name</i></code> —(Optional) Clear the LLDP neighbors on the specified interface.
<b>Required Privilege Level</b>	clear
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">clear lldp statistics on page 137</a></li></ul>
<b>List of Sample Output</b>	<a href="#">clear lldp statistics on page 136</a>
<b>Output Fields</b>	When you enter this command, you are provided no feedback on the status of your request. You can enter the <b>show lldp neighbors</b> command before and after clearing the LLDP neighbors to verify the clear operation.

## Sample Output

```
clear lldp statistics  user@host> clear lldp statistics
                        user@host> clear lldp statistics interface ge-0/2/0
```



## clear lldp statistics

---

<b>Syntax</b>	<code>clear lldpp neighbor</code> <code>&lt;interface <i>interface-name</i>&gt;</code>
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	On MX Series routers, clear all Link Layer Discovery Protocols (LLDP) statistics or LLDP statistics associated with the specified interface.
<b>Options</b>	<code>interface <i>interface-name</i></code> —(Optional) Clear LLDP statistics on the specified interface.
<b>Required Privilege Level</b>	clear
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">clear lldp neighbor on page 136</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">clear lldp neighbor on page 137</a>
<b>Output Fields</b>	When you enter this command, you are provided no feedback on the status of your request. You can enter the <b>show lldp statistics</b> command before and after clearing the LLDP statistics to verify the clear operation.

## Sample Output

```
clear lldp neighbor  user@host> clear lldp neighbors
                    user@host> clear lldp neighbors interface ge-0/2/2
```

## show lldp

<b>Syntax</b>	show lldp <detail>
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	On MX Series routers, display information about the Link Layer Discovery Protocol (LLDP).
<b>Options</b>	detail—(Optional) Display the detailed output level.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show lldp on page 139 show lldp detail on page 139
<b>Output Fields</b>	Table 37 on page 138 describes the output fields for the <b>show lldp</b> command. Output fields are listed in the approximate order in which they appear.

**Table 37: show lldp Output Fields**

Field Name	Field Description
LLDP	Status of LLDP: <b>Enabled</b> or <b>Disabled</b> .
Advertisement interval	Value of the advertisement interval parameter.
Transmit delay	Value of the transmit delay parameter.
Hold timer	Value of the hold timer parameter.
Notification interval	Value of the notification interval parameter.
Config Trap Interval	Value of the configuration trap parameter.
Connection Hold timer	Value of the connection hold timer parameter.
Interface	List of LLDP interfaces, showing status ( <b>Enabled</b> or <b>Disabled</b> ) and <b>Neighbor count</b> ( <b>detail</b> only).
LLDP basic TLVs supported	List of basic LLDP TLVs supported by this device ( <b>detail</b> only).
LLDP 802 TLVs supported	List of IEEE 802.1 LLDP TLVs supported by this device ( <b>detail</b> only).

## Sample Output

```

user@host> show lldp
LLDP : Enabled
Advertisement interval : 30 Second(s)
Transmit delay : 2 Second(s)
Hold timer : 4 Second(s)
Notification interval : 30 Second(s)
Config Trap Interval : 300 Second(s)
Connection Hold timer : 60 Second(s)

Interface      LLDP
ge-0/0/0       Enabled
ge-0/0/1       Enabled
ge-0/0/4       Enabled

```

## Sample Output

```

user@host> show lldp detail
LLDP : Enabled
Advertisement interval : 30 Second(s)
Transmit delay : 2 Second(s)
Hold timer : 4 Second(s)
Notification interval : 30 Second(s)
Config Trap Interval : 300 Second(s)
Connection Hold timer : 60 Second(s)

Interface      LLDP      Neighbor count
ge-0/0/0       Enabled   0
ge-0/0/1       Enabled   0
ge-0/0/4       Enabled   0

LLDP basic TLVs supported:
Chassis identifier, Port identifier, Port description, System name, System
description, System capabilities, Management address.

LLDP 802 TLVs supported:
Link aggregation, Maximum frame size, MAC/PHY Configuration/Status, Port VLAN ID,
Port VLAN name.

```

## show lldp local-information

<b>Syntax</b>	show lldp local-information
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	On MX Series routers, display local Link Layer Discovery Protocol (LLDP) information.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show lldp local-information on page 141
<b>Output Fields</b>	Table 38 on page 140 describes the output fields for the <b>show lldp local-information</b> command. Output fields are listed in the approximate order in which they appear.

**Table 38: show lldp local-information Output Fields**

Field Name	Field Description
<b>LLDP Local Information details</b>	Information that follows pertains to the local system.
<b>Chassis ID</b>	List of chassis identifiers for local information.
<b>System name</b>	Local system name reported by LLDP.
<b>System descr</b>	Local system description reported by LLDP.
<b>System Capabilities</b>	Capabilities (such as <b>Bridge</b> or <b>Router</b> ) that are <b>Supported</b> or <b>Enabled</b> by system on the interface.
<b>Management Information</b>	Listed by <b>Interface Name</b> , <b>Address Subtype</b> (such as <b>ipv4</b> ), <b>Address</b> (such as <b>192.168.168.229</b> ), <b>Interface Number</b> , and <b>Interface Numbering Subtype</b> .
<b>Interface Name</b>	List of local interfaces.
<b>Interface ID</b>	List of local interface identifiers.
<b>Interface Description</b>	List of local interface descriptions.
<b>Status</b>	List of interface conditions: <b>UP</b> or <b>DOWN</b> .

## Sample Output

```

show lldp local-information user@host> show lldp local-information
LLDP Local Information details

Chassis ID   : 00:90:69:0a:77:c0
System name  : sw-mx-u
System descr : Juniper Networks, Inc. MX 960, Version 9.4IO.1, Build date
                2008-09-04 14:51:50 UTC

System Capabilities
  Supported   : Bridge Router
  Enabled     : Bridge Router

Management Information
  Interface Name : fxp0
  Address Subtype : IPv4(1)
  Address        : 192.168.168.229
  Interface Number : 1
  Interface Numbering Subtype : ifIndex(2)

Interface Name      Interface ID      Interface Description      Status
ge-0/1/0            18              Avaya Port                UP
ge-0/1/1            27              -                          DOWN
ge-0/1/2            13              Port for Hub              UP

```

## show lldp neighbors

<b>Syntax</b>	show lldp neighbors <interface <i>interface-name</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	On MX Series routers, display information about LLDP neighbors.
<b>Options</b>	interface <i>interface-name</i> —(Optional) Display the neighbor information about a particular physical interface.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>clear lldp neighbor on page 136</li> </ul>
<b>List of Sample Output</b>	show lldp neighbors on page 144 show lldp neighbors interface ge-0/0/4 on page 144
<b>Output Fields</b>	Table 39 on page 142 describes the output fields for the <b>show lldp neighbors</b> command. Output fields are listed in the approximate order in which they appear.

**Table 39: show lldp neighbors Output Fields**

Field Name	Field Description
LLDP Remote Devices Information	Information about remote devices.
LocalInterface	List of local interfaces for which neighbor information is available.
ChassisId	List of chassis identifiers for neighbors.
PortInfo	List of port information gathered from neighbors. This could be the port identifier or port description.
SysName	List of system names gathered from neighbors.
LLDP Neighbor Information	Information about both local and neighbor systems on the interface (appears when the <b>interface</b> option is used).
Local Information	Information about local systems on the interface (appears when the <b>interface</b> option is used).
Neighbor Information	Information about both local and neighbor system on the interface (appears when the <b>interface</b> option is used).
Index	Local interface index (appears when the <b>interface</b> option is used).

Table 39: show lldp neighbors Output Fields (*continued*)

Field Name	Field Description
<b>Time Mark</b>	Date and timestamp of information (appears when the <b>interface</b> option is used).
<b>Time To Live</b>	Number of seconds for which this information is valid (appears when the <b>interface</b> option is used).
<b>Local Interface</b>	Name of the local physical interface (appears when the <b>interface</b> option is used).
<b>Local Port ID</b>	Local port identifier (appears when the <b>interface</b> option is used).
<b>Neighbor Information</b>	Information about neighbor systems on the interface (appears when the <b>interface</b> option is used).
<b>Chassis type</b>	Type of chassis identifier supplied, such as <b>MAC address</b> (appears when the <b>interface</b> option is used).
<b>Chassis ID</b>	Chassis identifier of type listed (appears when the <b>interface</b> option is used).
<b>Port type</b>	Type of port identifier supplied, such as <b>local</b> (appears when the <b>interface</b> option is used).
<b>Port ID</b>	Port identifier of type listed (appears when the <b>interface</b> option is used).
<b>Port description</b>	Port description (appears when the <b>interface</b> option is used).
<b>System name</b>	Name supplied by the system on the interface (appears when the <b>interface</b> option is used).
<b>System Description</b>	Description supplied by the system on the interface (appears when the <b>interface</b> option is used).
<b>System Capabilities</b>	Capabilities (such as <b>bridge</b> or <b>router</b> ) that are <b>Supported</b> or <b>Enabled</b> by the system on the interface (appears when the <b>interface</b> option is used).
<b>Management address</b>	Details of the management address: <b>Address Type</b> (such as <b>ipv4</b> ), <b>Address</b> (such as <b>10.204.34.35</b> ), <b>Interface Number</b> , <b>Interface Subtype</b> , and <b>Organization Identifier (OID)</b> (appears when the <b>interface</b> option is used).
<b>Organization Info</b>	One or more entries listing remote information by Organizationally Unique Identifier (OUI), <b>Subtype</b> , <b>Index</b> , and <b>Info</b> (appears when the <b>interface</b> option is used).

## Sample Output

```

show lldp neighbors      user@host> show lldp neighbors
                          LLDP Remote Devices Information

                          LocalInterface  ChassisId          PortInfo          SysName
                          ge-0/0/0       10.209.192.12      00 19 bb 20 de 80 AVA4C357D
                          ge-0/0/1       10.209.192.12      00 19 bb 20 de 80 AVA4C357D
                          ge-0/0/1       10.209.192.13      00 19 bb 20 de 81 AVA4C357E
                          ge-0/0/3       00 19 bb 20 de 79  5                  apg-hp1
                          ge-0/0/3       00 19 bb 20 de 80  3                  apg-hp1
                          ge-0/0/4       00 19 bb 20 de 79  5                  apg-hp1
                          ge-0/0/4       00 19 bb 20 de 80  3                  apg-hp1
                          ge-0/0/5       00 19 bb 20 de 81  ge-0/0/3          MX480-1
                          ge-0/0/6       00 19 bb 20 de 82  ge-0/0/4          MX960-2

```

## Sample Output

```

show lldp neighbors      user@host> show lldp neighbors interface ge-0/0/4
interface ge-0/0/4      LLDP Neighbor Information:
                          Local Information:
                          Index 6 Time Mark Wed Jun 20 07:34:11 2007 Time To Live 120 seconds
                          Local Interface   : ge-0/0/4
                          Local Port ID    : 4

                          Neighbor Information:
                          Chassis type      : Mac address
                          Chassis ID       : 00 19 bb 20 de 80
                          Port type        : local
                          Port ID          : 3
                          Port description : 3
                          System name      : apg-hp1

                          System Description : ProCurve J9049A Switch 2900-24G, revision
                                              T.11.X1, ROM K....

                          System Capabilities
                          Supported  : bridge, router
                          Enabled   : bridge

                          Management address
                          Address Type : ipv4
                          Address      : 10.204.34.35
                          Interface Number : 1
                          Interface Subtype : ifIndex(2)
                          OID           : 1.3.6.1.2.1.31.1.1.1.1.1

                          Organization Info
                          OUI          : 0.18.15
                          Subtype     : 1
                          Index       : 1
                          Info        : 00A0000000

                          Organization Info
                          OUI          : 0.18.15
                          Subtype     : 3
                          Index       : 2
                          Info        : 0100000000

```



## Organization Info

OUI : 0.18.15

Subtype : 4

Index : 3

Info : 05EA

## show lldp remote-global-statistics

<b>Syntax</b>	show lldp remote-global-statistics
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	On MX Series routers, display remote Link Layer Discovery Protocol (LLDP) global statistics.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show lldp remote-global-statistics on page 147
<b>Output Fields</b>	Table 40 on page 146 describes the output fields for the <b>show lldp remote-global-statistics</b> command. Output fields are listed in the approximate order in which they appear.

**Table 40: show lldp remote-global-statistics Output Fields**

Field Name	Field Description
LLDP Remote Database Table Counters	Information about remote database table counters.
LastchangeTime	Time elapsed between LLDP agent startup and the last change to the remote database table information.
Inserts	Number of insertions made in the remote database table.
Deletes	Number of deletions made in the remote database table.
Drops	Number of LLDP frames dropped from the remote database table because of errors.
Ageouts	Number of remote database table entries that have aged out of the table.

## Sample Output

```
show lldp remote-global-statistics
user@host> show lldp remote-global-statistics
LLDP Remote Database Table Counters
LastchangeTime      Inserts    Deletes    Drops    Ageouts
00:00:76 (76 sec)   192        0          0        0
```

## show lldp statistics

<b>Syntax</b>	show lldp statistics <interface <i>interface-name</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	On MX Series routers, display information about Link Layer Discovery Protocol (LLDP) statistics.
<b>Options</b>	interface <i>interface-name</i> —(Optional) Display the statistics about a particular physical interface.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>clear lldp statistics on page 137</li> </ul>
<b>List of Sample Output</b>	show lldp statistics on page 149 show lldp statistics interface ge-0/1/1 on page 149
<b>Output Fields</b>	Table 41 on page 148 describes the output fields for the <b>show lldp statistics</b> command. Output fields are listed in the approximate order in which they appear.

**Table 41: show lldp statistics Output Fields**

Field Name	Field Description
<b>Interface</b>	Interface name.
<b>Received</b>	Number of LLDP frames received on this interface.
<b>Transmitted</b>	Number of LLDP frames sent on this interface.
<b>Unknown-TLVs</b>	Number of LLDP frames with unsupported content received on this interface.
<b>With-Errors</b>	Number of LLDP frames with errors received on this interface.
<b>Discarded</b>	Number of LLDP frames received on this interface that were discarded because of problems.

## Sample Output

```
show lldp statistics user@host> show lldp statistics
Interface Received Transmitted Unknown-TLVs With-Errors Discarded
-----
ge-0/1/1 544 540 0 0 0
ge-0/1/2 540 500 0 0 0
ge-0/1/3 544 540 0 0 0
ge-0/1/4 544 540 0 0 0
ge-0/1/5 544 540 0 0 0
ge-0/1/6 544 540 0 0 0
ge-0/1/7 0 0 0 0 0
```

## Sample Output

```
show lldp statistics user@host> show lldp statistics interface ge-0/1/1
interface ge-0/1/1 Interface Received Transmitted Unknown-TLVs With-Errors Discarded
-----
ge-0/1/1 544 540 0 0 0
```

## show accounting profile

<b>Syntax</b>	<code>show accounting profile <i>profile-name</i></code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Display accounting profile information.
<b>Options</b>	<i>profile-name</i> —Name of the accounting profile.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show accounting profile (Interface) on page 151</b> <b>show accounting profile (Filter) on page 152</b> <b>show accounting profile (Destination Class) on page 152</b> <b>show accounting profile (Routing Engine) on page 153</b>
<b>Output Fields</b>	Table 42 on page 150 lists the output fields for the <b>show accounting profile</b> command. Output fields are listed in the approximate order in which they appear.

**Table 42: show accounting profile Output Fields**

Field Name	Field Description
<b>Profile</b>	Name of the accounting profile.
<b>Sampling interval</b>	Configured interval, in minutes, for statistic collection.
<b>Profile Usage Count</b>	Number of items configured for collecting accounting statistics.
<b><i>file information</i></b>	Information about the accounting profile log, including: <ul style="list-style-type: none"> <li>• <b>File</b>—Name of accounting profile log. If no name is explicitly provided, the name of the accounting profile is used. All statistics files are placed in the <b>/var/log</b> directory.</li> <li>• <b>maximum size</b>—Configured size. When the size is exceeded, the log file closes and a new log file opens.</li> <li>• <b>maximum number</b>—Configured maximum number of log files.</li> <li>• <b>bytes written</b>—Number of bytes written to the log file.</li> </ul>
<b>Transfer Interval</b>	Length of time (in minutes) the file remains open, receiving statistics before it is closed, transferred, and rotated. When either the time or the file size is exceeded, the file is closed and a new one opened, whether or not a transfer site is specified.
<b>Next Scheduled Transfer</b>	Time at which the next transfer occurs.

Table 42: show accounting profile Output Fields (*continued*)

Field Name	Field Description
Column Labels	<p>Names of sampled statistics. This list varies depending on the configuration:</p> <ul style="list-style-type: none"> <li><b>profile-layout</b>—List of data fields reported, in the order they appear in the output.</li> <li><b>epoch-timestamp</b>—Number of seconds since the epoch.</li> <li><b>interfaces</b>—(For interface, filter, and destination class profiles) Name of the interfaces on which the filter is applied.</li> <li><b>filter-name</b>—(For filter profiles) Name of the filter.</li> <li><b>counter-name</b>—(For filter profiles) Name of the counter.</li> <li><b>packet-count</b>—(For filter and destination class profiles) Number of packets for the counter.</li> <li><b>byte-count</b>—(For filter and destination class profiles) Number of bytes for the counter.</li> <li><b>input-bytes</b>—(For interface profiles) Input bytes.</li> <li><b>input-errors</b>—(For interface profiles) Generic input error packets.</li> <li><b>input-multicast</b>—(For interface profiles) Input packets arriving by multicast.</li> <li><b>input-packets</b>—(For interface profiles) Input packets.</li> <li><b>input-unicast</b>—(For interface profiles) Input unicast packets.</li> <li><b>output-bytes</b>—(For interface profiles) Output bytes.</li> <li><b>output-errors</b>—(For interface profiles) Generic output error packets.</li> <li><b>output-multicast</b>—(For interface profiles) Output packets sent by multicast.</li> <li><b>output-packets</b>—(For interface profiles) Output packets.</li> <li><b>output-unicast</b>—(For interface profiles) Output unicast packets.</li> <li><b>no-proto</b>—(For interface profiles) Packets for unsupported protocol.</li> <li><b>snmp-index</b>—(For interface profiles) SNMP index.</li> <li><b>destination-class-name</b>—(For destination class profiles) Configured destination class name.</li> <li><b>host name</b>—(For Routing Engine profiles) Hostname for the router.</li> <li><b>date-yyyyymmdd</b>—(For Routing Engine profiles) Date.</li> <li><b>timeofday-hhmmss</b>—(For Routing Engine profiles) Time of day.</li> <li><b>uptime</b>—(For Routing Engine profiles) Time since the last reboot, in seconds.</li> <li><b>cpu1min</b>—(For Routing Engine profiles) Average system load over the last 1 minute.</li> <li><b>cpu5min</b>—(For Routing Engine profiles) Average system load over the last 5 minutes.</li> <li><b>cpu15min</b>—(For Routing Engine profiles) Average system load over the last 15 minutes.</li> </ul>
Interface name	Name of the interface configured for this accounting profile.
Filter name	Name of the filter configured for this accounting profile.
routing-engine-stats	Routing Engine accounting profile.
Next Scheduled Collection	Time for next collection of statistics for the named interface.

## Sample Output

```

show accounting profile (Interface) user@host> show accounting profile if_prof
Profile if_prof
Sampling interval: 1 minute(s), Profile Usage Count: 2
File accounting_profile_stats: maximum size 1048576, maximum number 5, bytes

```

```
written 2196
Transfer Interval: 15 minute(s), Next Scheduled Transfer: 2001-06-17-18:00:45
Column Labels:
  profile-layout
  epoch-timestamp
  interface-name
  snmp-index
  input-bytes
  output-bytes
  input-packets
  output-packets
  input-unicast
  output-unicast
  input-multicast
  output-multicast
  no-proto
  input-errors
  output-errors
```

Interface Name	Next Scheduled Collection
fxp0.0	2001-06-18-18:00:30
fxp0	2001-06-18-18:01:00

**show accounting  
profile (Filter)**

```
user@host> show accounting profile filter_profile
Profile filter_profile
Sampling interval: 1 minute(s), Profile Usage Count: 0
File accounting_profile_stats: maximum size 1048576, maximum number 5, bytes
written 822
Transfer Interval: 15 minute(s), Next Scheduled Transfer: 2001-06-17-18:00:46
Column Labels:
  profile-layout
  epoch-timestamp
  interfaces
  filter-name
  counter-name
  packet-count
  byte-count
```

Filter Name	Next Scheduled Collection
myfiltero	2001-06-03-04:32:59

**show accounting  
profile (Destination  
Class)**

```
user@host> show accounting profile dcu1
Profile dcu1
Sampling interval: 1 minute(s), Profile Usage Count: 0
File accounting_profile_stats: maximum size 1048576, maximum number 5, bytes
written 901
Transfer Interval: 15 minute(s), Next Scheduled Transfer: 2001-06-17-18:00:46
Column Labels:
  profile-layout
  epoch-timestamp
  interface-name
  destination-class-name
  packet-count
  byte-count
```



	Interface Name	Next Scheduled Collection
	so-0/3/3	2001-06-03-04:34:00

**show accounting profile (Routing Engine)**

```
user@host> show accounting profile rep1
Profile rep1
Sampling interval: 1 minute(s), Profile Usage Count: 1
File accounting_profile_stats: maximum size 1048576, maximum number 5, bytes
written 901
Transfer Interval: 15 minute(s), Next Scheduled Transfer: 2001-06-17-18:00:46
Column Labels:
  profile-layout
  epoch-timestamp
  hostname
  date-yyyyymmdd
  timeofday-hhmmss
  uptime
  cpu1min
  cpu5min
  cpu15min
```

	Interface Name	Next Scheduled Collection
	routing-engine-stats	2001-06-18-18:02:31

## show accounting records

<b>Syntax</b>	<code>show accounting records <i>profile-name</i></code> <code>&lt;since <i>time</i>&gt;</code> <code>&lt;utc_timestamp&gt;</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Display accounting records for the specified accounting profile.
<b>Options</b>	<p><i>profile-name</i>—Name of the accounting profile.</p> <p><i>since time</i>—(Optional) Display accounting statistics since the specified time (<i>YYYY-MM-DD-HH:MM:SS</i>)</p> <p><i>utc_timestamp</i>—(Optional) Display the timestamp in Coordinated Universal Time (UTC) format.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p><code>show accounting records</code> on page 155</p> <p><code>show accounting records utc-timestamp</code> on page 156</p> <p><code>show accounting records (Since Time)</code> on page 156</p> <p><code>show accounting records (Filter Profile)</code> on page 156</p> <p><code>show accounting records (Destination Class Profile)</code> on page 156</p> <p><code>show accounting records (Routing Engine Profile)</code> on page 156</p>
<b>Output Fields</b>	Table 43 on page 154 lists the output fields for the <b>show accounting records</b> command. Output fields are listed in the approximate order in which they appear.

**Table 43: show accounting records Output Fields**

Field Name	Field Description
Timestamp	Date and time of sample.
Interface Name	(For interface profiles) Name and SNMP index of the interface for the accounting profile.
Filter name	(For filter profiles) Name of the filter.
Interfaces	(For filter profiles) Name of the interfaces for the accounting profile.
Counter name	(For filter profiles) Name of the counter.
Destination Class	(For destination class profiles) Name of the destination class.
Input Bytes	(For interface profiles) Input bytes.
Output Bytes	(For interface profiles) Output bytes.

Table 43: show accounting records Output Fields (*continued*)

Field Name	Field Description
<b>Input Packets</b>	(For interface profiles) Input packets.
<b>Output Packets</b>	(For interface profiles) Output packets.
<b>Input Unicast Packets</b>	(For interface profiles) Input unicast packets.
<b>Output Unicast Packets</b>	(For interface profiles) Output unicast packets
<b>Input Multicast Packets</b>	(For interface profiles) Input packets arriving by multicast.
<b>Output Multicast Packets</b>	(For interface profiles) Output packets sent by multicast.
<b>Unsupported Protocol Packets</b>	(For interface profiles) Packets for unsupported protocols.
<b>Input Errors</b>	(For interface profiles) Generic input error packets.
<b>Output Errors</b>	(For interface profiles) Generic output error packets.
<b>Host Name</b>	(For Routing Engine profiles) Hostname for the router.
<b>Date</b>	(For Routing Engine profiles) Date, in <b>YYYYMMDD</b> format.
<b>Time of Day</b>	(For Routing Engine profiles) Time of day, in <b>HHMMSS</b> format.
<b>Uptime</b>	(For Routing Engine profiles) Time since the last reboot, in seconds.
<b>Average CPU Load (1 min)</b>	(For Routing Engine profiles) Average system load over the last 1 minute.
<b>Average CPU Load (5 min)</b>	(For Routing Engine profiles) Average system load over the last 5 minutes.
<b>Average CPU Load (15 min)</b>	(For Routing Engine profiles) Average system load over the last 15 minutes.

## Sample Output

```

show accounting records user@host> show accounting records if_prof
Timestamp: 2000-10-03-00:30:41, Interface Name: fxp0 (SNMP Index 1)
32663634 Input Bytes
3487515 Output Bytes
158000 Input Packets
33296 Output Packets
158000 Input Unicast Packets
33296 Output Unicast Packets
0 Input Multicast Packets
0 Output Multicast Packets

```

```

0   Unsupported Protocol Packets
0   Input Errors
0   Output Errors

```

```

show accounting      user@host> show accounting records if_prof utc_timestamp
records utc-timestamp Timestamp: 2001-06-18-18:01:00, Interface Name: fxp0 (SNMP Index 1)
                        32663634   Input Bytes
                        3487515   Output Bytes
                        158000    Input Packets
                        33296     Output Packets
                        158000    Input Unicast Packets
                        33296     Output Unicast Packets
                        0         Input Multicast Packets
                        0         Output Multicast Packets
                        0         Unsupported Protocol Packets
                        0         Input Errors
                        0         Output Errors

show accounting      user@host> show accounting records if_prof since 2000-10-03-00:10:41
records (Since Time) Timestamp: 2000-10-03-00:30:41, Interface Name: fxp0 (SNMP Index 1)
                        32663634   Input Bytes
                        3487515   Output Bytes
                        158000    Input Packets
                        33296     Output Packets
                        158000    Input Unicast Packets
                        33296     Output Unicast Packets
                        0         Input Multicast Packets
                        0         Output Multicast Packets
                        0         Unsupported Protocol Packets
                        0         Input Errors
                        0         Output Errors

show accounting      user@host> show accounting records filter_profile
records (Filter Profile) Timestamp: 2000-10-03-00:30:41, Filter Name: ap_filter, Interfaces: fxp0.0
                        Counter Name: c1
                        2440      Packets
                        223509    Bytes

show accounting      user@host> show accounting records dcu1
records (Destination Timestamp: 2000-10-03-00:30:41, Interface: so-2/0/0.0, Destination Class: gold
Class Profile)      0         Packets
                        0         Bytes

show accounting      user@host> show accounting records rep1
records (Routing      Timestamp: 2000-10-03-00:30:41
Engine Profile)      Host Name:      andro
                        Date:          20010618
                        Time of Day:    183130
                        Uptime:         88260
                        Average CPU Load (1 min): 0.000000
                        Average CPU Load (5 min): 0.000000
                        Average CPU Load (15 min): 0.000000

```

## CHAPTER 7

# Chassis Operational Mode Commands

Table 44 on page 157 summarizes the command-line interface (CLI) commands you can use to monitor the router chassis. Commands are listed in alphabetical order.

**Table 44: Chassis Operational Mode Commands**

Task	CLI Command
(T Series and M320 routers only) Clear or stop a text message on the craft interface.	<b>clear chassis display message</b>
(T Series, M120, M320, and MX Series routers only) Change Control Board (CB) status information.	<b>request chassis cb</b>
(M7i and M10i routers only) Control the operation of the Compact Forwarding Engine Board (CFEB).	<b>request chassis cfeb</b>
(TX Matrix Plus routers only) Control the operation of the Connector Interface Panel (CIP).	<b>request chassis cip</b>
(M120 and MX Series routers only) Control the operation of the specified fabric plane.	<b>request chassis fabric plane</b>
(M120 router only) Control the operation of the specified Forwarding Engine Board (FEB).	<b>request chassis feb</b>
(M20, M40, M40e, M120 M160, M320, and MX Series routers, and T Series routers only) Control the operation of the Flexible PIC Concentrator (FPC).	<b>request chassis fpc</b>
(M40e, M120, M160, M320, and MX Series routers, and T Series routers only) Resynchronize the Front Panel Module (FPM) craft interface status	<b>request chassis fpm resync</b>
(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, control the operation of the T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, control the operation of a T1600 router that is connected to the TX Matrix Plus router.	<b>request chassis lcc</b>
(MX Series routers) Control the operation of Modular Interface Cards (MICs)	<b>request chassis mic</b>

**Table 44: Chassis Operational Mode Commands** *(continued)*

Task	CLI Command
(M40e and M160 routers only) Control the operation of the Miscellaneous Control Subsystem (MCS).	<b>request chassis mcs</b>
(MX Series routers only) Control the operation of a MIC.	<b>request chassis mic</b>
(M40e and M160 routers only) Control the operation of the Packet Forwarding Engine Clock Generator (PCG).	<b>request chassis pcg</b>
Control the operation of a PIC.	<b>request chassis pic</b>
(M120 routers only) Control the operation of a FEB in a redundancy group.	<b>request chassis redundancy feb slot</b>
For routers with multiple Routing Engines, control which Routing Engine is the master.	<b>request chassis routing-engine master</b>
(T Series routers only) Control the operation of the specified SONET Clock Generator (SCG).	<b>request chassis scg</b>
(M40e and M160 routers only) Control which Switching and Forwarding Module (SFM) is master.	<b>request chassis sfm master switch</b>
(M40e and M160 routers only) Control the operation of the specified SFM.	<b>request chassis sfm</b>
(M320 routers and T Series routers only) Control the operation of the specified Switch Interface Board (SIB).	<b>request chassis sib</b>
(TX Matrix Plus routers only) Control the receiving link of the specified Switch Interface Board (SIB) of the SFC.	<b>request chassis sib f13 train-link-receive slot</b>
(TX Matrix Plus routers only) Control the transmission link of the specified Switch Interface Board (SIB) of the SFC.	<b>request chassis sib f13 train-link-transmit slot</b>
(T1600 routers (LCCs) and TX Matrix Plus routing platform only) Control the receiving link of the specified Switch Interface Board (SIB) of the LCC.	<b>request chassis sib train-link-receive slot</b>
(T1600 routers (LCCs) and TX Matrix Plus routing platform only) Control the transmission link of the specified Switch Interface Board (SIB) of the LCC.	<b>request chassis sib train-link-transmit slot</b>
(T Series routers only) Restart the specified Switch Processor Mezzanine Board (SPMB) on the CB.	<b>request chassis spmb restart</b>
(M320 routers only) Change the external clock source used for chassis synchronization.	<b>request chassis synchronization switch</b>
Send a message to the router's craft interface.	<b>set chassis display message</b>

Table 44: Chassis Operational Mode Commands *(continued)*

Task	CLI Command
Display chassis alarm status.	<b>show chassis alarms</b>
(M7i and M10i routers only) Change and display CFEB status information.	<b>show chassis cfeb</b>
(TX Matrix Plus routers only) Display environmental information about the CIP.	<b>show chassis cip</b>
View information that is currently displayed on the craft interface.	<b>show chassis craft-interface</b>
Display environmental information about the router chassis, including the temperature and information about the fans, power supplies, and Routing Engine.	<b>show chassis environment</b>
(T Series, M120, M320, and MX Series routers only) Display CB environmental information.	<b>show chassis environment cb</b>
(M20, M40, M40e, M120, M160, M320, and MX Series routers, and T Series routers only) Display FPC environmental status information.	<b>show chassis environment fpc</b>
(M20, M40, M40e, M120, M160, M320, and MX Series routers, and T Series routers only) Change and display FPM status information.	<b>show chassis environment fpm</b>
(M40e and M160 routers only) Display MCS environmental status information.	<b>show chassis environment mcs</b>
Display generic environmental information.	<b>show chassis environment</b>
(M40e and M160 routers only) Display PCG environmental status information.	<b>show chassis environment pcg</b>
(M40e, M120, M160, M320, and MX Series routers, and T Series routers only) Display Power Entry Module (PEM) environmental status information.	<b>show chassis environment pem</b>
Display Routing Engine environmental status information.	<b>show chassis environment routing-engine</b>
(T Series routers only) Display SCG environmental information.	<b>show chassis environment scg</b>
(M40e and M160 routers only) Display SFM environmental information.	<b>show chassis environment sfm</b>
(M320 routers and T Series router only) Display SIB environmental information.	<b>show chassis environment sib</b>

**Table 44: Chassis Operational Mode Commands** *(continued)*

Task	CLI Command
(M10i, M40e, M120, M160, M320, and MX Series routers, and T Series routers only) Display information about the ports on the CB Ethernet switch.	<b>show chassis ethernet-switch</b>
(MX Series routers only) Display information about the fan and fan trays.	<b>show chassis fan</b>
(M120 router only) Display the state of the electrical and optical switching fabric link between the FEBs and the fabric planes, as interpreted by the FEB.	<b>show chassis fabric feb</b>
(TX Matrix Plus routers only) Display chassis fabric errors for FPCs and SIBs.	<b>show chassis fabric errors</b>
(M320 and MX Series routers and T Series router only) Display the state of the electrical and optical switch fabric links between the FPCs and the SIBs.	<b>show chassis fabric fpcs</b>
(M120 and MX Series routers only) Display the state of the switching fabric map for connections from the FEBs to the ports on the fabric planes, as interpreted by the fabric plane.	<b>show chassis fabric map</b>
(M120, MX Series, T1600, and TX Matrix Plus routers only) Display the state of all fabric plane connections to the FEBs. On a TX Matrix Plus router and T1600 routers, display the state of the fabric management plane and the logical planes on the SFC and line-card chassis (LCC)	<b>show chassis fabric plane</b>
(M120, MX Series, T1600, and TX Matrix Plus router only) Display the CB location of each plane.	<b>show chassis fabric plane-location</b>
(T Series routers only) Display the state of the electrical and optical switch fabric links: <ul style="list-style-type: none"> <li>Between the SIBs in the TX Matrix router and the SIBs in the T640 routers.</li> <li>Between the T640 SIBs and the FPCs in a T640 router.</li> </ul>	<b>show chassis fabric sibs</b>
(T Series routers only) Display the state of the switching fabric topology for the SIB connection between the TX Matrix router and the T640 routers.	<b>show chassis fabric topology</b>
(M5, M10, and M120 routers only). Display FEB status information.	<b>show chassis feb</b>
Display the version levels of the firmware running on the SCB, SFM, SSB, FEB, and FPCs.	<b>show chassis firmware</b>
(J Series Services Routers only) Display status of the forwarding process (fwdd).	<b>show chassis forwarding</b>



Table 44: Chassis Operational Mode Commands *(continued)*

Task	CLI Command
(M20, M40, M40e, M160, and M320 routers, MX Series routers and T Series routers only) Display FPC status information.	<b>show chassis fpc</b>
(M120 router only) Display the FPC and FEB mapping and their respective states.	<b>show chassis fpc-feb-connectivity</b>
Display hardware inventory.	<b>show chassis hardware</b>
Display the status of the most recent unified in-service software upgrade (ISSU).	<b>show chassis in-service-upgrade</b>
(TX Matrix and TX Matrix Plus router only) On a TX Matrix router, display the status of all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display the status of all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.	<b>show chassis lccs</b>
Display chassis location information.	<b>show chassis location</b>
Display MAC address information.	<b>show chassis mac-addresses</b>
Display the network services mode.	<b>show chassis network services</b>
Display PIC status information.	<b>show chassis pic</b>
(J Series routers only) Display PIM power ratings.	<b>show chassis power-ratings</b>
(MX Series Ethernet Services routers only) Display power limits and usage.	<b>show chassis power</b>
(MX Series Ethernet Services routers only) Show power-on sequence for the chassis DPCs.	<b>show chassis power sequence</b>
(Root System Domain [RSD] only) Display information about Protected System Domains (PSDs).	<b>show chassis psd</b>
(M120 routers only) Display status information about configured FEB redundancy groups.	<b>show chassis redundancy feb</b>
Display the information about one or more Routing Engines.	<b>show chassis routing-engine</b>
(M40 router only) Display System Control Board (SCB) status information.	<b>show chassis scb</b>
(M40e and M160 routers only) Change and display SFM status information.	<b>show chassis sfm</b>
(M320 routers and T Series routers only) Display SIB status information.	<b>show chassis sibs</b>

Table 44: Chassis Operational Mode Commands (*continued*)

Task	CLI Command
(T Series routers only) Display SPMB status information.	<b>show chassis spmb</b>
(T Series routers only) Display SPMB Switch Interface Board (SIB) status information.	<b>show chassis spmb sibs</b>
(M320 routers only) Display information about the external clock source currently used for chassis synchronization.	<b>show chassis synchronization</b>
Display chassis temperature threshold settings, in degrees Celsius.	<b>show chassis temperature-thresholds</b>



**NOTE:** For information about how to configure chassis parameters, such as conditions that activate the alarm LEDs on the router's craft interface, properties for specific PICs, and redundancy, see the *Junos OS System Basics Configuration Guide*.

For information about related tasks performed by network operations center (NOC) personnel, see the *Junos Hardware Network Operations Guide*.

## clear chassis display message

<b>Syntax</b>	clear chassis display message
<b>Syntax (TX Matrix Router)</b>	clear chassis display message <fcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	clear chassis display message <fcc <i>number</i>   sfc <i>number</i> >
<b>Release Information</b>	<p>Command introduced in Junos OS Release 7.5.</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 routers introduced 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>(M40e, M160, M320, T Series routers, EX Series, and QFX Series 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.</p>
<b>Options</b>	<p>none—Clear or stop a text message on the craft interface display.</p> <p>fcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, clear or stop a text message on the craft interface on a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, clear or stop a text message on the craft interface on a specific T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) (Optional) Clear or stop a text message on the craft interface on the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(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 <i>number</i> with 0.</p>
<b>Required Privilege Level</b>	clear
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>Configuring the LCD Panel on EX Series Switches (CLI Procedure)</li> <li>set chassis display message on page 197</li> <li>show chassis craft-interface on page 207</li> </ul>
<b>List of Sample Output</b>	clear chassis display message on page 164
<b>Output Fields</b>	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
+-----+

```

## 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>   scc <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>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>
<b>Description</b>	<p>(M120, M320, and MX Series routers and T Series routers and EX8200 switches only)</p> <p>Control the operation of the Control Board (CB). For information about the meaning of "CBs" on the switches, see EX Series Switches Hardware and CLI Terminology Mapping.</p>
<b>Options</b>	<p>offline—Take the CB offline.</p> <p>online—Bring the CB online.</p> <p>slot <i>slot-number</i>—CB slot number:</p> <ul style="list-style-type: none"> <li>(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 <b>lcc <i>number</i></b> option (the recommended method), replace <b><i>cb-slot-number</i></b> with a value from 0 through 1.</li> <li>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>cb-slot-number</i></b> with a value from 0 through 1.</li> <li>M320 router—Replace <b><i>slot-number</i></b> with a value from 0 through 1.</li> <li>MX480/MX240 routers—Replace <b><i>slot-number</i></b> with a value from 0 through 1.</li> <li>MX960 router—Replace <b><i>slot-number</i></b> with a value from 0 through 2.</li> <li>EX8208 switch—Replace <b><i>slot-number</i></b> with a value from 0 through 2.</li> <li>EX8216 switch—Replace <b><i>slot-number</i></b> with a value from 0 through 1.</li> </ul> <p><b>sfc <i>number</i></b>—(TX Matrix Plus routers only) (Optional) Change the CB status for the TX Matrix Plus router (or switch-fabric chassis). Replace <b><i>number</i></b> with 0.</p>
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	request chassis cb on page 166
<b>Output Fields</b>	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 cfep

---

<b>Syntax</b>	request chassis cfep (offline   online   restart)
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M7i and M10i routers only) Control the operation of the Compact Forwarding Engine Board (CFEB).
<b>Options</b>	offline—Take the CFEB offline.  online—Bring the CFEB online.  restart—Restart the CFEB.
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show chassis cfep on page 203</a></li></ul>
<b>List of Sample Output</b>	<a href="#">request chassis cfep on page 167</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

<b>request chassis cfep</b>	user@host> request chassis cfep offline CFEB Offlined
-----------------------------	----------------------------------------------------------

## request chassis cip

---

<b>Syntax</b>	request chassis cip (offline   online) slot <i>slot-number</i>
<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>	offline—Take the CIP offline.  online—Bring the CIP online.  slot <i>slot-number</i> —CIP slot number. Replace <i>slot-number</i> with a value ranging from 0 through 1.
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<b>request chassis cip offline slot (TX Matrix Plus Router) on page 168</b> <b>request chassis cip offline slot (TX Matrix Plus Router) on page 168</b>
<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 fabric plane

<b>Syntax</b>	<code>request chassis fabric plane <i>plane-number</i> (offline   online)</code>
<b>Release Information</b>	Command introduced in Junos OS Release 8.0. Command introduced in Junos OS Release 9.4 for EX Series switches.
<b>Description</b>	(M120 and MX Series routers and EX8200 switches only) Control the operation of the specified fabric plane.
<b>Options</b>	<p>offline—Take the fabric plane offline. Use the <code>request chassis fabric plane <i>plane-number</i> offline</code> command to clear a <b>FAULT</b> state on a fabric plane. To bring the fabric plane back online, use the <code>request chassis fabric plane <i>plane-number</i> online</code> command.</p> <p>online—Bring the fabric plane online.</p> <p>plane <i>plane-number</i>—Fabric plane number.</p> <ul style="list-style-type: none"> <li>For the M120 router, replace <i>plane-number</i> with a value from 0 through 3.</li> <li>For the MX480 and MX240 routers, replace <i>plane-number</i> with a value from 0 through 7.</li> <li>For the MX960 router, replace <i>plane-number</i> with a value from 0 through 5.</li> <li>For the EX8208 switch, replace <i>plane-number</i> with a value from 0 through 11.</li> <li>For the EX8216 switch, replace <i>plane-number</i> with a value from 0 through 7.</li> </ul>
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<p><code>request chassis fabric plane 0 online</code> on page 169</p> <p><code>request chassis fabric plane 0 offline</code> on page 169</p> <p><code>request chassis fabric plane 0 online (EX8200 switch)</code> on page 169</p>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```

request chassis fabric plane 0 online  user@host> request chassis fabric plane 0 online
                                       Online initiated, use "show chassis fabric plane" to verify

request chassis fabric plane 0 offline user@host> request chassis fabric plane 0 offline
                                       Offline initiated, use "show chassis fabric plane" to verify

request chassis fabric plane 0 online  user@host> request chassis fabric plane 0 online
plane 0 online                          Plane 0 is already active
(EX8200 switch)

```

## request chassis feb

---

<b>Syntax</b>	<code>request chassis feb (offline   online   restart) slot <i>slot-number</i></code>
<b>Release Information</b>	Command introduced in Junos OS Release 8.0.
<b>Description</b>	(M120 router only) Control the operation of the specified Forwarding Engine Board (FEB).
<b>Options</b>	<p><b>offline</b>—Take the specified FEB offline.</p> <p><b>online</b>—Bring the specified FEB online.</p> <p><b>restart</b>—Restart the specified FEB.</p> <p><b>slot <i>slot-number</i></b>—FEB slot number. Replace <i>slot-number</i> with a value from 0 through 5.</p>
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<p><code>request chassis feb offline slot 0</code> on page 170</p> <p><code>request chassis feb online slot 0</code> on page 170</p> <p><code>request chassis feb restart slot 0</code> on page 170</p>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

<code>request chassis feb offline slot 0</code>	<code>user@host&gt; request chassis feb offline slot 0</code> Offline initiated, use "show chassis feb" to verify
<code>request chassis feb online slot 0</code>	<code>user@host&gt; request chassis feb online slot 0</code> Online initiated, use "show chassis feb" to verify
<code>request chassis feb restart slot 0</code>	<code>user@host&gt; request chassis feb restart slot 0</code> Restart initiated, use "show chassis feb" to verify

## request chassis fpc

<b>Syntax</b>	<code>request chassis fpc (offline   online   restart) slot <i>slot-number</i></code>
<b>Syntax (TX Matrix and TX Matrix Plus Router)</b>	<code>request chassis fpc (offline   online   restart) 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 that have multiple FPCs.
<b>Description</b>	(M20, M40, M40e, M120, M160, M320, MX Series, and T Series routers and EX Series switches only) Control the operation of the Flexible PIC Concentrator (FPC). For information about the meaning of “FPCs” on the switches, see EX Series Switches Hardware and CLI Terminology Mapping.
<b>Options</b>	<p>offline—Take the FPC offline.</p> <p>online—Bring the FPC online.</p> <p>restart—Restart the FPC.</p> <p>slot <i>slot-number</i>—FPC slot number:</p> <ul style="list-style-type: none"> <li>• M20 router—0 through 3.</li> <li>• M120 router—0 through 5.</li> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> <li>• 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 <b>lcc <i>number</i></b> option (the recommended method), replace <b>slot-number</b> with a value from 0 through 7. Otherwise, replace <b>slot-number</b> with a value from 0 through 31.</li> </ul> <p>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>slot-number</b> with a value from 0 through 7. Otherwise, replace <b>slot-number</b> with a value from 0 through 31. For example, the following commands have the same result:</p> <pre> user@host&gt; request chassis fpc lcc 1 slot 1 offline user@host&gt; request chassis fpc slot 9 offline </pre>

- Other routers—0 through 7.
- EX Series switches:
  - 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).

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

**Required Privilege Level** maintenance

**Related Documentation**

- [show chassis fpc on page 398](#)

**List of Sample Output** [request chassis fpc on page 172](#)

**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 fpm resync

<b>Syntax</b>	request chassis fpm resync
<b>Syntax (TX Matrix Router)</b>	request chassis fpm resync ( <i>lcc number</i>   <i>scc</i> )
<b>Syntax (TX Matrix Plus Router)</b>	request chassis fpm resync ( <i>lcc number</i>   <i>sfc number</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>	(M40e, M120, M160, M320, MX Series, and T Series routers only) Resynchronize the craft interface status.
<b>Options</b>	<p><i>lcc number</i>—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, resynchronize the craft interface status on a specified T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, resynchronize the craft interface status on a specified T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from <b>0</b> through <b>3</b>.</p> <p><i>scc</i>—(TX Matrix routers only) Resynchronize the craft interface status on the TX Matrix router (or switch-card chassis).</p> <p><i>sfc number</i>—(TX Matrix Plus routers only) Resynchronize the craft interface status on the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with <b>0</b>.</p>
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	request chassis fpm resync on page 173
<b>Output Fields</b>	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 lcc

---

**Syntax (TX Matrix and TX Matrix Plus Router)**    request chassis lcc (offline | online) slot *slot-number*

**Release Information**    Command introduced before Junos OS Release 7.4.

**Description**    (TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, control the operation of a T640 router (or line-card chassis) that is connected to the TX matrix router. On a TX Matrix Plus router, control the operation of a T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router.

**Options**    offline—On a routing matrix based on the TX Matrix router (or switch-card chassis), take the T640 router (or line-card chassis) offline. On a routing matrix based on a TX Matrix Plus router (or switch-fabric chassis), take the T1600 router (or line-card chassis) offline.

online—On a routing matrix based on the TX Matrix router (or switch-card chassis), bring the T640 router (or line-card chassis) online. On a routing matrix based on a TX Matrix Plus router (or switch-fabric chassis), bring the T1600 router (or line-card chassis) online.

slot *slot-number*—On a TX Matrix router (or switch-card chassis), the slot number of a T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router (or switch-fabric chassis), the slot number of a T1600 router (or line-card chassis) that is connected to the TX Matrix Plus (or switch-fabric chassis) router. Replace *slot-number* with a value from 0 through 3.

**Required Privilege Level**    maintenance

**Related Documentation**    • [show chassis lccs on page 461](#)

**List of Sample Output**    [request chassis lcc on page 174](#)

**Output Fields**    When you enter this command, you are provided feedback on the status of your request.

## Sample Output

**request chassis lcc**    user@host> request chassis lcc offline slot 0

## request chassis mcs

---

<b>Syntax</b>	request chassis mcs (offline   online   restart) slot <i>slot-number</i>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M40e and M160 routers only) Control the operation of the Miscellaneous Control Subsystem (MCS).
<b>Options</b>	offline—Take the MCS offline.  online—Bring the MCS online.  restart—Restart the MCS.  slot <i>slot-number</i> —MCS slot number. Replace <i>slot-number</i> with 0 or 1.
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<b>request chassis mcs on page 175</b>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

<b>request chassis mcs</b>	user@host> request chassis mcs online slot 0 MCS 0 appears to be online already
----------------------------	------------------------------------------------------------------------------------

## request chassis pcg

---



<b>Syntax</b>	<code>request chassis pcg (offline   online) slot <i>slot-number</i></code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M40e and M160 routers) Control the operation of the Packet Forwarding Engine (PFE) clock generator (PCG).
<b>Options</b>	<p>offline—Take the PCG offline.</p> <p>online—Bring the PCG online.</p> <p>slot <i>slot-number</i>—PCG slot number. Replace <i>slot-number</i> with 0 or 1.</p>
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<a href="#">request chassis pcg on page 176</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```
request chassis pcg user@host> request chassis pcg online slot 0
PCG 1 appears to be already online
```



## request chassis pic

<b>Syntax</b>	request chassis pic (offline   online) fpc-slot <i>slot-number</i> pic-slot <i>slot-number</i>
<b>Syntax (TX Matrix and TX Matrix Plus Router)</b>	request chassis pic (offline   online) fpc-slot <i>slot-number</i> pic-slot <i>slot-number</i> <lcc <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>Description</b>	Control the operation of the PIC.
	<div>  <p><b>NOTE:</b> The request chassis pic (offline   online) fpc-slot <i>slot number</i> pic-slot <i>slot-number</i> command is not supported for built-in PICs on MX Series routers.</p> <p>To view a list of built-in PICs on the router or switch chassis, use the show chassis hardware command.</p> </div>
	<div>  <p><b>NOTE:</b> 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.</p> </div>
<b>Options</b>	<p>offline—Take the PIC offline.</p> <p>online—Bring the PIC online.</p> <p>fpc-slot <i>slot-number</i>—Flexible PIC Concentrator (FPC) slot number. Replace <i>slot-number</i> with a value appropriate for your router or switch:</p> <ul style="list-style-type: none"> <li>EX Series switches: <ul style="list-style-type: none"> <li>EX3200 switches and EX4200 standalone switches—0.</li> <li>EX4200 switches in a Virtual Chassis configuration—0 through 9 (switch's member ID).</li> <li>EX8208 switches—0 through 7 (line card).</li> <li>EX8216 switches—0 through 15 (line card).</li> </ul> </li> <li>M5, M7i, M10, and M10i routers—0 or 1.</li> <li>M20 routers—0 through 3.</li> <li>M120 routers—0 through 5.</li> <li>MX960 routers—0 through 11.</li> </ul>

- M40, M40e, M160, M320, T320, T640, and T1600 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 router by using the lcc number option (the recommended method), replace **slot-number** with a value from 0 through 7. Otherwise, replace **slot-number** with a value from 0 through 31. For example, the following commands have the same result:

```
user@host> request chassis 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. For the M Series router, the T640 router, the T1600 router, and the TX Matrix and TX Matrix Plus routers, it can be 0, 1, 2, or 3. On the MX960 router, **slot-number** corresponds to the slot number of the Packet Forwarding Engine. For the T320 router, it can be 0 or 1. For EX3200 and EX4200 switches, it is 0 for built-in network interfaces and 1 for interfaces on uplink modules. For EX8208 and EX8216 switches, it is 0.

**lcc number**—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, control the PIC in a specified T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, control the PIC in a specified T1600 router that is connected to the TX Matrix Plus router. Replace **number** with a value from 0 through 3.

**Required Privilege Level** maintenance

**Related Documentation**

- [show chassis hardware on page 414](#)
- [show chassis pic on page 469](#)

**List of Sample Output** [request chassis pic on page 178](#)

**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 mic

<b>Syntax</b>	<code>request chassis mic (offline   online) fpc-slot <i>slot-number</i> mic-slot <i>slot-number</i></code>
<b>Release Information</b>	Command introduced in Junos OS Release 10.1.
<b>Description</b>	(MX Series routers only) Control the operation of the Modular Interface Cards (MICs) installed on a Modular Port Concentrator (MPC).
<b>Options</b>	<p><code>offline</code>—Take the MIC offline.</p> <p><code>online</code>—Bring the MIC online.</p> <p><code>fpc-slot <i>slot-number</i></code>—FPC slot number where the MIC is installed:</p> <ul style="list-style-type: none"> <li>MX80 router—Replace <i>fpc-slot</i> with the value 1. This command is not supported on FPC slot 0.</li> <li>MX240 router—Replace <i>fpc-slot</i> with a value from 0 through 2.</li> <li>MX480 router—Replace <i>fpc-slot</i> with a value from 0 through 5.</li> <li>MX-960 router—Replace <i>fpc-slot</i> with a value from 0 through 11.</li> </ul> <p><code>mic-slot <i>slot-number</i></code>—MIC 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 hardware on page 414</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">request chassis mic online on page 179</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```
request chassis mic online user@host> request chassis mic online fpc-slot 1 mic-slot 1
```

## request chassis redundancy feb slot

---

<b>Syntax</b>	<code>request chassis redundancy feb slot <i>slot-number</i> (switch-to-backup   revert-from-backup)</code>
<b>Release Information</b>	Command introduced in Junos OS Release 8.2.
<b>Description</b>	(M120 routers only) Control the operation of the specified Forwarding Engine Board (FEB) in a redundancy group.
<b>Options</b>	<p><i>slot-number</i>—FEB slot number. Replace <i>slot-number</i> with a value from 0 through 5.</p> <p><code>switch-to-backup</code>—Initiate a switchover from the specified active FEB to the backup FEB for the redundancy group.</p> <p><code>revert-from-backup</code>—Initiate a revert to the specified FEB following a switchover to the backup FEB for a redundancy group.</p>
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<code>request chassis redundancy feb slot 2 switch-to-backup</code> on page 180 <code>request chassis redundancy feb slot 3 revert-to-backup</code> on page 180
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

<code>request chassis redundancy feb slot 2 switch-to-backup</code>	<code>user@host&gt; request chassis redundancy feb slot 2 switch-to-backup</code> Switch initiated, use "show chassis redundancy febs" to verify
<code>request chassis redundancy feb slot 3 revert-to-backup</code>	<code>user@host&gt; request chassis redundancy feb slot 3 revert-to-backup</code> Revert initiated, use "show chassis redundancy febs" to verify

## request chassis routing-engine master

<b>Syntax</b>	request chassis routing-engine master (acquire   release   switch) <force> <no-confirm>
<b>Syntax (TX Matrix Router)</b>	request chassis routing-engine master (acquire   release   switch) (lcc <i>number</i>   scc   all-chassis) <force> <no-confirm>
<b>Syntax (TX Matrix Plus Router)</b>	request chassis routing-engine master (acquire   release   switch) (lcc <i>number</i>   sfc   all-chassis   all-lcc) <force> <no-confirm>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. all-chassis option added in Junos OS Release 8.0. Command introduced in Junos OS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
<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 T640 routers (in a routing matrix based on the TX Matrix router) or T1600 routers (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 Configuration Guide*.



**NOTE:** Successive graceful Routing Engine switchover events must be a minimum of 240 seconds (4 minutes) apart after both Routing Engines have come up.

If the router or switch displays a warning message similar to “Standby Routing Engine is not ready for graceful switchover. Packet Forwarding Engines that are not ready for graceful switchover might be reset,” do not attempt switchover. If you choose to proceed with switchover, only the Packet Forwarding Engines that were not ready for graceful switchover are reset. None of the Flexible PIC concentrators (FPCs) should spontaneously restart. We recommend that you wait until the warning no longer appears and then proceed with the switchover.

- 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 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).
- lcc *number***—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, the T640 router (or LCC) that is connected to the TX Matrix router (or switch-card chassis). On a TX Matrix Plus router, the T1600 router (or LCC) that is connected to the TX Matrix Plus router (or switch-fabric chassis). Replace ***number*** with a value from 0 through 3.
- no-confirm**—(Optional) Do not request confirmation for the switch.
- scc**—(TX Matrix routers only) TX Matrix (or 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.

**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 System Basics Configuration Guide*.

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.

<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">show chassis routing-engine on page 487</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">request chassis routing-engine master acquire on page 183</a> <a href="#">request chassis routing-engine master switch on page 183</a>
<b>Output Fields</b>	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><i>lcc number</i>—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix Plus router, change the SCG status on a specified T640 router (or line-card chassis [LCC]) that is connected to the TX Matrix router. On a TX Matrix Plus router, change the SCG status on a specified T1600 router (or LCC) that is connected to a TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p><i>offline</i>—Take the SCG offline. When you change the SCG status to offline, the unit is not powered down.</p> <p><i>online</i>—Bring the SCG online.</p> <p><i>slot slot-number</i>—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 272</a></li></ul>
<b>List of Sample Output</b>	<a href="#">request chassis scg on page 184</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

<b>request chassis scg</b>	<pre>user@host&gt; request chassis scg online slot 0 Online initiated, use "show chassis environment scg" to verify</pre>
----------------------------	---------------------------------------------------------------------------------------------------------------------------



## request chassis sfm

<b>Syntax</b>	request chassis sfm (offline   online   restart) slot <i>slot-number</i>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M40e and M160 routers only) Control the operation of the specified Switching and Forwarding Module (SFM).
<b>Options</b>	<p>offline—Take the SFM offline.</p> <p>online—Bring the SFM online.</p> <p>restart—Restart the SFM.</p> <p>slot <i>slot-number</i>—SFM slot number. Replace <i>slot-number</i> with a value from 0 through 3.</p>
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">show chassis sfm on page 501</a></li> </ul>
<b>List of Sample Output</b>	<p><a href="#">request chassis sfm (M40e) on page 185</a></p> <p><a href="#">request chassis sfm (M160) on page 185</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 sfm (M40e) user@host> request chassis sfm slot 1 restart
                             M40e router:
                             error: SFM 0 is transitioning to online state.
```

```
request chassis sfm (M160) user@host> request chassis sfm slot 1 restart
                             M160 router:
                             Restart initiated, use "show chassis sfm" to verify
```

## request chassis sfm master switch

---

<b>Syntax</b>	request chassis sfm master switch <no-confirm>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M40e and M160 routers only) Control which Switching and Forwarding Module (SFM) is master.
<b>Options</b>	no-confirm—(Optional) Do not display a switch warning or query.
<b>Additional Information</b>	<p>By default, the SFM in slot 0 (SFM0) is the master and the SFM in slot 1 (SFM1) is the backup. If you use this command to change the master, and then restart the chassis software for any reason, the master reverts to the default setting. To change the default master SFM, include the <b>sfm</b> statement at the <b>[edit chassis redundancy]</b> hierarchy level in the configuration. For more information, see the <i>Junos OS System Basics Configuration Guide</i>.</p> <p>All installed SFMs are always working together to forward packets. If an SFM fails, the other SFMs take over and traffic continues to flow uninterrupted.</p>
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show chassis sfm on page 501</a></li></ul>
<b>List of Sample Output</b>	<a href="#">request chassis sfm master switch on page 186</a> <a href="#">request chassis sfm master switch no-confirm on page 186</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

<b>request chassis sfm master switch</b>	<pre>user@host&gt; request chassis sfm master switch warning: Traffic will be interrupted while the PFE is re-initialized Toggle mastership between system forwarding module? [yes,no] (no) yes  Switch initiated, use "show chassis sfm" to verify</pre>
<b>request chassis sfm master switch no-confirm</b>	<pre>user@host&gt; request chassis sfm master switch no-confirm Switch initiated, use "show chassis sfm" to verify</pre>

## 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 (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>all-lcc—(TX Matrix Plus routers only) Control the operation of the SIB on all T1600 routers connected to the TX Matrix Plus router.</p> <p>f13 <i>slot-number</i>—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>f2s <i>sib-slot/sib-f2s-slot-number</i>—(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>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, the T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, the T1600 router (or line-card chassis) and TX Matrix Plus that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix router only) TX Matrix router (or switch-card chassis) on a routing matrix.</p> <p>offline—Take the SIB offline.</p> <p>online—Bring the SIB online.</p> <p>slot <i>slot-number</i>—SIB slot number. For the T320 router, replace <i>slot-number</i> with a value from 0 through 2. For the T640 router, TX Matrix router, and T1600 router in a routing matrix, replace <i>slot-number</i> with a value from 0 through 4.</p> <p>start-receiver <i>number</i>—(TX Matrix routers only) Start the SIB optical receiver. Replace <i>number</i> with a value from 0 through 3.</p> <p>stop-receiver <i>number</i>—(TX Matrix routers only) Stop the SIB optical receiver. Replace <i>number</i> with a value from 0 through 3.</p>
<b>Required Privilege Level</b>	maintenance

Related Documentation	<ul style="list-style-type: none"><li>• <a href="#">show chassis sibs on page 504</a></li></ul>
List of Sample Output	<a href="#">request chassis sib on page 188</a> <a href="#">request chassis sib on page 188</a>
Output Fields	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

<b>request chassis sib</b>	<code>user@host&gt; request chassis sib slot 0 online</code> Online initiated, use "show chassis sibs" to verify
<b>request chassis sib</b>	<code>user@host&gt; request chassis sib f13 slot 0 offline</code> Offline initiated, use "show chassis sibs" to verify

## 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 Routing)</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 routing platform 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>request chassis sib f13 train-link-transmit slot on page 190</li> </ul>
<b>List of Sample Output</b>	request chassis sib f13 train-link-receive slot on page 189
<b>Output Fields</b>	When you enter this command, the SFC is ready to receive traffic from the T1600 router (LCC).

### Sample Output

```
request chassis sib f13 train-link-receive slot
user@host> request chassis sib f13 train-link-receive slot 0
```

## request chassis sib f13 train-link-transmit slot

---

<b>Syntax</b>	request chassis sib f13 train-link-transmit 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 routing platform only) Control the transmission 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>request chassis sib f13 train-link-receive slot on page 189</li></ul>
<b>List of Sample Output</b>	request chassis sib f13 train-link-transmit slot on page 190
<b>Output Fields</b>	When you enter this command, the SFC is ready to transmit traffic to the T1600 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 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] and TX Matrix Plus routing platform 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 192</a></li></ul>
<b>List of Sample Output</b>	<a href="#">request chassis sib train-link-receive slot on page 191</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  user@host> request chassis sib train-link-receive slot 0
train-link-receive slot
```

## 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) and TX Matrix Plus routing platform 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 191</a></li></ul>
<b>List of Sample Output</b>	<a href="#">request chassis sib train-link-transmit slot on page 192</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 spmb restart

<b>Syntax</b>	<code>request chassis spmb restart slot <i>slot-number</i></code>
<b>Syntax (TX Matrix Router)</b>	<code>request chassis spmb restart (lcc <i>number</i>   scc) slot <i>slot-number</i></code>
<b>Syntax (TX Matrix Plus Router)</b>	<code>request chassis spmb restart (lcc <i>number</i>   sfc <i>number</i>) slot <i>slot-number</i></code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. sfc option for the TX Matrix Plus router introduced in Junos OS Release 9.6.
<b>Description</b>	Restart the specified Switch Processor Mezzanine Board (SPMB) on the Control Board (CB).
<b>Options</b>	<p><i>lcc number</i>—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, the T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, the T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p><i>scc</i>—(TX Matrix routers only) TX Matrix router (or switch-card chassis) in the routing matrix.</p> <p><i>sfc</i>—(TX Matrix Plus routers only) TX Matrix Plus router (or switch-fabric chassis) in the routing matrix.</p> <p><i>slot slot-number</i>—CB 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 510</a></li> <li>• <a href="#">show chassis spmb sibs on page 517</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">request chassis spmb restart on page 193</a>
<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 ssb master switch

---

<b>Syntax</b>	request chassis ssb master switch <no-confirm>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M20 router only) Control which System and Switch Board (SSB) is master.
<b>Options</b>	no-confirm—(Optional) Do not request confirmation for the switch.
<b>Additional Information</b>	<p>By default, the SSB in slot 0 (SSB0) is the master and the SSB in slot 1 (SSB1) is the backup. If you use this command to change the master, and then restart the chassis software for any reason, the master reverts to the default setting. To change the default master SSB, include the <b>ssb</b> statement at the <b>[edit chassis redundancy]</b> hierarchy level in the configuration. For more information, see the <i>Junos OS System Basics Configuration Guide</i>.</p> <p>The configurations on the two SSBs do not have to be the same, and they are not automatically synchronized. If you configure both SSBs as masters, when the chassis software restarts for any reason, the SSB in slot 0 becomes the master and the one in slot 1 becomes the backup.</p> <p>The switchover from the primary SSB to the backup SSB is immediate. The SSB takes several seconds to reinitialize the Flexible PIC Concentrators (FPCs) and restart the PICs. The interior gateway protocol (IGP) and BGP convergence times depend on the specific network environment.</p>
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show chassis ssb on page 521</a></li></ul>
<b>List of Sample Output</b>	<a href="#">request chassis ssb master switch on page 194</a> <a href="#">request chassis ssb master switch no-confirm on page 194</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

request chassis ssb master switch	user@host> request chassis ssb master switch warning: Traffic will be interrupted while the PFE is re-initialized Toggle mastership between system switch boards ? [yes,no] (no) yes  Switch initiated, use "show chassis ssb" to verify
request chassis ssb master switch no-confirm	user@host> request chassis ssb master switch no-confirm Switch initiated, use "show chassis ssb" to verify

## request chassis synchronization mode

<b>Syntax</b>	request chassis synchronization mode (free-run   holdover   auto-select)
<b>Release Information</b>	Command introduced in Junos OS Release 10.4.
<b>Description</b>	(MX80 and MX240 routers only) Change the chassis synchronization source used for synchronized Ethernet (Sync-E) configuration.
<b>Options</b>	<p>freerun—Change chassis synchronization to freerun mode.</p> <p>holdover—Change chassis synchronization to holdover mode.</p> <p>auto-select—Change chassis synchronization to auto-select mode.</p>
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	
<b>List of Sample Output</b>	<p>request chassis synchronization mode freerun on page 195</p> <p>request chassis synchronization mode holdover on page 195</p> <p>request chassis synchronization mode auto-select on page 195</p>
<b>Output Fields</b>	<p>When you enter this command, you are provided feedback on the status of your request. <b>Not configured</b> indicates that the source is not configured. <b>Present</b> indicates that the source is configured and present. <b>Qualified</b> indicates that the source is being used for synchronization.</p>

### Sample Output

```
request chassis user@host> request chassis synchronization mode freerun
mode is freerun, status: qualified
freerun
```

### Sample Output

```
request chassis user@host> request chassis synchronization mode holdover
mode is holdover, status: qualified
holdover
```

### Sample Output

```
request chassis user@host> request chassis synchronization mode auto-select
mode is auto-select, status: qualified
auto-select
```

## request chassis synchronization switch

---

<b>Syntax</b>	request chassis synchronization switch (external-a   external-b)
<b>Release Information</b>	Command introduced in Junos OS Release 7.6. Command introduced in Junos OS Release 8.3 for M40e routers. Command introduced in Junos OS Release 9.3 for M120 routers. Command introduced in Junos OS Release 10.2 for T320, T640, and T1600 routers.
<b>Description</b>	(M320, M40e, M120, T320, T640, and T1600 routers only) Change the external clock source used for chassis synchronization.
<b>Options</b>	external-a—(Routing matrix only) Change the synchronization source to external source A.  external-b—(Routing matrix only) Change the synchronization source to external source B.
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show chassis synchronization on page 523</a></li></ul>
<b>List of Sample Output</b>	<a href="#">request chassis synchronization switch external-a on page 196</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request. <b>Not configured</b> indicates that the source is not configured. <b>Present</b> indicates that the source is configured and present. <b>Qualified</b> indicates that the source is being used for synchronization.

### Sample Output

request chassis synchronization switch external-a	user@host> request chassis synchronization switch external-a switching to external-a, status: qualified
---------------------------------------------------------	------------------------------------------------------------------------------------------------------------

## 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>Syntax (QFX Series)</b>	set chassis display message " <i>message</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 for TX Matrix Plus router introduced in Junos OS Release 9.6. Command introduced in Junos OS Release 11.1 for the QFX Series.
<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, 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>	<p><b>"<i>message</i>"</b>—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.</p> <p><b>fpc-slot <i>slot-number</i></b>—(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 <b><i>slot-number</i></b> with a value from <b>0</b> through <b>31</b>. On the switch, display the text message for a specific member of a Virtual Chassis, where <b>fpc-slot <i>slot-number</i></b> corresponds to the member ID. Replace <b><i>slot-number</i></b> with a value from <b>0</b> through <b>9</b>. On the QFX Series, the <b><i>slot-number</i></b> is always <b>0</b>.</p> <p><b><i>lcc number</i></b> —(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, display the text message on the craft interface display of a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display the text message on the craft interface display of a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <b><i>number</i></b> with a value from <b>0</b> through <b>3</b>.</p> <p><b>permanent</b>—(Optional) Display a text message on the craft interface display or LCD panel display permanently.</p>

scc—(TX Matrix routers only) Display the text message on the craft interface display of the TX Matrix router (or 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).

<b>Required Privilege Level</b>	clear
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>Configuring the LCD Panel on EX Series Switches (CLI Procedure)</li> <li><b>clear chassis display message on page 163</b></li> <li><b>show chassis craft-interface on page 207</b></li> </ul>
<b>List of Sample Output</b>	<b>set chassis display message (Creating) on page 198</b> <b>set chassis display message (Deleting) on page 198</b> <b>set chassis display message (QFX Series) on page 199</b>
<b>Output Fields</b>	See <b>show chassis craft-interface</b> 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|
+-----+

```

**set chassis display message (QFX Series)**

```
user@switch> set chassis display message
```

```
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 Router)</b>	show chassis alarms <lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show chassis alarms <lcc <i>number</i>   sfc <i>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><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>
<b>Description</b>	Display information about the conditions that have been configured to trigger alarms.
<b>Options</b>	<p>none—Display information about the conditions that have been configured to trigger alarms.</p> <p><i>lcc number</i> — (TX Matrix and TX Matrix Plus routers only) (Optional) On the TX Matrix router, show information about a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On the TX Matrix Plus router, show information about a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix router only) (Optional) Show information about the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus router only) (Optional) Show information about the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p>
<b>Additional Information</b>	<p>You cannot clear the alarms for chassis components. Instead, you must remedy the cause of the alarm. When a chassis alarm is lit, it indicates that you are running the router or switch in a manner that we do not recommend.</p> <p>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.</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>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p>show chassis alarms (Alarms Active) on page 201</p> <p>show chassis alarms (No Alarms Active) on page 201</p>



[show chassis alarms \(Fan Tray\) on page 201](#)  
[show chassis alarms \(Alarms Active on a TX Matrix Router\) on page 201](#)  
[show chassis alarms \(Backup Routing Engine\) on page 202](#)  
[show chassis alarms \(Alarms Active on the QFX Series\) on page 202](#)

**Output Fields** Table 45 on page 201 lists the output fields for the **show chassis alarms** command. Output fields are listed in the approximate order in which they appear.

**Table 45: 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 (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**  
**(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
2011-11-24 07:45:01 PST  Major  FPC 0 Fan 1 not spinning
```

## show chassis cfeb

<b>Syntax</b>	show chassis cfeb
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M7i and M10i routers only) Display status information about the Compact Forwarding Engine Board (CFEB).
<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>request chassis cfeb on page 167</li> </ul>
<b>List of Sample Output</b>	show chassis cfeb (M7i) on page 204 show chassis cfeb (M10i) on page 204
<b>Output Fields</b>	Table 46 on page 203 lists the output fields for the <b>show chassis cfeb</b> command. Output fields are listed in the approximate order in which they appear.

**Table 46: show chassis cfeb Output Fields**

Field Name	Field Description
<b>State</b>	Status of the CFEB: <ul style="list-style-type: none"> <li>• <b>Online</b>—CFEB is online and running.</li> <li>• <b>Offline</b>—CFEB is powered down.</li> </ul>
<b>Intake Temperature</b>	Temperature of the air before flowing past the CFEB.
<b>Exhaust Temperature</b>	Temperature of the air after flowing past the CFEB.
<b>CPU utilization</b>	Percentage of CPU being used by the CFEB processor.
<b>Interrupt utilization</b>	Of the total CPU being used by the CFEB processor, the percentage being used for interrupts
<b>Heap Utilization</b>	Percentage of heap space (dynamic memory) being used by the CFEB processor. If this number exceeds 80 percent, there may be a software problem (memory leak).
<b>Buffer Utilization</b>	Percentage of buffer space being used by the CFEB processor for buffering internal messages
<b>Total CPU DRAM</b>	Amount of DRAM available to the CFEB CPU.
<b>Internet Processor II</b>	Information about the CFEB processor.

Table 46: show chassis cfep Output Fields (*continued*)

Field Name	Field Description
<b>Start time</b>	Time when the Routing Engine detected that the CFEB was running.
<b>Uptime</b>	How long the Routing Engine has been connected to the CFEB and, therefore, how long the Flexible PIC Concentrator (FPC) has been up and running.

## Sample Output

```

show chassis cfep user@host> show chassis cfep
(M7i) CFEB status:
      State Online
      Intake Temperature 27 degrees C / 80 degrees F
      Exhaust Temperature 33 degrees C / 91 degrees F
      CPU utilization 3 percent
      Interrupt utilization 0 percent
      Heap utilization 8 percent
      Buffer utilization 21 percent
      Total CPU DRAM 128 MB
      Internet Processor II Version 1, Foundry IBM, Part number 164
      Start time: 2003-06-11 11:41:22 PDT
      Uptime: 1 hour, 39 minutes, 31 seconds

show chassis cfep user@host> show chassis cfep
(M10i) CFEB status:
Slot 0 information:
  StateMaster
  Intake temperature 35 degrees C / 95 degrees F
  Exhaust temperature 43 degrees C / 109 degrees F
  CPU utilization 3 percent
  Interrupt utilization 0 percent
  Heap utilization 10 percent
  Buffer utilization 22 percent
  Total CPU DRAM 128 MB
  Internet Processor II Version 1, Foundry IBM, Part number 164
  Start time: 2004-11-01 03:24:15 PST
  Uptime: 12 hours, 56 minutes, 18 seconds
Slot 1 information:
  State Backup

```

## show chassis cip

<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>request chassis cip on page 168</li> </ul>
<b>Output Fields</b>	Table 47 on page 205 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 47: show chassis cip Output Fields**

Field Name	Field Description
<b>Eswitch</b>	Ethernet switch used to connect to the LCC or to a JCS1200: <b>0</b> or <b>1</b> .
<b>Port</b>	Physical port number of the Ethernet switch: <ul style="list-style-type: none"> <li>Port numbers: <b>4</b> to <b>8</b> on Ethernet switch <b>0</b> 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 <b>0</b> to <b>15</b> on Ethernet switch <b>1</b> 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 four LCCs. You can connect the four LCCs to any of the ports (<b>0</b> to <b>15</b>) on the Ethernet switch <b>1</b>.</p>
<b>Type</b>	Type of CIP: <ul style="list-style-type: none"> <li><b>XE</b>—Ethernet switch <b>0</b> ports used for connections to the SFC control plane or other devices such as JCS1200.</li> <li><b>GE</b>—Ethernet switch <b>1</b> ports used for connections to the LCC control plane.</li> </ul>
<b>Connected-to</b>	Show control plane connection to a specific LCC or SFC.
<b>Link</b>	State of the connection to an LCC control plane, SFC control plane, or other devices: <b>Up</b> or <b>Down</b> .
<b>Speed</b>	Ethernet link speed.
<b>Duplex</b>	Type of Ethernet link: <b>Full</b> or <b>Half Duplex</b> .

Table 47: show chassis cip Output Fields (*continued*)

Field Name	Field Description
<b>Auto-neg</b>	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 GE16 Down 0 Half On
1 17 GE GE17 Down 0 Half On

```

## show chassis craft-interface

<b>Syntax</b>	show chassis craft-interface
<b>Syntax (TX Matrix Router)</b>	show chassis craft-interface <fcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show chassis craft-interface <fcc <i>number</i>   sfc <i>number</i> >
<b>Release Information</b>	Command introduced before JUNOS Release 7.4. sfc option for the TX Matrix Plus router introduced in JUNOS Release 9.6.
<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>none—(TX Matrix and TX Matrix Plus 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 T1600 routers.</p> <p>fcc <i>number</i>—(TX Matrix and TX Matrix Plus router only) (Optional) On a TX Matrix router, show messages that are currently displayed on the craft interface for a specified T640 router (or 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 T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix router only) (Optional) Show messages that are currently displayed on the craft interface for the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus router only) (Optional) Show messages that are currently displayed on the craft interface for the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>clear chassis display message on page 163</li> <li>set chassis display message on page 197</li> </ul>
<b>List of Sample Output</b>	<p>show chassis craft-interface (M20 Router) on page 208</p> <p>show chassis craft-interface (M40 Router) on page 209</p> <p>show chassis craft-interface (M120 Router) on page 209</p> <p>show chassis craft-interface (M160 Router) on page 210</p> <p>show chassis craft-interface (TX Matrix Routing Matrix) on page 210</p> <p>show chassis craft-interface (TX Matrix Plus Routing Matrix) on page 212</p>

**Output Fields** Table 48 on page 208 lists the output fields for the **show chassis craft-interface** command. Output fields are listed in the approximate order in which they appear.

**Table 48: show chassis craft-interface Output Fields**

Field Name	Field Description
LCD screen or FPM Display Contents	Contents of the Front Panel Module display: <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>
Front Panel System LEDs	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	Status of the Front Panel Alarm indicators. A dot (.) indicates the relay is off. An asterisk (*) indicates the relay is active.
Front Panel FPC LEDs	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.
CB LEDs	Status of the Control Board (CB) LEDs. A dot (.) indicates the LED is not lit. An asterisk (*) indicates the LED is lit.
MCS and SFM LEDs	Status of the Miscellaneous Control Subsystem (MCS) and Switching and Forwarding Module (SFM) LEDs. A dot (.) indicates the LED is not lit. An asterisk (*) indicates the LED is lit. When neither a dot nor an asterisk is displayed, there is no board in that slot.
SIB LEDs	Status of the Switch Interface Board (SIB) LEDs. A dot (.) indicates the LED is not lit. An asterisk (*) indicates the LED is lit.
SCG LEDs	Status of the SONET Clock Generator (SCG) LEDs. A dot (.) indicates the LED is not lit. An asterisk (*) indicates the LED is lit.

## Sample Output

```

show chassis user@host> show chassis craft-interface
craft-interface (M20 Red alarm:      LED off, relay off
Router)          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 (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:
+-----+
| finalfive      |

```

```

|22 Alarms active  |
|R: LCC 0 Major Error|
|R: SIB F2S 4/6 Absen|
+-----+

```

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      *    .

```

FPM Display contents:

```

+-----+
|tigh   |
|5 Alarms active |
|R: SIB-L - Fan Rev M|
|Y: Check SIB 0   |
+-----+

```

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 environment

<b>Syntax</b>	show chassis environment
<b>Syntax (TX Matrix Router)</b>	show chassis environment <lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show chassis environment <lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (QFX Series)</b>	show chassis environment <fpc <i>fpc-slot</i> > <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 9.6. Command introduced in Junos OS Release 11.1 for the QFX Series.
<b>Description</b>	Display environmental information about the router or switch chassis, including the temperature and information about the fans, power supplies, and Routing Engine.
<b>Options</b>	<p>none—Display environmental information about the router or switch chassis. On a TX Matrix router, display environmental information about the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about the TX Matrix Plus router and its attached T1600 routers.</p> <p>fpc <i>fpc-slot</i>—(QFX Series only) (Optional) On the QFX Series, display chassis environmental information for a specified Flexible Pic Concentrator. Replace <b><i>fpc-slot</i></b> with <b>0</b>.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display chassis environmental information for a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display chassis environmental information for a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <b><i>number</i></b> with a value from <b>0</b> through <b>3</b>.</p> <p>routing-engine—(QFX Series only) (Optional) On the QFX Series, display chassis environmental information for the Routing Engine.</p> <p>scc—(TX Matrix routers only) (Optional) Display chassis environmental information about the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) (Optional) Display chassis environmental information about the TX Matrix Plus router (or switch-fabric chassis). Replace <b><i>number</i></b> with <b>0</b>.</p>
<b>Required Privilege Level</b>	view

- Related Documentation**
- [show chassis environment cb](#) on page 232
  - [show chassis environment cip](#) on page 243
  - [show chassis environment fpc](#) on page 245
  - [show chassis environment fpm](#) on page 255
  - [show chassis environment mcs](#) on page 259
  - [show chassis environment pcg](#) on page 261
  - [show chassis environment pem](#) on page 263
  - [show chassis environment routing-engine](#) on page 269

- List of Sample Output**
- [show chassis environment \(J2300 Router\)](#) on page 217
  - [show chassis environment \(J4300 or J6300 Router\)](#) on page 217
  - [show chassis environment \(M5 Router\)](#) on page 217
  - [show chassis environment \(M7i Router\)](#) on page 217
  - [show chassis environment \(M10 Router\)](#) on page 218
  - [show chassis environment \(M10i Router\)](#) on page 218
  - [show chassis environment \(M20 Router\)](#) on page 218
  - [show chassis environment \(M40 Router\)](#) on page 219
  - [show chassis environment \(M40e Router\)](#) on page 219
  - [show chassis environment \(M120 Router\)](#) on page 220
  - [show chassis environment \(M160 Router\)](#) on page 221
  - [show chassis environment \(M320 Router\)](#) on page 221
  - [show chassis environment \(MX240 Router\)](#) on page 222
  - [show chassis environment \(MX480 Router\)](#) on page 223
  - [show chassis environment \(MX960 Router\)](#) on page 224
  - [show chassis environment \(T320 Router\)](#) on page 224
  - [show chassis environment \(T640 Router\)](#) on page 225
  - [show chassis environment \(TX Matrix Router\)](#) on page 226
  - [show chassis environment \(T1600 Router\)](#) on page 227
  - [show chassis environment \(TX Matrix Plus Router\)](#) on page 228
  - [show chassis environment \(EX4200 Standalone Switch\)](#) on page 231
  - [show chassis environment \(QFX Series\)](#) on page 231

- Output Fields** Table 49 on page 216 lists the output fields for the **show chassis environment** command. Output fields are listed in the approximate order in which they appear.

Table 49: show chassis environment Output Fields

Field Name	Field Description
<b>Class</b>	<b>Item, Status, Measurement</b>
<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, T Series routers and EX Series switches only) Information about the 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> </ul>



Table 49: show chassis environment Output Fields (*continued*)

Field Name	Field Description
Temp	Temperature of air flowing through the chassis in degrees Celsius (C) and Fahrenheit (F).
Fan	Fan status: <b>OK</b> , <b>Testing</b> (during initial power-on), <b>Failed</b> , or <b>Absent</b> . <b>Measurement</b> indicates if fans are spinning at normal or high speed.
Misc	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 M160 router, <b>Misc</b> includes <b>CIP</b> (Connector Interface Panel). <b>OK</b> indicates the CIP is present.</li> <li>On the T640 router, <b>Misc</b> includes <b>CIP</b> and <b>SPMB</b> (Switch Processor Mezzanine Board). <b>OK</b> indicates the item is present.</li> </ul>

### Sample Output

```

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

```

```

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

```

```

show chassis environment (M5 Router) user@host> show chassis environment
Class Item Status Measurement
Power Power Supply A OK
Power Power Supply B Absent
Temp FPC 0 OK 30 degrees C / 86 degrees F
FEB OK 33 degrees C / 91 degrees F
PS Intake OK 27 degrees C / 80 degrees F
PS Exhaust OK 27 degrees C / 80 degrees F
Routing Engine OK 34 degrees C / 93 degrees F
Fans Left Fan 1 OK Spinning at normal speed
Left Fan 2 OK Spinning at normal speed
Left Fan 3 OK Spinning at normal speed
Left Fan 4 OK Spinning at normal speed
Misc Craft Interface OK

```

```

show chassis environment (M7i Router) user@host> show chassis environment
Class Item Status Measurement
Power Power Supply 0 OK
Power Power Supply 1 Absent
Temp Intake OK 22 degrees C / 71 degrees F
FPC 0 OK 23 degrees C / 73 degrees F
Power Supplies OK 23 degrees C / 73 degrees F
CFEB Intake OK 24 degrees C / 75 degrees F
CFEB Exhaust OK 29 degrees C / 84 degrees F
Routing Engine OK 26 degrees C / 78 degrees F
Fans Fan 1 OK Spinning at normal speed
Fan 2 OK Spinning at normal speed

```

```

Fan 3          OK      Spinning at normal speed
Fan 4          OK      Spinning at normal speed

```

```

show chassis user@host> show chassis environment
environment (M10i)
Router)      Class Item          Status      Measurement
Power Power Supply A      OK
Power Power Supply B      Failed
Temp  FPC 0              OK          36 degrees C / 96 degrees F
      FPC 1              OK          35 degrees C / 95 degrees F
      FEB                OK          34 degrees C / 93 degrees F
      PS Intake          OK          31 degrees C / 87 degrees F
      PS Exhaust         OK          34 degrees C / 93 degrees F
      Routing Engine     OK          35 degrees C / 95 degrees F
Fans   Left Fan 1        OK          Spinning at normal speed
      Left Fan 2        OK          Spinning at normal speed
      Left Fan 3        OK          Spinning at normal speed
      Left Fan 4        OK          Spinning at normal speed
Misc   Craft Interface   OK

```

```

show chassis user@host> show chassis environment
environment (M10i)
Router)      Class Item          Status      Measurement
Power Power Supply 0      OK
Power Power Supply 1      OK
Power Power Supply 2      Absent
Power 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 user@host> show chassis environment
environment (M20i)
Router)      Class Item          Status      Measurement
Power Power Supply A      OK
Power Power Supply B      Absent
Temp  FPC 0              OK          28 degrees C / 82 degrees F
      FPC 1              OK          27 degrees C / 80 degrees F

```

	Power Supply A	OK	22 degrees C / 71 degrees F
	Power Supply B	Absent	
	SSB 0	OK	30 degrees C / 86 degrees F
	Backplane	OK	22 degrees C / 71 degrees F
	Routing Engine 0	OK	26 degrees C / 78 degrees F
	Routing Engine 1	Testing	
Fans	Rear Fan	OK	Spinning at normal speed
	Front Upper Fan	OK	Spinning at normal speed
	Front Middle Fan	OK	Spinning at normal speed
	Front Bottom Fan	OK	Spinning at normal speed
Misc	Craft Interface	OK	

**show chassis environment (M40 Router)**      user@host> show chassis environment

Class	Item	Status	Measurement
Power	Power Supply A	OK	
	Power 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 (MX240 Router)**

```
user@host> show chassis environment
```

Class	Item	Status	Measurement
Temp	PEM 0	OK	40 degrees C / 104 degrees F
	PEM 1	OK	45 degrees C / 113 degrees F
	PEM 2	Absent	
	PEM 3	Absent	
	Routing Engine 0	OK	39 degrees C / 102 degrees F
	Routing Engine 1	OK	37 degrees C / 98 degrees F
	CB 0 Intake	OK	36 degrees C / 96 degrees F
	CB 0 Exhaust A	OK	34 degrees C / 93 degrees F
	CB 0 Exhaust B	OK	38 degrees C / 100 degrees F
	CB 0 ACBC	OK	37 degrees C / 98 degrees F
	CB 0 SF A	OK	49 degrees C / 120 degrees F
	CB 0 SF B	OK	41 degrees C / 105 degrees F
	CB 1 Intake	OK	37 degrees C / 98 degrees F
	CB 1 Exhaust A	OK	34 degrees C / 93 degrees F
	CB 1 Exhaust B	OK	39 degrees C / 102 degrees F
	CB 1 ACBC	OK	38 degrees C / 100 degrees F
	CB 1 SF A	OK	47 degrees C / 116 degrees F
	CB 1 SF B	OK	41 degrees C / 105 degrees F
	FPC 1 Intake	OK	33 degrees C / 91 degrees F
	FPC 1 Exhaust A	OK	38 degrees C / 100 degrees F
	FPC 1 Exhaust B	OK	53 degrees C / 127 degrees F
	FPC 1 I3 0 TSensor	OK	50 degrees C / 122 degrees F
	FPC 1 I3 0 Chip	OK	53 degrees C / 127 degrees F
	FPC 1 I3 1 TSensor	OK	49 degrees C / 120 degrees F
	FPC 1 I3 1 Chip	OK	52 degrees C / 125 degrees F
	FPC 1 I3 2 TSensor	OK	47 degrees C / 116 degrees F
	FPC 1 I3 2 Chip	OK	49 degrees C / 120 degrees F
	FPC 1 I3 3 TSensor	OK	44 degrees C / 111 degrees F
	FPC 1 I3 3 Chip	OK	46 degrees C / 114 degrees F
	FPC 1 IA 0 TSensor	OK	45 degrees C / 113 degrees F
	FPC 1 IA 0 Chip	OK	44 degrees C / 111 degrees F
	FPC 1 IA 1 TSensor	OK	44 degrees C / 111 degrees F
	FPC 1 IA 1 Chip	OK	48 degrees C / 118 degrees F
	FPC 2 Intake	OK	32 degrees C / 89 degrees F
	FPC 2 Exhaust A	OK	40 degrees C / 104 degrees F
	FPC 2 Exhaust B	OK	52 degrees C / 125 degrees F
	FPC 2 I3 0 TSensor	OK	52 degrees C / 125 degrees F
	FPC 2 I3 0 Chip	OK	56 degrees C / 132 degrees F
	FPC 2 I3 1 TSensor	OK	52 degrees C / 125 degrees F
	FPC 2 I3 1 Chip	OK	55 degrees C / 131 degrees F
	FPC 2 I3 2 TSensor	OK	49 degrees C / 120 degrees F
	FPC 2 I3 2 Chip	OK	52 degrees C / 125 degrees F
	FPC 2 I3 3 TSensor	OK	44 degrees C / 111 degrees F
	FPC 2 I3 3 Chip	OK	48 degrees C / 118 degrees F
	FPC 2 IA 0 TSensor	OK	50 degrees C / 122 degrees F

```

FPC 2 IA 0 Chip          OK          48 degrees C / 118 degrees F
FPC 2 IA 1 TSensor       OK          47 degrees C / 116 degrees F
FPC 2 IA 1 Chip          OK          53 degrees C / 127 degrees F
Fans Front Fan           OK          Spinning at normal speed
      Middle Fan         OK          Spinning at normal speed
      Rear Fan           OK          Spinning at normal speed

show chassis user@host> show chassis environment
environment (MX480 Class Item Status Measurement
Router) 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 (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 (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 (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

```

```

lcc0-re0:

```

```

-----
Class Item          Status Measurement
Temp PEM 0          OK      29 degrees C / 84 degrees F
    PEM 1           Absent
    SCG 0           OK      35 degrees C / 95 degrees F
    SCG 1           Absent
    Routing Engine 0 OK      39 degrees C / 102 degrees F
    Routing Engine 1 OK      36 degrees C / 96 degrees F

```

```

CB 0          OK          32 degrees C / 89 degrees F
CB 1          OK          32 degrees C / 89 degrees F
SIB 0         OK          40 degrees C / 104 degrees F
SIB 0 (B)     OK          51 degrees C / 123 degrees F
FPC 0 Top     OK          45 degrees C / 113 degrees F
FPC 0 Bottom  OK          31 degrees C / 87 degrees F
FPC 1 Top     OK          34 degrees C / 93 degrees F
FPC 1 Bottom  OK          31 degrees C / 87 degrees F
FPM GBUS      OK          30 degrees C / 86 degrees F
FPM Display   OK          34 degrees C / 93 degrees F
Fans Top Left Front fan  OK          Spinning at normal speed
Top Left Middle fan     OK          Spinning at normal speed
Top Left Rear fan       OK          Spinning at normal speed
Top Right Front fan     OK          Spinning at normal speed
Top Right Middle fan    OK          Spinning at normal speed
Top Right Rear fan      OK          Spinning at normal speed
Bottom Left Front fan   OK          Spinning at normal speed
Bottom Left Middle fan  OK          Spinning at normal speed
Bottom Left Rear fan    OK          Spinning at normal speed
Bottom Right Front fan  OK          Spinning at normal speed
Bottom Right Middle fan OK          Spinning at normal speed
Bottom Right Rear fan   OK          Spinning at normal speed
Rear Tray Top fan      OK          Spinning at normal speed
Rear Tray Second fan   OK          Spinning at normal speed
Rear Tray Third fan    OK          Spinning at normal speed
Rear Tray Fourth fan   OK          Spinning at normal speed
Rear Tray Fifth fan    OK          Spinning at normal speed
Rear Tray Sixth fan    OK          Spinning at normal speed
Rear Tray Seventh fan  OK          Spinning at normal speed
Rear Tray Bottom fan   OK          Spinning at normal speed
Misc CIP         OK
SPMB 0          OK
SPMB 1          OK

```

lcc2-re0:

```

-----
Class Item          Status Measurement
Temp PEM 0          OK          29 degrees C / 84 degrees F
      PEM 1          Absent
      SCG 0          OK          32 degrees C / 89 degrees F
      SCG 1          Absent
      Routing Engine 0 OK          31 degrees C / 87 degrees F
      Routing Engine 1 OK          32 degrees C / 89 degrees F
      CB 0           OK          30 degrees C / 86 degrees F
      SIB 0          OK          38 degrees C / 100 degrees F
      SIB 0 (B)      OK          49 degrees C / 120 degrees F
      FPC 0 Top      OK          45 degrees C / 113 degrees F
      FPC 0 Bottom   OK          33 degrees C / 91 degrees F
      FPC 1 Top      OK          37 degrees C / 98 degrees F
      FPC 1 Bottom   OK          33 degrees C / 91 degrees F
      FPM GBUS       OK          30 degrees C / 86 degrees F
      FPM Display    OK          34 degrees C / 93 degrees F
Fans  Top Left Front fan  OK          Spinning at normal speed
      Top Left Middle fan OK          Spinning at normal speed
...

```

```

show chassis user@host> show chassis environment
environment (T1600 Class Item          Status Measurement
Router)          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 (EX4200 Standalone Switch)
user@host> show chassis environment
Class Item                               Status      Measurement
Power FPC 0 Power Supply 0              OK
      FPC 0 Power Supply 1              Absent
Temp  FPC 0 CPU                          OK          41 degrees C / 105 degrees F
      FPC 0 EX-PFE1                      OK          42 degrees C / 107 degrees F
      FPC 0 EX-PFE2                      OK          46 degrees C / 114 degrees F
      FPC 0 GEPHY Front Left             OK          25 degrees C / 77 degrees F
      FPC 0 GEPHY Front Right            OK          27 degrees C / 80 degrees F
      FPC 0 Uplink Conn                   OK          29 degrees C / 84 degrees F
Fans  FPC 0 Fan 1                        OK          Spinning at normal speed
      FPC 0 Fan 2                        OK          Spinning at normal speed
      FPC 0 Fan 3                        OK          Spinning at normal speed

show chassis environment (QFX Series)
user@switch> show chassis environment
Class Item                               Status      Measurement
Power FPC 0 Power Supply 0              OK
      FPC 0 Power Supply 1              OK
Temp  FPC 0 Sensor TopLeft I             OK          26 degrees C / 78 degrees F
      FPC 0 Sensor TopRight I            OK          24 degrees C / 75 degrees F
      FPC 0 Sensor TopLeft E             OK          30 degrees C / 86 degrees F
      FPC 0 Sensor TopRight E            OK          30 degrees C / 86 degrees F
      FPC 0 Sensor TopMiddle I           OK          30 degrees C / 86 degrees F
      FPC 0 Sensor TopMiddle E           OK          38 degrees C / 100 degrees F
      FPC 0 Sensor Bottom I              OK          34 degrees C / 93 degrees F
      FPC 0 Sensor Bottom E              OK          38 degrees C / 100 degrees F
      FPC 0 Sensor Die Temp              OK          38 degrees C / 100 degrees F
      FPC 0 Sensor Mgmt Brd I            OK          24 degrees C / 75 degrees F
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 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>Release Information</b>	Command introduced before Junos Release 7.4. Command introduced in Junos OS Release 9.4 for EX Series switches. <b>sfc</b> option introduced for the TX Matrix Plus router in Junos Release 9.6.
<b>Description</b>	(M120, M320, MX series, and T Series routers and EX8200 switches only) Display environmental information about the Control Boards (CBs). For information about the meaning of “CBs” on the switches, see EX Series Switches Hardware and CLI Terminology Mapping.
<b>Options</b>	<p><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 routers.</p> <p><b>lcc number</b>—(TX Matrix and TX Matrix Plus routers only) (Optional) For a TX Matrix router, display environmental information about the CBs in a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. For a TX Matrix Plus router, display environmental information about the CBs in a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <b>number</b> with a value from <b>0</b> through <b>3</b>.</p> <p><b>scc</b> —(TX Matrix router only) (Optional) Display environmental information about the CBs in the TX Matrix router (or switch-card chassis).</p> <p><b>sfc number</b>—(TX Matrix Plus router only) (Optional) Display environmental information about the CBs in the TX Matrix Plus router (or switch-fabric chassis).</p> <p><b>slot</b>—(Optional) Display environmental information about the specified CB. On the routers, replace <b>slot</b> with <b>0</b> or <b>1</b>. On the switches, replace <b>slot</b> with <b>0</b>, <b>1</b>, or <b>2</b>.</p> <p><b>slot</b>—(Optional) Display environmental information about the specified CB. On EX8200 switches, replace <b>slot</b> with <b>0</b> or <b>1</b> or <b>2</b>.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p>show chassis environment cb (M120 Router) on page 233</p> <p>show chassis environment cb (M320 Router) on page 234</p>



show chassis environment cb (MX80 Router) on page 234  
 show chassis environment cb (MX240 Router) on page 234  
 show chassis environment cb (MX480 Router) on page 235  
 show chassis environment cb (MX960 Router) on page 235  
 show chassis environment cb (TX Matrix Router) on page 236  
 show chassis environment cb (TX Matrix Plus Router) on page 236  
 show chassis environment cb (EX8200 Switch) on page 240  
 show chassis environment cb (EX8208 Switch) on page 241

**Output Fields** Table 50 on page 233 lists the output fields for the **show chassis environment cb** command. Output fields are listed in the approximate order in which they appear.

**Table 50: 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 EX Series Switches Hardware and CLI Terminology Mapping.</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>
<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>

## 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 user@host> show chassis environment cb
environment cb (M320 Router) 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 user@host> show chassis environment cb
environment cb (MX80 Router) 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 user@host> show chassis environment cb
environment cb (MX240 Router) 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    user@host> show chassis environment cb
(MX480 Router)                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    user@host> show chassis environment cb
(MX960 Router)                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 user@host> show chassis environment cb
environment cb -----
(TX Matrix Router)
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 user@host> show chassis environment cb
environment cb sfc0-re0:
-----

```

```

(TX Matrix Plus Router) CB 0 status:
State Online Master
Temperature 38 degrees C / 100 degrees F
Power 1
  1.0 V 1005 mV
  1.1 V 1108 mV
  1.2 V 1205 mV
  1.25 V 1269 mV
  1.5 V 1508 mV
  1.8 V 1814 mV
  2.5 V 2507 mV
  3.3 V 3306 mV
  3.3 V bias 3300 mV
  9.0 V 9058 mV
  9.0 V RE 9107 mV
Power 2
  3.9 V 3963 mV
  5.0 V 5020 mV
  9.0 V 9087 mV
Bus Revision 79
FPGA Revision 23
CB 1 status:
State Online Standby
Temperature 39 degrees C / 102 degrees F
Power 1
  1.0 V 1002 mV
  1.1 V 1105 mV
  1.2 V 1198 mV
  1.25 V 1276 mV
  1.5 V 1504 mV
  1.8 V 1804 mV
  2.5 V 2507 mV
  3.3 V 3300 mV
  3.3 V bias 3293 mV
  9.0 V 9039 mV
  9.0 V RE 9049 mV
Power 2
  3.9 V 3892 mV
  5.0 V 5040 mV
  9.0 V 9058 mV
Bus Revision 79
FPGA Revision 23

lcc0-re0:
-----
CB 0 status:
State Online Master
Temperature 39 degrees C / 102 degrees F
Power 1
  1.8 V 1799 mV
  2.5 V 2499 mV
  3.3 V 3327 mV
  3.3 V bias 3299 mV
  4.6 V 4673 mV
  5.0 V 4918 mV
  8.0 V bias 7308 mV
  12.0 V 11887 mV
Power 2
  1.0 V 996 mV
  1.2 V 1199 mV
  3.3 V RE 3319 mV

```

```

Bus Revision          51
FPGA Revision         3
CB 1 status:
State                 Online Standby
Temperature           40 degrees C / 104 degrees F
Power 1
  1.8 V               1800 mV
  2.5 V               2496 mV
  3.3 V               3322 mV
  3.3 V bias          3284 mV
  4.6 V               4680 mV
  5.0 V               4954 mV
  8.0 V bias          7284 mV
  12.0 V              11902 mV
Power 2
  1.0 V               998 mV
  1.2 V               1205 mV
  3.3 V RE            3327 mV
Bus Revision          51
FPGA Revision         3

```

lcc1-re0:

```

-----
CB 0 status:
State                 Online Master
Temperature           41 degrees C / 105 degrees F
Power 1
  1.8 V               1804 mV
  2.5 V               2517 mV
  3.3 V               3300 mV
  3.3 V bias          3284 mV
  4.6 V               4681 mV
  5.0 V               4927 mV
  8.0 V bias          7357 mV
  12.0 V              11907 mV
Power 2
  1.0 V               991 mV
  1.2 V               1202 mV
  3.3 V RE            3301 mV
Bus Revision          51
FPGA Revision         3

```

```

CB 1 status:
State                 Online Standby
Temperature           40 degrees C / 104 degrees F
Power 1
  1.8 V               1805 mV
  2.5 V               2528 mV
  3.3 V               3324 mV
  3.3 V bias          3289 mV
  4.6 V               4694 mV
  5.0 V               4959 mV
  8.0 V bias          7311 mV
  12.0 V              11926 mV
Power 2
  1.0 V               998 mV
  1.2 V               1200 mV
  3.3 V RE            3313 mV
Bus Revision          51
FPGA Revision         3

```

lcc2-re0:

```

-----
CB 0 status:
State                Online Master
Temperature           41 degrees C / 105 degrees F
Power 1
  1.8 V              1805 mV
  2.5 V              2494 mV
  3.3 V              3333 mV
  3.3 V bias         3296 mV
  4.6 V              4673 mV
  5.0 V              4901 mV
  8.0 V bias         7343 mV
  12.0 V             11916 mV
Power 2
  1.0 V              993 mV
  1.2 V              1213 mV
  3.3 V RE           3328 mV
Bus Revision          51
FPGA Revision         3
CB 1 status:
State                Online Standby
Temperature           41 degrees C / 105 degrees F
Power 1
  1.8 V              1804 mV
  2.5 V              2523 mV
  3.3 V              3334 mV
  3.3 V bias         3291 mV
  4.6 V              4697 mV
  5.0 V              4969 mV
  8.0 V bias         7308 mV
  12.0 V             11936 mV
Power 2
  1.0 V              996 mV
  1.2 V              1200 mV
  3.3 V RE           3328 mV
Bus Revision          51
FPGA Revision         3

```

```

lcc3-re0:
-----

```

```

CB 0 status:
State                Online Master
Temperature           37 degrees C / 98 degrees F
Power 1
  1.8 V              1809 mV
  2.5 V              2510 mV
  3.3 V              3296 mV
  3.3 V bias         3291 mV
  4.6 V              4670 mV
  5.0 V              4905 mV
  8.0 V bias         7211 mV
  12.0 V             11882 mV
Power 2
  1.0 V              996 mV
  1.2 V              1188 mV
  3.3 V RE           3326 mV
Bus Revision          51
FPGA Revision         5
CB 1 status:
State                Online Standby
Temperature           38 degrees C / 100 degrees F

```

```

Power 1
  1.8 V      1813 mV
  2.5 V      2510 mV
  3.3 V      3322 mV
  3.3 V bias 3289 mV
  4.6 V      4692 mV
  5.0 V      4967 mV
  8.0 V bias 7194 mV
 12.0 V     11916 mV
Power 2
  1.0 V      996 mV
  1.2 V     1205 mV
  3.3 V RE   3273 mV
Bus Revision    51
FPGA Revision    5

```

```

show chassis environment cb
user@host> show chassis environment cb
(EX8200 Switch)
CB 0 status:
State          Online Master
Temperature Intake 20 degrees C / 68 degrees F
Temperature Exhaust 24 degrees C / 75 degrees F
Power 1
  1.1 V      1086 mV
  1.2 V      1179 mV
  1.2 V *    1182 mV
  1.2 V *    1182 mV
  1.25 V     1211 mV
  1.5 V      1472 mV
  1.8 V      1756 mV
  2.5 V      2449 mV
  3.3 V      3254 mV
  3.3 V bias 3300 mV
  5.0 V      4911 mV
 12.0 V     11891 mV
Power 2
  3.3 V bias * 3615 mV
  3.3 V bias * 3615 mV
  3.3 V bias * 3567 mV
  3.3 V bias * 3664 mV
  4.3 V bias * 4224 mV
  4.3 V bias * 4215 mV
  4.3 V bias * 4224 mV
  4.3 V bias * 4205 mV
  4.3 V bias * 4195 mV
  4.3 V bias * 4215 mV
  5.0 V bias  4920 mV
CB 1 status:
State          Online Standby
Temperature Intake 19 degrees C / 66 degrees F
Temperature Exhaust 23 degrees C / 73 degrees F
Power 1
  1.1 V      1082 mV
  1.2 V      1169 mV
  1.2 V *    1179 mV
  1.2 V *    1179 mV
  1.25 V     1214 mV
  1.5 V      1482 mV
  1.8 V      1759 mV
  2.5 V      2481 mV
  3.3 V      3248 mV

```



```

3.3 V bias          3306 mV
5.0 V              4911 mV
12.0 V            11910 mV
Power 2
3.3 V bias *       3644 mV
3.3 V bias *       3664 mV
3.3 V bias *       3586 mV
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 user@host> show chassis environment cb
environment cb CB 0 status:
(EX8208 Switch) 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 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><code>none</code>—Display environmental information about all the CIP.</p> <p><code>slot</code>—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 51 on page 243 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 51: 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 Router)</b>	show chassis environment fpc <lcc number> <slot>
<b>Syntax (QFX Series)</b>	show chassis environment fpc <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 the QFX Series.
<b>Description</b>	(M40e, M120, M160, M320, MX Series, and T Series routers and EX Series switches only) Display environmental information about Flexible PIC Concentrators (FPCs).
<b>Options</b>	<p>none—Display environmental information about all FPCs. On a TX Matrix router, display environmental information about all FPCs on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about all FPCs on the TX Matrix Plus router and its attached T1600 routers.</p> <p><i>lcc number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display environmental information about the FPC in a T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display environmental information about the FPC in a T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p><i>slot</i> or <i>fpc-slot</i>—(Optional) Display environmental information about an individual FPC:</p> <ul style="list-style-type: none"> <li>(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 <i>lcc number</i> option (the recommended method), replace <i>slot</i> with a value from 0 through 7. Similarly, on a TX Matrix Plus router, if you specify the number of the T1600 router by using only the <i>lcc number</i> option (the recommended method), replace <i>slot</i> with a value from 0 through 7. Otherwise, replace <i>slot</i> with a value from 0 through 31. For example, the following commands have the same result: <pre> user@host&gt; show chassis environment fpc 1 lcc 1 user@host&gt; show chassis environment fpc 9 </pre> </li> <li>M120 router—Replace <i>slot</i> with a value from 0 through 5.</li> <li>MX240 router—Replace <i>slot</i> with a value from 0 through 2.</li> <li>MX480 router—Replace <i>slot</i> with a value from 0 through 5.</li> <li>MX960 router—Replace <i>slot</i> with a value from 0 through 11.</li> <li>Other routers—Replace <i>slot</i> with a value from 0 through 7.</li> </ul>

- 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).
  - 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).
- QFX Series—Replace **fpc-slot** with 0.

**Required Privilege Level** view

**List of Sample Output**

show chassis environment fpc (M120 Router) on page 247  
 show chassis environment fpc (M160 Router) on page 248  
 show chassis environment fpc (M320 Router) on page 248  
 show chassis environment fpc (MX240 Router) on page 249  
 show chassis environment fpc (MX480 Router) on page 250  
 show chassis environment fpc (MX960 Router) on page 251  
 show chassis environment fpc (T Series Core Routers) on page 252  
 show chassis environment fpc lcc (TX Matrix Router) on page 252  
 show chassis environment fpc lcc (TX Matrix Plus Router) on page 253  
 show chassis environment fpc 0 (QFX Series) on page 254

**Output Fields** Table 52 on page 246 lists the output fields for the **show chassis environment fpc** command. Output fields are listed in the approximate order in which they appear.

**Table 52: show chassis environment fpc Output Fields**

Field Name	Field Description
<b>State</b>	Status of the FPC: <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>Temperature Intake</b>	(M320 routers 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.

Table 52: show chassis environment fpc Output Fields (*continued*)

Field Name	Field Description
Temperature Exhaust	(M120 and M320 routers only) Temperature of the air flowing out of the chassis.
Temperature Bottom	(T Series routers only) Temperature of the air flowing past the bottom of the FPC.
Temperature MMBO	(T640 router only) Temperature of the air flowing past the type 3 FPC.
Temperature MMB1	(M320 and T Series routers only) Temperature of the air flowing past the type 1, type 2, and type 3 FPC.
Power	Information about the voltage supplied to the FPC. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
CMB Revision or BUS revision	Revision level of the chassis management bus device (M Series router) or bus (T Series routers).

### Sample Output

```

show chassis environment fpc (M120 Router) user@host> show chassis environment fpc
FPC 2 status:
State Online
Temperature Exhaust A 32 degrees C / 89 degrees F
Temperature Exhaust B 31 degrees C / 87 degrees F
Power A-Board
  1.2 V 1202 mV
  1.5 V 1508 mV
  1.8 V 1798 mV
  2.5 V 2507 mV
  3.3 V 3351 mV
  5.0 V 4995 mV
  3.3 V bias 3296 mV
  1.2 V Rocket IO 1205 mV
  1.5 V Rocket IO 1501 mV
I2C Slave Revision 12
FPC 3 status:
State Online
Temperature Exhaust A 31 degrees C / 87 degrees F
Temperature Exhaust B 33 degrees C / 91 degrees F
Power A-Board
  1.2 V 1211 mV
  1.5 V 1501 mV
  1.8 V 1798 mV
  2.5 V 2471 mV
  3.3 V 3293 mV
  5.0 V 4930 mV
  3.3 V bias 3296 mV
  1.2 V Rocket IO 1205 mV
  1.5 V Rocket IO 1501 mV
Power B-Board
  1.2 V 1214 mV
  1.5 V 1501 mV
  2.5 V 2471 mV
  3.3 V 3300 mV
  5.0 V 4943 mV

```

```

        3.3 V bias          3296 mV
        1.2 V Rocket IO    1205 mV
        1.5 V Rocket IO    1501 mV
    I2C Slave Revision      12
FPC 4 status:
    State                   Online
    Temperature Exhaust A   32 degrees C / 89 degrees F
    Temperature Exhaust B   30 degrees C / 86 degrees F
    Power A-Board
        1.2 V              1195 mV
        1.5 V              1504 mV
        1.8 V              1801 mV
        2.5 V              2504 mV
        3.3 V              3293 mV
        5.0 V              4917 mV
        3.3 V bias         3296 mV
        1.2 V Rocket IO    1202 mV
        1.5 V Rocket IO    1492 mV
    I2C Slave Revision      12

```

```

show chassis environment fpc (M160 Router)
user@host> show chassis environment fpc
FPC 0 status:
    State                   Online
    Temperature             42 degrees C / 107 degrees F
    Power:
        1.5 V              1500 mV
        2.5 V              2509 mV
        3.3 V              3308 mV
        5.0 V              4991 mV
        5.0 V bias         4952 mV
        8.0 V bias         8307 mV
    CMB Revision            12
FPC 1 status:
    State                   Online
    Temperature             45 degrees C / 113 degrees F
    Power:
        1.5 V              1498 mV
        2.5 V              2501 mV
        3.3 V              3319 mV
        5.0 V              5020 mV
        5.0 V bias         5025 mV
        8.0 V bias         8307 mV
    CMB Revision            12

```

```

show chassis environment fpc (M320 Router)
user@host> show chassis environment fpc
FPC 0 status:
    State                   Online
    Temperature Intake       27 degrees C / 80 degrees F
    Temperature Exhaust      38 degrees C / 100 degrees F
    Temperature MMB1         31 degrees C / 87 degrees F
    Power:
        1.5 V              1487 mV
        1.5 V *            1494 mV
        1.8 V              1821 mV
        2.5 V              2533 mV
        3.3 V              3323 mV
        5.0 V              5028 mV
        3.3 V bias         3296 mV
        5.0 V bias         4984 mV
    CMB Revision            16
FPC 1 status:

```



```

State                               Online
Temperature Intake                  27 degrees C / 80 degrees F
Temperature Exhaust                  37 degrees C / 98 degrees F
Temperature MMB1                    32 degrees C / 89 degrees F
Power:
  1.5 V                             1504 mV
  1.5 V *                           1499 mV
  1.8 V                             1820 mV
  2.5 V                             2529 mV
  3.3 V                             3328 mV
  5.0 V                             5013 mV
  3.3 V bias                        3294 mV
  5.0 V bias                        4984 mV
CMB Revision                        16
FPC 2 status:
State                               Online
Temperature Intake                  28 degrees C / 82 degrees F
Temperature Exhaust                  38 degrees C / 100 degrees F
Temperature MMB1                    32 degrees C / 89 degrees F
Power:
  1.5 V                             1498 mV
  1.5 V *                           1487 mV
  1.8 V                             1816 mV
  2.5 V                             2531 mV
  3.3 V                             3324 mV
  5.0 V                             5025 mV
  3.3 V bias                        3277 mV
  5.0 V bias                        5013 mV
CMB Revision                        17
FPC 3 status:
...

```

**show chassis  
environment fpc  
(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 (T  
Series Core 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 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 user@switch> show chassis environment fpc 0
environment fpc 0 FPC 0 status:
(QFX Series)      State           Online
                  Temperature      42 degrees C / 107 degrees F
    
```

## show chassis environment fpm

<b>Syntax</b>	show chassis environment fpm
<b>Syntax (TX Matrix Router)</b>	show chassis environment fpm <lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show chassis environment fpm <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>	(M40e, M120, M160, M320, MX Series, and T Series routers only) Display environmental information about the front panel module in the router.
<b>Options</b>	<p>none—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, display environmental information about the front panel modules (craft interfaces) on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about the front panel modules (craft interfaces) on the TX Matrix Plus router and its attached T1600 routers.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display environmental information about the front panel module (craft interface) on a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display environmental information about the front panel module (craft interface) on a specified T1600 router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix router only) (Optional) Display environmental information about the front panel module (craft interface) on the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus router only) (Optional) Display environmental information about the front panel module (craft interface) on the TX Matrix Plus router (or switch-fabric chassis).</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p>show chassis environment fpm (M40e and M160 Routers) on page 256</p> <p>show chassis environment fpm (M320 Router) on page 256</p> <p>show chassis environment fpm (MX240 Router) on page 257</p> <p>show chassis environment fpm (MX480 Router) on page 257</p> <p>show chassis environment fpm (T Series Routers) on page 257</p> <p>show chassis environment fpm lcc (TX Matrix Router) on page 257</p> <p>show chassis environment fpm scc (TX Matrix Router) on page 257</p> <p>show chassis environment fpm sfc (TX Matrix Plus Router) on page 258</p>

**Output Fields** Table 53 on page 256 lists the output fields for the **show chassis environment fpm** command. Output fields are listed in the approximate order in which they appear.

**Table 53: show chassis environment fpm Output Fields**

Field Name	Field Description
State	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>
FPM CMB Voltage	(M40e and M160 routers only) Information about the voltage supplied to the FPM chassis management bus (CMB) device. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
FPM GBUS Voltage	(M320 and T Series routers only) Information about the voltage supplied to the FPM generic bus (GBUS) device. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
FPM Display Voltage	Information about the voltage supplied to the FPM display. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
FPM CMB Temperature	(M40e and M160 routers only) Temperature of the air flowing past the FPM CMB device
FPM GBUS Temperature	(M320 and T Series routers only) Temperature of the air flowing past the FPM GBUS device.
FPM 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.

## Sample Output

```

show chassis environment fpm (M40e and M160 Routers)
user@host> show chassis environment fpm
FPM status:
State Online
FPM CMB Voltage:
  5.0 V bias 5030 mV
  8.0 V bias 8083 mV
FPM Display Voltage:
  5.0 V bias 4998 mV
FPM CMB temperature 34 degrees C / 93 degrees F
FPM Display temperature 35 degrees C / 95 degrees F
CMB Revision 12

show chassis environment fpm (M320 Router)
user@host> show chassis environment fpm
FPM status:
State Online
FPM GBUS Voltage:
  5.0 V 5006 mV
  1.8 V bias 1799 mV

```



```

        3.3 V bias           3294 mV
        5.0 V bias           4998 mV
        8.0 V bias           7682 mV
        FPM GBUS temperature 30 degrees C / 86 degrees F
        GBUS Revision        51

show chassis environment fpm (MX240 Router) user@host> show chassis environment fpm
FPM status:
  State           Online
  I2CS Revision   41

show chassis environment fpm (MX480 Router) user@host> show chassis environment fpm
FPM status:
  State           Online
  I2CS Revision   41

show chassis environment fpm (T Series Routers) user@host> show chassis environment fpm
FPM status:
  State           Online
  FPM GBUS Voltage:
    1.8 V bias     1787 mV
    3.3 V bias     3286 mV
    5.0 V bias     4991 mV
    8.0 V bias     7162 mV
  FPM Display Voltage:
    5.0 V          4996 mV
  FPM GBUS temperature 29 degrees C / 84 degrees F
  FPM Display temperature 26 degrees C / 78 degrees F
  GBUS Revision     37

show chassis environment fpm lcc (TX Matrix Router) user@host> show chassis environment fpm lcc 0
lcc0-re0:
-----
FPM status:
  State           Online
  FPM GBUS Voltage:
    1.8 V bias     1797 mV
    3.3 V bias     3294 mV
    5.0 V bias     5015 mV
    8.0 V bias     7470 mV
  FPM Display Voltage:
    5.0 V          5018 mV
  FPM GBUS temperature 25 degrees C / 77 degrees F
  FPM Display temperature 29 degrees C / 84 degrees F
  GBUS Revision     37

show chassis environment fpm scc (TX Matrix Router) user@host> show chassis environment fpm scc
scc-re0:
-----
FPM status:
  State           Online
  FPM GBUS Voltage:
    1.8 V bias     1789 mV
    3.3 V bias     3296 mV
    5.0 V bias     5003 mV
    8.0 V bias     7592 mV
  FPM Display Voltage:
    5.0 V          5010 mV
  FPM GBUS temperature 22 degrees C / 71 degrees F

```

```

FPM Display temperature    27 degrees C / 80 degrees F
GBUS Revision              37

```

```

show chassis environment fpm sfc
(TX Matrix Plus
Router)

```

```

user@host> show chassis environment fpm sfc

```

```

sfc0-re0:
-----

```

```

FPM status:
State                      Online
FPM I2CS Voltage:
  3.3 V                    3300 mV
  5.0 V                    5001 mV
  9.0 V FPD                8672 mV
FPM I2CS temperature       33 degrees C / 91 degrees F
I2CS Revision              69

```

```

lcc0-re0:
-----

```

```

FPM status:
State                      Online
FPM GBUS Voltage:
  1.8 V bias               1802 mV
  3.3 V bias               3301 mV
  5.0 V bias               4984 mV
  8.0 V bias               7377 mV
FPM Display Voltage:
  5.0 V                    5015 mV
FPM GBUS temperature       30 degrees C / 86 degrees F
FPM Display temperature    32 degrees C / 89 degrees F
GBUS Revision              37

```

```

lcc1-re0:
-----

```

```

FPM status:
State                      Online
FPM GBUS Voltage:
  1.8 V bias               1789 mV
  3.3 V bias               3311 mV
  5.0 V bias               5013 mV
  8.0 V bias               7467 mV
FPM Display Voltage:
  5.0 V                    5015 mV
FPM GBUS temperature       29 degrees C / 84 degrees F
FPM Display temperature    31 degrees C / 87 degrees F
GBUS Revision              37

```

## show chassis environment mcs

<b>Syntax</b>	<code>show chassis environment mcs</code> <code>&lt;slot&gt;</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M40e and M160 routers only) Display environmental information about the Miscellaneous Control Subsystems (MCSs).
<b>Options</b>	<p><code>none</code>—Display environmental information about both MCSs.</p> <p><code>slot</code> —(Optional) Display environmental information about an individual MCS. Replace <code>slot</code> with <code>0</code> or <code>1</code>.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p><code>show chassis environment mcs (M40e Router)</code> on page 260</p> <p><code>show chassis environment mcs (M160 Router)</code> on page 260</p>
<b>Output Fields</b>	Table 54 on page 259 lists the output fields for the <code>show chassis environment mcs</code> command. Output fields are listed in the approximate order in which they appear.

**Table 54: show chassis environment mcs Output Fields**

Field Name	Field Description
<b>State</b>	<p>Status of the MCS:</p> <ul style="list-style-type: none"> <li>• <b>Present</b>—MCS is detected by the chassis daemon but is either not supported by the current version of Junos or MCS is coming up but not yet online.</li> <li>• <b>Online</b>—MCS is online and running.</li> <li>• <b>Offline</b>—MCS is powered down.</li> <li>• <b>Empty</b>—No MCS is present.</li> <li>• <b>Master</b>—MCS is online, operating as master.</li> <li>• <b>Standby</b>—MCS is online, operating as standby.</li> </ul>
<b>Temperature</b>	Temperature of the air flowing past the MCS.
<b>Power</b>	Information about the voltage supplied to the MCS. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
<b>BUS Revision</b>	Revision level of the generic bus device.
<b>FPGA Revision</b>	Revision level of the field-programmable gate array (FPGA) revision.

## Sample Output

```
show chassis environment mcs user@host> show chassis environment mcs
(M40e Router)                MCS 0 status:
                               State                Online Master
                               Temperature          45 degrees C / 113 degrees F
                               Power:
                               3.3 V                3283 mV
                               5.0 V                5013 mV
                               12.0 V              11721 mV
                               5.0 V bias           5025 mV
                               8.0 V bias           8229 mV
                               BUS Revision         12
                               FPGA Revision        13
                               MCS 1 status:
                               State                Online Standby
                               Temperature          42 degrees C / 107 degrees F
                               Power:
                               3.3 V                3296 mV
                               5.0 V                4971 mV
                               12.0 V              11814 mV
                               5.0 V bias           4976 mV
                               8.0 V bias           8241 mV
                               BUS Revision         12
                               FPGA Revision        13

show chassis environment mcs user@host> show chassis environment mcs
(M160 Router)                MCS 0 status:
                               State                Online Master
                               Temperature          50 degrees C / 122 degrees F
                               Power:
                               3.3 V                3306 mV
                               5.0 V                4993 mV
                               12.0 V              11799 mV
                               5.0 V bias           4993 mV
                               8.0 V bias           8288 mV
                               BUS Revision         12
                               FPGA Revision        13
```

## show chassis environment pcg

<b>Syntax</b>	show chassis environment pcg <slot>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M40e and M160 routers only) Display environmental information about the Packet Forwarding Engine clock generators (PCGs).
<b>Options</b>	none—Display environmental information about both PCGs.  slot—(Optional) Display environmental information about an individual PCG. Replace <i>slot</i> with 0 or 1.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show chassis environment pcg (M40e Router) on page 262 show chassis environment pcg (M160 Router) on page 262
<b>Output Fields</b>	Table 55 on page 261 lists the output fields for the <b>show chassis environment pcg</b> command. Output fields are listed in the approximate order in which they appear.

**Table 55: show chassis environment pcg Output Fields**

Field Name	Field Description
PCG slot status	Slot number: 0 or 1.
State	Status of PCG: <ul style="list-style-type: none"> <li>• <b>Present</b>—PCG is detected by the chassis process but is either not supported by the current version of Junos OS or PCG is coming up but is not yet online.</li> <li>• <b>Online</b>—PCG is powered down. If <b>Online</b>, it can be the <b>Master clock</b> or the <b>Standby clock</b>.</li> <li>• <b>Offline</b>—PCG is powered down.</li> <li>• <b>Empty</b>—No PCG is present.</li> </ul>
Temperature	Temperature of the air flowing past the PCG.
Frequency	Frequency setting and measurement for the PCG.
Power	Information about the voltage supplied to the PCG. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
BUS Revision	Revision level of the generic bus device.

## Sample Output

```

show chassis environment pcg (M40e Router) user@host> show chassis environment pcg
PCG 0 status:
  State Online - Master clock
  Temperature 44 degrees C / 111 degrees F
  Frequency:
    Setting 125.00 MHz
    Measurement 124.95 MHz
  Power:
    3.3 V 3266 mV
    5.0 V bias 4964 mV
    8.0 V bias 8112 mV
  BUS Revision 12
PCG 1 status:
  State Online - Standby
  Temperature 47 degrees C / 116 degrees F
  Frequency:
    Setting 125.00 MHz
    Measurement 124.96 MHz
  Power:
    3.3 V 3271 mV
    5.0 V bias 4979 mV
    8.0 V bias 8117 mV
  BUS Revision 12

show chassis environment pcg (M160 Router) user@host> show chassis environment pcg
PCG 0 status:
  State Online - Master clock
  Temperature 41 degrees C / 105 degrees F
  Frequency:
    Setting 125.00 MHz
    Measurement 125.03 MHz
  Power:
    3.3 V 3286 mV
    5.0 V bias 5010 mV
    8.0 V bias 8183 mV
  BUS Revision 12
PCG 1 status:
  State Online - Standby
  Temperature 43 degrees C / 109 degrees F
  Frequency:
    Setting 125.00 MHz
    Measurement 125.01 MHz
  Power:
    3.3 V 3288 mV
    5.0 V bias 4993 mV
    8.0 V bias 8197 mV
  BUS Revision 12

```

## show chassis environment pem

<b>Syntax</b>	show chassis environment pem <slot>
<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>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M40e, M120, M160, M320, MX Series, and T Series routers only) Display Power Entry Module (PEM) environmental status information.
<b>Options</b>	<p>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 T1600 routers.</p> <p>lcc number—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display environmental information about the PEM in a specified T640 router (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display environmental information about the PEM in a specified T1600 router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) (Optional) Display environmental information about the PEM in the TX Matrix router (or switch-card chassis).</p> <p>sfc—(TX Matrix Plus routers only) (Optional) Display environmental information about the PEM in the TX Matrix Plus router (or switch-fabric chassis).</p> <p>slot —(Optional) Display environmental information about an individual PEM. Replace <i>slot</i> with 0 or 1.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p>show chassis environment pem (M40e Router) on page 264</p> <p>show chassis environment pem (M120 Router) on page 264</p> <p>show chassis environment pem (M160 Router) on page 265</p> <p>show chassis environment pem (M320 Router) on page 265</p> <p>show chassis environment pem (MX240 Router) on page 265</p> <p>show chassis environment pem (MX480 Router) on page 266</p> <p>show chassis environment pem (MX960 Router) on page 266</p> <p>show chassis environment pem (T320 Router) on page 266</p>

[show chassis environment pem \(T640 Router\) on page 266](#)  
[show chassis environment pem lcc \(TX Matrix Routing Matrix\) on page 266](#)  
[show chassis environment pem scc \(TX Matrix Routing Matrix\) on page 267](#)  
[show chassis environment pem sfc \(TX Matrix Plus Routing Matrix\) on page 267](#)  
[show chassis environment pem lcc \(TX Matrix Plus Routing Matrix\) on page 267](#)

**Output Fields** Table 56 on page 264 lists the output fields for the **show chassis environment pem** command. Output fields are listed in the approximate order in which they appear.

**Table 56: show chassis environment pem Output Fields**

Field Name	Field Description
PEM <i>slot</i> status	Number of the PEM slot.
State	Status of the PEM.
Temperature	Temperature of the air flowing past the PEM.
AC Input	Status of the AC input for the specified component
AC Output	Status of the AC output for the specified component.
DC input	Status of the DC input for the specified component.
DC output	Status of the DC output for the specified component.
Load	(Not available on M40e or M160 routers) Information about the load on supply, in percentage of rated current being used.
Voltage	(M120, M160, M320, T640, T1600, TX Matrix, and TX Matrix Plus routers only) Information about voltage supplied to the PEM.
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.

## 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  
(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 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 0**  
(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 routing-engine

<b>Syntax</b>	show chassis environment routing-engine <slot>
<b>Syntax (TX Matrix Routers)</b>	show chassis environment routing-engine <fcc number   scc> <slot>
<b>Syntax (TX Matrix Plus Routers)</b>	show chassis environment routing-engine <fcc number   sfc number> <slot>
<b>Syntax (QFX Series)</b>	show chassis environment 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 9.6. Command introduced in Junos OS Release 11.1 for the QFX Series.
<b>Description</b>	Display Routing Engine environmental status information.
<b>Options</b>	<p>none—Display environmental information about all Routing Engines. For a TX Matrix router, display environmental information about all Routing Engines on the TX Matrix router and its attached T640 routers. For a TX Matrix Plus router, display environmental information about all Routing Engines on the TX Matrix Plus router and its attached T1600 routers.</p> <p>fcc number—(TX Matrix and TX Matrix routers only) (Optional) On a TX Matrix router, display environmental information about the Routing Engine in a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display environmental information about the Routing Engine in a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <b>number</b> with a value from <b>0</b> through <b>3</b>.</p> <p>scc—(TX Matrix router only) (Optional) Display environmental information about the Routing Engine in the TX Matrix router (or switch-card chassis).</p> <p>sfc—(TX Matrix Plus router only) (Optional) Display environmental information about the Routing Engine in the TX Matrix Plus router (or switch-fabric chassis).</p> <p>slot—(Optional) Display environmental information about an individual Routing Engine. On M10i, M20, M40e, M120, M160, M320, MX Series, and T Series routers, replace <b>slot</b> with <b>0</b> or <b>1</b>. On M5, M7i, M10, and M40 routers and on the J Series router, replace <b>slot</b> with <b>0</b>. On EX3200 and EX4200 standalone switches, replace <b>slot</b> with <b>0</b>. On EX4200 switches in a Virtual Chassis configuration and on EX8208 and EX8216 switches, replace <b>slot</b> with <b>0</b> or <b>1</b>. On the QFX3500 switch, there is only one Routing Engine so you do not need to specify the slot number.</p>

**Required Privilege Level** view

**List of Sample Output** [show chassis environment routing-engine \(Nonredundant\) on page 270](#)  
[show chassis environment routing-engine \(Redundant\) on page 270](#)  
[show chassis environment routing-engine \(TX Matrix Plus Router\) on page 270](#)  
[show chassis environment routing-engine \(QFX Series\) on page 271](#)

**Output Fields** Table 57 on page 270 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 57: 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>—MCS is online, operating as Master.</li> <li>• <b>Online Standby</b>—MCS is online, operating as Standby.</li> </ul>
Temperature	Temperature of the air flowing past the Routing Engine.

## Sample Output

```
show chassis environment routing-engine (Nonredundant)
user@host> show chassis environment routing-engine
Routing Engine 0 status:
  State           Online Master
  Temperature      27 degrees C / 80 degrees
```

```
show chassis environment routing-engine (Redundant)
user@host> show chassis environment routing-engine
Route Engine 0 status:
  State           Online Master
  Temperature      26 degrees C / 78 degrees F
Route Engine 1 status:
  State           Online Standby
  Temperature      26 degrees C / 78 degrees F
```

```
show chassis environment routing-engine (TX Matrix Plus Router)
user@host> show chassis environment routing-engine
sfc0-re0:
-----
Routing Engine 0 status:
  State           Online Master
  Temperature      26 degrees C / 78 degrees F
Routing Engine 1 status:
  State           Online Standby
  Temperature      28 degrees C / 82 degrees F

lcc0-re0:
-----
Routing Engine 0 status:
  State           Online Master
  Temperature      30 degrees C / 86 degrees F
Routing Engine 1 status:
```

	State	Online Standby
	Temperature	29 degrees C / 84 degrees F
<b>show chassis</b>	user@switch> <b>show chassis environment routing-engine</b>	
<b>environment</b>	Routing Engine 0 status:	
<b>routing-engine (QFX</b>	State	Online Master
<b>Series)</b>	Temperature	42 degrees C / 107 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 <fcc number> <slot>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Display SONET Clock Generator (SCG) environmental information.
<b>Options</b>	<p>none—(TX Matrix and TX Matrix Plus routers only) Display environmental information about all SCGs. On a TX Matrix router, display environmental information about all SCGs on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about all SCGs on the TX Matrix Plus router and its attached T1600 routers.</p> <p>fcc number—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display environmental information about the SCG in a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display environmental information about the SCG in a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>slot—(Optional) Display environmental information about the SCG. Replace <i>slot</i> with 0 or 1.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p>show chassis environment scg (T Series Routers) on page 273</p> <p>show chassis environment scg fcc (TX Matrix Router) on page 273</p> <p>show chassis environment scg fcc (TX Matrix Plus Router) on page 274</p> <p>show chassis environment scg (TX Matrix Plus Router) on page 274</p>
<b>Output Fields</b>	Table 58 on page 272 lists the output fields for the <b>show chassis environment scg</b> command. Output fields are listed in the approximate order in which they appear.

**Table 58: show chassis environment scg Output Fields**

Field Name	Field Description
SCG slot status	Number of the SCG slot: 0 or 1.



Table 58: show chassis environment scg Output Fields (*continued*)

Field Name	Field Description
<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> <p>If two SCGs are installed and online, one is functioning as the master, and the other is the standby.</p>
<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 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

1cc3-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 sfm

<b>Syntax</b>	<code>show chassis environment sfm</code> <code>&lt;slot&gt;</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M40e and M160 routers only) Display Switching and Forwarding Module (SFM) environmental information.
<b>Options</b>	<p><code>none</code>—Display environmental information about all SFMs.</p> <p><code>slot</code>—(Optional) Display environmental information about an individual SFM. Replace <code>slot</code> with a value from <code>0</code> through <code>3</code>.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p><a href="#">show chassis environment sfm (M40e Router) on page 277</a></p> <p><a href="#">show chassis environment sfm (M160 Router) on page 277</a></p>
<b>Output Fields</b>	Table 59 on page 276 lists the output fields for the <code>show chassis environment sfm</code> command. Output fields are listed in the approximate order in which they appear.

**Table 59: show chassis environment sfm Output Fields**

Field Name	Field Description
<b>SFM slot status</b>	SFM slot number: <code>0</code> or <code>1</code> on an M40e router, or <code>0</code> , <code>1</code> , <code>2</code> , or <code>3</code> on an M160 router.
<b>State</b>	<p>Status of the SFM:</p> <ul style="list-style-type: none"> <li><b>Online</b>—SFM is online and running.</li> <li><b>Offline</b>—SFM is powered down.</li> </ul> <p>If two SFMs are installed and online, one is functioning as the master, and the other is marked as the <b>Standby</b>.</p>
<b>SPP Temperature</b>	Temperature of the air flowing past the Switch Plane Processor card.
<b>SPR Temperature</b>	Temperature of the air flowing past the Switch Plane Router card.
<b>SPP Power</b>	Information about the voltage supplied to the Switch Plane Processor card. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
<b>SPR Power</b>	Information about the voltage supplied to the Switch Plane Router. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
<b>CMB Revision</b>	Revision level of the Chassis Management Bus (CMB) device.

## Sample Output

```

show chassis environment sfm
(M40e Router)
user@host> show chassis environment sfm
SFM 0 status:
  State                               Online
  SPP temperature                     40 degrees C / 104 degrees F
  SPR temperature                     44 degrees C / 111 degrees F
  SPP Power:
    1.5 V                             1501 mV
    2.5 V                             2472 mV
    3.3 V                             3293 mV
    5.0 V                             5028 mV
    5.0 V bias                         4964 mV
  SPR Power:
    1.5 V                             1501 mV
    2.5 V                             2483 mV
    3.3 V                             3308 mV
    5.0 V                             5035 mV
    5.0 V bias                         4981 mV
    8.0 V bias                         8239 mV
  CMB Revision                         12
SFM 1 status:
  State                               Online - Standby
  SPP temperature                     43 degrees C / 109 degrees F
  SPR temperature                     45 degrees C / 113 degrees F
  SPP Power:
    1.5 V                             1503 mV
    2.5 V                             2483 mV
    3.3 V                             3284 mV
    5.0 V                             5045 mV
    5.0 V bias                         4993 mV
  SPR Power:
    1.5 V                             1498 mV
    2.5 V                             2472 mV
    3.3 V                             3284 mV
    5.0 V                             5035 mV
    5.0 V bias                         4991 mV
    8.0 V bias                         8231 mV
  CMB Revision                         12

```

```

show chassis environment sfm
(M160 Router)
user@host> show chassis environment sfm
SFM 0 status:
  State                               Online
  SPP temperature                     43 degrees C / 109 degrees F
  SPR temperature                     44 degrees C / 111 degrees F
  SPP Power:
    1.5 V                             1504 mV
    2.5 V                             2474 mV
    3.3 V                             3290 mV
    5.0 V                             5015 mV
    5.0 V bias                         4962 mV
  SPR Power:
    1.5 V                             1498 mV
    2.5 V                             2482 mV
    3.3 V                             3299 mV
    5.0 V                             5020 mV
    5.0 V bias                         4971 mV
    8.0 V bias                         8229 mV
  CMB Revision                         12
SFM 1 status:

```

```

State                               Online
SPP temperature                     47 degrees C / 116 degrees F
SPR temperature                     50 degrees C / 122 degrees F
SPP Power:
  1.5 V                             1499 mV
  2.5 V                             2466 mV
  3.3 V                             3274 mV
  5.0 V                             5025 mV
  5.0 V bias                         4984 mV
SPR Power:
  1.5 V                             1496 mV
  2.5 V                             2470 mV
  3.3 V                             3279 mV
  5.0 V                             5020 mV
  5.0 V bias                         4993 mV
  8.0 V bias                         8222 mV
CMB Revision                         12
SFM 2 status:
State                               Online
SPP temperature                     50 degrees C / 122 degrees F
SPR temperature                     52 degrees C / 125 degrees F
SPP Power:
  1.5 V                             1504 mV
  2.5 V                             2471 mV
  3.3 V                             3294 mV
  5.0 V                             5045 mV
  5.0 V bias                         4981 mV
SPR Power:
  1.5 V                             1496 mV
  2.5 V                             2470 mV
  3.3 V                             3293 mV
  5.0 V                             5028 mV
  5.0 V bias                         4971 mV
  8.0 V bias                         8214 mV
CMB Revision                         12
SFM 3 status:
State                               Online
SPP temperature                     49 degrees C / 120 degrees F
SPR temperature                     48 degrees C / 118 degrees F
SPP Power:
  1.5 V                             1505 mV
  2.5 V                             2484 mV
  3.3 V                             3296 mV
  5.0 V                             5040 mV
  5.0 V bias                         4984 mV
SPR Power:
  1.5 V                             1503 mV
  2.5 V                             2488 mV
  3.3 V                             3302 mV
  5.0 V                             5037 mV
  5.0 V bias                         4993 mV
  8.0 V bias                         8249 mV
CMB Revision                         12

```

## show chassis environment sib

<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 <lcc number  sfc number> <slot> <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 for the TX Matrix Plus router in Junos OS Release 9.6.
<b>Description</b>	(M320, T Series routers, TX Matrix and TX Matrix Plus only) Display Switch Interface Boards (SIB) environmental information.
<b>Options</b>	<p>none—(TX Matrix and TX Matrix Plus routers only) Display environmental information about all SIBs. On a TX Matrix router, display environmental information about all SIBs on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about all SIBs on the TX Matrix Plus router and its attached T1600 routers.</p> <p>f13 sib-slot—(TX Matrix Plus routers only) (Optional) Display SIB F13 environmental information only. Replace <b>sib-slot</b> with one of the following values: <b>0</b>, <b>1</b>, <b>3</b>, <b>4</b>, <b>6</b>, <b>7</b>, <b>8</b>, <b>9</b>, <b>11</b>, or <b>12</b>.</p> <p>f2s sib-slot/sib-f2s-slot-number—(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</b>, <b>2</b>, <b>4</b> or <b>6</b>.</p> <p>lcc number—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display environmental information about the SIB in a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display environmental information about the SIB in a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <b>number</b> with a value from <b>0</b> through <b>4</b>.</p> <p>scc—(TX Matrix routers only) (Optional) Display environmental information about the SIB in the TX Matrix router (or switch-card chassis).</p> <p>sfc—(TX Matrix Plus routers only) (Optional) Display environmental information about the SIB in the TX Matrix Plus router (or switch-fabric chassis).</p> <p>slot—(Optional) Display environmental information about the specified SIB. For the M320 router, replace <b>slot</b> with a value from <b>0</b> through <b>3</b>. For the T640, T1600, and TX Matrix routers, replace <b>slot</b> with a value from <b>0</b> through <b>4</b>. For the TX Matrix Plus router,</p>

replace **slot** with a value from **0** through **15**. For the T320 router, replace **slot** with a value from **0** through **2**.

**Required Privilege Level** view

**List of Sample Output** **show chassis environment sib** (M320 Router) on page 280  
**show chassis environment sib 1** (T640 Router) on page 281  
**show chassis environment sib scc** (TX Matrix Router) on page 282  
**show chassis environment sib** (TX Matrix Plus Router) on page 282  
**show chassis environment sib sfc** (TX Matrix Plus Router) on page 292  
**show chassis environment sib f13** (TX Matrix Plus Router) on page 297  
**show chassis environment sib f2s** (TX Matrix Plus Router) on page 298

**Output Fields** Table 60 on page 280 lists the output fields for the **show chassis environment sib** command. Output fields are listed in the approximate order in which they appear.

**Table 60: 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 or T1600 router.</li> <li>• <b>0</b> through <b>15</b> on a TX Matrix or TX Matrix Plus 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.</li> <li>• <b>0</b> through <b>4</b>, followed by <b>0, 2, 4, or 6</b> for an F2S SIB on a TX Matrix Plus router. For example, <b>SIB F2S 0/4</b>.</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 router only)—SIB is redundant and will move to active state if one of the working SIBs fails.</li> </ul> <p>Only four of the five T640 router 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>
<b>Temperature</b>	Temperature of the air flowing past the SIB.
<b>Power</b>	Information about the voltage supplied to the SIB. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.

## Sample Output

```

show chassis environment sib (M320 Router)
user@host> show chassis environment sib
SIB 0 status:
  State           Online
  Temperature     34 degrees C / 93 degrees F
  Power:
    GROUND        0 mV

```



```

1.8 V          1805 mV
2.5 V          2498 mV
3.3 V          3306 mV
1.8 V bias     1789 mV
3.3 V bias     3299 mV
5.0 V bias     5003 mV
8.0 V bias     7374 mV
SIB 1 status:
State          Online
Temperature     35 degrees C / 95 degrees F
Power:
GROUND         0 mV
1.8 V          1814 mV
2.5 V          2477 mV
3.3 V          3319 mV
1.8 V bias     1792 mV
3.3 V bias     3291 mV
5.0 V bias     4981 mV
8.0 V bias     7335 mV
SIB 2 status:
State          Online
Temperature     33 degrees C / 91 degrees F
Power:
GROUND         0 mV
1.8 V          1811 mV
2.5 V          2489 mV
3.3 V          3330 mV
1.8 V bias     1797 mV
3.3 V bias     3304 mV
5.0 V bias     5025 mV
8.0 V bias     7330 mV
SIB 3 status:
State          Online
Temperature     37 degrees C / 98 degrees F
Power:
GROUND         0 mV
1.8 V          1798 mV
2.5 V          2481 mV
3.3 V          3328 mV
1.8 V bias     1792 mV
3.3 V bias     3313 mV
5.0 V bias     5013 mV
8.0 V bias     7467 mV

```

```

show chassis environment sib 1
(T640 Router)
user@host> show chassis environment sib 1
SIB 1 status:
State          Online
Temperature     39 degrees C / 102 degrees F
Power:
GROUND         0 mV
1.8 V          1809 mV
2.5 V          2478 mV
3.3 V          3308 mV
1.8 V bias     1794 mV
3.3 V bias     3274 mV
5.0 V bias     4996 mV
8.0 V bias     7247 mV

```

**show chassis  
environment sib 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
Temperature
Temperature (B)
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
Temperature
Temperature (B)
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
Temperature
Temperature (B)
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 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 (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>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.4 for EX Series switches. <b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
<b>Description</b>	(M10i, M40e, M120, M160, M320, MX Series, and T Series routers and EX8200 switches only) Display information about the ports on the Control Board (CB) Ethernet switch.
<b>Options</b>	<p><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 T1600 routers.</p> <p><b>errors</b>—(Optional) Display the numbers and types of errors accumulated on all ports of the Ethernet switch.</p> <p><b>errors port</b>—(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 <b>port</b> with a value from 0 through 15. On the TX Matrix Plus router and EX8200 switch, replace <b>port</b> with a value from 0 through 27.</p> <p><b>errors switch number</b>—(TX Matrix Plus router only) (Optional) Display the numbers and types of errors accumulated on the specified switch. Replace <b>number</b> with a value from 0 through 2.</p> <p><b>lcc number</b>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display information about the ports on the CB's Ethernet switch on a specified T640 router (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display information about the ports on the CB's Ethernet switch on a specified T1600 router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace <b>number</b> with a value from 0 through 3.</p> <p><b>scc</b>—(TX Matrix router only) (Optional) Display information about the ports on the CB's Ethernet switch on the TX Matrix router (or switch-card chassis).</p>

*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**.

*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 302
- `show chassis ethernet-switch (TX Matrix Router)` on page 302
- `show chassis ethernet-switch errors` on page 303
- `show chassis ethernet-switch statistics` on page 304
- `show chassis ethernet-switch errors (TX Matrix Plus Router)` on page 305
- `show chassis ethernet-switch sfc errors (TX Matrix Plus Router)` on page 306
- `show chassis ethernet-switch statistics (TX Matrix Plus Router)` on page 307

**Output Fields** Table 61 on page 300 lists the output fields for the `show chassis ethernet-switch` command. Output fields are listed in the approximate order in which they appear.

**Table 61: show chassis ethernet-switch Output Fields**

Field Name	Field Description
Link is good on port n connected to device	Information about the link between each port on the CB's Ethernet switch and one of the following devices:
or	<ul style="list-style-type: none"> <li>FPC0 (Flexible PIC Concentrator 0) through FPC7</li> <li>Local controller</li> <li>Other RE (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>
Link is good on FE port n connected to device	
Speed is	Speed at which the Ethernet link is running: <b>10 Mb</b> or <b>100 Mb</b> . When the device is <b>Other RE</b> on the TX Matrix router, the speed is <b>1000 Mb</b> .
Duplex is	Duplex type of the Ethernet link: <b>full</b> or <b>half</b> .

Table 61: show chassis ethernet-switch Output Fields (*continued*)

Field Name	Field Description
<b>Auto-negotiate is enabled</b>	By default, both of the built-in Fast Ethernet ports on the M7i router 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 System Basics Configuration Guide</i> ).
<b>MLT3</b>	Number of multilevel threshold-3 (MLT-3) Fast Ethernet errors detected.
<b>Accumulated error counts for port n connected to device FPCn: (error output only)</b>	
<b>Lock</b>	Number of lock errors detected.
<b>Xmit</b>	Number of transmission errors detected.
<b>ESD</b>	Number of electrostatic discharge (ESD) errors detected.
<b>False Carrier</b>	Number of false carrier errors detected.
<b>Disconnects</b>	Number of disconnect errors detected.
<b>FX mode</b>	Number of errors detected on an Ethernet link over optical fiber.
<b>Statistics for port n connected to device FPCn (statistics output only)</b>	
<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 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>RX Unicast packets</b>	Number of unicast packets received.
<b>RX Multicast packets</b>	Number of multicast packets received.
<b>RX Broadcast packets</b>	Number of broadcast packets received.
<b>RX FCS Errors</b>	Number of packets discarded because of frame check sequence errors.
<b>RX Alignment Errors</b>	Number of incomplete octets received.
<b>RX Dropped Packets</b>	Number of incoming packets that were dropped.
<b>RX Fragments</b>	Number of fragmented packets received.

Table 61: show chassis ethernet-switch Output Fields (*continued*)

Field Name	Field Description
RX Symbol Errors	Number of symbols received that the router did not correctly decode.

### Sample Output

```

show chassis ethernet-switch      user@host> show chassis ethernet-switch
Link is good on port 0 connected to device: FPC0
Speed is 100Mb
Duplex is full

Link is good on port 1 connected to device: FPC1
Speed is 100Mb
Duplex is full

Link is good on port 2 connected to device: FPC2
Speed is 100Mb
Duplex is full

Link is good on port 3 connected to device: FPC3
Speed is 100Mb
Duplex is full

Link is good on port 7 connected to device: Local controller
Speed is 100Mb
Duplex is full

Link is good on port 9 connected to device: SPMB
Speed is 100Mb
Duplex is full

Link is good on port 13 connected to device: FPC5
Speed is 100Mb
Duplex is full

show chassis ethernet-switch (TX Matrix Router) user@host> show chassis ethernet-switch
scc-re0:
-----
Link is good on FE port 4 connected to device: LCC0
Speed is 100Mb
Duplex is full
Autonegotiate is Enabled

Link is good on FE port 6 connected to device: LCC2
Speed is 100Mb
Duplex is full
Autonegotiate is Enabled

Link is good on FE port 8 connected to device: SPMB
Speed is 100Mb
Duplex is full
Autonegotiate is Enabled

lcc0-re0:
-----
Link is good on FE port 1 connected to device: FPC1

```

```
Speed is 100Mb
Duplex is full
Autonegotiate is Enabled
```

```
Link is good on FE port 2 connected to device: FPC2
Speed is 100Mb
Duplex is full
Autonegotiate is Enabled
```

```
Link is good on FE port 8 connected to device: SPMB
Speed is 100Mb
Duplex is full
Autonegotiate is Enabled
```

```
Link is good on FE port 10 connected to device: SCC
Speed is 100Mb
Duplex is full
Autonegotiate is Enabled
```

```
1cc2-re0:
```

```
-----
Link is good on FE port 0 connected to device: FPC0
Speed is 100Mb
Duplex is full
Autonegotiate is Enabled
```

```
Link is good on FE port 1 connected to device: FPC1
Speed is 100Mb
Duplex is full
Autonegotiate is Enabled
```

```
Link is good on FE port 2 connected to device: FPC2
Speed is 100Mb
Duplex is full
Autonegotiate is Enabled
```

```
Link is good on FE port 8 connected to device: SPMB
Speed is 100Mb
Duplex is full
Autonegotiate is Enabled
```

```
Link is good on FE port 10 connected to device: SCC
Speed is 100Mb
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 errors switch sfc
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:

```

**show chassis  
ethernet-switch  
statistics (TX Matrix  
Plus Router)**

-----  
error: command is not valid on the t1600

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 Xmins     0
TX Frame excessive deferl   0
TX Oversize Packets         0
TX Jabbers                  0
TX FCS Error Counter        0
TX Fragment Counter         0
TX Byte Counter             329291449
RX Packets 64 Octets       5640175
RX Packets 65-127 Octets   79875
RX Packets 128-255 Octets  6338
RX Packets 256-511 Octets  165
RX Packets 512-1023 Octets 4317

```

```
RX Packets 1024-1518 Octets 10
RX Packets 1519-2047 Octets 0
RX Packets 2048-4095 Octets 0
RX Packets 4096-9216 Octets 0
RX Octets 5730880
RX Multicast Packets 4
RX Broadcast Packets 1735007
RX FCS Errors 0
RX Align Errors 0
RX Fragments 0
RX Symbol errors 0
RX Unsupported opcodes 0
RX Out of Range Length 0
RX False Carrier Errors 0
RX Undersize Packets 0
RX Oversize Packets 0
RX Jabbers 0
RX 1519-1522 Good Vlan frms 0
RX MTU Exceed Counter 0
RX Control Frame Counter 0
RX Pause Frame Counter 0
RX Byte Counter 371282850
Statistics for port 18 connected to device SPMB:
TX Packets 64 Octets 2990326
TX Packets 65-127 Octets 8572
TX Packets 128-255 Octets 4
TX Packets 256-511 Octets 49
TX Packets 512-1023 Octets 0
TX Packets 1024-1518 Octets 10793
TX Packets 1519-2047 Octets 0
TX Packets 2048-4095 Octets 0
TX Packets 4096-9216 Octets 0
TX 1519-1522 Good Vlan frms 0
TX Octets 3009744
TX Multicast Packets 20
TX Broadcast Packets 2458322
TX Single Collision frames 0
TX Mult. Collision frames 0
TX Late Collisions 0
TX Excessive Collisions 0
TX Collision frames 0
TX PAUSEMAC Ctrl Frames 0
TX MAC ctrl frames 0
TX Frame deferred Xmsns 0
TX Frame excessive deferl 0
TX Oversize Packets 0
TX Jabbers 0
TX FCS Error Counter 0
TX Fragment Counter 0
TX Byte Counter 203712524
RX Packets 64 Octets 873454
RX Packets 65-127 Octets 8886
RX Packets 128-255 Octets 44
RX Packets 256-511 Octets 21862
RX Packets 512-1023 Octets 2
RX Packets 1024-1518 Octets 49912
RX Packets 1519-2047 Octets 0
RX Packets 2048-4095 Octets 0
RX Packets 4096-9216 Octets 0
RX Octets 954160
RX Multicast Packets 0
```

RX Broadcast Packets	402369
RX FCS Errors	0
RX Align Errors	0
RX Fragments	0
RX Symbol errors	0
RX Unsupported opcodes	0
RX Out of Range Length	0
RX False Carrier Errors	0
RX Undersize Packets	0
RX Oversize Packets	0
RX Jabbers	0
RX 1519-1522 Good Vlan frms	0
RX MTU Exceed Counter	0
RX Control Frame Counter	0
RX Pause Frame Counter	0
RX Byte Counter	137941752
...	

## show chassis fan

<b>Syntax</b>	show chassis fan
<b>Release Information</b>	Command introduced in JUNOS Release 10.0.
<b>Description</b>	(MX Series Ethernet Services Routers only) Show information about the fan tray and fans.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show chasis fan on page 312
<b>Output Fields</b>	Table 62 on page 312 lists the output fields for the <b>show chassis fan</b> command. Output fields are listed in the approximate order in which they appear.

**Table 62: show chassis fan Output Fields**

Field Name	Field Description
<b>Item</b>	Fan item identifier.
<b>Status</b>	Status of the fan: <ul style="list-style-type: none"> <li>• <b>OK</b>-Fan is running properly and within the normal range.</li> <li>• <b>Check</b>-Fan is in <b>Check</b> state because of some fault or alarm condition.</li> </ul>
<b>RPM</b>	Fan speed in revolutions per minute (RPM).
<b>Measurement</b>	Fan speed status based on different chassis cooling requirements: <ul style="list-style-type: none"> <li>• Spinning at high speed</li> <li>• Spinning at intermediate-speed</li> <li>• Spinning at low speed</li> </ul>

## Sample Output

```

show chasis fan  user@host> show chassis fan
                  regress@seeker> show chassis fan
                  Item           Status  RPM      Measurement
                  Top Tray Fan 1    OK      3790    Spinning at normal speed
                  Top Tray Fan 2    OK      3769    Spinning at normal speed
                  Top Tray Fan 3    OK      3769    Spinning at normal speed
                  Top Tray Fan 4    OK      3790    Spinning at normal speed
                  Top Tray Fan 5    OK      3790    Spinning at normal speed
                  Top Tray Fan 6    OK      3769    Spinning at normal speed
                  Top Tray Fan 7    OK      3790    Spinning at normal speed
                  Top Tray Fan 8    OK      3769    Spinning at normal speed
                  Top Tray Fan 9    OK      3769    Spinning at normal speed
                  Top Tray Fan 10   OK      3790    Spinning at normal speed

```



Top Tray Fan 11	OK	3790	Spinning at normal speed
Top Tray Fan 12	OK	3769	Spinning at normal speed
Bottom Tray Fan 1	OK	2880	Spinning at normal speed
Bottom Tray Fan 2	OK	2912	Spinning at normal speed
Bottom Tray Fan 3	OK	2928	Spinning at normal speed
Bottom Tray Fan 4	OK	2896	Spinning at normal speed
Bottom Tray Fan 5	OK	2896	Spinning at normal speed
Bottom Tray Fan 6	OK	2928	Spinning at normal speed

## show chassis fabric feb

<b>Syntax</b>	show chassis fabric feb
<b>Release Information</b>	Command introduced in Junos OS Release 8.0.
<b>Description</b>	(M120 router only) Display the state of the electrical and optical switching fabric links between the Forwarding Engine Boards (FEBs) and the fabric planes, as interpreted by the FEB.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show chassis fabric feb on page 314
<b>Output Fields</b>	Table 63 on page 314 lists the output fields for the <b>show chassis fabric feb</b> command.

**Table 63: show chassis fabric feb Output Fields**

Field Name	Field Description
Fabric management FEB state	State of the switching fabric link between each FEB and fabric plane: desalination error, disabled, enabled, link error, link ok, or unused.

## Sample Output

```
show chassis fabric feb
user@host> show chassis fabric feb
Fabric management      FEB state
FEB 0                  Plane 0: Plane enabled
                       Plane 1: Plane enabled
                       Plane 2: Plane enabled
                       Plane 3: Plane enabled
FEB 4                  Plane 0: Plane enabled
                       Plane 1: Plane enabled
                       Plane 2: Plane enabled
                       Plane 3: Plane enabled
```

## show chassis fabric errors

**Syntax** show chassis fabric errors  
 <fpc *slot-number* lcc *number*>  
 <sib (*slot* | f13 *sib-slot* | f2s *sib-slot/sib-f2s-slot-number* | lcc *number*)>

**Release Information** Command introduced in Junos OS Release 10.0.

**Description** (TX Matrix Plus routers only) Display the first ten and last ten fabric errors for the FPC or Switch Interface Boards (SIBs).



**NOTE:** This command can only be issued on a master Routing Engine.

**Options** fpc *slot-number*—Show error log of the first ten and last ten errors for the specified FPC. Replace *slot-number* with a value from 0 through 31. This option has the following suboptions:

- **lcc *number***—Show error log of the first ten and last ten errors for the specified FPC on a specific T1600 router (or line-card chassis) that is part of the routing matrix. Replace *number* with a value from 0 through 3.

If you specify the number of the T1600 router 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:

- ***sib-slot***—Replace *sib-slot* with a value ranging from 0 through 4.
- **f13 *sib-slot***—(Optional) Show SIB F13 errors. Replace *sib-slot* with a valid SIB value number: 0, 1, 3, 4, 6, 7, 8, 9, 11, or 12.
- **f2s *sib-slot/sib-f2s-slot-number***—(Optional) Show SIB F2S errors. Replace *sib-slot* with a value from 0 through 4, followed by a *sib-f2s-slot-number* value 0, 2, 4 or 6.
- **lcc *number***—(Optional) Show error log of the first ten and last ten SIB errors for the specified T1600 router (or line-card chassis). Replace *number* with a value from 0 through 3.



**NOTE:** The `lcc number` suboption is mandatory when using the following format for the command: `show chassis fabric errors sib lcc number sib slot-number`. For instance, issuing `show chassis fabric errors sib lcc 2 3` displays errors detected on LCC 2, SIB 3.

This suboption is not required when the `f13` or `f2s` suboptions are used with the `sib slot-number` option.

**Required Privilege Level** view

**List of Sample Output**

`show chassis fabric errors (F13 SIB Errors on a TX Matrix Plus Router)` on page 316

`show chassis fabric errors (F2S SIB Errors on a TX Matrix Plus Router)` on page 316

`show chassis fabric errors (SIB Errors Specific to an LCC Connected to a TX Matrix Plus Router)` on page 316

`show chassis fabric errors (FPC Errors Specific to an LCC Connected to a TX Matrix Plus Router)` on page 317

**Output Fields** Table 64 on page 316 lists the output fields for the `show chassis fabric errors` command. Output fields are listed in the approximate order in which they appear.

**Table 64: show chassis fabric errors Output Fields**

Field Name	Field Description
Time	Time the error was logged.
Error log of first 10 errors	List of the first ten errors.
Error log of last 10 errors	List of the last ten errors.

## 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 fpcs

---

<b>Syntax</b>	<code>show chassis fabric fpcs</code> <code>&lt;fcc number&gt;</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.4 for EX Series switches.
<b>Description</b>	(M320, MX Series, and T Series routers and EX8200 switches only) Display the state of the electrical and optical switch fabric links between the Flexible PIC Concentrators (FPCs) and the Switch Interface Boards (SIBs).
<b>Options</b>	<p><code>none</code>—Display the switch fabric link state. On a TX Matrix router, display the switching fabric link states for the FPCs in all T640 routers connected to the TX Matrix router. On a TX Matrix Plus router, display the switching fabric link states for the FPCs in all T1600 routers connected to the TX Matrix Plus router.</p> <p><code>fcc number</code>—(TX Matrix and TX Matrix Plus router only) (Optional) On a TX Matrix router, display the switch fabric link state for the FPCs in the specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display the switch fabric link state for the FPCs in the specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<code>show chassis fabric fpcs</code> (M320 Router) on page 319 <code>show chassis fabric fpcs</code> (MX240 Router) on page 319 <code>show chassis fabric fpcs</code> (MX480 Router) on page 320 <code>show chassis fabric fpcs</code> (MX960 Router) on page 321 <code>show chassis fabric fpcs</code> (T320 Router) on page 322 <code>show chassis fabric fpcs</code> (T640 Router) on page 323 <code>show chassis fabric fpcs</code> (TX Matrix Router) on page 323 <code>show chassis fabric fpcs</code> (T1600 Router) on page 324 <code>show chassis fabric fpcs</code> (TX Matrix Plus Router) on page 326 <code>show chassis fabric fpcs fcc</code> (TX Matrix Plus Router) on page 333 <code>show chassis fabric fpcs</code> (EX8200 Switch) on page 334
<b>Output Fields</b>	Table 65 on page 319 lists the output fields for the <code>show chassis fabric fpcs</code> command. Output fields are listed in the approximate order in which they appear.

Table 65: 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.</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> </ul> </li> <li>• <b>Plane enabled</b>—Link between the active SIB and FPC 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 (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
                  0   1   2   3   4   5   6   7
    SIB #4      Destination error on PFes
                  8   9  10  11  12  13  14  15  16  17  18  19  20  21
                  0   1   2   3   4   5   6   7
...

```

**show chassis fabric fpcs (TX Matrix Router)**      user@host> **show chassis fabric fpcs**  
 lcc0-re0:

```
-----
Fabric management FPC state:
FPC #0
  PFE #1
    SIB #0      Links ok
    SIB #2      Links ok
    SIB #3      Links ok
    SIB #4      Links ok
FPC #2
  PFE #1
    SIB #0      Links ok
    SIB #2      Links ok
    SIB #3      Links ok
    SIB #4      Links ok
FPC #3
  PFE #1
    SIB #2      Plane enabled
    SIB #3      Link error
                  Destination error on PFes
                  8   9  10  11  12  13  14  15  16  17  18  19  20  21
                  0   1   2   3   4   5   6   7
    SIB #4      Destination error on PFes
                  8   9  10  11  12  13  14  15  16  17  18  19  20  21
                  0   1   2   3   4   5   6   7

```

```

      8    9   10   11   12   13   14   15   16   17   18   19   20   21
...
FPC #4
  PFE #0
    SIB #4 Links ok
  PFE #1
    SIB #4 Links ok
FPC #5
  PFE #1
    SIB #4 Links ok
FPC #6
  PFE #1
    SIB #4 Links ok

```

```
lcc2-re0:
```

```
-----
Fabric management FPC state:
```

```

FPC #0
  PFE #1
    SIB #4 Links ok
FPC #1
  PFE #1
    SIB #4 Links ok
FPC #2
  PFE #0
    SIB #4 Links ok
  PFE #1
    SIB #4 Links ok
FPC #4
  PFE #0
    SIB #4 Links ok
  PFE #1
    SIB #4 Links ok
FPC #5
  PFE #1
    SIB #4 Links ok

```

**show chassis fabric  
fpcs (T1600 Router)**

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

```
Fabric management FPC state:
```

```

FPC #0
  PFE #0
    SIB #0
      Links ok
    SIB #1
      Plane enabled
    SIB #2
      Plane enabled
    SIB #3
      Plane enabled
    SIB #4
      Plane enabled
  PFE #1
    SIB #0
      Links ok
    SIB #1
      Plane enabled
    SIB #2
      Plane enabled
    SIB #3
      Plane enabled
    SIB #4

```

```
Plane enabled
FPC #1
  PFE #0
    SIB #0
      Links ok
    SIB #1
      Plane enabled
    SIB #2
      Plane enabled
    SIB #3
      Plane enabled
    SIB #4
      Plane enabled
  PFE #1
    SIB #0
      Links ok
    SIB #1
      Plane enabled
    SIB #2
      Plane enabled
    SIB #3
      Plane enabled
    SIB #4
      Plane enabled
FPC #2
  PFE #0
    SIB #0
      Links ok
    SIB #1
      Plane enabled
    SIB #2
      Plane enabled
    SIB #3
      Plane enabled
    SIB #4
      Plane enabled
FPC #4
  PFE #0
    SIB #0
      Links ok
    SIB #1
      Plane enabled
    SIB #2
      Plane enabled
    SIB #3
      Plane enabled
    SIB #4
      Plane enabled
  PFE #1
    SIB #0
      Links ok
    SIB #1
      Plane enabled
    SIB #2
      Plane enabled
    SIB #3
      Plane enabled
    SIB #4
      Plane enabled
FPC #3
  PFE #1
```

```

SIB #2
    Plane enabled
SIB #3
    Link error
    Destination error on PFES
      8   9  10  11  12  13  14  15  16  17  18  19  20  21
SIB #4
    Destination error on PFES
      8   9  10  11  12  13  14  15  16  17  18  19  20  21

```

**show chassis fabric fpcs (TX Matrix Plus Router)**

```

user@host> show chassis fabric fpcs
1cc0-re0:
-----
Fabric management FPC state:
FPC #0
  PFE #1
    SIB #0
      Unused
    SIB #1
      Links ok
    SIB #2
      Links ok
    SIB #3
      Links ok
    SIB #4
      Links ok
  FPC #2
    PFE #0
      SIB #0
        Unused
      SIB #1
        Links ok
      SIB #2
        Links ok
      SIB #3
        Links ok
      SIB #4
        Links ok
    PFE #1
      SIB #0
        Unused
      SIB #1
        Links ok
      SIB #2
        Links ok
      SIB #3
        Links ok
      SIB #4
        Links ok
  FPC #3
    PFE #1
      SIB #2
        Plane enabled
      SIB #3
        Link error
        Destination error on PFES
          8   9  10  11  12  13  14  15  16  17  18  19  20  21
      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
    Unused
  SIB #1
    Links ok
  SIB #2
    Links ok
  SIB #3
    Links ok
  SIB #4
    Links ok
PFE #1
  SIB #0
    Unused
  SIB #1
    Links ok
  SIB #2
    Links ok
  SIB #3
    Links ok
  SIB #4
    Links ok
FPC #6
  PFE #0
    SIB #0
      Unused
    SIB #1
      Links ok
    SIB #2
      Links ok
    SIB #3
      Links ok
    SIB #4
      Links ok
  PFE #1
    SIB #0
      Unused
    SIB #1
      Links ok
    SIB #2
      Links ok
    SIB #3
      Links ok
    SIB #4
      Links ok
FPC #7
  PFE #0
    SIB #0
      Unused
    SIB #1
      Links ok
    SIB #2
      Links ok
    SIB #3
      Links ok
    SIB #4
      Links ok
```

lcc1-re0:

-----  
Fabric management FPC state:

```

FPC #2
  PFE #0
    SIB #0
      Links ok
    SIB #1
      Links ok
    SIB #2
      Links ok
    SIB #3
      Links ok
    SIB #4
      Links ok
  PFE #1
    SIB #0
      Links ok
    SIB #1
      Links ok
    SIB #2
      Links ok
    SIB #3
      Links ok
    SIB #4
      Links ok
FPC #4
  PFE #0
    SIB #0
      Links ok
    SIB #1
      Links ok
    SIB #2
      Links ok
    SIB #3
      Links ok
    SIB #4
      Links ok
  PFE #1
    SIB #0
      Links ok
    SIB #1
      Links ok
    SIB #2
      Links ok
    SIB #3
      Destination error on PFEs      1      8      9      29      40      65      72      73
      93 104
    SIB #4
      Links ok
FPC #6
  PFE #0
    SIB #0
      Links ok
    SIB #1
      Links ok
    SIB #2
      Links ok
    SIB #3
      Links ok
    SIB #4
      Links ok
  PFE #1

```



```
SIB #0
Links ok
SIB #1
Links ok
SIB #2
Links ok
SIB #3
Links ok
SIB #4
Links ok
FPC #7
PFE #0
SIB #0
Links ok
SIB #1
Links ok
SIB #2
Links ok
SIB #3
Links ok
SIB #4
Links ok
```

lcc2-re0:

-----  
Fabric management FPC state:

```
FPC #0
PFE #0
SIB #0
Links ok
SIB #1
Links ok
SIB #2
Links ok
SIB #3
Links ok
SIB #4
Links ok
PFE #1
SIB #0
Links ok
SIB #1
Links ok
SIB #2
Links ok
SIB #3
Links ok
SIB #4
Links ok
FPC #2
PFE #0
SIB #0
Links ok
SIB #1
Links ok
SIB #2
Links ok
SIB #3
Links ok
SIB #4
Links ok
```

```
PFE #1
  SIB #0
    Links ok
  SIB #1
    Links ok
  SIB #2
    Links ok
  SIB #3
    Links ok
  SIB #4
    Links ok
FPC #4
  PFE #0
    SIB #0
      Links ok
    SIB #1
      Links ok
    SIB #2
      Links ok
    SIB #3
      Links ok
    SIB #4
      Links ok
  PFE #0
    SIB #0
      Links ok
    SIB #1
      Links ok
    SIB #2
      Links ok
    SIB #3
      Links ok
    SIB #4
      Links ok
  PFE #1
    SIB #0
      Links ok
    SIB #1
      Links ok
    SIB #2
      Links ok
    SIB #3
      Links ok
    SIB #4
      Links ok
FPC #6
  PFE #0
    SIB #0
      Links ok
    SIB #1
      Links ok
    SIB #2
      Links ok
    SIB #3
      Links ok
    SIB #4
      Links ok
  PFE #1
    SIB #0
      Links ok
```

```
SIB #1
Links ok
SIB #2
Links ok
SIB #3
Links ok
SIB #4
Links ok
FPC #7
PFE #0
SIB #0
Links ok
SIB #1
Links ok
SIB #2
Links ok
SIB #3
Links ok
SIB #4
Links ok
```

```
lcc3-re0:
```

```
-----
Fabric management FPC state:
```

```
FPC #0
PFE #0
SIB #0
Links ok
SIB #1
Links ok
SIB #2
Links ok
SIB #3
Links ok
SIB #4
Links ok
PFE #1
SIB #0
Links ok
SIB #1
Links ok
SIB #2
Links ok
SIB #3
Links ok
SIB #4
Links ok
FPC #2
PFE #0
SIB #0
Links ok
SIB #1
Links ok
SIB #2
Links ok
SIB #3
Links ok
SIB #4
Links ok
PFE #1
SIB #0
```

```

        Links ok
    SIB #1
        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok
FPC #4
  PFE #0
    SIB #0
        Links ok
    SIB #1
        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok
  PFE #1
    SIB #0
        Links ok
    SIB #1
        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok
FPC #5
  PFE #0
    SIB #0
        Links ok
    SIB #1
        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok
  PFE #1
    SIB #0
        Links ok
    SIB #1
        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok
FPC #6
  PFE #0
    SIB #0
        Links ok
    SIB #1
        Links ok
```

```

SIB #2
    Links ok
SIB #3
    Links ok
SIB #4
    Links ok
PFE #1
SIB #0
    Links ok
SIB #1
    Links ok
SIB #2
    Links ok
SIB #3
    Links ok
SIB #4
    Links ok
FPC #7
PFE #0
SIB #0
    Links ok
SIB #1
    Links ok
SIB #2
    Links ok
SIB #3
    Links ok
SIB #4
    Links ok

```

**show chassis fabric  
fpcs 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 map

<b>Syntax</b>	show chassis fabric map plane <plane-number>
<b>Release Information</b>	Command introduced in Junos OS Release 8.0. Command introduced in Junos OS Release 9.4 for EX Series switches.
<b>Description</b>	(M120 and MX Series routers and EX8200 switches only) On the M120 router, display the state of the switching fabric map for connections from the Forwarding Engine Boards (FEBs) to the ports on the fabric planes, as interpreted by the fabric plane. On the MX Series router and the EX8200 switch, display the state of the switching fabric map for connections from each Packet Forwarding Engine on the Dense Port Concentrators (DPCs) to the ports on the fabric planes, as interpreted by the fabric plane. For information about the meaning of “fabric plane”, “DPCs”, and “SIBs” on the switches, see EX Series Switches Hardware and CLI Terminology Mapping.
<b>Options</b>	<p>none—Display the switching fabric map state for the M120 or MX Series router or EX8200 switch.</p> <p>planeplane-number—(Optional) Display the state of the fabric link for the specified plane number.</p> <ul style="list-style-type: none"> <li>For the M120 router, replace <b>plane-number</b> with a value from 0 through 3.</li> <li>For the MX480 and MX240 routers, replace <b>plane-number</b> with a value from 0 through 7.</li> <li>For the MX960 router, replace <b>plane-number</b> with a value from 0 through 5.</li> <li>For the EX8208 switch, replace <b>plane-number</b> with a value from 0 through 11.</li> <li>For the EX8216 switch, replace <b>plane-number</b> with a value from 0 through 7.</li> </ul>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p>show chassis fabric map (M120 Router) on page 337</p> <p>show chassis fabric map (MX Series Routers) on page 337</p> <p>show chassis fabric map plane 1 (EX8200 Switch) on page 340</p>
<b>Output Fields</b>	Table 66 on page 336 lists the output fields for the <b>show chassis fabric map</b> command. Output fields are listed in the approximate order in which they appear.

**Table 66: show chassis fabric map Output Fields**

Field Name	Field Description
in-links	Fabric map for receive side links.
out-links	Fabric map for transmit side links.



Table 66: show chassis fabric map 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 SIB and FPC/DPC is powered down on purpose. This is done in all non-dual PFE based boards.</li> <li>• <b>UP</b>—Link between SIB and FPC/DPC is up and running.</li> <li>• <b>DOWN</b>—Link between SIB and FPC/DPC is powered down.</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> </ul>

### Sample Output

#### show chassis fabric map (M120 Router)

```

user@host> show chassis fabric map
FEB0->CB0F0_00 up CB0F0_08->FEB7 Down

FEB1->CB0F0_01 Down CB0F0_09->FEB6 Down

FEB6->CB0F0_02 Down CB0F0_10->FEB1 Down

FEB2->CB0F0_03 Down CB0F0_11->FEB0 up

FEB3->CB0F0_04 Down CB0F0_12->FEB3 Down

FEB4->CB0F0_05 up CB0F0_13->FEB2 Down

FEB7->CB0F0_06 Down CB0F0_14->FEB5 Down

FEB5->CB0F0_07 Down CB0F0_15->FEB4 up:

```

#### show chassis fabric map (MX Series Routers)

```

user@host> show chassis fabric map
DPC4PFE0->CB0F0_00_0 up CB0F0_00_0->DPC4PFE0 up
DPC4PFE1->CB0F0_00_1 up CB0F0_00_1->DPC4PFE1 up
DPC4PFE2->CB0F0_00_2 up CB0F0_00_2->DPC4PFE2 up
DPC4PFE3->CB0F0_00_3 up CB0F0_00_3->DPC4PFE3 up
DPC7PFE0->CB0F0_01_0 Down CB0F0_01_0->DPC7PFE0 Down
DPC7PFE1->CB0F0_01_1 Down CB0F0_01_1->DPC7PFE1 Down
DPC7PFE2->CB0F0_01_2 Down CB0F0_01_2->DPC7PFE2 Down
DPC7PFE3->CB0F0_01_3 Down CB0F0_01_3->DPC7PFE3 Down
DPC3PFE0->CB0F0_03_0 Down CB0F0_03_0->DPC3PFE0 Down
DPC3PFE1->CB0F0_03_1 Down CB0F0_03_1->DPC3PFE1 Down
DPC3PFE2->CB0F0_03_2 Down CB0F0_03_2->DPC3PFE2 Down
DPC3PFE3->CB0F0_03_3 Down CB0F0_03_3->DPC3PFE3 Down
DPC8PFE0->CB0F0_05_0 Down CB0F0_05_0->DPC8PFE0 Down
DPC8PFE1->CB0F0_05_1 Down CB0F0_05_1->DPC8PFE1 Down
DPC8PFE2->CB0F0_05_2 Down CB0F0_05_2->DPC8PFE2 Down
DPC8PFE3->CB0F0_05_3 Down CB0F0_05_3->DPC8PFE3 Down
DPC1PFE0->CB0F0_06_0 Down CB0F0_06_0->DPC1PFE0 Down
DPC1PFE1->CB0F0_06_1 Down CB0F0_06_1->DPC1PFE1 Down
DPC1PFE2->CB0F0_06_2 Down CB0F0_06_2->DPC1PFE2 Down
DPC1PFE3->CB0F0_06_3 Down CB0F0_06_3->DPC1PFE3 Down

```

DPC10PFE0->CB0F0_07_0	Down	CB0F0_07_0->DPC10PFE0	Down
DPC10PFE1->CB0F0_07_1	Down	CB0F0_07_1->DPC10PFE1	Down
DPC10PFE2->CB0F0_07_2	Down	CB0F0_07_2->DPC10PFE2	Down
DPC10PFE3->CB0F0_07_3	Down	CB0F0_07_3->DPC10PFE3	Down
DPC11PFE0->CB0F0_08_0	Down	CB0F0_08_0->DPC11PFE0	Down
DPC11PFE1->CB0F0_08_1	Down	CB0F0_08_1->DPC11PFE1	Down
DPC11PFE2->CB0F0_08_2	Down	CB0F0_08_2->DPC11PFE2	Down
DPC11PFE3->CB0F0_08_3	Down	CB0F0_08_3->DPC11PFE3	Down
DPC0PFE0->CB0F0_09_0	Down	CB0F0_09_0->DPC0PFE0	Down
DPC0PFE1->CB0F0_09_1	Down	CB0F0_09_1->DPC0PFE1	Down
DPC0PFE2->CB0F0_09_2	Down	CB0F0_09_2->DPC0PFE2	Down
DPC0PFE3->CB0F0_09_3	Down	CB0F0_09_3->DPC0PFE3	Down
DPC9PFE0->CB0F0_11_0	Down	CB0F0_11_0->DPC9PFE0	Down
DPC9PFE1->CB0F0_11_1	Down	CB0F0_11_1->DPC9PFE1	Down
DPC9PFE2->CB0F0_11_2	Down	CB0F0_11_2->DPC9PFE2	Down
DPC9PFE3->CB0F0_11_3	Down	CB0F0_11_3->DPC9PFE3	Down
DPC2PFE0->CB0F0_13_0	up	CB0F0_13_0->DPC2PFE0	up
DPC2PFE1->CB0F0_13_1	up	CB0F0_13_1->DPC2PFE1	up
DPC2PFE2->CB0F0_13_2	up	CB0F0_13_2->DPC2PFE2	up
DPC2PFE3->CB0F0_13_3	up	CB0F0_13_3->DPC2PFE3	up
DPC6PFE0->CB0F0_14_0	Down	CB0F0_14_0->DPC6PFE0	Down
DPC6PFE1->CB0F0_14_1	Down	CB0F0_14_1->DPC6PFE1	Down
DPC6PFE2->CB0F0_14_2	Down	CB0F0_14_2->DPC6PFE2	Down
DPC6PFE3->CB0F0_14_3	Down	CB0F0_14_3->DPC6PFE3	Down
DPC5PFE0->CB0F0_15_0	Down	CB0F0_15_0->DPC5PFE0	Down
DPC5PFE1->CB0F0_15_1	Down	CB0F0_15_1->DPC5PFE1	Down
DPC5PFE2->CB0F0_15_2	Down	CB0F0_15_2->DPC5PFE2	Down
DPC5PFE3->CB0F0_15_3	Down	CB0F0_15_3->DPC5PFE3	Down
DPC4PFE0->CB0F1_00_0	up	CB0F1_00_0->DPC4PFE0	up
DPC4PFE1->CB0F1_00_1	up	CB0F1_00_1->DPC4PFE1	up
DPC4PFE2->CB0F1_00_2	up	CB0F1_00_2->DPC4PFE2	up
DPC4PFE3->CB0F1_00_3	up	CB0F1_00_3->DPC4PFE3	up
DPC7PFE0->CB0F1_01_0	Down	CB0F1_01_0->DPC7PFE0	Down
DPC7PFE1->CB0F1_01_1	Down	CB0F1_01_1->DPC7PFE1	Down
DPC7PFE2->CB0F1_01_2	Down	CB0F1_01_2->DPC7PFE2	Down
DPC7PFE3->CB0F1_01_3	Down	CB0F1_01_3->DPC7PFE3	Down
DPC3PFE0->CB0F1_03_0	Down	CB0F1_03_0->DPC3PFE0	Down
DPC3PFE1->CB0F1_03_1	Down	CB0F1_03_1->DPC3PFE1	Down
DPC3PFE2->CB0F1_03_2	Down	CB0F1_03_2->DPC3PFE2	Down
DPC3PFE3->CB0F1_03_3	Down	CB0F1_03_3->DPC3PFE3	Down
DPC8PFE0->CB0F1_05_0	Down	CB0F1_05_0->DPC8PFE0	Down
DPC8PFE1->CB0F1_05_1	Down	CB0F1_05_1->DPC8PFE1	Down
DPC8PFE2->CB0F1_05_2	Down	CB0F1_05_2->DPC8PFE2	Down
DPC8PFE3->CB0F1_05_3	Down	CB0F1_05_3->DPC8PFE3	Down
DPC1PFE0->CB0F1_06_0	Down	CB0F1_06_0->DPC1PFE0	Down
DPC1PFE1->CB0F1_06_1	Down	CB0F1_06_1->DPC1PFE1	Down
DPC1PFE2->CB0F1_06_2	Down	CB0F1_06_2->DPC1PFE2	Down
DPC1PFE3->CB0F1_06_3	Down	CB0F1_06_3->DPC1PFE3	Down
DPC10PFE0->CB0F1_07_0	Down	CB0F1_07_0->DPC10PFE0	Down
DPC10PFE1->CB0F1_07_1	Down	CB0F1_07_1->DPC10PFE1	Down
DPC10PFE2->CB0F1_07_2	Down	CB0F1_07_2->DPC10PFE2	Down
DPC10PFE3->CB0F1_07_3	Down	CB0F1_07_3->DPC10PFE3	Down
DPC11PFE0->CB0F1_08_0	Down	CB0F1_08_0->DPC11PFE0	Down
DPC11PFE1->CB0F1_08_1	Down	CB0F1_08_1->DPC11PFE1	Down
DPC11PFE2->CB0F1_08_2	Down	CB0F1_08_2->DPC11PFE2	Down
DPC11PFE3->CB0F1_08_3	Down	CB0F1_08_3->DPC11PFE3	Down
DPC0PFE0->CB0F1_09_0	Down	CB0F1_09_0->DPC0PFE0	Down
DPC0PFE1->CB0F1_09_1	Down	CB0F1_09_1->DPC0PFE1	Down
DPC0PFE2->CB0F1_09_2	Down	CB0F1_09_2->DPC0PFE2	Down
DPC0PFE3->CB0F1_09_3	Down	CB0F1_09_3->DPC0PFE3	Down
DPC9PFE0->CB0F1_11_0	Down	CB0F1_11_0->DPC9PFE0	Down

DPC9PFE1->CB0F1_11_1	Down	CB0F1_11_1->DPC9PFE1	Down
DPC9PFE2->CB0F1_11_2	Down	CB0F1_11_2->DPC9PFE2	Down
DPC9PFE3->CB0F1_11_3	Down	CB0F1_11_3->DPC9PFE3	Down
DPC2PFE0->CB0F1_13_0	up	CB0F1_13_0->DPC2PFE0	up
DPC2PFE1->CB0F1_13_1	up	CB0F1_13_1->DPC2PFE1	up
DPC2PFE2->CB0F1_13_2	up	CB0F1_13_2->DPC2PFE2	up
DPC2PFE3->CB0F1_13_3	up	CB0F1_13_3->DPC2PFE3	up
DPC6PFE0->CB0F1_14_0	Down	CB0F1_14_0->DPC6PFE0	Down
DPC6PFE1->CB0F1_14_1	Down	CB0F1_14_1->DPC6PFE1	Down
DPC6PFE2->CB0F1_14_2	Down	CB0F1_14_2->DPC6PFE2	Down
DPC6PFE3->CB0F1_14_3	Down	CB0F1_14_3->DPC6PFE3	Down
DPC5PFE0->CB0F1_15_0	Down	CB0F1_15_0->DPC5PFE0	Down
DPC5PFE1->CB0F1_15_1	Down	CB0F1_15_1->DPC5PFE1	Down
DPC5PFE2->CB0F1_15_2	Down	CB0F1_15_2->DPC5PFE2	Down
DPC5PFE3->CB0F1_15_3	Down	CB0F1_15_3->DPC5PFE3	Down
DPC4PFE0->CB1F0_00_0	up	CB1F0_00_0->DPC4PFE0	up
DPC4PFE1->CB1F0_00_1	up	CB1F0_00_1->DPC4PFE1	up
DPC4PFE2->CB1F0_00_2	up	CB1F0_00_2->DPC4PFE2	up
DPC4PFE3->CB1F0_00_3	up	CB1F0_00_3->DPC4PFE3	up
DPC7PFE0->CB1F0_01_0	Down	CB1F0_01_0->DPC7PFE0	Down
DPC7PFE1->CB1F0_01_1	Down	CB1F0_01_1->DPC7PFE1	Down
DPC7PFE2->CB1F0_01_2	Down	CB1F0_01_2->DPC7PFE2	Down
DPC7PFE3->CB1F0_01_3	Down	CB1F0_01_3->DPC7PFE3	Down
DPC3PFE0->CB1F0_03_0	Down	CB1F0_03_0->DPC3PFE0	Down
DPC3PFE1->CB1F0_03_1	Down	CB1F0_03_1->DPC3PFE1	Down
DPC3PFE2->CB1F0_03_2	Down	CB1F0_03_2->DPC3PFE2	Down
DPC3PFE3->CB1F0_03_3	Down	CB1F0_03_3->DPC3PFE3	Down
DPC8PFE0->CB1F0_05_0	Down	CB1F0_05_0->DPC8PFE0	Down
DPC8PFE1->CB1F0_05_1	Down	CB1F0_05_1->DPC8PFE1	Down
DPC8PFE2->CB1F0_05_2	Down	CB1F0_05_2->DPC8PFE2	Down
DPC8PFE3->CB1F0_05_3	Down	CB1F0_05_3->DPC8PFE3	Down
DPC1PFE0->CB1F0_06_0	Down	CB1F0_06_0->DPC1PFE0	Down
DPC1PFE1->CB1F0_06_1	Down	CB1F0_06_1->DPC1PFE1	Down
DPC1PFE2->CB1F0_06_2	Down	CB1F0_06_2->DPC1PFE2	Down
DPC1PFE3->CB1F0_06_3	Down	CB1F0_06_3->DPC1PFE3	Down
DPC10PFE0->CB1F0_07_0	Down	CB1F0_07_0->DPC10PFE0	Down
DPC10PFE1->CB1F0_07_1	Down	CB1F0_07_1->DPC10PFE1	Down
DPC10PFE2->CB1F0_07_2	Down	CB1F0_07_2->DPC10PFE2	Down
DPC10PFE3->CB1F0_07_3	Down	CB1F0_07_3->DPC10PFE3	Down
DPC11PFE0->CB1F0_08_0	Down	CB1F0_08_0->DPC11PFE0	Down
DPC11PFE1->CB1F0_08_1	Down	CB1F0_08_1->DPC11PFE1	Down
DPC11PFE2->CB1F0_08_2	Down	CB1F0_08_2->DPC11PFE2	Down
DPC11PFE3->CB1F0_08_3	Down	CB1F0_08_3->DPC11PFE3	Down
DPC0PFE0->CB1F0_09_0	Down	CB1F0_09_0->DPC0PFE0	Down
DPC0PFE1->CB1F0_09_1	Down	CB1F0_09_1->DPC0PFE1	Down
DPC0PFE2->CB1F0_09_2	Down	CB1F0_09_2->DPC0PFE2	Down
DPC0PFE3->CB1F0_09_3	Down	CB1F0_09_3->DPC0PFE3	Down
DPC9PFE0->CB1F0_11_0	Down	CB1F0_11_0->DPC9PFE0	Down
DPC9PFE1->CB1F0_11_1	Down	CB1F0_11_1->DPC9PFE1	Down
DPC9PFE2->CB1F0_11_2	Down	CB1F0_11_2->DPC9PFE2	Down
DPC9PFE3->CB1F0_11_3	Down	CB1F0_11_3->DPC9PFE3	Down
DPC2PFE0->CB1F0_13_0	up	CB1F0_13_0->DPC2PFE0	up
DPC2PFE1->CB1F0_13_1	up	CB1F0_13_1->DPC2PFE1	up
DPC2PFE2->CB1F0_13_2	up	CB1F0_13_2->DPC2PFE2	up
DPC2PFE3->CB1F0_13_3	up	CB1F0_13_3->DPC2PFE3	up
DPC6PFE0->CB1F0_14_0	Down	CB1F0_14_0->DPC6PFE0	Down
DPC6PFE1->CB1F0_14_1	Down	CB1F0_14_1->DPC6PFE1	Down
DPC6PFE2->CB1F0_14_2	Down	CB1F0_14_2->DPC6PFE2	Down
DPC6PFE3->CB1F0_14_3	Down	CB1F0_14_3->DPC6PFE3	Down
DPC5PFE0->CB1F0_15_0	Down	CB1F0_15_0->DPC5PFE0	Down
DPC5PFE1->CB1F0_15_1	Down	CB1F0_15_1->DPC5PFE1	Down

DPC5PFE2->CB1F0_15_2	Down	CB1F0_15_2->DPC5PFE2	Down
DPC5PFE3->CB1F0_15_3	Down	CB1F0_15_3->DPC5PFE3	Down
DPC4PFE0->CB1F1_00_0	up	CB1F1_00_0->DPC4PFE0	up
DPC4PFE1->CB1F1_00_1	up	CB1F1_00_1->DPC4PFE1	up
DPC4PFE2->CB1F1_00_2	up	CB1F1_00_2->DPC4PFE2	up
DPC4PFE3->CB1F1_00_3	up	CB1F1_00_3->DPC4PFE3	up
DPC7PFE0->CB1F1_01_0	Down	CB1F1_01_0->DPC7PFE0	Down
DPC7PFE1->CB1F1_01_1	Down	CB1F1_01_1->DPC7PFE1	Down
DPC7PFE2->CB1F1_01_2	Down	CB1F1_01_2->DPC7PFE2	Down
DPC7PFE3->CB1F1_01_3	Down	CB1F1_01_3->DPC7PFE3	Down
DPC3PFE0->CB1F1_03_0	Down	CB1F1_03_0->DPC3PFE0	Down
DPC3PFE1->CB1F1_03_1	Down	CB1F1_03_1->DPC3PFE1	Down
DPC3PFE2->CB1F1_03_2	Down	CB1F1_03_2->DPC3PFE2	Down
DPC3PFE3->CB1F1_03_3	Down	CB1F1_03_3->DPC3PFE3	Down
DPC8PFE0->CB1F1_05_0	Down	CB1F1_05_0->DPC8PFE0	Down
DPC8PFE1->CB1F1_05_1	Down	CB1F1_05_1->DPC8PFE1	Down
DPC8PFE2->CB1F1_05_2	Down	CB1F1_05_2->DPC8PFE2	Down
DPC8PFE3->CB1F1_05_3	Down	CB1F1_05_3->DPC8PFE3	Down
DPC1PFE0->CB1F1_06_0	Down	CB1F1_06_0->DPC1PFE0	Down
DPC1PFE1->CB1F1_06_1	Down	CB1F1_06_1->DPC1PFE1	Down
DPC1PFE2->CB1F1_06_2	Down	CB1F1_06_2->DPC1PFE2	Down
DPC1PFE3->CB1F1_06_3	Down	CB1F1_06_3->DPC1PFE3	Down
DPC10PFE0->CB1F1_07_0	Down	CB1F1_07_0->DPC10PFE0	Down
DPC10PFE1->CB1F1_07_1	Down	CB1F1_07_1->DPC10PFE1	Down
DPC10PFE2->CB1F1_07_2	Down	CB1F1_07_2->DPC10PFE2	Down
DPC10PFE3->CB1F1_07_3	Down	CB1F1_07_3->DPC10PFE3	Down
DPC11PFE0->CB1F1_08_0	Down	CB1F1_08_0->DPC11PFE0	Down
DPC11PFE1->CB1F1_08_1	Down	CB1F1_08_1->DPC11PFE1	Down
DPC11PFE2->CB1F1_08_2	Down	CB1F1_08_2->DPC11PFE2	Down
DPC11PFE3->CB1F1_08_3	Down	CB1F1_08_3->DPC11PFE3	Down
DPC0PFE0->CB1F1_09_0	Down	CB1F1_09_0->DPC0PFE0	Down
DPC0PFE1->CB1F1_09_1	Down	CB1F1_09_1->DPC0PFE1	Down
DPC0PFE2->CB1F1_09_2	Down	CB1F1_09_2->DPC0PFE2	Down
DPC0PFE3->CB1F1_09_3	Down	CB1F1_09_3->DPC0PFE3	Down
DPC9PFE0->CB1F1_11_0	Down	CB1F1_11_0->DPC9PFE0	Down
DPC9PFE1->CB1F1_11_1	Down	CB1F1_11_1->DPC9PFE1	Down
DPC9PFE2->CB1F1_11_2	Down	CB1F1_11_2->DPC9PFE2	Down
DPC9PFE3->CB1F1_11_3	Down	CB1F1_11_3->DPC9PFE3	Down
DPC2PFE0->CB1F1_13_0	up	CB1F1_13_0->DPC2PFE0	up
DPC2PFE1->CB1F1_13_1	up	CB1F1_13_1->DPC2PFE1	up
DPC2PFE2->CB1F1_13_2	up	CB1F1_13_2->DPC2PFE2	up
DPC2PFE3->CB1F1_13_3	up	CB1F1_13_3->DPC2PFE3	up
DPC6PFE0->CB1F1_14_0	Down	CB1F1_14_0->DPC6PFE0	Down
DPC6PFE1->CB1F1_14_1	Down	CB1F1_14_1->DPC6PFE1	Down
DPC6PFE2->CB1F1_14_2	Down	CB1F1_14_2->DPC6PFE2	Down
DPC6PFE3->CB1F1_14_3	Down	CB1F1_14_3->DPC6PFE3	Down
DPC5PFE0->CB1F1_15_0	Down	CB1F1_15_0->DPC5PFE0	Down
DPC5PFE1->CB1F1_15_1	Down	CB1F1_15_1->DPC5PFE1	Down
DPC5PFE2->CB1F1_15_2	Down	CB1F1_15_2->DPC5PFE2	Down
DPC5PFE3->CB1F1_15_3	Down	CB1F1_15_3->DPC5PFE3	Down
plane 4 is not up			
plane 5 is not up			

show chassis fabric  
map plane 1 (EX8200  
Switch)

```
user@host> show chassis fabric map plane 1
regress@tp-grande01> show chassis fabric map plane 1
```

DPC6PFE0->CB0F0_00_0	Down	CB0F0_00_0->DPC6PFE0	Down
DPC6PFE1->CB0F0_00_1	Down	CB0F0_00_1->DPC6PFE1	Down
DPC6PFE2->CB0F0_00_2	Down	CB0F0_00_2->DPC6PFE2	Down
DPC6PFE3->CB0F0_00_3	Down	CB0F0_00_3->DPC6PFE3	Down
DPC0PFE0->CB0F0_01_0	Down	CB0F0_01_0->DPC0PFE0	Down
DPC0PFE1->CB0F0_01_1	Down	CB0F0_01_1->DPC0PFE1	Down

DPC0PFE2->CB0F0_01_2	Down	CB0F0_01_2->DPC0PFE2	Down
DPC0PFE3->CB0F0_01_3	Down	CB0F0_01_3->DPC0PFE3	Down
DPC5PFE0->CB0F0_02_0	Down	CB0F0_02_0->DPC5PFE0	Down
DPC5PFE1->CB0F0_02_1	Down	CB0F0_02_1->DPC5PFE1	Down
DPC5PFE2->CB0F0_02_2	Down	CB0F0_02_2->DPC5PFE2	Down
DPC5PFE3->CB0F0_02_3	Down	CB0F0_02_3->DPC5PFE3	Down
DPC3PFE0->CB0F0_03_0	Down	CB0F0_03_0->DPC3PFE0	Down
DPC3PFE1->CB0F0_03_1	Down	CB0F0_03_1->DPC3PFE1	Down
DPC3PFE2->CB0F0_03_2	Down	CB0F0_03_2->DPC3PFE2	Down
DPC3PFE3->CB0F0_03_3	Down	CB0F0_03_3->DPC3PFE3	Down
DPC4PFE0->CB0F0_04_0	Down	CB0F0_04_0->DPC4PFE0	Down
DPC4PFE1->CB0F0_04_1	Down	CB0F0_04_1->DPC4PFE1	Down
DPC4PFE2->CB0F0_04_2	Down	CB0F0_04_2->DPC4PFE2	Down
DPC4PFE3->CB0F0_04_3	Down	CB0F0_04_3->DPC4PFE3	Down
DPC2PFE0->CB0F0_05_0	Down	CB0F0_05_0->DPC2PFE0	Down
DPC2PFE1->CB0F0_05_1	Down	CB0F0_05_1->DPC2PFE1	Down
DPC2PFE2->CB0F0_05_2	Down	CB0F0_05_2->DPC2PFE2	Down
DPC2PFE3->CB0F0_05_3	Down	CB0F0_05_3->DPC2PFE3	Down
DPC7PFE0->CB0F0_06_0	Down	CB0F0_06_0->DPC7PFE0	Down
DPC7PFE1->CB0F0_06_1	Down	CB0F0_06_1->DPC7PFE1	Down
DPC7PFE2->CB0F0_06_2	Down	CB0F0_06_2->DPC7PFE2	Down
DPC7PFE3->CB0F0_06_3	Down	CB0F0_06_3->DPC7PFE3	Down
DPC1PFE0->CB0F0_07_0	Down	CB0F0_07_0->DPC1PFE0	Down
DPC1PFE1->CB0F0_07_1	Down	CB0F0_07_1->DPC1PFE1	Down
DPC1PFE2->CB0F0_07_2	Down	CB0F0_07_2->DPC1PFE2	Down
DPC1PFE3->CB0F0_07_3	Down	CB0F0_07_3->DPC1PFE3	Down
DPC0PFE0->CB0F0_08_0	Down	CB0F0_08_0->DPC0PFE0	Down
DPC0PFE1->CB0F0_08_1	Down	CB0F0_08_1->DPC0PFE1	Down
DPC0PFE2->CB0F0_08_2	Down	CB0F0_08_2->DPC0PFE2	Down
DPC0PFE3->CB0F0_08_3	Down	CB0F0_08_3->DPC0PFE3	Down
DPC7PFE0->CB0F0_09_0	Down	CB0F0_09_0->DPC7PFE0	Down
DPC7PFE1->CB0F0_09_1	Down	CB0F0_09_1->DPC7PFE1	Down
DPC7PFE2->CB0F0_09_2	Down	CB0F0_09_2->DPC7PFE2	Down
DPC7PFE3->CB0F0_09_3	Down	CB0F0_09_3->DPC7PFE3	Down
DPC1PFE0->CB0F0_10_0	Down	CB0F0_10_0->DPC1PFE0	Down
DPC1PFE1->CB0F0_10_1	Down	CB0F0_10_1->DPC1PFE1	Down
DPC1PFE2->CB0F0_10_2	Down	CB0F0_10_2->DPC1PFE2	Down
DPC1PFE3->CB0F0_10_3	Down	CB0F0_10_3->DPC1PFE3	Down
DPC4PFE0->CB0F0_11_0	Down	CB0F0_11_0->DPC4PFE0	Down
DPC4PFE1->CB0F0_11_1	Down	CB0F0_11_1->DPC4PFE1	Down
DPC4PFE2->CB0F0_11_2	Down	CB0F0_11_2->DPC4PFE2	Down
DPC4PFE3->CB0F0_11_3	Down	CB0F0_11_3->DPC4PFE3	Down
DPC2PFE0->CB0F0_12_0	Down	CB0F0_12_0->DPC2PFE0	Down
DPC2PFE1->CB0F0_12_1	Down	CB0F0_12_1->DPC2PFE1	Down
DPC2PFE2->CB0F0_12_2	Down	CB0F0_12_2->DPC2PFE2	Down
DPC2PFE3->CB0F0_12_3	Down	CB0F0_12_3->DPC2PFE3	Down
DPC5PFE0->CB0F0_13_0	Down	CB0F0_13_0->DPC5PFE0	Down
DPC5PFE1->CB0F0_13_1	Down	CB0F0_13_1->DPC5PFE1	Down
DPC5PFE2->CB0F0_13_2	Down	CB0F0_13_2->DPC5PFE2	Down
DPC5PFE3->CB0F0_13_3	Down	CB0F0_13_3->DPC5PFE3	Down
DPC3PFE0->CB0F0_14_0	Down	CB0F0_14_0->DPC3PFE0	Down
DPC3PFE1->CB0F0_14_1	Down	CB0F0_14_1->DPC3PFE1	Down
DPC3PFE2->CB0F0_14_2	Down	CB0F0_14_2->DPC3PFE2	Down
DPC3PFE3->CB0F0_14_3	Down	CB0F0_14_3->DPC3PFE3	Down
DPC6PFE0->CB0F0_15_0	Down	CB0F0_15_0->DPC6PFE0	Down
DPC6PFE1->CB0F0_15_1	Down	CB0F0_15_1->DPC6PFE1	Down
DPC6PFE2->CB0F0_15_2	Down	CB0F0_15_2->DPC6PFE2	Down
DPC6PFE3->CB0F0_15_3	Down	CB0F0_15_3->DPC6PFE3	Down

## show chassis fabric 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>Release Information</b>	Command introduced in Junos OS Release 8.0. Command introduced in Junos OS Release 9.4 for EX Series switches. <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.
<b>Description</b>	(TX Matrix Plus, 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 T1600 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.
<b>Options</b>	<p><b>detail</b>—(TX Matrix Plus and T1600 routers in a routing matrix only) (Optional) Display detailed output for the fabric management plane. Show Switch Interface Board (SIB) states for the TXP-F13 SIB and TXP-F2S SIB.</p> <p><b>extensive</b>—(TX Matrix Plus and T1600 routers in a routing matrix only) (Optional) Display extensive output for the fabric management plane, including the state of the optical links between the F13 SIB on the TX Matrix Plus router and the TXP-T1600 SIB (ST-SIB-L) on the T1600 router.</p> <p><b>lcc <i>number</i></b>—(TX Matrix Plus router only) (Optional) T1600 router (LCC) that is connected to a TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p><b>sfc <i>number</i></b>—(TX Matrix Plus router only) (Optional) Show information about the TX Matrix Plus router (SFC). Replace <i>number</i> with 0.</p> <p><b>terse</b>—(TX Matrix Plus router only) (Optional) Display terse output for the fabric management plane.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p>show chassis fabric plane (M120 Router) on page 348</p> <p>show chassis fabric plane (MX240 Router) on page 348</p> <p>show chassis fabric plane (MX480 Router) on page 350</p> <p>show chassis fabric plane (MX960 Router) on page 351</p> <p>show chassis fabric plane (TX Matrix Plus Router) on page 352</p> <p>show chassis fabric plane detail (TX Matrix Plus Router) on page 352</p>

show chassis fabric plane extensive (TX Matrix Plus Router) on page 353  
 show chassis fabric plane terse (TX Matrix Plus Router) on page 355  
 show chassis fabric plane lcc (TX Matrix Plus Router) on page 355  
 show chassis fabric plane sfc (TX Matrix Plus Router) on page 356  
 show chassis fabric plane (T1600 Router) on page 356  
 show chassis fabric plane extensive (T1600 Router) on page 356  
 show chassis fabric plane detail (T1600 Router) on page 359  
 show chassis fabric plane extensive (TX Matrix Plus Router) on page 359  
 show chassis fabric plane (EX8200 Switch) on page 362

**Output Fields** Table 67 on page 343 lists the output fields for the **show chassis fabric plane** command. Output fields are listed in the approximate order in which they appear.

**Table 67: show chassis fabric plane Output Fields**

Field Name	Field Description	Level of output
<b>Plane</b>	(TX Matrix Plus, MX Series, and M120 routers and EX8200 switches only) Number of the plane.	none
<b>Plane state</b>	(MX Series and M120 routers and EX8200 switches only) State of each plane: <ul style="list-style-type: none"> <li>• <b>ACTIVE</b>—SIB is operational and running.</li> <li>• <b>OFFLINE</b>—SIB is powered down.</li> <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>	none
<b>FEB</b>	(M120 routers only) FEB number and state of links to each FEB: <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
<b>PFE</b>	(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> <b>Links ok:</b> Link between SIB and FPC is active.  <b>Link error:</b> Link between SIB and FPC is not operational.  <b>Unused:</b> No FPC is present.           </p>	none

Table 67: show chassis fabric plane Output Fields (*continued*)

Field Name	Field Description	Level of output
<b>State</b>	<p>(TX Matrix Plus and T1600 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
<b>Uptime</b>	(TX Matrix Plus and T1600 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



Table 67: show chassis fabric plane Output Fields (*continued*)

Field Name	Field Description	Level of output
<b>PLANE number</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>
<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>

Table 67: show chassis fabric plane Output Fields (*continued*)

Field Name	Field Description	Level of output
<b>SIB F13 slot-number</b> <b>Odd/Even</b>	State of the TXP-F13 SIB even and odd port connection optical links from the TX Matrix Plus router (SFC) to the T1600 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.	<b>extensive</b>
<b>LCC number,</b> <b>SIB slot-number</b>	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: <ul style="list-style-type: none"> <li>• <b>Links ok</b>—Links between the TXP-F13 SIB on the SFC and the LCC is active.</li> <li>• <b>Link error</b>—Link between the TXP-F13 SIB on the SFC and the LCC is not operational.</li> <li>• <b>Unused</b>—No SIB is present.</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 not operational.</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 SIB.	<b>extensive</b>

Fabric Management SIB State Output Fields for the show chassis fabric plane extensive Command on a TX Matrix Plus Router

Table 67: 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 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 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. 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 only applicable 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 67: show chassis fabric plane Output Fields (*continued*)

Field Name	Field Description	Level of output
LCC SIB Link State	State of the LCC SIB link: <ul style="list-style-type: none"> <li>• <b>Links ok</b>—Link is active.</li> <li>• <b>Link error</b>—Link is not operational.</li> <li>• <b>Unused</b>—SIB is not in use.</li> </ul>	extensive
SG number Port number	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 not operational.</li> <li>• <b>Unused</b>—Port is not in use.</li> </ul>	extensive

### Sample Output

**show chassis fabric plane (M120 Router)**

```

user@host> show chassis fabric plane
Fabric management PLANE state
Plane 0
Plane state: ACTIVE
FEB 0: Links ok
FEB 1: Links ok
FEB 2: Links ok
FEB 3: Links ok
FEB 4: Links ok
FEB 5: Links ok
Plane 1
Plane state: ACTIVE
FEB 0: Links ok
FEB 1: Links ok
FEB 2: Links ok
FEB 3: Links ok
FEB 4: Links ok
FEB 5: Links ok
Plane 2
Plane state: ACTIVE
FEB 0: Links ok
FEB 1: Links ok
FEB 2: Links ok
FEB 3: Links ok
FEB 4: Links ok
FEB 5: Links ok
Plane 3
Plane state: ACTIVE
FEB 0: Links ok
FEB 1: Links ok
FEB 2: Links ok
FEB 3: Links ok
FEB 4: Links ok
FEB 5: Links ok

```

**show chassis fabric plane (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 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
Plane 1
  Plane state: ACTIVE
    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
Plane 2
  Plane state: OFFLINE
Plane 3
  Plane state: OFFLINE
Plane 4
  Plane state: OFFLINE

```

Plane 5  
Plane state: OFFLINE

**show chassis fabric  
plane (TX Matrix Plus  
Router)**

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

Plane	State	Uptime
0	Spare	
1	Online	1 hour, 11 minutes, 26 seconds
2	Online	1 hour, 11 minutes, 25 seconds
3	Online	1 hour, 11 minutes, 20 seconds
4	Online	1 hour, 11 minutes, 12 seconds

lcc0-re0:

SIB	State	Uptime
0	Spare	
1	Online	5 hours, 11 minutes, 39 seconds
2	Online	5 hours, 11 minutes, 39 seconds
3	Online	5 hours, 11 minutes, 39 seconds
4	Online	5 hours, 11 minutes, 39 seconds

lcc1-re0:

SIB	State	Uptime
0	Spare	
1	Online	5 hours, 11 minutes, 40 seconds
2	Online	5 hours, 11 minutes, 40 seconds
3	Online	5 hours, 11 minutes, 40 seconds
4	Online	5 hours, 11 minutes, 40 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 terse (TX Matrix  
Plus Router)**

```

user@host> show chassis fabric plane terse
sfc0-re0:

```

Plane	State	Uptime
0	Spare	
1	Online	1 hour, 16 minutes, 14 seconds
2	Online	1 hour, 16 minutes, 13 seconds
3	Online	1 hour, 16 minutes, 8 seconds
4	Online	1 hour, 16 minutes

```
lcc0-re0:
```

SIB	State	Uptime
0	Spare	
1	Online	5 hours, 16 minutes, 27 seconds
2	Online	5 hours, 16 minutes, 27 seconds
3	Online	5 hours, 16 minutes, 27 seconds
4	Online	5 hours, 16 minutes, 27 seconds

```
lcc1-re0:
```

SIB	State	Uptime
0	Spare	
1	Online	5 hours, 16 minutes, 28 seconds
2	Online	5 hours, 16 minutes, 28 seconds
3	Online	5 hours, 16 minutes, 28 seconds
4	Online	5 hours, 16 minutes, 28 seconds

**show chassis fabric  
plane lcc (TX Matrix  
Plus Router)**

```

user@host> show chassis fabric plane lcc 7
lcc1-re0:

```

SIB	State	Uptime
0	Spare	
1	Online	5 hours, 17 minutes, 52 seconds
2	Online	5 hours, 17 minutes, 52 seconds
3	Online	5 hours, 17 minutes, 52 seconds
4	Online	5 hours, 17 minutes, 52 seconds

**show chassis fabric  
plane sfc (TX Matrix  
Plus Router)**

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

Plane	State	Uptime
0	Spare	
1	Online	1 hour, 4 minutes, 43 seconds
2	Online	1 hour, 4 minutes, 38 seconds
3	Online	1 hour, 4 minutes, 35 seconds
4	Online	1 hour, 4 minutes, 33 seconds

```
1cc0-re0:
```

SIB	State	Uptime
0	Spare	
1	Online	1 hour, 7 minutes, 24 seconds
2	Online	1 hour, 7 minutes, 24 seconds
3	Online	1 hour, 7 minutes, 24 seconds
4	Online	1 hour, 7 minutes, 24 seconds

```
1cc1-re0:
```

SIB	State	Uptime
0	Offline	
1	Online	1 hour, 7 minutes, 22 seconds
2	Online	1 hour, 7 minutes, 22 seconds
3	Online	1 hour, 7 minutes, 22 seconds
4	Online	1 hour, 7 minutes, 22 seconds

**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 extensive (TX  
Matrix Plus Router)**

```

user@host> show chassis fabric plane extensive
sfc0-re0:

```

```

-----
Fabric Management PLANE State:
PLANE 0:   Online
SIB F13 0  :   Online
SIB F13 1  :   Empty
SIB F2S 0/0 :   Online
SIB F2S 0/2 :   Online
SIB F2S 0/4 :   Online
SIB F2S 0/6 :   Online
SIB F13 0 Even:
LCC 0, 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 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:   Fault
    SIB F13 3      :   Fault
    SIB F13 4      :   Empty
    SIB F2S 1/0 :   Fault
    SIB F2S 1/2 :   Fault
    SIB F2S 1/4 :   Online
    SIB F2S 1/6 :   Online
    SIB F13 3 Even:
        LCC 0, SIB 1 : 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
...
lcc1-re1:
-----
Fabric Management SIB State:
    SIB      0      :   Online
        LCC SIB Link State : 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      1      :   Fault
        LCC SIB Link State : Link error
        SG 0

```

```

Port 0 : Link error
Port 1 : Link error
Port 2 : Link error
Port 3 : Link error
SG 1
Port 0 : Link error
Port 1 : Link error
Port 2 : Link error
Port 3 : Link error
SG 2
Port 0 : Link error
Port 1 : Link error
Port 2 : Link error
Port 3 : Link error
SG 3
Port 0 : Link error
Port 1 : Link error
Port 2 : Link error
Port 3 : Link error
SIB 2 : Online
LCC SIB Link State : 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 3 : Check
LCC SIB Link State : Link error
SG 0
Port 0 : Link error
Port 1 : Link error
Port 2 : Link error

```

```

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>Release Information</b>	Command introduced in Junos OS Release 8.0. Command introduced in Junos OS Release 9.4 for EX Series switches.
<b>Description</b>	(M120 and MX Series routers and TX Matrix Plus router and EX8200 switches only) Display the Control Board (CB) location of each plane. This command can be used on the master Routing Engine or the backup Routing Engine. For information about the meaning of “CBs” and “fabric plane” on the switches, see EX Series Switches Hardware and CLI Terminology Mapping.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show chassis fabric plane-location (M120 Router) on page 364 show chassis fabric plane-location (MX240 and MX480 Routers) on page 365 show chassis fabric plane-location (MX960 Router) on page 365 show chassis fabric plane-location (TX Matrix Plus Router) on page 365 show chassis fabric plane-location (EX8200 Switch) on page 365
<b>Output Fields</b>	Table 68 on page 364 lists the output fields for the <b>show chassis fabric plane location</b> command. Output fields are listed in the approximate order in which they appear.

**Table 68: show chassis fabric plane location Output Fields**

Field Name	Field Description
Plane <i>n</i>	Plane number.
Control Board <i>n</i>	Control board number.
SFC ABS-SIB-F13	(TX Matrix Plus routers only) Switch Interface Board (SIB) slot number on the F13 SIB.
SFC ABS-SIB-F2S	(TX Matrix Plus routers only) SIB slot number on the F2S.
LCC ST-SIB-L	(TX Matrix Plus routers only) Line-card chassis (LCC) SIB slot number.

## 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 user@host> show chassis fabric plane-location
(MX240 and MX480 Routers)          -----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 user@host> show chassis fabric plane-location
(MX960 Router)                      -----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 user@host> show chassis fabric plane-location
(TX Matrix Plus Router)             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 user@host> show chassis fabric plane-location
(EX8200 Switch)                     -----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 sibs

<b>Syntax</b>	show chassis fabric sibs <fcc <i>number</i>   scc>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	<p>(T Series routers only) Display the state of the electrical and optical switch fabric links:</p> <ul style="list-style-type: none"> <li>Between the Switch Interface Boards (SIBs) in the TX Matrix router (TX SIBs) and the SIBs in the T640 routers (T640 SIBs).</li> <li>Between the T640 SIBs and the Flexible PIC Concentrators (FPCs) in a T640 router.</li> </ul>
<b>Options</b>	<p>none—Display the switching fabric link state for the TX SIBs in the TX Matrix router and for the T640 SIBs in all the T640 routers connected to a TX Matrix router.</p> <p>fcc <i>number</i>—(Optional) Display the switching fabric link state for the T640 SIBs in a specified T640 router (or line-card chassis) connected to a TX Matrix router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(Optional) Display the switching fabric link state for the TX SIBs on the TX Matrix router (or switch-card chassis).</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p>show chassis fabric sibs (T640 Router) on page 367</p> <p>show chassis fabric sibs (T1600 Router) on page 368</p> <p>show chassis fabric sibs (TX Matrix Router) on page 369</p> <p>show chassis fabric sibs fcc (TX Matrix Router) on page 372</p> <p>show chassis fabric sibs scc (TX Matrix Router) on page 372</p>
<b>Output Fields</b>	Table 69 on page 366 lists the output fields for the <b>show chassis fabric sibs</b> command. Output fields are listed in the approximate order in which they appear.

**Table 69: show chassis fabric sibs Output Fields**

Field Name	Field Description
<b>Fabric management SIB state</b>	<p>Switching fabric link (link from FPC to SIB) state for each SIB:</p> <ul style="list-style-type: none"> <li><b>Unused</b>—SIB is not present.</li> <li><b>Links ok</b>—Link between the SIB and the FPC is active.</li> <li><b>Link error</b>—Link between the SIB and the FPC is not operational.</li> </ul>

Table 69: show chassis fabric sibs Output Fields (*continued*)

Field Name	Field Description
Plane state	<p>In a routing matrix composed of the TX Matrix router, state of the TX SIB or T640 SIB:</p> <ul style="list-style-type: none"> <li>• <b>S_ACTIVE</b>—Links on the SIB are operational, and the fabric plane (SIB) is operational and running.</li> <li>• <b>S_SPARE</b>—Links on the SIB are operational and the fabric plane (SIB) is redundant and can be operational if any of the fabric planes in the <b>S_ACTIVE</b> state encounters an error.</li> </ul> <p><b>NOTE:</b> If the plane is unusable by any of the Packet Forwarding Engines, the command output displays an additional string, <b>plane has link errors on # pfes</b>, where, # indicates the total number of links (both from SIB to FPC, and from FPC to SIB) having link errors (detected either during initialization time or runtime) in this particular plane. This does not count links having destination errors.</p>

### Sample Output

show chassis fabric  
sibs (T640 Router)

```

user@host> show chassis fabric sibs
Fabric management SIB state:
SIB #0
  plane state: S_SPARE
  FPC #0
    PFE #1 : Links ok
  FPC #2
    PFE #1 : Links ok
  FPC #3
    PFE #0 : Links ok
    PFE #1 : Links ok
SIB #1
  plane state: S_ACTIVE
  FPC #0
    PFE #1 : Links ok
  FPC #2
    PFE #1 : Links ok
  FPC #3
    PFE #0 : Links ok
    PFE #1 : Links ok
SIB #2
  plane state: S_ACTIVE
  FPC #0
    PFE #1 : Links ok
  FPC #2
    PFE #1 : Links ok
  FPC #3
    PFE #0 : Links ok
    PFE #1 : Links ok
SIB #3
  plane state: S_ACTIVE
  FPC #0
    PFE #1 : Links ok
  FPC #2
    PFE #1 : Links ok
  FPC #3
    PFE #0 : Links ok

```

```
        PFE #1 : Links ok
SIB #4
  plane state: S_ACTIVE
  FPC #0
    PFE #1 : Links ok
  FPC #2
    PFE #1 : Links ok
  FPC #3
    PFE #0 : Links ok
    PFE #1 : Links ok
```

**show chassis fabric  
sibs (T1600 Router)**

```
user@host> show chassis fabric sibs
SIB #0
  plane state: S_SPARE
  FPC #0
    PFE #0 : Links ok
    PFE #1 : Links ok
  FPC #1
    PFE #0 : Links ok
    PFE #1 : Links ok
  FPC #2
    PFE #0 : Links ok
  FPC #4
    PFE #0 : Links ok
    PFE #1 : Links ok
  FPC #5
    PFE #0 : Links ok
  FPC #6
    PFE #0 : Links ok
    PFE #1 : Links ok
  FPC #7
    PFE #0 : Links ok
    PFE #1 : Links ok
SIB #1
  plane state: S_ACTIVE , plane has link errors on 2 pfes
  FPC #0
    PFE #0 : Links ok
    PFE #1 : Links ok
  FPC #1
    PFE #0 : Links ok
    PFE #1 : Links ok
  FPC #3
    PFE #0 : Links ok
    PFE #1 : Links ok
  FPC #4
    PFE #0 : Links ok
    PFE #1 : Links ok
  FPC #5
    PFE #0 : Links ok
    PFE #1 : Links ok
  FPC #7
    PFE #0 : Links ok
    PFE #1 : Links okSIB #2
  plane state: S_ACTIVE
SIB #2
  plane state: S_ACTIVE
  FPC #0
    PFE #0 : Links ok
    PFE #1 : Links ok
  FPC #1
    PFE #0 : Links ok
```



```

        PFE #1 : Links ok
FPC #2
        PFE #0 : Links ok
FPC #4
        PFE #0 : Links ok
        PFE #1 : Links ok
FPC #5
        PFE #0 : Links ok
FPC #6
        PFE #0 : Links ok
        PFE #1 : Links ok
FPC #7
        PFE #0 : Links ok
        PFE #1 : Links ok
SIB #3
plane state: S_ACTIVE
FPC #0
        PFE #0 : Links ok
        PFE #1 : Links ok
FPC #1
        PFE #0 : Links ok
        PFE #1 : Links ok
FPC #2
        PFE #0 : Links ok
FPC #4
        PFE #0 : Links ok
        PFE #1 : Links ok
FPC #5
        PFE #0 : Links ok
FPC #6
        PFE #0 : Links ok
        PFE #1 : Links ok
FPC #7
        PFE #0 : Links ok
        PFE #1 : Links ok
SIB #4
plane state: S_ACTIVE
FPC #0
        PFE #0 : Links ok
        PFE #1 : Links ok
FPC #1
        PFE #0 : Links ok
        PFE #1 : Links ok
FPC #2
        PFE #0 : Links ok
FPC #4
        PFE #0 : Links ok
        PFE #1 : Links ok
FPC #5
        PFE #0 : Links ok
FPC #6
        PFE #0 : Links ok
        PFE #1 : Links ok
FPC #7
        PFE #0 : Links ok
        PFE #1 : Links ok

```

```

show chassis fabric sibs (TX Matrix Router) user@host> show chassis fabric sibs
scc-re0:

```

```
-----
Fabric management SIB state:

```

```
SIB #1
plane state: S_ACTIVE , plane has link errors on 2 pfes
FPC #0
  PFE #0 : Links ok
  PFE #1 : Links ok
FPC #1
  PFE #0 : Links ok
  PFE #1 : Links ok
FPC #3
  PFE #0 : Links ok
  PFE #1 : Links ok
FPC #4
  PFE #0 : Links ok
  PFE #1 : Links ok
FPC #5
  PFE #0 : Links ok
  PFE #1 : Links ok
FPC #7
  PFE #0 : Links ok
  PFE #1 : Links ok
SIB #2
plane state: S_ACTIVE
LCC #0 : Links ok
LCC #1 : Links ok
SIB #3
plane state: S_ACTIVE
LCC #0 : Links ok
LCC #1 : Links ok
SIB #4
plane state: S_ACTIVE
LCC #0 : Links ok
LCC #1 : Links ok
```

lcc0-re0:

-----  
Fabric management SIB state:

```
SIB #1
plane state: S_ACTIVE
FPC #0
  PFE #0 : Links ok
  PFE #1 : Links ok
FPC #1
  PFE #1 : Links ok
FPC #2
  PFE #0 : Links ok
  PFE #1 : Links ok
FPC #3
  PFE #1 : Links ok
FPC #4
  PFE #1 : Links ok
FPC #5
  PFE #0 : Links ok
FPC #6
  PFE #1 : Links ok
FPC #7
  PFE #1 : Links ok
SCC : Links ok
SIB #2
plane state: S_ACTIVE
FPC #0
  PFE #0 : Links ok
```

```

    PFE #1 : Links ok
FPC #1
    PFE #1 : Links ok
FPC #2
    PFE #0 : Links ok
    PFE #1 : Links ok
FPC #3
    PFE #1 : Links ok
FPC #4
    PFE #1 : Links ok
FPC #5
    PFE #0 : Links ok
FPC #6
    PFE #1 : Links ok
FPC #7
    PFE #1 : Links ok
SCC      : Links ok
SIB #3
plane state: S_ACTIVE
FPC #0
    PFE #0 : Links ok
    PFE #1 : Links ok
FPC #1
    PFE #1 : Links ok
FPC #2
    PFE #0 : Links ok
    PFE #1 : Links ok
FPC #3
    PFE #1 : Links ok
FPC #4
    PFE #1 : Links ok
FPC #5
    PFE #0 : Links ok
FPC #6
    PFE #1 : Links ok
FPC #7
    PFE #1 : Links ok
SCC      : Links ok
SIB #4
plane state: S_ACTIVE
FPC #0
    PFE #0 : Links ok
    PFE #1 : Links ok
FPC #1
    PFE #1 : Links ok
FPC #2
    PFE #0 : Links ok
    PFE #1 : Links ok
FPC #3
    PFE #1 : Links ok
FPC #4
    PFE #1 : Links ok
FPC #5
    PFE #0 : Links ok
FPC #6
    PFE #1 : Links ok
FPC #7
    PFE #1 : Links ok
SCC      : Links o
```

```
show chassis fabric sibs lcc (TX Matrix
Router) user@host> show chassis fabric sibs lcc 0
lcc1-re0:
```

```
-----
Fabric management SIB state:
```

```
SIB #1
```

```
plane state: S_ACTIVE
```

```
FPC #0
```

```
PFE #0 : Links ok
```

```
FPC #2
```

```
PFE #1 : Links ok
```

```
FPC #4
```

```
PFE #0 : Links ok
```

```
FPC #5
```

```
PFE #1 : Links ok
```

```
FPC #7
```

```
PFE #0 : Links ok
```

```
SCC
```

```
: Links ok
```

```
SIB #2
```

```
plane state: S_ACTIVE
```

```
FPC #0
```

```
PFE #0 : Links ok
```

```
FPC #2
```

```
PFE #1 : Links ok
```

```
FPC #4
```

```
PFE #0 : Links ok
```

```
FPC #5
```

```
PFE #1 : Links ok
```

```
FPC #7
```

```
PFE #0 : Links ok
```

```
SCC
```

```
: Links ok
```

```
SIB #3
```

```
plane state: S_ACTIVE
```

```
FPC #0
```

```
PFE #0 : Links ok
```

```
FPC #2
```

```
PFE #1 : Links ok
```

```
FPC #4
```

```
PFE #0 : Links ok
```

```
FPC #5
```

```
PFE #1 : Links ok
```

```
FPC #7
```

```
PFE #0 : Links ok
```

```
SCC
```

```
: Links ok
```

```
SIB #4
```

```
plane state: S_ACTIVE
```

```
FPC #0
```

```
PFE #0 : Links ok
```

```
FPC #2
```

```
PFE #1 : Links ok
```

```
FPC #4
```

```
PFE #0 : Links ok
```

```
FPC #5
```

```
PFE #1 : Links ok
```

```
FPC #7
```

```
PFE #0 : Links ok
```

```
SCC
```

```
: Links ok
```

```
show chassis fabric sibs scc (TX Matrix
Router) user@host> show chassis fabric sibs scc
scc-re0:
```

```
-----
Fabric management SIB state:
```

```
SIB #1
  plane state: S_ACTIVE
  LCC #0      : Links ok
  LCC #1      : Links ok
SIB #2
  plane state: S_ACTIVE
  LCC #0      : Links ok
  LCC #1      : Links ok
SIB #3
  plane state: S_ACTIVE
  LCC #0      : Links ok
  LCC #1      : Links ok
SIB #4
  plane state: S_ACTIVE
  LCC #0      : Links ok
  LCC #1      : Links ok
```

## show chassis fabric summary

<b>Syntax</b>	show chassis fabric summary
<b>Release Information</b>	Command introduced in Junos OS Release 8.4. Command introduced in Junos OS Release 9.4 for EX Series switches.
<b>Description</b>	(MX Series routers and EX8200 switches only) Display the state of all fabric planes and the elapsed uptime.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<a href="#">show chassis fabric summary (MX240 Router) on page 375</a> <a href="#">show chassis fabric summary (MX480 Router) on page 375</a> <a href="#">show chassis fabric summary (MX960 Router) on page 375</a> <a href="#">show chassis fabric summary (EX8200 Switch) on page 375</a>
<b>Output Fields</b>	Table 70 on page 374 lists the output fields for the <b>show chassis fabric summary</b> command. Output fields are listed in the approximate order in which they appear.

**Table 70: show chassis fabric summary Output Fields**

Field Name	Field Description
<b>Plane</b>	Plane number.
<b>State</b>	<p>State of each plane:</p> <ul style="list-style-type: none"> <li>• <b>Online</b>—Switch Interface Board (SIB) is operational and running.</li> <li>• <b>Offline</b>—SIB is powered down.</li> <li>• <b>Check</b>—SIB is in the <b>Check</b> state because of the following reasons: <ul style="list-style-type: none"> <li>• SIB is not inserted properly.</li> <li>• Some destination errors are detected on the SIB. In this case, the Packet Forwarding Engine stops using the SIB to send traffic to the affected destination Packet Forwarding Engine.</li> <li>• Some link errors are detected on the channel between the SIB and a Packet Forwarding Engine. Link errors can be detected at initialization time or runtime: <ul style="list-style-type: none"> <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> </li> </ul> <p>For information about link and destination errors, issue the <b>show chassis fabric fpcs</b> commands.</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.</li> </ul>

Table 70: show chassis fabric summary Output Fields (*continued*)

Field Name	Field Description
Uptime	Elapsed time the plane has been online.

### Sample Output

```

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

```

```

show chassis fabric summary (MX480 Router)
user@host> show chassis fabric summary
Plane  State  Uptime
0      Online 8 hours, 45 minutes, 29 seconds
1      Online 8 hours, 45 minutes, 28 seconds
2      Online 8 hours, 45 minutes, 28 seconds
3      Online 8 hours, 45 minutes, 28 seconds
4      Spare 8 hours, 45 minutes, 28 seconds
5      Spare 8 hours, 45 minutes, 28 seconds
6      Spare 8 hours, 45 minutes, 28 seconds
7      Check 6 hours, 10 minutes, 12 seconds

```

```

show chassis fabric summary (MX960 Router)
user@host> show chassis fabric summary
Plane  State  Uptime
0      Online 16 hours, 41 minutes, 48 seconds
1      Online 16 hours, 41 minutes, 47 seconds
2      Online 16 hours, 41 minutes, 47 seconds
3      Check 8 hours, 13 minutes, 12 seconds
4      Spare 16 hours, 41 minutes, 46 seconds
5      Spare 16 hours, 41 minutes, 45 seconds

```

```

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

```

## show chassis fabric topology

<b>Syntax</b>	show chassis fabric topology <lcc <i>number</i>   scc> < <i>sib-slot-number</i> >
<b>Syntax (TX Matrix Router)</b>	show chassis fabric topology <lcc <i>number</i>   scc> < <i>sib-slot-number</i> >
<b>Syntax (TX Matrix Plus Router)</b>	show chassis fabric topology <lcc <i>number</i>   sfc <i>number</i> > < <i>sib-slot-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>	(TX Matrix, TX Matrix Plus, and T Series routers only) On the TX Matrix router, display the state of the switching fabric topology for the Switch Interface Board (SIB) connection between the TX Matrix router and the T640 routers. On the TX Matrix Plus router, display the state of the switching fabric topology for the SIB connection between the TX Matrix Plus router and the T1600 routers.
<b>Options</b>	<p>none—Display the fabric topology state for the TX Matrix router and for all the T640 routers connected to it.</p> <p><i>lcc number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display the fabric topology state for a specified T640 router (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display the fabric topology state for a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) (Optional) Display the fabric topology state for the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) (Optional) Display the fabric topology for the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p> <p><i>sib-slot-number</i>—(Optional) Display the fabric topology state for a specified SIB slot. Replace <i>sib-slot-number</i> with a value from 0 through 4. On a TX Matrix Plus router, replace <i>sib-slot-number</i> with a value from 0 through 15.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p>show chassis fabric topology scc (TX Matrix Router) on page 379</p> <p>show chassis fabric topology lcc on page 381</p> <p>show chassis fabric topology (TX Matrix Plus Router) on page 383</p> <p>show chassis fabric topology sfc (TX Matrix Plus Router) on page 385</p> <p>show chassis fabric topology lcc (TX Matrix Plus Router) on page 386</p>



**Output Fields** Table 71 on page 377 lists the output fields for the **show chassis fabric topology** command. Output fields are listed in the approximate order in which they appear.

**Table 71: 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.
<b>state</b>	State of the fabric link: <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>—SIB is in the alarmed state, in which 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></ul>

**Table 71: 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:
	<hr/> <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> <hr/> <ul style="list-style-type: none"> <li>• <b>HSL2 Status</b> —The status of the HSL2 Channel. Includes the following states: <ul style="list-style-type: none"> <li>• <b>Up</b>—Channel is up.</li> <li>• <b>Down</b>—Channel is down.</li> <li>• <b>Reset</b>—Channel has been reset.</li> <li>• <b>Fault</b>—Channel has faults.</li> </ul> </li> </ul> <p>The following is a sample output with description of the fields displayed in the output for Out-Links:</p> <p>Out-Links:</p> <pre>===== SF_3_13_FB_A(21,09) -&gt; FPC7_B_SG(3,3,6)_FB_A(18,09)      OK 203      Up</pre> <hr/>

Table 71: show chassis fabric topology Output Fields (*continued*)

- **SF\_3\_13**—Name of the ASIC, with Fabric F1 or F3 mode. In this case, 3 is the F3 direction and is used in the Tx path. You can also have F1 mode and Rx path instead.
- **FB\_A (21, 09)**—Fiber bundle A, with VCSEL unit number 21 within the SIB, and channel number 9 within the unit number.
- **FPC7\_B\_SG(3,3,6)**—FPC 7.with bottom Packet Forwarding Engine (T for top PFE and B for bottom PFE), SG ASIC, with number 3 and port number 3, with HSL2 link number with the SIB as 6.
- **FB\_A(18, 09)**—Fiber Bundle, with VCSEL unit number 18 within the SIB, and VCSEL channel number 9 within the unit number.

The following is a sample output with description of the fields displayed in the output for In-Links:

In-Links:

=====

```
FPC0_T_SG(0,0,0)_FB_D(04,11)  -> SF_1_00_FB_D(01,11)      OK      0
                               Up
```

- **FPC0**—FPC 0.
- **T**—Top Packet Forwarding Engine.
- **SG (0, 0, 0)**—SG ASIC with port number 0 and link 0.
- **FB\_D (04,11)**—Fiber Bundle D with VCSEL 4, channel 11.
- **SF\_1**—Indicates F1 mode and Rx path.
- **SF\_1\_00\_FB\_D(01,11)** —Indicates F1 mode and Rx path with port 0, fiber bundle D, with VCSEL 1, channel 11.

## Sample Output

show chassis fabric  
topology scc (TX  
Matrix Router)

```
user@host> show chassis fabric topology scc
scc-rel:
```

```
-----
fchip (mode)
```

```
in-links      state  out-links      state
-----
```

Sib #0 :

-----

SIB0\_F0 (F2 ):

LCC0_SIB-L0_F0,03->SIB-S0_F0,00	UP	SIB-S0_F0,00->LCC0_SIB-L0_F1,00	UP
LCC1_SIB-L0_F0,03->SIB-S0_F0,01	UP	SIB-S0_F0,01->LCC1_SIB-L0_F1,08	UP
LCC2_SIB-L0_F0,03->SIB-S0_F0,02	RESET	SIB-S0_F0,02->LCC2_SIB-L0_F1,08	UP
LCC3_SIB-L0_F0,03->SIB-S0_F0,03	RESET	SIB-S0_F0,03->LCC3_SIB-L0_F1,00	UP
LCC0_SIB-L0_F0,02->SIB-S0_F0,04	UP	SIB-S0_F0,04->LCC0_SIB-L0_F1,01	UP
LCC1_SIB-L0_F0,02->SIB-S0_F0,05	UP	SIB-S0_F0,05->LCC1_SIB-L0_F1,09	UP
LCC2_SIB-L0_F0,02->SIB-S0_F0,06	RESET	SIB-S0_F0,06->LCC2_SIB-L0_F1,09	UP
LCC3_SIB-L0_F0,02->SIB-S0_F0,07	RESET	SIB-S0_F0,07->LCC3_SIB-L0_F1,01	UP
LCC0_SIB-L0_F0,07->SIB-S0_F0,08	UP	SIB-S0_F0,08->LCC0_SIB-L0_F1,04	UP
LCC1_SIB-L0_F0,07->SIB-S0_F0,09	UP	SIB-S0_F0,09->LCC1_SIB-L0_F1,12	UP
LCC2_SIB-L0_F0,07->SIB-S0_F0,10	RESET	SIB-S0_F0,10->LCC2_SIB-L0_F1,12	UP
LCC3_SIB-L0_F0,07->SIB-S0_F0,11	RESET	SIB-S0_F0,11->LCC3_SIB-L0_F1,04	UP
LCC0_SIB-L0_F0,06->SIB-S0_F0,12	UP	SIB-S0_F0,12->LCC0_SIB-L0_F1,05	UP
LCC1_SIB-L0_F0,06->SIB-S0_F0,13	UP	SIB-S0_F0,13->LCC1_SIB-L0_F1,13	UP
LCC2_SIB-L0_F0,06->SIB-S0_F0,14	RESET	SIB-S0_F0,14->LCC2_SIB-L0_F1,13	UP
LCC3_SIB-L0_F0,06->SIB-S0_F0,15	RESET	SIB-S0_F0,15->LCC3_SIB-L0_F1,05	UP

## SIB0\_F1 (F2 ):

LCC0_SIB-L0_F0,11->SIB-S0_F1,00	UP	SIB-S0_F1,00->LCC0_SIB-L0_F1,08	UP
LCC1_SIB-L0_F0,11->SIB-S0_F1,01	UP	SIB-S0_F1,01->LCC1_SIB-L0_F1,00	UP
LCC2_SIB-L0_F0,11->SIB-S0_F1,02	RESET	SIB-S0_F1,02->LCC2_SIB-L0_F1,00	UP
LCC3_SIB-L0_F0,11->SIB-S0_F1,03	RESET	SIB-S0_F1,03->LCC3_SIB-L0_F1,08	UP
LCC0_SIB-L0_F0,10->SIB-S0_F1,04	UP	SIB-S0_F1,04->LCC0_SIB-L0_F1,09	UP
LCC1_SIB-L0_F0,10->SIB-S0_F1,05	UP	SIB-S0_F1,05->LCC1_SIB-L0_F1,01	UP
LCC2_SIB-L0_F0,10->SIB-S0_F1,06	RESET	SIB-S0_F1,06->LCC2_SIB-L0_F1,01	UP
LCC3_SIB-L0_F0,10->SIB-S0_F1,07	RESET	SIB-S0_F1,07->LCC3_SIB-L0_F1,09	UP
LCC0_SIB-L0_F0,15->SIB-S0_F1,08	UP	SIB-S0_F1,08->LCC0_SIB-L0_F1,12	UP
LCC1_SIB-L0_F0,15->SIB-S0_F1,09	UP	SIB-S0_F1,09->LCC1_SIB-L0_F1,04	UP
LCC2_SIB-L0_F0,15->SIB-S0_F1,10	RESET	SIB-S0_F1,10->LCC2_SIB-L0_F1,04	UP
LCC3_SIB-L0_F0,15->SIB-S0_F1,11	RESET	SIB-S0_F1,11->LCC3_SIB-L0_F1,12	UP
LCC0_SIB-L0_F0,14->SIB-S0_F1,12	UP	SIB-S0_F1,12->LCC0_SIB-L0_F1,13	UP
LCC1_SIB-L0_F0,14->SIB-S0_F1,13	UP	SIB-S0_F1,13->LCC1_SIB-L0_F1,05	UP
LCC2_SIB-L0_F0,14->SIB-S0_F1,14	RESET	SIB-S0_F1,14->LCC2_SIB-L0_F1,05	
UP			
LCC3_SIB-L0_F0,14->SIB-S0_F1,15	RESET	SIB-S0_F1,15->LCC3_SIB-L0_F1,13	
UP			

## SIB0\_F2 (F2 ):

LCC3_SIB-L0_F0,13->SIB-S0_F2,00	RESET	SIB-S0_F2,00->LCC3_SIB-L0_F1,14	UP
LCC2_SIB-L0_F0,13->SIB-S0_F2,01	RESET	SIB-S0_F2,01->LCC2_SIB-L0_F1,06	
UP			
LCC1_SIB-L0_F0,13->SIB-S0_F2,02	UP	SIB-S0_F2,02->LCC1_SIB-L0_F1,06	UP
LCC0_SIB-L0_F0,13->SIB-S0_F2,03	UP	SIB-S0_F2,03->LCC0_SIB-L0_F1,14	UP
LCC3_SIB-L0_F0,12->SIB-S0_F2,04	RESET	SIB-S0_F2,04->LCC3_SIB-L0_F1,15	
UP			
LCC2_SIB-L0_F0,12->SIB-S0_F2,05	RESET	SIB-S0_F2,05->LCC2_SIB-L0_F1,07	UP
LCC1_SIB-L0_F0,12->SIB-S0_F2,06	UP	SIB-S0_F2,06->LCC1_SIB-L0_F1,07	UP
LCC0_SIB-L0_F0,12->SIB-S0_F2,07	UP	SIB-S0_F2,07->LCC0_SIB-L0_F1,15	UP
LCC3_SIB-L0_F0,09->SIB-S0_F2,08	RESET	SIB-S0_F2,08->LCC3_SIB-L0_F1,10	
UP			
LCC2_SIB-L0_F0,09->SIB-S0_F2,09	RESET	SIB-S0_F2,09->LCC2_SIB-L0_F1,02	
UP			
LCC1_SIB-L0_F0,09->SIB-S0_F2,10	UP	SIB-S0_F2,10->LCC1_SIB-L0_F1,02	UP
LCC0_SIB-L0_F0,09->SIB-S0_F2,11	UP	SIB-S0_F2,11->LCC0_SIB-L0_F1,10	UP
LCC3_SIB-L0_F0,08->SIB-S0_F2,12	RESET	SIB-S0_F2,12->LCC3_SIB-L0_F1,11	
UP			
LCC2_SIB-L0_F0,08->SIB-S0_F2,13	RESET	SIB-S0_F2,13->LCC2_SIB-L0_F1,03	
UP			
LCC1_SIB-L0_F0,08->SIB-S0_F2,14	UP	SIB-S0_F2,14->LCC1_SIB-L0_F1,03	UP
LCC0_SIB-L0_F0,08->SIB-S0_F2,15	UP	SIB-S0_F2,15->LCC0_SIB-L0_F1,11	UP

## SIB0\_F3 (F2 ):

LCC3_SIB-L0_F0,05->SIB-S0_F3,00	RESET	SIB-S0_F3,00->LCC3_SIB-L0_F1,06	
UP			
LCC2_SIB-L0_F0,05->SIB-S0_F3,01	RESET	SIB-S0_F3,01->LCC2_SIB-L0_F1,14	
UP			
LCC1_SIB-L0_F0,05->SIB-S0_F3,02	UP	SIB-S0_F3,02->LCC1_SIB-L0_F1,14	UP
LCC0_SIB-L0_F0,05->SIB-S0_F3,03	UP	SIB-S0_F3,03->LCC0_SIB-L0_F1,06	UP
LCC3_SIB-L0_F0,04->SIB-S0_F3,04	RESET	SIB-S0_F3,04->LCC3_SIB-L0_F1,07	
UP			
LCC2_SIB-L0_F0,04->SIB-S0_F3,05	RESET	SIB-S0_F3,05->LCC2_SIB-L0_F1,15	
UP			
LCC1_SIB-L0_F0,04->SIB-S0_F3,06	UP	SIB-S0_F3,06->LCC1_SIB-L0_F1,15	UP
LCC0_SIB-L0_F0,04->SIB-S0_F3,07	UP	SIB-S0_F3,07->LCC0_SIB-L0_F1,07	UP
LCC3_SIB-L0_F0,01->SIB-S0_F3,08	RESET	SIB-S0_F3,08->LCC3_SIB-L0_F1,02	
UP			
LCC2_SIB-L0_F0,01->SIB-S0_F3,09	RESET	SIB-S0_F3,09->LCC2_SIB-L0_F1,10	
UP			
LCC1_SIB-L0_F0,01->SIB-S0_F3,10	UP	SIB-S0_F3,10->LCC1_SIB-L0_F1,10	UP
LCC0_SIB-L0_F0,01->SIB-S0_F3,11	UP	SIB-S0_F3,11->LCC0_SIB-L0_F1,02	UP

```

LCC3_SIB-L0_F0,00->SIB-S0_F3,12  RESET      SIB-S0_F3,12->LCC3_SIB-L0_F1,03
UP
LCC2_SIB-L0_F0,00->SIB-S0_F3,13  RESET      SIB-S0_F3,13->LCC2_SIB-L0_F1,11
UP
LCC1_SIB-L0_F0,00->SIB-S0_F3,14  UP          SIB-S0_F3,14->LCC1_SIB-L0_F1,11  UP
LCC0_SIB-L0_F0,00->SIB-S0_F3,15  UP          SIB-S0_F3,15->LCC0_SIB-L0_F1,03  UP
Sib #1 :
-----
SIB1_F0 (F2 ):
LCC0_SIB-L1_F0,03->SIB-S1_F0,00  RESET      SIB-S1_F0,00->LCC0_SIB-L1_F1,00  UP
LCC1_SIB-L1_F0,03->SIB-S1_F0,01  RESET      SIB-S1_F0,01->LCC1_SIB-L1_F1,08  UP
LCC2_SIB-L1_F0,03->SIB-S1_F0,02  RESET      SIB-S1_F0,02->LCC2_SIB-L1_F1,08  UP
LCC3_SIB-L1_F0,03->SIB-S1_F0,03  RESET      SIB-S1_F0,03->LCC3_SIB-L1_F1,00  UP
LCC0_SIB-L1_F0,02->SIB-S1_F0,04  RESET      SIB-S1_F0,04->LCC0_SIB-L1_F1,01  UP
LCC1_SIB-L1_F0,02->SIB-S1_F0,05  RESET      SIB-S1_F0,05->LCC1_SIB-L1_F1,09  UP
LCC2_SIB-L1_F0,02->SIB-S1_F0,06  RESET      SIB-S1_F0,06->LCC2_SIB-L1_F1,09  UP
LCC3_SIB-L1_F0,02->SIB-S1_F0,07  RESET      SIB-S1_F0,07->LCC3_SIB-L1_F1,01  UP
LCC0_SIB-L1_F0,07->SIB-S1_F0,08  RESET      SIB-S1_F0,08->LCC0_SIB-L1_F1,04  UP
LCC1_SIB-L1_F0,07->SIB-S1_F0,09  RESET      SIB-S1_F0,09->LCC1_SIB-L1_F1,12  UP
LCC2_SIB-L1_F0,07->SIB-S1_F0,10  RESET      SIB-S1_F0,10->LCC2_SIB-L1_F1,12  UP
LCC3_SIB-L1_F0,07->SIB-S1_F0,11  RESET      SIB-S1_F0,11->LCC3_SIB-L1_F1,04  UP
LCC0_SIB-L1_F0,06->SIB-S1_F0,12  RESET      SIB-S1_F0,12->LCC0_SIB-L1_F1,05  UP
LCC1_SIB-L1_F0,06->SIB-S1_F0,13  RESET      SIB-S1_F0,13->LCC1_SIB-L1_F1,13  UP
LCC2_SIB-L1_F0,06->SIB-S1_F0,14  RESET      SIB-S1_F0,14->LCC2_SIB-L1_F1,13  UP
LCC3_SIB-L1_F0,06->SIB-S1_F0,15  RESET      SIB-S1_F0,15->LCC3_SIB-L1_F1,05  UP
SIB1_F1 (F2 ):
LCC0_SIB-L1_F0,11->SIB-S1_F1,00  RESET      SIB-S1_F1,00->LCC0_SIB-L1_F1,08  UP
LCC1_SIB-L1_F0,11->SIB-S1_F1,01  RESET      SIB-S1_F1,01->LCC1_SIB-L1_F1,00  UP
LCC2_SIB-L1_F0,11->SIB-S1_F1,02  RESET      SIB-S1_F1,02->LCC2_SIB-L1_F1,00  UP
LCC3_SIB-L1_F0,11->SIB-S1_F1,03  RESET      SIB-S1_F1,03->LCC3_SIB-L1_F1,08  UP
LCC0_SIB-L1_F0,10->SIB-S1_F1,04  RESET      SIB-S1_F1,04->LCC0_SIB-L1_F1,09  UP
LCC1_SIB-L1_F0,10->SIB-S1_F1,05  RESET      SIB-S1_F1,05->LCC1_SIB-L1_F1,01  UP
LCC2_SIB-L1_F0,10->SIB-S1_F1,06  RESET      SIB-S1_F1,06->LCC2_SIB-L1_F1,01  UP
LCC3_SIB-L1_F0,10->SIB-S1_F1,07  RESET      SIB-S1_F1,07->LCC3_SIB-L1_F1,09  UP
LCC0_SIB-L1_F0,15->SIB-S1_F1,08  RESET      SIB-S1_F1,08->LCC0_SIB-L1_F1,12  UP
LCC1_SIB-L1_F0,15->SIB-S1_F1,09  RESET      SIB-S1_F1,09->LCC1_SIB-L1_F1,04  UP
LCC2_SIB-L1_F0,15->SIB-S1_F1,10  RESET      SIB-S1_F1,10->LCC2_SIB-L1_F1,04  UP
LCC3_SIB-L1_F0,15->SIB-S1_F1,11  RESET      -S1_F1,11->LCC3_SIB-L1_F1,12,05  UP
LCC0_SIB-L1_F0,14->SIB-S1_F1,12  RESET      SIB-S1_F1,12->LCC0_SIB-L1_F1,13  UP
LCC1_SIB-L1_F0,14->SIB-S1_F1,13  RESET      SIB-S1_F1,13->LCC1_SIB-L1_F1,05  UP
LCC2_SIB-L1_F0,14->SIB-S1_F1,14  RESET      SIB-S1_F1,14->LCC2_SIB-L1_F1,05  UP

```

show chassis fabric  
topology lcc

```

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

```

```

-----
      fchip (mode)
in-links          state      out-links          state
-----
Sib #2 :
-----
SIB2_F0 (F1 ):
FPC0_T->SIB-L2_F0,00  DOWN      SIB-L2_F0,00->SIB-S2_F3,15  DOWN
FPC0_B->SIB-L2_F0,01  UP        SIB-L2_F0,01->SIB-S2_F3,11  DOWN
FPC1_T->SIB-L2_F0,02  DOWN      SIB-L2_F0,02->SIB-S2_F0,04  DOWN
FPC1_B->SIB-L2_F0,03  DOWN      SIB-L2_F0,03->SIB-S2_F0,00  DOWN
FPC2_T->SIB-L2_F0,04  DOWN      SIB-L2_F0,04->SIB-S2_F3,07  DOWN
FPC2_B->SIB-L2_F0,05  DOWN      SIB-L2_F0,05->SIB-S2_F3,03  DOWN
FPC3_T->SIB-L2_F0,06  DOWN      SIB-L2_F0,06->SIB-S2_F0,12  DOWN
FPC3_B->SIB-L2_F0,07  DOWN      SIB-L2_F0,07->SIB-S2_F0,08  DOWN
FPC4_T->SIB-L2_F0,08  DOWN      SIB-L2_F0,08->SIB-S2_F2,15  DOWN
FPC4_B->SIB-L2_F0,09  DOWN      SIB-L2_F0,09->SIB-S2_F2,11  DOWN

```

```

FPC5_T->SIB-L2_F0,10    DOWN    SIB-L2_F0,10->SIB-S2_F1,04 DOWN
FPC5_B->SIB-L2_F0,11    DOWN    SIB-L2_F0,11->SIB-S2_F1,00 DOWN
FPC6_T->SIB-L2_F0,12    DOWN    SIB-L2_F0,12->SIB-S2_F2,07 DOWN
FPC6_B->SIB-L2_F0,13    UP      SIB-L2_F0,13->SIB-S2_F2,03 DOWN
FPC7_T->SIB-L2_F0,14    DOWN    SIB-L2_F0,14->SIB-S2_F1,12 DOWN
FPC7_B->SIB-L2_F0,15    DOWN    SIB-L2_F0,15->SIB-S2_F1,08 DOWN
SIB2_F1 (F3 ):
SIB-S2_F0,00->SIB-L2_F1,00 UP    SIB-L2_F1,00->FPC7_B    DOWN
SIB-S2_F0,04->SIB-L2_F1,01 UP    SIB-L2_F1,01->FPC7_T    DOWN
SIB-S2_F3,11->SIB-L2_F1,02 UP    SIB-L2_F1,02->FPC6_B    DOWN
SIB-S2_F3,15->SIB-L2_F1,03 UP    SIB-L2_F1,03->FPC6_T    DOWN
SIB-S2_F0,08->SIB-L2_F1,04 UP    SIB-L2_F1,04->FPC5_B    DOWN
SIB-S2_F0,12->SIB-L2_F1,05 UP    SIB-L2_F1,05->FPC5_T    DOWN
SIB-S2_F3,03->SIB-L2_F1,06 UP    SIB-L2_F1,06->FPC4_B    DOWN
SIB-S2_F3,07->SIB-L2_F1,07 UP    SIB-L2_F1,07->FPC4_T    DOWN
SIB-S2_F1,00->SIB-L2_F1,08 UP    SIB-L2_F1,08->FPC3_B    DOWN
SIB-S2_F1,04->SIB-L2_F1,09 UP    SIB-L2_F1,09->FPC3_T    DOWN
SIB-S2_F2,11->SIB-L2_F1,10 UP    SIB-L2_F1,10->FPC2_B    DOWN
SIB-S2_F2,15->SIB-L2_F1,11 UP    SIB-L2_F1,11->FPC2_T    DOWN
SIB-S2_F1,08->SIB-L2_F1,12 UP    SIB-L2_F1,12->FPC1_B    DOWN
SIB-S2_F1,12->SIB-L2_F1,13 UP    SIB-L2_F1,13->FPC1_T    DOWN
SIB-S2_F2,03->SIB-L2_F1,14 UP    SIB-L2_F1,14->FPC0_B    DOWN
SIB-S2_F2,07->SIB-L2_F1,15 UP    SIB-L2_F1,15->FPC0_T    DOWN
Sib #4 :
-----
SIB4_F0 (F1 ):
FPC0_T->SIB-L4_F0,00    RESET    SIB-L4_F0,00->SIB-S4_F3,15 UP
FPC0_B->SIB-L4_F0,01    UP        SIB-L4_F0,01->SIB-S4_F3,11 UP
FPC1_T->SIB-L4_F0,02    RESET    SIB-L4_F0,02->SIB-S4_F0,04 UP
FPC1_B->SIB-L4_F0,03    RESET    SIB-L4_F0,03->SIB-S4_F0,00 UP
FPC2_T->SIB-L4_F0,04    RESET    SIB-L4_F0,04->SIB-S4_F3,07 UP
FPC2_B->SIB-L4_F0,05    RESET    SIB-L4_F0,05->SIB-S4_F3,03 UP
FPC3_T->SIB-L4_F0,06    RESET    SIB-L4_F0,06->SIB-S4_F0,12 UP
FPC3_B->SIB-L4_F0,07    RESET    SIB-L4_F0,07->SIB-S4_F0,08 UP
FPC4_T->SIB-L4_F0,08    RESET    SIB-L4_F0,08->SIB-S4_F2,15 UP
FPC4_B->SIB-L4_F0,09    RESET    SIB-L4_F0,09->SIB-S4_F2,11 UP
FPC5_T->SIB-L4_F0,10    RESET    SIB-L4_F0,10->SIB-S4_F1,04 UP
FPC5_B->SIB-L4_F0,11    RESET    SIB-L4_F0,11->SIB-S4_F1,00 UP
FPC6_T->SIB-L4_F0,12    RESET    SIB-L4_F0,12->SIB-S4_F2,07 UP
FPC6_B->SIB-L4_F0,13    UP        SIB-L4_F0,13->SIB-S4_F2,03 UP
FPC7_T->SIB-L4_F0,14    RESET    SIB-L4_F0,14->SIB-S4_F1,12 UP
FPC7_B->SIB-L4_F0,15    RESET    SIB-L4_F0,15->SIB-S4_F1,08 UP
SIB4_F1 (F3 ):
SIB-S4_F0,00->SIB-L4_F1,00 UP    SIB-L4_F1,00->FPC7_B    UP
SIB-S4_F0,04->SIB-L4_F1,01 UP    SIB-L4_F1,01->FPC7_T    UP
SIB-S4_F3,11->SIB-L4_F1,02 UP    SIB-L4_F1,02->FPC6_B    UP
SIB-S4_F3,15->SIB-L4_F1,03 UP    SIB-L4_F1,03->FPC6_T    UP
SIB-S4_F0,08->SIB-L4_F1,04 UP    SIB-L4_F1,04->FPC5_B    UP
SIB-S4_F0,12->SIB-L4_F1,05 UP    SIB-L4_F1,05->FPC5_T    UP
SIB-S4_F3,03->SIB-L4_F1,06 UP    SIB-L4_F1,06->FPC4_B    UP
SIB-S4_F3,07->SIB-L4_F1,07 UP    SIB-L4_F1,07->FPC4_T    UP
SIB-S4_F1,00->SIB-L4_F1,08 UP    SIB-L4_F1,08->FPC3_B    UP
SIB-S4_F1,04->SIB-L4_F1,09 UP    SIB-L4_F1,09->FPC3_T    UP
SIB-S4_F2,11->SIB-L4_F1,10 UP    SIB-L4_F1,10->FPC2_B    UP
SIB-S4_F2,15->SIB-L4_F1,11 UP    SIB-L4_F1,11->FPC2_T    UP
SIB-S4_F1,08->SIB-L4_F1,12 UP    SIB-L4_F1,12->FPC1_B    UP
SIB-S4_F1,12->SIB-L4_F1,13 UP    SIB-L4_F1,13->FPC1_T    UP
SIB-S4_F2,03->SIB-L4_F1,14 UP    SIB-L4_F1,14->FPC0_B    UP
SIB-S4_F2,07->SIB-L4_F1,15 UP    SIB-L4_F1,15->FPC0_T    UP

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show chassis fabric  
topology (TX Matrix  
Plus Router)

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

1cc0-re0:

SIB0

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Out-Links:

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

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



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_3_00_FB_D(04,11)	-> FPC0_T_SG(0,0,0)_FB_D(01,11)	OK	112	Up
SF_3_00_FB_D(04,10)	-> FPC0_T_SG(0,0,1)_FB_D(01,10)	OK	112	Up
SF_3_00_FB_D(04,09)	-> FPC0_T_SG(0,0,2)_FB_D(01,09)	OK	112	Up
SF_3_00_FB_D(04,08)	-> FPC0_T_SG(0,0,3)_FB_D(01,08)	OK	112	Up
SF_3_00_FB_D(04,07)	-> FPC0_T_SG(0,0,4)_FB_D(01,07)	OK	112	Up
SF_3_00_FB_D(04,06)	-> FPC0_T_SG(0,0,5)_FB_D(01,06)	OK	112	Up
SF_3_00_FB_D(04,05)	-> FPC0_T_SG(0,0,6)_FB_D(01,05)	OK	112	Up
SF_3_00_FB_D(04,04)	-> FPC0_T_SG(0,0,7)_FB_D(01,04)	OK	112	Up
SF_3_01_FB_B(16,11)	-> FPC4_T_SG(2,0,0)_FB_B(13,11)	OK	119	Up
SF_3_01_FB_B(16,10)	-> FPC4_T_SG(2,0,1)_FB_B(13,10)	OK	119	Up
SF_3_01_FB_B(16,09)	-> FPC4_T_SG(2,0,2)_FB_B(13,09)	OK	119	Up
SF_3_01_FB_B(16,08)	-> FPC4_T_SG(2,0,3)_FB_B(13,08)	OK	119	Up
SF_3_01_FB_B(16,07)	-> FPC4_T_SG(2,0,4)_FB_B(13,07)	OK	119	Up
SF_3_01_FB_B(16,06)	-> FPC4_T_SG(2,0,5)_FB_B(13,06)	OK	119	Up
SF_3_01_FB_B(16,05)	-> FPC4_T_SG(2,0,6)_FB_B(13,05)	OK	119	Up
SF_3_01_FB_B(16,04)	-> FPC4_T_SG(2,0,7)_FB_B(13,04)	OK	119	Up
SF_3_02_FB_D(05,08)	-> FPC1_T_SG(0,2,0)_FB_D(02,08)	OK	126	Up
SF_3_02_FB_D(05,07)	-> FPC1_T_SG(0,2,1)_FB_D(02,07)	OK	126	Up
SF_3_02_FB_D(05,06)	-> FPC1_T_SG(0,2,2)_FB_D(02,06)	OK	126	Up
SF_3_02_FB_D(05,05)	-> FPC1_T_SG(0,2,3)_FB_D(02,05)	OK	126	Up
SF_3_02_FB_D(05,03)	-> FPC1_T_SG(0,2,4)_FB_D(02,03)	OK	126	Up
SF_3_02_FB_D(05,02)	-> FPC1_T_SG(0,2,5)_FB_D(02,02)	OK	126	Up
SF_3_02_FB_D(05,01)	-> FPC1_T_SG(0,2,6)_FB_D(02,01)	OK	126	Up
SF_3_02_FB_D(05,00)	-> FPC1_T_SG(0,2,7)_FB_D(02,00)	OK	126	Up
SF_3_03_FB_B(17,08)	-> FPC5_T_SG(2,2,0)_FB_B(14,08)	OK	133	Up
SF_3_03_FB_B(17,07)	-> FPC5_T_SG(2,2,1)_FB_B(14,07)	OK	133	Up
SF_3_03_FB_B(17,06)	-> FPC5_T_SG(2,2,2)_FB_B(14,06)	OK	133	Up
SF_3_03_FB_B(17,05)	-> FPC5_T_SG(2,2,3)_FB_B(14,05)	OK	133	Up
SF_3_03_FB_B(17,03)	-> FPC5_T_SG(2,2,4)_FB_B(14,03)	OK	133	Up
SF_3_03_FB_B(17,02)	-> FPC5_T_SG(2,2,5)_FB_B(14,02)	OK	133	Up
SF_3_03_FB_B(17,01)	-> FPC5_T_SG(2,2,6)_FB_B(14,01)	OK	133	Up
SF_3_03_FB_B(17,00)	-> FPC5_T_SG(2,2,7)_FB_B(14,00)	OK	133	Up
SF_3_04_FB_C(10,11)	-> FPC2_T_SG(1,0,0)_FB_C(07,11)	OK	140	Up
SF_3_04_FB_C(10,10)	-> FPC2_T_SG(1,0,1)_FB_C(07,10)	OK	140	Up
SF_3_04_FB_C(10,09)	-> FPC2_T_SG(1,0,2)_FB_C(07,09)	OK	140	Up
SF_3_04_FB_C(10,08)	-> FPC2_T_SG(1,0,3)_FB_C(07,08)	OK	140	Up
SF_3_04_FB_C(10,07)	-> FPC2_T_SG(1,0,4)_FB_C(07,07)	OK	140	Up
SF_3_04_FB_C(10,06)	-> FPC2_T_SG(1,0,5)_FB_C(07,06)	OK	140	Up
SF_3_04_FB_C(10,05)	-> FPC2_T_SG(1,0,6)_FB_C(07,05)	OK	140	Up
SF_3_04_FB_C(10,04)	-> FPC2_T_SG(1,0,7)_FB_C(07,04)	OK	140	Up
SF_3_05_FB_A(22,11)	-> FPC6_T_SG(3,0,0)_FB_A(19,11)	OK	147	Up
SF_3_05_FB_A(22,10)	-> FPC6_T_SG(3,0,1)_FB_A(19,10)	OK	147	Up
SF_3_05_FB_A(22,09)	-> FPC6_T_SG(3,0,2)_FB_A(19,09)	OK	147	Up
SF_3_05_FB_A(22,08)	-> FPC6_T_SG(3,0,3)_FB_A(19,08)	OK	147	Up
SF_3_05_FB_A(22,07)	-> FPC6_T_SG(3,0,4)_FB_A(19,07)	OK	147	Up
SF_3_05_FB_A(22,06)	-> FPC6_T_SG(3,0,5)_FB_A(19,06)	OK	147	Up
SF_3_05_FB_A(22,05)	-> FPC6_T_SG(3,0,6)_FB_A(19,05)	HIGH	CUR	147
SF_3_05_FB_A(22,04)	-> FPC6_T_SG(3,0,7)_FB_A(19,04)	OK	147	Up
SF_3_06_FB_C(11,08)	-> FPC3_T_SG(1,2,0)_FB_C(08,08)	OK	154	Up

```

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

```

**show chassis fabric  
topology lcc (TX Matrix  
Plus Router)**

```

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

```

SIB0

=====

Out-Links:

=====

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

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

## show chassis feb

<b>Syntax</b>	show chassis feb
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M5, M10, and M120 routers only) Display Forwarding Engine Board (FEB) status information.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<a href="#">show chassis feb (M10 Router) on page 389</a> <a href="#">show chassis feb (M120 Router) on page 389</a> <a href="#">show chassis feb detail (M120 Router) on page 389</a>
<b>Output Fields</b>	Table 72 on page 388 lists the output fields for the <b>show chassis feb</b> command. Output fields are listed in the approximate order in which they appear.

Table 72: show chassis feb

Field Name	Field Description
<b>State</b>	State of the FEB: <ul style="list-style-type: none"> <li>• <b>Offline</b>—FEB is powered down.</li> <li>• <b>Online</b>—FEB is operational and running.</li> <li>• <b>Check</b>—FEB is in alarmed state where the Switch Interface Board (SIB) plane is partially operational for the following reasons:               <ul style="list-style-type: none"> <li>• FEB is not inserted properly.</li> <li>• Two or more links between the FEB and Packet Forwarding Engine fail.</li> </ul> </li> </ul>
<b>Temp (C) or Intake temperature</b>	Temperature of the air passing by the FEB, in degrees Celsius or in both degrees Celsius and degrees Fahrenheit.
<b>CPU Utilization (%)</b>	Percentage of CPU being used: <ul style="list-style-type: none"> <li>• <b>Total</b>—Total percentage of CPU being used by the FEB processor.</li> <li>• <b>Interrupt</b>—Of the total CPU being used by the FEB processor, the percentage being used for interrupts.</li> </ul>
<b>Memory DRAM (MB)</b>	Total DRAM, in megabytes, available to the FEB processor.
<b>Utilization (%)</b>	Percentage of memory utilization: <ul style="list-style-type: none"> <li>• <b>Heap</b>—Percentage of heap space (dynamic memory) being used by the FEB processor. If this number exceeds 80 percent, you might experience a software problem (memory leak).</li> <li>• <b>Buffer</b>—Percentage of buffer space being used by the FPC processor for buffering internal messages.</li> </ul>
<b>Exhaust A temperature</b>	Temperature of the air flowing past Exhaust A.

Table 72: show chassis feb (continued)

Field Name	Field Description
<b>Exhaust B temperature</b>	Temperature of the air flowing past Exhaust B.
<b>Total DDR DRAM</b>	Amount of double data rate dynamic random access memory (DDR DRAM) available to the FEB CPU.
<b>Total RLD RAM</b>	Amount of reduced latency dynamic random access memory (RLDRAM) available to the FEB CPU.
<b>Start time</b> (Detail output only)	Time when the Routing Engine detected that the FEB was running.
<b>Uptime</b> (Detail output only)	How long the Routing Engine has been connected to the FEB, and therefore, how long the Flexible PIC Concentrator (PIC) has been up and running.

## Sample Output

```

show chassis feb (M10 Router)  user@host> show chassis feb
                                FEB status:
                                Temperature          27 degrees C / 80 degrees F
                                CPU utilization        3 percent
                                Interrupt utilization  0 percent
                                Heap utilization       26 percent
                                Buffer utilization      50 percent
                                Total CPU DRAM         64 MB
                                Internet Processor II  Version 1, Foundry IBM, Part number 9
                                Start time:           2010-05-23 13:59:51 PDT
                                Uptime:                6 hours, 33 minutes, 11 seconds

```

```

show chassis feb (M120 Router) user@host> show chassis feb
                                Temp  CPU Utilization (%)  Memory  Utilization (%)
                                (C)   Total  Interrupt  DRAM (MB) Heap      Buffer
                                Slot State
0  Online          47      4      0      512      7      60
1  Online          54      3      0      512      7      59
2  Online          50      4      0      512      7      59
3  Online          49      4      0      512      7      59
4  Online          46      3      0      512      7      59
5  Online          35      3      0      512      7      59

```

```

show chassis feb detail (M120 Router) user@host> show chassis feb detail
Slot 0 information:
State                Online
Intake temperature    48 degrees C / 118 degrees F
Exhaust A temperature 51 degrees C / 123 degrees F
Exhaust B temperature 52 degrees C / 125 degrees F
Total DDR DRAM       512 MB
Total RLD RAM        32 MB
Start time:          2006-06-28 15:00:40 PDT
Uptime:              10 minutes, 21 seconds
Slot 1 information:
State                Online
Intake temperature    55 degrees C / 131 degrees F
Exhaust A temperature 46 degrees C / 114 degrees F
Exhaust B temperature 45 degrees C / 113 degrees F
Total DDR DRAM       512 MB
Total RLD RAM        32 MB

```

```
Start time:                2006-06-28 15:00:33 PDT
Uptime:                    10 minutes, 28 seconds
Slot 2 information:
  State                     Online
  Intake temperature        50 degrees C / 122 degrees F
  Exhaust A temperature     47 degrees C / 116 degrees F
  Exhaust B temperature     47 degrees C / 116 degrees F
  Total DDR DRAM            512 MB
  Total RLDRAM              32 MB
  Start time:               2006-06-28 15:00:35 PDT
  Uptime:                   10 minutes, 26 seconds
Slot 3 information:
  State                     Online
  Intake temperature        49 degrees C / 120 degrees F
  Exhaust A temperature     47 degrees C / 116 degrees F
  Exhaust B temperature     49 degrees C / 120 degrees F
  Total DDR DRAM            512 MB
  Total RLDRAM              32 MB
  Start time:               2006-06-28 15:00:43 PDT
  Uptime:                   10 minutes, 18 seconds
Slot 4 information:
  State                     Online
  Intake temperature        45 degrees C / 113 degrees F
  Exhaust A temperature     42 degrees C / 107 degrees F
  Exhaust B temperature     42 degrees C / 107 degrees F
  Total DDR DRAM            512 MB
  Total RLDRAM              32 MB
  Start time:               2006-06-28 15:00:29 PDT
  Uptime:                   10 minutes, 32 seconds
Slot 5 information:
  State                     Online
  Intake temperature        35 degrees C / 95 degrees F
  Exhaust A temperature     33 degrees C / 91 degrees F
  Exhaust B temperature     40 degrees C / 104 degrees F
  Total DDR DRAM            512 MB
  Total RLDRAM              32 MB
  Start time:               2006-06-28 15:00:27 PDT
  Uptime:                   10 minutes, 34 seconds
```

## show chassis firmware

<b>Syntax</b>	show chassis firmware
<b>Syntax (TX Matrix Router)</b>	show chassis firmware <lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show chassis firmware <lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (QFX Series)</b>	show chassis firmware
<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 the QFX Series.</p>
<b>Description</b>	<p>On the 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, EX4200, and the QFX Series, display the version levels of the firmware running on the switch. On an EX8208 switch, display the version levels of the firmware running on the Switch Fabric and Routing Engine (SRE) modules and on the line cards (shown as FPCs). On an EX8216 switch, display the version levels of the firmware running on the Routing Engine (RE) modules and on the line cards (shown as FPCs).</p>
<b>Options</b>	<p>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 T1600 routers connected to the TX Matrix Plus router.</p> <p><i>lcc number</i>—(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 (or 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 T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <b><i>number</i></b> with a value from <b>0</b> through <b>3</b>.</p> <p><i>scc</i>—(TX Matrix router only) (Optional) Display version levels for the firmware on the TX Matrix router (or switch-card chassis).</p>

*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.

**Required Privilege Level** view

**List of Sample Output**

- show chassis firmware (M10 Router) on page 392
- show chassis firmware (M20 Router) on page 392
- show chassis firmware (M40 Router) on page 393
- show chassis firmware (M120 Router) on page 393
- show chassis firmware (M160 Router) on page 393
- show chassis firmware (MX240 Router) on page 393
- show chassis firmware (MX480 Router) on page 393
- show chassis firmware (MX960 Router) on page 393
- show chassis firmware (EX4200 Switch) on page 393
- show chassis firmware (EX8200 Switch) on page 394
- show chassis firmware lcc (TX Matrix Router) on page 394
- show chassis firmware scc (TX Matrix Router) on page 394
- show chassis firmware (TX Matrix Plus Router) on page 394
- show chassis firmware lcc (TX Matrix Plus Router) on page 396
- show chassis firmware sfc (TX Matrix Plus Router) on page 396
- show chassis firmware (QFX Series) on page 396

**Output Fields** Table 73 on page 392 lists the output fields for the **show chassis firmware** command. Output fields are listed in the approximate order in which they appear.

**Table 73: show chassis firmware Output Fields**

Field Name	Field Description
<b>Part</b>	Chassis part name.
<b>Type</b>	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>	Version of firmware running on the chassis part.

## Sample Output

```

show chassis firmware user@host> show chassis firmware
(M10 Router)          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 user@host> show chassis firmware
(M20 Router)          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 O/S	Juniper ROM Monitor Version 3.0b1 Version 3.4I4 by smackie on 2000-02-25 21
<b>show chassis firmware (M40 Router)</b>	user@host> show chassis firmware		
	Part	Type	Version
	System control board	ROM O/S	Juniper ROM Monitor Version 2.0i126Copyri Version 2.0i1 by root on Thu Jul 23 00:51
	FPC 5	ROM O/S	Juniper ROM Monitor Version 2.0i49Copyrig Version 2.0i1 by root on Thu Jul 23 00:59
<b>show chassis firmware (M120 Router)</b>	user@host> show chassis firmware		
	FPC 2	ROM O/S	Juniper ROM Monitor Version 8.0b29 Version 8.2B1 by builder on 2006-10-18 16:2
	FPC 3	ROM O/S	Juniper ROM Monitor Version 8.0b29 Version 8.2B1 by builder on 2006-10-18 16:2
	FPC 4	ROM O/S	Juniper ROM Monitor Version 8.0b29 Version 8.2B1 by builder on 2006-10-18 16:2
	FEB 3	ROM O/S	Juniper ROM Monitor Version 8.0b29 Version 8.2B1 by builder on 2006-10-18 16:1
	FEB 4	ROM O/S	Juniper ROM Monitor Version 8.0b29 Version 8.2B1 by builder on 2006-10-18 16:1
<b>show chassis firmware (M160 Router)</b>	user@host> show chassis firmware		
	Part	Type	Version
	SFM 0	ROM O/S	Juniper ROM Monitor Version 4.0b2 Version 4.0I1 by tlim on 2000-02-29 11:50
	SFM 1	ROM O/S	Juniper ROM Monitor Version 4.0b2 Version 4.0I1 by tlim on 2000-02-29 11:50
	FPC 0	ROM O/S	Juniper ROM Monitor Version 4.0b2 Version 4.0I1 by tlim on 2000-02-29 11:56
	FPC 1	ROM O/S	Juniper ROM Monitor Version 4.0b2 Version 4.0I1 by tlim on 2000-02-29 11:56
	FPC 2	ROM O/S	Juniper ROM Monitor Version 4.0b3 Version 4.0I1 by tlim on 2000-02-29 11:56
<b>show chassis firmware (MX240 Router)</b>	user@host> show chassis firmware		
	Part	Type	Version
	FPC 1	ROM O/S	Juniper ROM Monitor Version 8.3b1 Version 9.0-20080103.0 by builder on 2008-0
	FPC 2	ROM O/S	Juniper ROM Monitor Version 8.3b1 Version 9.0-20080103.0 by builder on 2008-0
<b>show chassis firmware (MX480 Router)</b>	user@host> show chassis firmware		
	Part	Type	Version
	FPC 1	ROM O/S	Juniper ROM Monitor Version 8.3b1 Version 9.0-20070916.3 by builder on 2007-0
<b>show chassis firmware (MX960 Router)</b>	user@host> show chassis firmware		
	Part	Type	Version
	FPC 4	ROM O/S	Juniper ROM Monitor Version 8.0b8 Version 8.2I59 by artem on 2006-10-31 19:22
	FPC 7	ROM O/S	Juniper ROM Monitor Version 8.2b1 Version 8.2-20061026.1 by builder on 2006-1
<b>show chassis firmware (EX4200 Switch)</b>	user@host> show chassis firmware		
	Part	Type	Version
	FPC 0	uboot loader	U-Boot 1.1.6 (Feb 6 2008 - 11:27:42) 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@host> 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          U-Boot 1.1.6 (Mar 25 2009 - 06:13:12) 2.4.0
                loader     FreeBSD/PowerPC U-Boot bootstrap loader 2.2

```

**show chassis firmware**  
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 user@host> show chassis firmware lcc 0
lcc0-re1:

```

Router)

```

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

```

Router)

```

-----
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 user@switch> show chassis firmware
(QFX Series)

```

```

Part      Type      Version
FPC 0
Routing Engine 0  U-Boot  U-Boot 1.1.6 (Sep 15 2010 - 02:11:11) 1.0.5
                  loader  FreeBSD/MIPS U-Boot bootstrap loader 0.1

```

## show chassis forwarding

<b>Syntax</b>	show chassis forwarding
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(J Series Services Routers only) Display status of the forwarding process (fwdd).
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show chassis forwarding on page 397</b>
<b>Output Fields</b>	Table 74 on page 397 lists the output fields for the <b>show chassis forwarding</b> command. Output fields are listed in the approximate order in which they appear.

**Table 74: show chassis forwarding Output Fields**

Field Name	Field Description
FWDD status	<p>Forwarding status:</p> <ul style="list-style-type: none"> <li>• <b>State:</b> <ul style="list-style-type: none"> <li>• <b>Online</b>—FWDD is operational and running.</li> <li>• <b>Offline</b>—FWDD is not running.</li> </ul> </li> <li>• <b>Microkernel CPU utilization</b>—Percentage of microkernel CPU being used by the forwarding process.</li> <li>• <b>Real-time threads CPU utilization</b>—Percentage of CPU being used by the forwarding process.</li> <li>• <b>Heap utilization</b>—Percentage of heap space (dynamic memory) being used by the forwarding process. If this number exceeds 80 percent, there may be a software problem (memory leak).</li> <li>• <b>Buffer utilization</b>—Percentage of buffer space being used by the forwarding process for buffering internal messages.</li> <li>• <b>Uptime</b>—How long the forwarding process has been up and running.</li> </ul>

## Sample Output

```

show chassis forwarding user@host> show chassis forwarding
FWDD status:
  State Online
  Microkernel CPU utilization 10 percent
  Real-time threads CPU utilization 4 percent
  Heap utilization 26 percent
  Buffer utilization 0 percent
  Uptime: 1 day, 1 hour, 30 minutes, 11 seconds

```

## show chassis fpc

<b>Syntax</b>	show chassis fpc <detail <slot>>   <pic-status <slot>>
<b>Syntax (TX Matrix and TX Matrix Plus Router)</b>	show chassis fpc <detail <fpc-slot>>   <pic-status <fpc-slot>> <lcc number>
<b>Syntax (QFX Series)</b>	show chassis fpc <detail <fpc-slot>>   <pic-status <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 the QFX Series.
<b>Description</b>	Display status information about the installed Flexible PIC Concentrators (FPCs) and PICs.
<b>Options</b>	<p>none—Display status information for all FPCs. On a TX Matrix router, display status information for all FPCs on the attached T640 routers in the routing matrix. On a TX Matrix Plus router, display status information for all FPCs on the attached T1600 routers in the routing matrix.</p> <p>detail—(Optional) Display detailed status information for all FPCs or for the FPC in the specified slot (see <i>fpc-slot</i> or <i>slot</i>).</p> <p><i>fpc-slot</i>—(Optional) FPC slot number:</p> <ul style="list-style-type: none"> <li>(TX Matrix and TX Matrix Plus router only)—On a TX Matrix router, if you specify the number of the T640 router (or line-card chassis) by using the <i>lcc number</i> option (the recommended method), replace <i>fpc-slot</i> with a value from 0 through 7. Otherwise, replace <i>fpc-slot</i> with a value from 0 through 31. Likewise, on a TX Matrix Plus router, if you specify the number of the T1600 router (or line-card chassis) by using the <i>lcc number</i> option (the recommended method), replace <i>fpc-slot</i> with a value from 0 through 7. Otherwise, replace <i>fpc-slot</i> with a value from 0 through 31. For example, the following commands have the same result: <pre> user@host&gt; show chassis fpc detail 1 lcc 1 user@host&gt; show chassis fpc detail 9 </pre> </li> <li>M120 router—Replace <i>fpc-slot</i> with a value from 0 through 5.</li> <li>MX80 router—Replace <i>fpc-slot</i> with a value from 0 through 1.</li> <li>MX240 router—Replace <i>fpc-slot</i> with a value from 0 through 2.</li> <li>MX480 router—Replace <i>fpc-slot</i> with a value from 0 through 5.</li> <li>MX-960 router—Replace <i>fpc-slot</i> with a value from 0 through 11.</li> <li>Other routers—Replace <i>fpc-slot</i> with a value from 0 through 7.</li> <li>EX Series switches:</li> </ul>

- 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 (switch's member ID).
- EX8208 switches—Replace *fpc-slot* with a value from 0 through 7 (line card).
- EX8216 switches—Replace *fpc-slot* with a value from 0 through 15 (line card).
- QFX Series:
  - QFX3500 switches—Replace *fpc-slot* with 0.

*pic-status*—(Optional) Display status information for all PICs or for the PIC in the specified slot (see *fpc-slot*).



**NOTE:** On T1600 routers, Type 4 FPCs with ASICs based on the SL2.0 chipset do not support the 10-Gigabit Ethernet LAN/WAN PIC with SFP+ (10x10GE [LAN/WAN] SFPP). If you issue the `show chassis fpc` command with the *pic-status* option, the CLI displays the string “Not Supported” for 10x10GE (LAN/WAN) SFPP PICs installed on such FPCs. The following is a sample output:

```
user@host> show chassis fpc pic-status
Slot 0  Online      E2-FPC Type 1
  PIC 0  Online      1x G/E SFP, 1000 BASE
  PIC 1  Online      Adaptive Services-II
  PIC 2  Online      1x G/E IQ, 1000 BASE
  PIC 3  Online      1x G/E IQ, 1000 BASE
Slot 1  Online      FPC Type 3-ES
  PIC 0  Present     UNUSED- Not Supported
Slot 2  Online      FPC Type 4-ES
  PIC 0  Offline     4x OC-192 SONET XFP
  PIC 1  Present     10x10GE(LAN/WAN) SFPP- Not Supported
<<<<<<
Slot 4  Offline     FPC Type 1-ES
Slot 5  Offline     FPC Type 2-ES
Slot 6  Online      E2-FPC Type 3
  PIC 0  Online      1x OC-192 SONET XFP
  PIC 1  Online      4x OC-48 SONET
  PIC 2  Online      4x OC-48 SONET
  PIC 3  Online      MultiServices 500
Slot 7  Online      FPC Type 4-ES
  PIC 0  Online      4x 10GE (LAN/WAN) XFP
  PIC 1  Online      4x 10GE (LAN/WAN) XFP
```

In addition, an entry is logged in the system log messages (/var/log/messages) that the PIC is not supported. The following is a sample message logged in the system log:

```
Apr  5 08:47:36 router1 chassisd[2770]: CHASSISD_UNSUPPORTED_PIC:
PIC 1 in FPC 2 (type 763, version 257) is not supported
```

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

Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> <li>request chassis fpc on page 171</li> </ul>
List of Sample Output	<p>show chassis fpc (M10 Router) on page 402</p> <p>show chassis fpc (M20 Router) on page 402</p> <p>show chassis fpc detail (M Series Routers) on page 402</p> <p>show chassis fpc detail (MX80 Router) on page 402</p> <p>show chassis fpc (MX240 Router) on page 403</p> <p>show chassis fpc (MX480 Router) on page 403</p> <p>show chassis fpc (MX960 Router) on page 403</p> <p>show chassis fpc detail (MX Series Routers) on page 403</p> <p>show chassis fpc (Hardware Not Supported) on page 403</p> <p>show chassis fpc detail (Hardware Not Supported) on page 404</p> <p>show chassis fpc pic-status on page 404</p> <p>show chassis fpc pic-status (M Series Routers) on page 404</p> <p>show chassis fpc pic-status (M120 Router) on page 405</p> <p>show chassis fpc lcc (TX Matrix Router) on page 405</p> <p>show chassis fpc pic-status (TX Matrix Router) on page 405</p> <p>show chassis fpc pic-status lcc (TX Matrix Router) on page 406</p> <p>show chassis fpc (TX Matrix Plus Router) on page 406</p> <p>show chassis fpc lcc (TX Matrix Plus Router) on page 406</p> <p>show chassis fpc detail (TX Matrix Plus Router) on page 407</p> <p>show chassis fpc pic-status (TX Matrix Plus Router) on page 409</p> <p>show chassis fpc (T1600 Router) on page 410</p> <p>show chassis fpc detail (T1600 Router) on page 410</p> <p>show chassis fpc &lt;slot-number&gt; (T1600 Router) on page 411</p> <p>show chassis fpc pic-status (T1600 Router) on page 411</p> <p>show chassis fpc (QFX Series) on page 411</p> <p>show chassis fpc detail (QFX Series) on page 411</p> <p>show chassis fpc pic-status (QFX Series) on page 411</p>
Output Fields	Table 75 on page 401 lists the output fields for the <b>show chassis fpc</b> command. Output fields are listed in the approximate order in which they appear.



Table 75: 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>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 (PFE).</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
<b>Total CPU Utilization (%)</b>	Total percentage of CPU being used by the FPC's processor.	all levels
<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).	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.	detail
<b>Total RLDRAM</b>	Amount of reduced latency dynamic random access memory (RLDRAM) available to the FPC CPU.	detail
<b>Total DDR DRAM</b>	Amount of double data rate dynamic random access memory (DDR DRAM) available to the FPC CPU.	detail
<b>Total SRAM</b>	Amount of static RAM (SRAM) used by the FPC's CPU.	detail
<b>Total SDRAM</b>	Total amount of memory used for storing packets and notifications.	detail

Table 75: show chassis fpc Output Fields (*continued*)

Field Name	Field Description	Level of Output
I/O Manager ASICs information	I/O Manager version number, manufacturer, and part number.	detail
Start time	Time when the Routing Engine detected that the FPC was running.	detail
Uptime	How long the Routing Engine has been connected to the FPC and, therefore, how long the FPC has been up and running.	detail
PIC type	(pic-status output only) Type of PIC.	none specified

### Sample Output

```
show chassis fpc (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 Mbytes
Total SRAM 4 Mbytes
Total SDRAM 256 Mbytes
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  
(MX240 Router)**

```

user@host> show chassis fpc
Slot State      Temp  CPU Utilization (%)  Memory  Utilization (%)
      (C)      Total  Interrupt      DRAM (MB) Heap      Buffer
0  Empty
1  Online       34     6           0       1024      18       30
2  Online       33     9           0       1024      24       30

```

**show chassis fpc  
(MX480 Router)**

```

user@host> show chassis fpc
Slot State      Temp  CPU Utilization (%)  Memory  Utilization (%)
      (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  
(MX960 Router)**

```

user@host> show chassis fpc
Slot State      Temp  CPU Utilization (%)  Memory  Utilization (%)
      (C)      Total  Interrupt      DRAM (MB) Heap      Buffer
0  Empty
1  Empty
2  Empty
3  Online       25    19           0       1024      15       57
4  Empty
5  Online       26    27           0       1024      15       57
6  Empty
7  Empty
8  Empty
9  Empty
10 Empty
11 Empty

```

**show chassis fpc detail  
(MX Series Routers)**

```

user@host> show chassis fpc detail 2
Slot 0 information:
State                Online
Temperature          36 degrees C / 96 degrees F
Total CPU DRAM       1024 MB
Total 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
Temp  CPU Utilization (%)  Memory  Utilization (%)
      (C)      Total  Interrupt      DRAM (MB) Heap      Buffer
Slot State
0  Online ----- CPU less FPC -----
1  Present ----- Hardware Not In Right Slot -----
2  Online          0          0          0          0          0
3  Present ----- Hardware Not Supported -----
4  Empty

```

```

5 Empty
6 Online          0          0          0          0          0

show chassis fpc detail
(Hardware Not Supported)
user@host> show chassis fpc detail
Slot 0 information:
  State Online
  Total CPU DRAM ---- CPU less FPC ----
  Start time 2006-07-07 03:21:00 UTC
  Uptime 27 minutes, 51 seconds
Slot 1 information:
  State Present
  Reason --- Hardware Not In Right Slot ---
Slot 2 information:
  State Online
  Total CPU DRAM 32 MB
  Start time 2006-07-07 03:20:59 UTC
  Uptime 27 minutes, 52 seconds
Slot 3 information:
  State Present
  Reason --- Hardware Not Supported ---
  Total CPU DRAM 0 MB
Slot 6 information:
  State Online
  Total CPU DRAM 32 MB
  Start time 2006-07-07 03:21:01 UTC
  Uptime 27 minutes, 50 seconds

show chassis fpc pic-status
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 lcc (TX Matrix Router)
user@host> show chassis fpc lcc 0
lcc0-re0:
-----
Slot State      Temp CPU      Utilization (%) Memory Utilization (%)
      (C) Total Interrupt  DRAM (MB)      Heap      Buffer
0 Empty
1 Online      27      2          0      256      8      44
2 Online      27      3          0      256     15      44
3 Empty
4 Empty
5 Empty
6 Empty
7 Empty

show chassis fpc pic-status (TX Matrix Router)
user@host> show chassis fpc pic-status
lcc0-re0:
-----
Slot 0  Online      FPC Type 3
PIC 0   Online      1x OC-192 SM SR1
PIC 1   Online      1x OC-192 SM SR2
PIC 2   Online      1x OC-192 SM SR1
PIC 3   Online      1x Tunnel
Slot 1  Online      FPC Type 2
PIC 0   Online      1x OC-48 SONET, SMSR
PIC 1   Online      1x OC-48 SONET, SMSR

lcc1-re0:
-----

lcc2-re0:
-----
Slot 1  Online      FPC Type 3
PIC 0   Online      1x OC-192 SM SR1
Slot 5  Online      FPC Type 2
PIC 0   Online      1x OC-48 SONET, SMSR
PIC 1   Online      2x G/E, 1000 BASE-LX
PIC 2   Online      2x G/E, 1000 BASE-LX
PIC 3   Online      1x OC-48 SONET, SMSR

lcc3-re0:
-----

```

**show chassis fpc**  
**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
```

```
1cc0-re0:
```

```

-----
Slot 1  Online      FPC Type 2-ES
PIC 0   Online      8x 1GE(LAN), IQ2
Slot 2  Online      FPC Type 4-ES
PIC 0   Online      4x 10GE (LAN/WAN) XFP
Slot 4  Online      FPC Type 4-ES
PIC 0   Online      4x 10GE (LAN/WAN) XFP
Slot 6  Online      FPC Type 4-ES
PIC 0   Online      4x 10GE (LAN/WAN) XFP
PIC 1   Online      4x 10GE (LAN/WAN) XFP
Slot 7  Online      FPC Type 3-ES
PIC 0   Online      10x 1GE(LAN), 1000 BASE
PIC 2   Online      1x OC-192 SM SR2
PIC 3   Online      10x 1GE(LAN), 1000 BASE

```

```
1cc2-re0:
```

```

-----
Slot 0  Online      FPC Type 4-ES
PIC 0   Online      4x 10GE (LAN/WAN) XFP
Slot 2  Online      FPC Type 4-ES
PIC 0   Online      4x 10GE (LAN/WAN) XFP
PIC 1   Online      4x 10GE (LAN/WAN) XFP
Slot 3  Online      FPC Type 2-ES
PIC 0   Online      8x 1GE(LAN), IQ2
Slot 4  Online      FPC Type 4
PIC 0   Online      10x10GE(LAN/WAN) SFPP
Slot 6  Online      FPC Type 4-ES
PIC 0   Online      4x OC-192 SONET XFP
Slot 7  Online      FPC Type 3-ES
PIC 0   Online      10x 1GE(LAN), 1000 BASE
PIC 1   Offline     1x 10GE(LAN/WAN) IQ2E
PIC 2   Online      1x OC-192 SM SR2
PIC 3   Online      1x Tunnel

```

```
1cc3-re0:
```

```

Slot 2  Online      FPC Type 4-ES
        PIC 0  Online 10x10GE(LAN/WAN) SFPP
Slot 4  Online      FPC Type 4-ES
        PIC 0  Online 4x OC-192 SONET XFP
Slot 5  Online      FPC Type 4-ES
        PIC 0  Online 4x OC-192 SONET XFP
        PIC 1  Online 4x 10GE (LAN/WAN) XFP
Slot 6  Online      FPC Type 4-ES
        PIC 1  Online 4x 10GE (LAN/WAN) XFP
Slot 7  Online      FPC Type 3-ES
        PIC 0  Online 10x 1GE(LAN), 1000 BASE
        PIC 1  Online 8x 1GE(TYPE3), IQ2E
        PIC 2  Online 4x OC-48 SONET

```

**show chassis fpc**  
(T1600 Router)

```

user@host> show chassis fpc

```

Slot	State	Temp (C)	CPU Utilization (%)	Memory DRAM (MB)	Utilization (%)
			Total Interrupt	Heap	Buffer
0	Empty				
1	Empty				
2	Online	49	3 0	2048 3	24
3	Online	46	6 0	2048 6	24
4	Empty				
5	Online	46	5 0	2048 3	24
6	Empty				
7	Online	44	8 0	1024 7	49

**show chassis fpc detail**  
(T1600 Router)

```

user@host> show chassis fpc detail
show chassis fpc detail
Slot 2 information:
  State Online
  Temperature 49 degrees C / 120 degrees F
  Total CPU DRAM 2048 MB
  Total SRAM 64 MB
  Total SDRAM 1280 MB
  Start time 2010-10-04 21:12:52 PDT
  Uptime 32 minutes, 9 seconds
Slot 3 information:
  State Online
  Temperature 47 degrees C / 116 degrees F
  Total CPU DRAM 2048 MB
  Total SRAM 128 MB
  Total SDRAM 2560 MB
  Start time 2010-10-04 21:13:06 PDT
  Uptime 31 minutes, 55 seconds
Slot 5 information:
  State Online
  Temperature 46 degrees C / 114 degrees F
  Total CPU DRAM 2048 MB
  Total SRAM 64 MB
  Total SDRAM 1280 MB
  Start time 2010-10-04 21:12:56 PDT
  Uptime 32 minutes, 5 seconds
Slot 7 information:
  State Online
  Temperature 44 degrees C / 111 degrees F
  Total CPU DRAM 1024 MB
  Total SRAM 64 MB
  Total SDRAM 1280 MB
  Start time 2010-10-04 21:14:34 PDT
  Uptime 30 minutes, 27 seconds

```

```

show chassis fpc      user@host> show chassis fpc 2
<slot-number> (T1600
Router)

```

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

```

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

```

Slot 2	Online	FPC Type 1-ES
PIC 0	Online	Load Type 1
PIC 1	Online	4x 1GE(LAN), IQ2E
PIC 3	Online	1x OC-12-3 SFP
Slot 3	Online	FPC Type 4-ES
PIC 0	Online	4x 10GE (LAN/WAN) XFP
PIC 1	Online	4x OC-192 SONET XFP
Slot 5	Online	FPC Type 2-ES
PIC 0	Online	Load Type 2
PIC 1	Online	8x 1GE(LAN), IQ2E
PIC 2	Online	8x 1GE(LAN), IQ2E
PIC 3	Online	1x OC-48-12-3 SFP
Slot 7	Online	FPC Type 4
PIC 0	Online	4x 10GE (LAN/WAN) XFP

```

show chassis fpc (QFX user@switch> show chassis fpc
Series)

```

Temp	CPU	Utilization (%)	Memory	Utilization (%)	DRAM (MB)	Heap	Buffer
Slot	State	(C)	Total	Interrupt			
0	Online	26	2	0	2820	0	49

```

show chassis fpc detail user@switch> show chassis fpc detail
(QFX Series)

```

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      user@switch> show chassis fpc pic-status
pic-status (QFX
Series)

```

Slot 0	Online	QFX3500-48S4Q
PIC 0	Online	48x 10G-SFP+

## show chassis fpc-feb-connectivity

<b>Syntax</b>	show chassis fpc-feb-connectivity
<b>Release Information</b>	Command introduced in Junos OS Release 8.0.
<b>Description</b>	(M120 router only) Display the Flexible PIC Concentrator (FPC) and Forwarding Engine Board (FEB) mapping and their respective states.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show chassis fpc-feb-connectivity on page 413
<b>Output Fields</b>	Table 76 on page 412 lists the output fields for the <b>show chassis fpc-feb-connectivity</b> command. Output fields are listed in the approximate order in which they appear.

**Table 76: show chassis fpc-feb-connectivity Output Fields**

Field Name	Field Description
<b>FPC</b>	Slot number of the Flexible PIC Concentrator (FPC).
<b>FPC type</b>	Type of FPC: <b>Type 1</b> , <b>Type 2</b> , <b>Type 3</b> , or <b>cFPC</b> .
<b>FPC state</b>	State of the FPC. State can be any of the following: <ul style="list-style-type: none"> <li>• <b>Announce offline</b>—Intermediate state where FPC is going down but is not offline and the Chassis manager acknowledges that the FPC is in the process of going offline.</li> <li>• <b>Announce online</b>—Intermediate state where FPC is coming up but is not online and the Chassis manager acknowledges that the FPC is in the process of coming online.</li> <li>• <b>Empty</b>—No FPC is present.</li> <li>• <b>Offline</b>—FPC is powered down.</li> <li>• <b>Online</b>—FPC is online and running.</li> <li>• <b>Present</b>—The chassis process has detected the FPC, but the FPC is either not supported by the current version of the Junos OS or FPC is coming up but is not online.</li> <li>• <b>Ready</b>—FPC is in transition state.</li> </ul>
<b>Connected FEB</b>	Slot number of the Forwarding Engine Board (FEB) connected to the FPC or <b>None</b> if the FPC is not connected to a FEB.

Table 76: show chassis fpc-feb-connectivity Output Fields (*continued*)

Field Name	Field Description
<b>FEB state</b>	<p>State of the FEB. State can be any of the following:</p> <ul style="list-style-type: none"> <li>• <b>Announce offline</b>—Intermediate state where FEB is going down but is not offline and the Chassis manager acknowledges that the FEB is in the process of going offline.</li> <li>• <b>Announce online</b>—Intermediate state where FEB is coming up but is not online and the Chassis manager acknowledges that the FEB is in the process of coming online.</li> <li>• <b>Empty</b>—No FEB is present.</li> <li>• <b>Offline</b>—FEB is powered down.</li> <li>• <b>Online</b>—FEB is online and running.</li> <li>• <b>Present</b>—The chassis process has detected the FEB, but the FEB is either not supported by the current version of the Junos OS or FEB is coming up but is not online.</li> <li>• <b>Ready</b>—FEB is in transition state.</li> </ul>
<b>Link status</b>	<p>Status of the link connecting the R-FEB and R-FPC:</p> <ul style="list-style-type: none"> <li>• <b>Error</b></li> <li>• <b>Misconfiguration</b>—Configuration between the R-FEB and the F-FPC is incorrect.</li> <li>• <b>OK</b></li> </ul>

## Sample Output

```

show chassis fpc-feb-connectivity
user@host> show chassis fpc-feb-connectivity
FPC  FPC type  FPC state  Connected FEB  FEB state  Link status
0    cFPC      Online    0              Empty
1    cFPC      Online    1              Online    OK
2    Type 3   Online    3              Online    OK
3    Type 2   Online    None
4    Type 1   Online    4              Online    OK
5    Type 3   Online    None

FIFO errors: 0, HS link CRC errors: 0, MTU errors: 0, Resource errors: 0
Egress queues: 8 supported, 8 in use
Queue counters:      Queued packets  Transmitted packets  Dropped packets

0 best-effort          0              0              0
1 expedited-fo         0              0              0
2 assured-forw         0              0              0
3 network-cont         0              0              0

Active alarms : PLL, LOS, LINK
Active defects : PLL, LOF, LOS, SEF, LOP, BERR-SF, PLM-P, LINK
PCS statistics      Seconds
  Bit errors        0
  Errored blocks    3
MAC statistics:      Receive      Transmit
  Total octets      0              0
  Total packets     0              0

```

## show chassis hardware

<b>Syntax</b>	show chassis hardware <clei-models   detail   extensive   models>
<b>Syntax (EX and QFX Series)</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>Release Information</b>	<p>Command introduced before Junos OS Release 7.4.</p> <p><b>models</b> option introduced in Junos OS Release 8.2.</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>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.</p> <p>In EX Series switch command output, FPC refers to the following:</p> <ul style="list-style-type: none"> <li>On EX2200 switches, EX3200 switches, EX4200 standalone switches, and EX4500 switches—Refers to the switch; FPC <b>number</b> is always 0.</li> <li>On EX4200 switches in a Virtual Chassis configuration—Refers to the member of a Virtual Chassis; FPC <b>number</b> equals the member ID, from 0 through 9.</li> <li>On EX8208 and EX8216 switches—Refers to a line card; FPC <b>number</b> equals the slot number for the line card.</li> </ul> <p>In QFX Series command output, FPC refers to a line card; FPC <b>number</b> equals the slot number for the line card. Both the FPC and FPC <b>number</b> are always 0.</p>
<b>Options</b>	<p>none—Display information about hardware. For a TX Matrix router, display information about the TX Matrix router and its attached T640 routers. For a TX Matrix Plus router, display information about the TX Matrix Plus router and its attached T1600 routers.</p> <p>clei-models—(Optional) Display Common Language Equipment Identifier (CLEI) bar code and model number for orderable field-replaceable units (FRUs).</p>

detail—(Optional) Include RAM and disk information in output.

extensive—(Optional) Display ID EEPROM information.

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

models—(Optional) Display model numbers and part numbers for orderable FRUs and, for components that use ID EEPROM format v2, the CLEI code.

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

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

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

**Table 77: 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

**List of Sample Output**

- show chassis hardware (EX8216 Switch) on page 419
- show chassis hardware clei-models (EX8216 Switch) on page 420
- show chassis hardware clei-models (T1600 Router) on page 420
- show chassis hardware detail (EX4200 Switch) on page 421
- show chassis hardware models (EX4500 Switch) on page 421
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**Output Fields** Table 78 on page 417 lists the output fields for the `show chassis hardware` command. Output fields are listed in the approximate order in which they appear.



Table 78: show chassis hardware Output Fields

Field Name	Field Description	Level of Output
<b>Item</b>	Chassis component: <ul style="list-style-type: none"> <li>• (EX Series switches)—Information about the chassis, Routing Engine (SRE and RE modules in EX8200 switches), power supplies, fan trays, and LCD panel. Also displays information about Flexible PIC Concentrators (FPCs) and associated Physical Interface Cards (PICs). Information about the backplane, midplane, and SIBs (SF modules) is displayed for EX8200 switches. See EX Series Switches Hardware and CLI Terminology Mapping .</li> <li>• (MX Series routers)—Information about the backplane, Routing Engine, Power Entry Modules (PEMs), and fan trays. Also displays information about Flexible PIC Concentrators (FPCs) and associated Physical Interface Cards (PICs), Modular Port Concentrators (MPCs) and associated Modular Interface Cards (MICs), or Dense Port Concentrators (DPCs). MX80 routers have a single Routing Engine and a built-in Packet Forwarding Engine (PFE) that attaches directly to MICs. The PFE has two “pseudo” FPCs (FPC 0 and FPC1). MX80 routers also have a Forwarding Engine Board (FEB).</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, and fan trays. Also displays information about Flexible PIC Concentrators (FPCs) and associated Physical Interface Cards (PICs).</li> </ul>	All levels
<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 or switch 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 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

Table 78: show chassis hardware Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>EEPROM Version</b>	ID EEPROM version used by 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 Type OC192</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> <li><b>2x CTIE1</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> </ul>	All levels

Table 78: show chassis hardware Output Fields (*continued*)

Field Name	Field Description	Level of Output
	<ul style="list-style-type: none"> <li>• <b>MPCM 16x10GE</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: LX, SX, LH, or T.</li> <li>• LCD description for EX Series switches (except EX2200 switches).</li> </ul>	

### Sample Output

```

user@host> show chassis hardware
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-FX/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

## Sample Output

```

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

```

## Sample Output

```

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
T640-FPC2-E2
PB-4GE-SFP
PB-10C48-SON-SMSR
PB-40C12-SON-SMIR
PB-10C48-SON-SMSR
T640-FPC1-E2
P-1GE-SX
PB-4GE-TYPE1-SFP-IQ2
PB-1CHOC12SMIR-QPP

```

PIC 0	REV 16	750-007141	PC-10GE-SFP
PIC 1	REV 06	750-015217	PC-8GE-TYPE3-SFP-IQ2
PIC 2	REV 05	750-004695	PC-TUNNEL
PIC 3	REV 17	750-009553	PC-40C48-SON-SFP
FPC 3	REV 01	710-010154	T640-FPC3-E
PIC 0	REV 07	750-012793	PC-1XGE-TYPE3-XFP-IQ2
PIC 1	REV 25	750-007141	PC-10GE-SFP
PIC 2	REV 17	750-009553	PC-40C48-SON-SFP
PIC 3	REV 32	750-003700	PC-10C192-SON-VSR
FPC 4	REV 16	710-013037	T1600-FPC4-ES
PIC 1	REV 06	750-034781	PD-1CE-CFP
FPC 5	REV 02	710-013037	T1600-FPC4-ES
PIC 0	REV 16	750-012518	PD-40C192-SON-XFP
PIC 1	REV 01	750-010850	PD-10C768-SON-SR
FPC 6	REV 14	710-013037	T1600-FPC4-ES
PIC 0	REV 11	750-017405	PD-4XGE-XFP
PIC 1	REV 13	750-017405	PD-4XGE-XFP
FPC 7	REV 09	710-007529	T640-FPC3
PIC 0	REV 10	750-012793	PC-1XGE-TYPE3-XFP-IQ2
PIC 1	REV 01	750-015217	PC-8GE-TYPE3-SFP-IQ2
PIC 2	REV 01	750-015217	PC-8GE-TYPE3-SFP-IQ2
PIC 3	REV 15	750-009450	PC-10C192-SON-SR2
SIB 0	REV 07	710-013074	SIB-I-T1600-S
SIB 1	REV 07	710-013074	SIB-I-T1600-S
SIB 2	REV 07	710-013074	SIB-I-T1600-S
SIB 3	REV 07	710-013074	SIB-I-T1600-S
SIB 4	REV 07	710-013074	SIB-I-T1600-S
Fan Tray 0			FANTRAY-T-S
Fan Tray 1			FANTRAY-T-S
Fan Tray 2			FAN-REAR-TX-T640-S

## Sample Output

```

user@host> show chassis hardware detail
show chassis hardware detail (EX4200 Switch)
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

```

## Sample Output

```

user@host> show chassis hardware models
show chassis hardware models (EX4500 Switch)
Hardware inventory:
Item          Version  Part number  Serial number  FRU model number
Routing Engine 0 REV 01    750-035700  GG0210271867  EX4500-40F-FB-C
FPC 0          REV 01    750-035700  GG0210271867  EX4500-40F-FB-C
PIC 0          BUILTIN      BUILTIN      EX4500-40F-FB-C
Power Supply 1 REV 01    740-029654  H884FS00JC09  EX4500-PWR1-AC-FB

```

## Sample Output

```

show chassis hardware user@host> show chassis hardware
(J6350 Router)      Hardware inventory:
Item                Version  Part number  Serial number  Description
Chassis                                     JN1090E07ADB   JSR6350
Midplane            REV 03   710-014593   NP1265
System IO           REV 01   710-016210   NN9950        JX350 System IO
Crypto Module
Routing Engine      REV 08   710-015273   NM6509        Crypto Acceleration
ad0                 248 MB  256MB  CKS           RE-J6350-3400
Flash
FPC 0
PIC 0
FPC 1               REV 06   750-010355   AI07030023    FPC
PIC 0
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 user@host> show chassis hardware
(J6300 Router)      Hardware inventory:
Item                Version  Part number  Serial number  Description
Chassis                                     JN000164AB     J6300
Midplane            REV 02.04 710-010001   CORE99570
System IO           REV 02.00 710-010003   CORE100848    System IO board
Routing Engine      RevX2.6  750-010006   IWGS40735390  RE-J.3
FPC 0
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
1xADSL pic Annex A
1xADSL pic Annex B
1x T3

show chassis hardware user@host> show chassis hardware
(M7i Router)        Hardware inventory:
Item                Version  Part number  Serial number  Description
Chassis                                     31959          M7i
Midplane            REV 02   710-008761   CA0209        M7i Midplane
Power Supply 0      Rev 04   740-008537   PD10272       AC Power Supply
Routing Engine      REV 01   740-008846   1000396803    RE-5.0
CFEB                REV 02   750-009492   CA0166        Internet Processor IIv1
FPC 0
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				E-FPC
PIC 0	REV 12	750-012838	DL7993	4x 1GE(LAN), IQ2
Xcvr 0	REV 01	740-011614	PD94TDJ	SFP-LX10
Xcvr 1	REV 01	740-011615	PAD5EER	UNKNOWN
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	UNKNOWN
Fan Tray				Rear Fan Tray

**show chassis hardware (M10 Router)**      user@host> show chassis hardware  
Hardware inventory:

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

**show chassis hardware models (M10 Router)**      user@host> show chassis hardware models  
Hardware inventory:

Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 04	710-008920		CHAS-MP-M10i-S
Power Supply 0	Rev 06	740-008537		PWR-M10i-M7i-AC-S
Power Supply 1	Rev 06	740-008537		PWR-M10i-M7i-AC-S
HCM 0	REV 03	710-010580		HCM-M10i-S
HCM 1	REV 03	710-010580		HCM-M10i-S
Routing Engine 0	REV 09	740-009459		RE-400-256-S
CFEB 0	REV 05	750-010465		FEB-M10i-M7i-S
FPC 0				
PIC 0	REV 10	750-002971		PE-40C3-SON-MM
PIC 1	REV 11	750-002992		PE-4FE-TX
PIC 2	REV 03	750-002977		PE-20C3-ATM-MM
PIC 3	REV 08	750-005724		PE-20C3-ATM2-MM
FPC 1				
PIC 2	REV 12	750-008425		PE-AS
PIC 3	REV 13	750-005636		PE-4CHDS3-QPP
Fan Tray 0				FANTRAY-M10I-S
Fan Tray 1				FANTRAY-M10I-S

**show chassis hardware (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 Mbytes
SSRAM bank 1	REV 01	710-001385	S00490	2 Mbytes
SSRAM bank 2	REV 01	710-001385	S001:?	2 Mbytes
SSRAM bank 3	REV 01	710-001385	S00483	2 Mbytes
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 Mbyte
SDRAM bank 0	REV 01	710-000099	S/N 000603	64 Mbytes
SDRAM bank 1	REV 01	710-000099	S/N 000414	64 Mbytes
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 Mbyte
SDRAM bank 0	REV 01	710-000099	S/N 306835	64 Mbytes
SDRAM bank 1	REV 01	710-000099	S/N 306832	64 Mbytes
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&gt; 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&gt; 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 Mbyte
SSRAM bank 1	REV 02	710-000077	S/N AA2270	1 Mbyte
SSRAM bank 2	REV 02	710-000077	S/N AA2269	1 Mbyte
SSRAM bank 3	REV 02	710-000077	S/N AA2268	1 Mbyte
FPC 0	REV 01	710-000175	S/N AA0048	
SSRAM	REV 01	710-000077	S/N AA2333	1 Mbyte
SDRAM bank 0	REV 01	710-000099	S/N AA2332	64 Mbytes
SDRAM bank 1	REV X1	710-000099	S/N AA2337	64 Mbytes
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 Mbyte
SDRAM bank 0	REV 01	710-000099	S/N AA2331	64 Mbytes
SDRAM bank 1	REV 01	710-000099	S/N AA2330	64 Mbytes
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 Mbyte
SDRAM bank 0	REV 01	710-000099	S/N AA2329	64 Mbytes
SDRAM bank 1	REV 01	710-000099	S/N AA2328	64 Mbytes
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 Mbyte
SDRAM bank 0	REV 01	710-000099	S/N 300949	64 Mbytes
SDRAM bank 1	REV 01	710-000099	S/N 300868	64 Mbytes
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** user@host> **show chassis hardware**

(M120 Router)

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN000054AC	M120
Midplane	REV 01	710-013667	RB4170	M120 Midplane
FPM Board	REV 02	710-011407	CJ9186	M120 FPM Board
FPM Display	REV 02	710-011405	CJ9173	M120 FPM Display
FPM CIP	REV 02	710-011410	CJ9221	M120 FPM CIP
PEM 0	Rev 05	740-011936	RM28320	AC Power Entry Module
PEM 1	Rev 05	740-011936	RM28321	AC Power Entry Module
Routing Engine 0	REV 03	740-014080	1000642883	RE-A-1000
CB 0	REV 03	710-011403	CM8346	M120 Control Board
CB 1	REV 06	710-011403	CP6728	M120 Control Board
FPC 1	REV 02	710-015908	CP6925	M120 CFPC 10GE
PIC 0		BUILTIN	BUILTIN	1x 10GE(LAN/WAN) XFP
Xcvr 0	REV 01	740-014279	62E204N00007	XFP-10G-LR
FPC 3	REV 03	710-011393	CJ9234	M120 FPC Type 2
PIC 0	REV 16	750-008155	NB5229	2x G/E IQ, 1000 BASE
Xcvr 0	REV 01	740-011613	P9F15JB	SFP-SX
Xcvr 1	REV 01	740-007326	P4Q0R9G	SFP-SX
PIC 1	REV 09	750-007745	CG4360	4x OC-3 SONET, SMIR
PIC 2	REV 16	750-008155	ND7787	2x G/E IQ, 1000 BASE
Xcvr 0	REV 01	740-011613	P9F12AS	SFP-SX
Xcvr 1	REV 01	740-011613	P9F1ALU	SFP-SX
PIC 3	REV 07	750-011800	JW1284	8x 1GE(LAN), IQ2
Xcvr 0	REV 01	740-011613	P9F1AM6	SFP-SX
Xcvr 6	REV 01	740-011613	P9F16NN	SFP-SX
Xcvr 7	REV 01	740-011782	P8C29Y7	SFP-SX
Board B	REV 02	710-011395	CN3754	M120 FPC Mezz
FPC 4	REV 02	710-011398	CP6741	M120 FPC Type 3
PIC 0	REV 16	750-007141	NB2855	10x 1GE(LAN), 1000 BASE
Xcvr 0	REV 01	740-011782	P922A1F	SFP-SX
Xcvr 1	REV 01	740-011782	P922A16	SFP-SX
Xcvr 2	REV 01	740-011782	P922A0U	SFP-SX
Xcvr 3	REV 01	740-011782	P9229UZ	SFP-SX
Xcvr 4	REV 01	740-009029	P11JXWP	SFP-LX
Xcvr 6	REV 01	740-011613	P9F1ALW	SFP-SX
FPC 5	REV 01	710-011388	CJ9088	M120 FPC Type 1
PIC 0	*** Hardware Not Supported ***			
PIC 1	REV 05	750-012052	NB0410	1x CHOC3 IQ SONET, SMLR
PIC 2	REV 01	750-013167	CM3824	4x CHDS3 IQ
PIC 3	REV 01	750-010240	CB5366	1x G/E SFP, 1000 BASE
Board B	REV 01	710-011390	CJ9103	M120 FPC Mezz Board
FEB 3	REV 04	710-011663	CP6673	M120 FEB
FEB 4	REV 04	710-011663	CJ9368	M120 FEB
FEB 5	REV 04	710-011663	CJ9386	M120 FEB
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray

Fan Tray 2  
Fan Tray 3

Rear Top Fan Tray  
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 126CT505S0763SC	00110 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		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> show chassis hardware models

Hardware inventory:

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

**show chassis hardware  
detail (M160 Router)**

user@host> show chassis hardware detail

Hardware inventory:

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

SSRAM bank 1	REV 01	710-000077	S/N 306474	1 Mbyte
SSRAM bank 2	REV 01	710-000077	S/N 306388	1 Mbyte
SSRAM bank 3	REV 01	710-000077	S/N 306392	1 Mbyte
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 Mbyte
SSRAM bank 1	REV 01	710-000077	S/N 302662	1 Mbyte
SSRAM bank 2	REV 01	710-000077	S/N 302593	1 Mbyte
SSRAM bank 3	REV 01	710-000077	S/N 100160	1 Mbyte
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 Mbyte
SDRAM 0	REV 01	710-001196	S00141	32 Mbytes
SDRAM 1	REV 01	710-001196	S0010;	32 Mbytes
SSRAM	REV 01	710-000077	S/N 302633	1 Mbyte
SDRAM 0	REV 01	710-001196	S00143	32 Mbytes
SDRAM 1	REV 01	710-001196	S00115	32 Mbytes
SSRAM	REV 01	710-000077	S/N 302952	1 Mbyte
SDRAM 0	REV 01	710-001196	S00135	32 Mbytes
SDRAM 1	REV 01	710-001196	S001=3	32 Mbytes
SSRAM	REV 01	710-000077	S/N 302892	1 Mbyte
SDRAM 0	REV 01	710-001196	S00076	32 Mbytes
SDRAM 1	REV 01	710-001196	S001=5	32 Mbytes
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 Mbyte
SDRAM 0	REV 01	710-001196	S00012	32 Mbytes
SDRAM 1	REV 01	710-001196	S0001?	32 Mbytes
SSRAM	REV 01	710-000077	S/N 306454	1 Mbyte
SDRAM 0	REV 01	710-001196	S00028	32 Mbytes
SDRAM 1	REV 01	710-001196	S0002?	32 Mbytes
SSRAM	REV 01	710-000077	S/N 306492	1 Mbyte
SDRAM 0	REV 01	710-001196	S00015	32 Mbytes
SDRAM 1	REV 01	710-001196	S00031	32 Mbytes
SSRAM	REV 01	710-000077	S/N 306363	1 Mbyte
SDRAM 0	REV 01	710-001196	S00013	32 Mbytes
SDRAM 1	REV 01	710-001196	S00032	32 Mbytes
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 Mbyte

**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
Fan Tray 1
Fan Tray 2          RFANTRAY-M320-S

```

**show chassis hardware**  
(Fixed MX80 Router)

```

user@host> show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis
Midplane      REV 01  711-031603  KF9250         MX80-48T
Routing Engine
FEB 0
FPC 0
  MIC 0
    PIC 0
      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
  MIC 0        REV 01  711-029399  JR6981         12x 1GE(LAN) RJ45
  PIC 0
  PIC 1
  MIC 1        REV 01  BUILTIN     BUILTIN        12x 1GE(LAN) RJ45
  PIC 2
  PIC 3
Fan Tray

```

**show chassis hardware**  
(Modular MX80 Router)

```

user@host> show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis
Midplane      REV 02  711-031594  JR7084         MX80
PEM 0
Routing Engine
FEB 0
  QXM 0        REV 05  711-028408  JR7041         MPC QXM
FPC 0
  MIC 0
    PIC 0
      FPC 1
        MIC 0    REV 02  750-028380  JR6598         3D 2x 10GE XFP
        PIC 0
          Xcvr 0  REV 01  740-014289  T07M86365     XFP-10G-SR
          PIC 1
            Xcvr 0  REV 01  740-014289  T07M71094     XFP-10G-SR
        MIC 1    REV 02  750-028380  JG8548         3D 2x 10GE XFP
        PIC 2
          Xcvr 0  REV 02  740-014289  T08L86302     XFP-10G-SR
        PIC 3
          Xcvr 0  REV 02  740-014289  C810XU0BA     XFP-10G-SR
Fan Tray

```

**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**  
(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**  
(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)

```
user@host> show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               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-LH
Xcvr 1	REV 01	740-017726	4814061	SFP-LH
Xcvr 5	REV 01	740-017726	6ZS184H31108	SFP-LH
Xcvr 9	REV 01	740-021340	76E245X00486	SFP-1000BASE-BX10-U
Fan Tray 0				
Fan Tray 1	REV 03	740-014971	TP0850	Fan Tray

# show chassis hardware 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

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Xcvr 4      REV 01  740-011782  P8J1W27      SFP-SX
Xcvr 6      REV 01  740-011782  P8J1VSD      SFP-SX
Xcvr 9      REV 01  740-011782  P8J1W25      SFP-SX
Fan Tray 0
Fan Tray 1

```

# show chassis hardware (T320 Router)

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

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Hardware inventory:
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Item	Version	Part number	Serial number	Description
Chassis			19093	T320
Midplane	REV 04	710-004339	BC1436	T320 Backplane
FPM GBUS	REV 03	710-004461	BC1407	T320 FPM Board
FPM Display	REV 04	710-002897	BE0763	FPM Display
CIP	REV 05	710-002895	BB2311	T Series CIP
PEM 0	Rev 01	740-004359	NB12546	Power Entry Module
SCG 0	REV 06	710-004455	AY4522	T320 Sonet
Clock Gen.				
Routing Engine 0				unknown
CB 0	REV 13	710-002728	BC1577	T Series
Control Board				
CB 1	REV 13	710-002728	BC1595	T Series
Control Board				
FPC 1	REV 09	710-007531	HS1572	FPC Type 2
CPU	REV 15	710-001726	HR8763	FPC CPU
PIC 0	REV 01	750-010618	CB5579	4x G/E SFP,
1000 BASE				
SFP 0	REV 01	740-007326	P5809Z1	SFP-SX
SFP 1	REV 01	740-007326	P4Q10XU	SFP-SX
SFP 2		NON-JNPR	RA45020031	SFP-SX
SFP 3		NON-JNPR	RA45020032	SFP-SX
PIC 1	REV 01	750-010618	CD9587	4x G/E SFP,
1000 BASE				
SFP 0		NON-JNPR	P5A08QZ	SFP-T
SFP 1	REV 01	740-007326	P4Q133K	SFP-SX
SFP 2	REV 01	740-007326	P5809YY	SFP-SX
SFP 3	REV 01	740-007327	4C81704	SFP-LX
MMB 1	REV 03	710-005555	HR9401	MMB-288mbit
PPB 0	REV 04	710-003758	HR2886	PPB Type 2
FPC 2	REV 07	710-005860	HP2392	FPC Type 1
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

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SFP 1      REV 01  740-007326  P4R0PN9      SFP-SX
PIC 1      REV 01  750-008155  BE2116      2x G/E QPP,
1000 BASE
SFP 0      REV 01  740-007326  P4R0PNZ      SFP-SX
SFP 1      NON-JNPR  2908      SFP-T
MMB 1      REV 01  710-005555  AZ2246      MMB-288mbit
PPB 0      REV 03  710-003758  AY4839      PPB Type 2
FPC 7      REV 01  710-005803  AZ2123      FPC Type 3
...

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**show chassis hardware** user@host> **show chassis hardware**  
**(T640 Router)** 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** user@host> **show chassis hardware models**  
**models (T640 Router)** 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** user@host> **show chassis hardware extensive**

**extensive (T640**

**Router)**

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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 ff ff
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
...

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FPC 1          REV 01  710-002385  HE3009          FPC Type 1
...            REV 06  710-001726  HC0010

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show chassis hardware user@host> show chassis hardware lcc 0
lcc (TX Matrix Router) lcc0-re0:

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Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               65751          T640
Midplane      REV 03  710-005608  RA1408         T640 Backplane
FPM GBUS      REV 09  710-002901  RA2784         T640 FPM Board
FPM Display   REV 05  710-002897  RA2825         FPM Display
CIP           REV 06  710-002895  HT0684         T Series CIP
PEM 0         Rev 11  740-002595  PM18483        Power Entry Module
PEM 1         Rev 11  740-002595  qb13984        Power Entry Module
SCG 0         REV 11  710-003423  HT0022         T640 Sonet Clock Gen.
Routing Engine 0 REV 13  740-005022  210865700363  RE-3.0 (RE-600)
CB 0          REV 03  710-007655  HW1195         Control Board (CB-T)
FPC 1         REV 05  710-007527  HM3245         FPC Type 2
CPU           REV 14  710-001726  HM1084         FPC CPU
PIC 0         REV 02  750-007218  AZ1112         2x OC-12 ATM2 IQ, SMIR
PIC 1         REV 02  750-007745  HG3462         4x OC-3 SONET, SMIR
PIC 2         REV 14  750-001901  BA5390         4x OC-12 SONET, SMIR
PIC 3         REV 09  750-008155  HS3012         2x G/E IQ, 1000 BASE
SFP 0         NON-JNPR  P1186TY        SFP-S
SFP 1         REV 01  740-007326  P11WLTf        SFP-SX
MMB 1         REV 02  710-005555  HL7514         MMB-288mbit
PPB 0         REV 04  710-003758  HM4405         PPB Type 2
PPB 1         REV 04  710-003758  AV1960         PPB Type 2
FPC 2         REV 08  710-010154  HZ3578         E-FPC Type 3
CPU           REV 05  710-010169  HZ3219         FPC CPU-Enhanced
PIC 0         REV 02  750-009567  HX2882         1x 10GE(LAN), XENPAK
SFP 0         REV 01  740-009898  USC202U709     XENPAK-LR
PIC 1         REV 03  750-003336  HJ9954         4x OC-48 SONET, SMSR
PIC 2         REV 01  750-004535  HC0235         1x OC-192 SM SR1
PIC 3         REV 07  750-007141  HX1699         10x 1GE(LAN), 1000 BASE

SFP 0         REV 01  740-007326  2441042        SFP-SX
SFP 1         REV 01  740-007326  2441027        SFP-SX
MMB 0         REV 03  710-010171  HV2365         MMB-5M3-288mbit
MMB 1         REV 03  710-010171  HZ3888         MMB-5M3-288mbit
SPMB 0        REV 09  710-003229  HW5245         T Series Switch CPU
SIB 3         REV 07  710-005781  HR5927         SIB-L8-F16
B Board       REV 06  710-005782  HR5971         SIB-L8-F16 (B)
SIB 4         REV 07  710-005781  HR5903         SIB-L8-F16
B Board       REV 06  710-005782  HZ5275         SIB-L8-F16 (B)

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show chassis hardware user@host> show chassis hardware scc
scc (TX Matrix Router) scc-re0:

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Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               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              REV 05    710-022574   TS3822         TXP
Midplane              REV 03    710-024027   DW4701         SFC Midplane
FPM Display           REV 05    710-023792   DW7998         TXP FPM Display
CIP 0                 REV 05    710-023792   DW7999         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             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
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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	P9M0U3Z	SFP-SX
Xcvr 5	REV 01	740-011782	P9M0U0C	SFP-SX
Xcvr 6	REV 01	740-011782	P9M0TLG	SFP-SX
Xcvr 7	REV 01	740-011782	P9M0U0F	SFP-SX
Xcvr 8	REV 01	740-011613	PFA6LAP	SFP-SX
Xcvr 9	REV 01	740-011782	PCH2POU	SFP-SX
PIC 1	REV 16	750-009450	CV2565	1x OC-192 SM SR2
PIC 2	REV 05	750-004424	HH3057	1x 10GE(LAN), 10GBASE-LR
PIC 3	REV 12	750-013423	DP0403	MultiServices 500
MMB 0	REV 04	710-016036	DK1988	ST-MMB2
FPC 5	REV 07	710-013560	DR0004	E2-FPC Type 3
CPU	REV 05	710-013563	DR0089	FPC CPU-Enhanced
PIC 0	REV 11	750-012793	DR6107	1x 10GE(LAN/WAN) IQ2
Xcvr 0	REV 01	740-014289	C743XU074	XFP-10G-SR
PIC 1	REV 01	750-004695	HD5980	1x Tunnel
PIC 2	REV 32	750-003700	DL3770	1x OC-192 12xMM VSR
PIC 3	REV 12	750-009553	WB8901	4x OC-48 SONET
Xcvr 0	REV 01	740-011785	P9D1GTQ	SFP-SR
Xcvr 1	REV 01	740-011785	PDSOMMB	SFP-SR
Xcvr 3	REV 01	740-011785	PDE1KXP	SFP-SR
MMB 0	REV 07	710-010171	DP7374	MMB-5M3-288mbit
MMB 1	REV 07	710-010171	DP7404	MMB-5M3-288mbit
FPC 6	REV 07	710-013035	DM0994	FPC Type 3-ES
CPU	REV 07	710-016744	DM3651	ST-PMB2
PIC 0	REV 07	750-015217	DN4743	8x 1GE(TYPE3), IQ2
Xcvr 3	REV 01	740-011613	AM0812S8XB0	SFP-SX
Xcvr 4	REV 01	740-011782	PB829RB	SFP-SX
Xcvr 5	REV 01	740-011782	P8J1SYX	SFP-SX
PIC 1	REV 03	750-003336	HJ9954	4x OC-48 SONET, SMSR
PIC 3	REV 02	750-012793	JM7665	1x 10GE(LAN/WAN) IQ2
MMB 0	REV 04	710-016036	DN6913	ST-MMB2
FPC 7	REV 08	710-010845	JM3958	FPC Type 4
CPU	REV 04	710-011481	JK3669	FPC CPU-Enhanced
PIC 0	REV 11	750-017405	DP8837	4x 10GE (LAN/WAN) XFP
Xcvr 1	REV 01	740-014279	753019A00277	XFP-10G-LR
Xcvr 2	REV 02	740-011571	C850XJ00P	XFP-10G-SR
Xcvr 3	REV 01	740-014279	AA0813N1RTG	XFP-10G-LR
MMB 0	REV 04	710-010842	JN1971	ST-MMB
SPMB 0	REV 04	710-023321	DW3629	LCC Switch CPU

SPMB 1	REV 04	710-023321	DW3621	LCC Switch CPU
SIB 0	REV 07	710-022594	DW4200	LCC SIB
B Board	REV 07	710-023185	DW3932	LCC SIB Mezz
SIB 1	REV 07	710-022594	DW4193	LCC SIB
B Board	REV 07	710-023185	DW3904	LCC SIB Mezz
SIB 2				
SIB 3	REV 07	710-022594	DW4210	LCC SIB
B Board	REV 06	710-023185	DT5780	LCC SIB Mezz
SIB 4	REV 08	710-022594	DW8019	LCC SIB
B Board	REV 06	710-023185	DT5795	LCC SIB Mezz
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray -- Rev 3

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sfc0-re0:

Router)

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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
SPMB 1              BUILTIN
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
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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
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
Jedec Code:   0x7fb0          EEPROM Version: 0x01

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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 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 Display      REV 03      710-024027      DX0282      TXP FPM Display
Jedec Code:      0x7fb0      EEPROM Version: 0x01
P/N:             710-024027      S/N:          S/N DX0282
Assembly ID:     0x096c      Assembly Version: 01.03
Date:           02-10-2009     Assembly Flags: 0x00
Version:        REV 03
ID: TXP FPM Display      FRU Model Number: CRAFT-TXP
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 01 ff 09 6c 01 03 52 45 56 20 30 33 00 00
Address 0x10: 00 00 00 00 37 31 30 2d 30 32 34 30 32 37 00 00
Address 0x20: 53 2f 4e 20 44 58 30 32 38 32 00 00 00 0a 02 07
Address 0x30: d9 ff ff ff ff ff ff ff ff ff ff ff ff ff ff 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 ff
Address 0x70: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
CIP 0            REV 04      710-023792      DW4889      TXP CIP
Jedec Code:      0x7fb0      EEPROM Version: 0x01
P/N:             710-023792      S/N:          S/N DW4889
Assembly ID:     0x0969      Assembly Version: 01.04
Date:           01-26-2009     Assembly Flags: 0x00
Version:        REV 04
ID: TXP CIP      FRU Model Number: CIP-TXP
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff

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**show chassis hardware  
clei-models (TX Matrix  
Plus Router)**

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user@host> show chassis hardware clei-models
sfc0-re0:

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Hardware inventory:
Item          Version  Part number  CLEI code  FRU model number
Midplane      REV 05    710-022574
FPM Display   REV 03    710-024027
CIP 0         REV 05    710-023792
CIP 1         REV 05    710-023792
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

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SIB F13 8	REV 04	750-024564	SIB-TXP-F13
SIB F13 11	REV 04	750-024564	SIB-TXP-F13
SIB F13 12	REV 03	750-024564	SIB-TXP-F13
SIB F2S 0/0	REV 05	710-022603	SIB-TXP-F2S-S
SIB F2S 0/2	REV 05	710-022603	SIB-TXP-F2S-S
SIB F2S 0/4	REV 04	710-022603	SIB-TXP-F2S-S
SIB F2S 0/6	REV 04	710-022603	SIB-TXP-F2S-S
SIB F2S 1/0	REV 04	710-022603	SIB-TXP-F2S-S
SIB F2S 1/2	REV 05	710-022603	SIB-TXP-F2S-S
SIB F2S 1/4	REV 04	710-022603	SIB-TXP-F2S-S
SIB F2S 1/6	REV 05	710-022603	SIB-TXP-F2S-S
SIB F2S 2/0	REV 04	710-022603	SIB-TXP-F2S-S
SIB F2S 2/2	REV 04	710-022603	SIB-TXP-F2S-S
SIB F2S 2/4	REV 05	710-022603	SIB-TXP-F2S-S
SIB F2S 2/6	REV 04	710-022603	SIB-TXP-F2S-S
SIB F2S 3/0	REV 05	710-022603	SIB-TXP-F2S-S
SIB F2S 3/2	REV 03	710-022603	SIB-TXP-F2S-S
SIB F2S 3/4	REV 05	710-022603	SIB-TXP-F2S-S
SIB F2S 3/6	REV 03	710-022603	SIB-TXP-F2S-S
SIB F2S 4/0	REV 03	710-022603	SIB-TXP-F2S-S
SIB F2S 4/2	REV 05	710-022603	SIB-TXP-F2S-S
SIB F2S 4/4	REV 04	710-022603	SIB-TXP-F2S-S
SIB F2S 4/6	REV 03	710-022603	SIB-TXP-F2S-S
Fan Tray 0	REV 02	760-024497	FANTRAY-TXP-H-S
Fan Tray 1	REV 02	760-024497	FANTRAY-TXP-H-S
Fan Tray 2	REV 05	760-024502	FANTRAY-TXP-V-S
Fan Tray 3			
Fan Tray 4	REV 05	760-024502	FANTRAY-TXP-V-S
Fan Tray 5	REV 02	760-024502	FANTRAY-TXP-V-S

lcc0-re0:

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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

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lcc1-re0:
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Hardware inventory:
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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

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Fan Tray 1
Fan Tray 2
FANTRAY-T-S
FANTRAY-TXP-R-S

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show chassis hardware
detail (TX Matrix Plus
Router)

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```

user@host> show chassis hardware detail
sfc0-re0:
-----
Hardware inventory:
Item                Version  Part number  Serial number  Description
Chassis              JN111B023AHB
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
SPMB 1               BUILTIN
SIB F13 0            REV 03  750-024564  DT9478         F13 SIB
  B Board            REV 02  710-023431  DT6554         F13 SIB
SIB F13 1            REV 03  750-024564  DT9454         F13 SIB
  B Board            REV 02  710-023431  DT6551         F13 SIB
SIB F2S 0/0          REV 02  710-022603  DT2838         F2S SIB
  B Board            REV 02  710-023787  DT1725         NEO PMB
SIB F2S 0/2          REV 02  710-022603  DT2824         F2S SIB
  B Board            REV 02  710-023787  DT1706         NEO PMB
SIB F2S 0/4          REV 02  710-022603  DT2822         F2S SIB
  B Board            REV 02  710-023787  DT1696         NEO PMB
SIB F2S 0/6          REV 02  710-022603  DT2823         F2S SIB
  B Board            REV 02  710-023787  DT1717         NEO PMB
SIB F2S 1/0          REV 03  710-022603  DV0059         F2S SIB
  B Board            REV 03  710-023787  DT9942         NEO PMB
SIB F2S 1/2          REV 02  710-022603  DT2826         F2S SIB
  B Board            REV 02  710-023787  DT1713         NEO PMB
SIB F2S 1/4          REV 03  710-022603  DV0092         F2S SIB
  B Board            REV 03  710-023787  DV0000         NEO PMB
SIB F2S 1/6          REV 03  710-022603  DV0079         F2S SIB
  B Board            REV 03  710-023787  DT9972         NEO PMB
SIB F2S 2/0          REV 03  710-022603  DV0100         F2S SIB
  B Board            REV 03  710-023787  DT9925         NEO PMB
SIB F2S 2/2          REV 03  710-022603  DV0050         F2S SIB
  B Board            REV 03  710-023787  DV0005         NEO PMB
SIB F2S 2/4          REV 03  710-022603  DV0097         F2S SIB
  B Board            REV 03  710-023787  DT9936         NEO PMB
Fan Tray 0           REV 02  760-024497  DR8286         Front Fan Tray
Fan Tray 1           REV 06  760-024497  DV9624         Front Fan Tray
Fan Tray 2           REV 02  760-024502  DR8259         Rear Fan Tray
Fan Tray 3           REV 02  760-024502  DR8270         Rear Fan Tray
Fan Tray 4           REV 02  760-024502  DR8284         Rear Fan Tray
Fan Tray 5           REV 06  760-024502  DV7813         Rear Fan Tray

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lcc0-re0:
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Hardware inventory:
Item                Version  Part number  Serial number  Description

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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)

```

user@host> show chassis hardware models
sfc0-re0:
-----
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        yyyyyyyyyyyyyyyyyyyyyyyy
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

1cc0-re0:

-----  
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:
```

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

Item	Version	Part number	Serial number	FRU model number
Midplane	REV 04	710-017247	RC5361	CHAS-BP-T1600-S
FPM Display	REV 01	710-021387	DS6430	CRAFT-T1600-S
CIP	REV 06	710-002895	DS4239	CIP-L-T640-S
PEM 0	Rev 08	740-017906	UD26649	PWR-T1600-3-80-DC-S
SCG 0	REV 15	710-003423	DP5820	SCG-T-S
CB 0	REV 06	710-022597	DW8523	CB-LCC
CB 1	REV 06	710-022597	DW8528	CB-LCC
FPC 4	REV 12	710-013037	DP8509	T1600-FPC4-ES
PIC 0	REV 11	750-017405	DP8808	PD-4XGE-XFP
PIC 1	REV 11	750-017405	DP7263	PD-4XGE-XFP
FPC 6	REV 14	710-013037	DS9961	T1600-FPC4-ES
PIC 0	REV 13	750-017405	DS5532	PD-4XGE-XFP
PIC 1	REV 13	750-017405	DS7639	PD-4XGE-XFP
FPC 7	REV 03	710-013035	DF5564	T1600-FPC3-ES
PIC 0	REV 16	750-007141	JJ8063	PC-10GE-SFP
SIB 0	REV 08	710-022594	DW8035	SIB-TXP-T1600-S
SIB 1	REV 10	710-022594	DX7672	SIB-TXP-T1600-S
SIB 2	REV 08	710-022594	DW8060	SIB-TXP-T1600-S
SIB 3	REV 08	710-022594	DW8072	SIB-TXP-T1600-S
SIB 4	REV 08	710-022594	DW8043	SIB-TXP-T1600-S
Fan Tray 0				FANTRAY-T-S
Fan Tray 1				FANTRAY-T-S
Fan Tray 2				FANTRAY-TXP-R-S

```
lcc2-re0:
```

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

Item	Version	Part number	Serial number	FRU model number
Midplane	REV 03	710-017247	RC3956	CHAS-BP-T1600-S
FPM Display	REV 01	710-021387	DN7030	CRAFT-T1600-S
CIP	REV 06	710-002895	DM3962	CIP-L-T640-S
PEM 0	Rev 08	740-017906	UD26519	PWR-T1600-3-80-DC-S
PEM 1	Rev 07	740-017906	UC26601	PWR-T1600-3-80-DC-S
SCG 0	REV 15	710-003423	DP0277	SCG-T-S
CB 0	REV 06	710-022597	DW8524	CB-LCC
CB 1	REV 06	710-022597	DW8536	CB-LCC
FPC 4	REV 12	710-013037	DR1194	T1600-FPC4-ES
PIC 0	REV 11	750-017405	DP8811	PD-4XGE-XFP
PIC 1	REV 11	750-017405	DP8823	PD-4XGE-XFP
FPC 5	REV 12	710-013037	DR1184	T1600-FPC4-ES
PIC 1	REV 11	750-017405	DP4744	PD-4XGE-XFP
FPC 6	REV 12	710-013037	DN8622	T1600-FPC4-ES
PIC 0	REV 14	750-012518	JY9924	PD-40C192-SON-XFP
PIC 1	REV 11	750-017405	DP8776	PD-4XGE-XFP
FPC 7	REV 04	710-013560	JR3968	T640-FPC3-E2
PIC 0	REV 16	750-007141	NC9330	PC-10GE-SFP
SIB 0	REV 07	710-022594	DW4217	SIB-TXP-T1600-S
SIB 1	REV 07	710-022594	DW4213	SIB-TXP-T1600-S
SIB 2	REV 07	710-022594	DW4189	SIB-TXP-T1600-S
SIB 3	REV 07	710-022594	DW4173	SIB-TXP-T1600-S
SIB 4	REV 07	710-022594	DW4201	SIB-TXP-T1600-S
Fan Tray 0				FANTRAY-T-S
Fan Tray 1				FANTRAY-T-S
Fan Tray 2				FANTRAY-TXP-R-S

```
lcc3-re0:
```

-----  
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**  
**(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** user@switch> **show chassis hardware**

(QFX Series)

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis				QFX3500
Routing Engine 0		BUILTIN	BUILTIN	QFX Routing Engine
FPC 0	REV 02	711-032234	EC4074	QFX 48x10G 4x40G Switch
CPU		BUILTIN	BUILTIN	FPC CPU
PIC 0		BUILTIN	BUILTIN	48x 10G-SFP+
Power Supply 0	PSMI 2C	11-d65800	--	QFX PS 650W AC
Fan Tray				

**show chassis hardware detail** user@switch> **show chassis hardware detail**

(QFX Series)

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN000TEST5	QFX3500
Routing Engine 0		BUILTIN	BUILTIN	QFX Routing Engine
FPC 0	REV 05	750-036931	EE0823	QFX 48x10G 4x40G Switch
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
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
Fan Tray 2				QFX Fan Tray

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

**models (QFX Series)**

Hardware inventory:

Item	Version	Part number	Serial number	FRU model number
Routing Engine 0		BUILTIN	BUILTIN	
FPC 0	REV 02	711-032234	EC4074	
Power Supply 0	PSMI 2C	11-d65800	--	

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

**clei-models (QFX Series)**

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 in-service-upgrade

**Syntax** `show chassis in-service-upgrade`

**Release Information** Command introduced in Junos OS Release 9.0.

**Description** Display the status of Flexible PIC Concentrators (FPCs) and their corresponding PICs after the most recent unified in-service software upgrade (ISSU). This command must be issued on the master Routing Engine.



**NOTE:** Only Intelligent Queuing (IQ) PICs are displayed by this command output. Unified ISSU status for other PIC types is controlled internally by the FPC.

**Options** This command has no options.

**Required Privilege Level** view

**Related Documentation**

- [request system software abort on page 757](#)
- [request system software in-service-upgrade on page 770](#)

**List of Sample Output** [show chassis in-service-upgrade on page 459](#)

**Output Fields** Table 79 on page 459 lists the output fields for the `show chassis in-service-upgrade` command. Output fields are listed in the approximate order in which they appear.

**Table 79: show chassis in-service-upgrade Output Fields**

Field Name	Field Description
<b>Item</b>	Flexible PIC Concentrator (FPC) slot number.
<b>Status</b>	FPC and corresponding PIC state. State can be either of the following: <ul style="list-style-type: none"> <li>• <b>Online</b>—FPC is online and running.</li> <li>• <b>Offline</b>—FPC is powered down.</li> </ul>
<b>Reason</b>	Reason for the state (if offline).

## Sample Output

```

show chassis in-service-upgrade user@host> show chassis in-service-upgrade
  Item      Status      Reason
  FPC 0     Online
  FPC 1     Online
  FPC 2     Online
  PIC 0     Online

```

PIC 1	Online	
FPC 3	Offline	Offlined by CLI command
FPC 4	Online	
PIC 1	Online	
FPC 5	Online	
PIC 0	Online	
FPC 6	Online	
PIC 3	Online	
FPC 7	Online	

## show chassis 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 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display the status of all T1600 routers (or line-card chassis) 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>request chassis lcc on page 174</li> </ul>
<b>List of Sample Output</b>	show chassis lccs on page 461
<b>Output Fields</b>	Table 80 on page 461 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 80: 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 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 <i>number</i> lcc <i>number</i> )   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show chassis location <fpc   interface (by-name <i>name</i>   by-slot fpc <i>number</i> lcc <i>number</i> )   lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (TX Matrix Plus Router)</b>	show chassis location
<b>Syntax (QFX Series)</b>	show chassis location
<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 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 the physical location of the chassis. This command can only be used on the master Routing Engine.
<b>Options</b>	<p>none—Display all information about the physical location of the chassis. On a TX Matrix router, display all information about the physical location of the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display all information about the physical location of the TX Matrix Plus router and its attached T1600 routers.</p> <p>fpc—(TX Matrix and TX Matrix Plus routers only) (Optional) Display the physical location of all Flexible PIC Concentrators (FPCs).</p> <p>interface by-name <i>name</i>—(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 (or line-card chassis) number associated with the specified interface. On a TX Matrix Plus router, this option displays the FPC number and T1600 router (or line-card chassis) number associated with the specified interface.</p> <p>interface by-slot fpc <i>number</i> lcc <i>number</i>—(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 (or line-card chassis) number. On a TX Matrix Plus router, display the global FPC number of an interface by specifying its local FPC number and T1600 router (or line-card chassis) number.</p> <ul style="list-style-type: none"> <li>• The global FPC number is the FPC slot number when all the FPC slots in the routing matrix are considered: <b>0</b> through <b>31</b>. The local FPC number is the FPC slot number on a particular T640 router.</li> <li>• For <b>fpc</b>, replace <i>number</i> with a value from <b>0</b> through <b>7</b>.</li> <li>• For <b>lcc</b>, replace <i>number</i> with a value from <b>0</b> through <b>3</b>.</li> </ul>

**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 (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display the physical location of a specified T1600 router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace **number** with a value from **0** through **3**.

**scc**—(TX Matrix routers only) (Optional) Display the physical location of the TX Matrix router (or 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 464**  
**show chassis location fpc (TX Matrix Router) on page 464**  
**show chassis location interface by-slot (TX Matrix Router) on page 464**  
**show chassis location on page 464**  
**show chassis location fpc (TX Matrix Plus Router) on page 464**  
**show chassis location interface by-slot (TX Matrix Plus Router) on page 464**  
**show chassis location (QFX Series) on page 464**

**Output Fields** Table 81 on page 463 lists the output fields for the **show chassis location** command. Output fields are listed in the approximate order in which they appear.

**Table 81: show chassis location Output Fields**

Field Name	Field Description
<b>country-code</b>	Country code information.
<b>postal-code</b>	Postal code information.
<b>Building</b>	Building information.
<b>Floor</b>	Floor information.
<b>Global FPC</b>	Global FPC number. The FPC slot number, when all FPC slots in the Routing Matrix are considered. The range of values is <b>0</b> through <b>31</b> .
<b>LCC</b>	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 T1600 router connected to the TX Matrix Plus router.
<b>Local FPC</b>	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 T1600 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 user@host> show chassis location fpc
fpc (TX Matrix Router) Global FPC    LCC      Local FPC
                        17          2         1
                        21          2         5

show chassis location user@host> show chassis location interface by-slot fpc 1 lcc 1
interface by-slot      Global FPC: 9
(TX Matrix 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 user@host> show chassis location fpc
fpc (TX Matrix Plus  Global FPC    LCC      Local FPC
Router)              0          0         0
                    1          0         1

show chassis location user@host> show chassis location interface by-slot fpc 2 lcc 1
interface by-slot      Global FPC: 10
(TX Matrix Plus
Router)

show chassis location user@switch> show chassis location
(QFX Series)          Global FPC: 10
```



## 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 (QFX Series)</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 Release 11.1 for the QFX Series.</p>
<b>Description</b>	Display the media access control (MAC) addresses for the router, switch chassis, or switch.
<b>Options</b>	<p>none—(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 T1600 routers.</p> <p><b>lcc <i>number</i></b>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display MAC addresses for a specified T640 router (or line-card chassis) that is connected to the TX Matrix Plus router. On a TX Matrix Plus router, display MAC addresses for a specified T640 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <b><i>number</i></b> with a value from <b>0</b> through <b>3</b>.</p> <p><b>scc</b>—(TX Matrix routers only) (Optional) Display MAC addresses for the TX Matrix router (or switch-card chassis).</p> <p><b>sfc <i>number</i></b>—(TX Matrix Plus routers only) (Optional) Display MAC addresses for the TX Matrix Plus router (or switch-fabric chassis).</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p>show chassis mac-addresses on page 466</p> <p>show chassis mac-addresses (TX Matrix Router) on page 466</p> <p>show chassis mac-addresses (TX Matrix Plus Router) on page 466</p> <p>show chassis mac-addresses (QFX Series) on page 467</p>
<b>Output Fields</b>	Table 82 on page 466 lists the output fields for the <b>show chassis mac-addresses</b> command. Output fields are listed in the approximate order in which they appear.

Table 82: 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 (TX user@host> show chassis mac-addresses
Matrix Router) 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 user@host> show chassis mac-addresses
Matrix Plus Router) sfc0-re0:
-----
MAC address information:
  Public base address  00:1d:b5:14:00:00
  Public count         65023
  Private base address 00:1d:b5:14:fd:ff
  Private count        512
lcc0-re0:

```

```

-----
MAC address information:
  Public base address    00:1f:12:7a:84:00
  Public count           2032
  Private base address   00:1f:12:7a:8b:f0
  Private count          16

```

```
lcc1-re0:
```

```

-----
MAC address information:
  Public base address    00:22:83:42:48:00
  Public count           2032
  Private base address   00:22:83:42:4f:f0
  Private count          16

```

```
lcc2-re0:
```

```

-----
MAC address information:
  Public base address    00:1f:12:c3:58:00
  Public count           2032
  Private base address   00:1f:12:c3:5f:f0
  Private count          16

```

```
lcc3-re0:
```

```

-----
MAC address information:
  Public base address    00:21:59:ef:b8:00
  Public count           2032
  Private base address   00:21:59:ef:bf:f0
  Private count          16

```

```

show chassis mac-addresses (QFX Series)
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 network services

<b>Syntax</b>	show chassis network services
<b>Release Information</b>	Command introduced in Junos OS Release 9.4.
<b>Description</b>	(MX Series routers only) Display the network services mode that the router is configured to run in—IP Services mode or Ethernet Services mode.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>Output Fields</b>	Table 83 on page 468 lists the output fields for the <b>show chassis network services</b> command. Output fields are listed in the approximate order in which they appear.

Table 83: show chassis network services Output Fields

Field Name	Field Description
<b>Network services mode</b>	Network services mode configured for the MX Series router: <ul style="list-style-type: none"><li>• <b>IP</b>—IP Services mode.</li><li>• <b>Ethernet</b>—Ethernet Services mode.</li></ul>

## show chassis network services

```
user@host> show chassis network services
Network Services Mode: IP
```

## show chassis pic

<b>Syntax</b>	<code>show chassis pic fpc-slot <i>slot-number</i> pic-slot <i>slot-number</i></code>
<b>Syntax (TX Matrix and TX Matrix Plus Routers)</b>	<code>show chassis pic fpc-slot <i>slot-number</i> pic-slot <i>slot-number</i> &lt;fcc <i>number</i>&gt;</code>
<b>Syntax (QFX Series)</b>	<code>show chassis pic fpc-slot <i>slot-number</i> pic-slot <i>slot-number</i></code>
<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>
<b>Description</b>	Display status information about the PIC installed in the specified Flexible PIC Concentrator (FPC) and PIC slot.
<b>Options</b>	<p><code>fpc-slot <i>slot-number</i></code>—Display information about the PIC in this particular FPC slot:</p> <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>fcc <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:</li> </ul> <pre> user@host&gt; show chassis pic fpc-slot 1 fcc 1 pic-slot 1 user@host&gt; show chassis pic fpc-slot 9 pic-slot 1 </pre> <ul style="list-style-type: none"> <li>Likewise, on a TX Matrix Plus router, if you specify the number of the T1600 router by using the <b>fcc <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:</li> </ul> <pre> user@host&gt; show chassis pic fpc-slot 1 fcc 1 pic-slot 1 user@host&gt; show chassis pic fpc-slot 9 pic-slot 1 </pre> <ul style="list-style-type: none"> <li>M120 routers only—Replace <b><i>slot-number</i></b> with a value from 0 through 5.</li> <li>MX80 routers only—Replace <b><i>slot-number</i></b> with a value from 0 through 1.</li> <li>MX240 routers only—Replace <b><i>slot-number</i></b> with a value from 0 through 2.</li> <li>MX480 routers only—Replace <b><i>slot-number</i></b> with a value from 0 through 5.</li> <li>MX960 routers only—Replace <b><i>slot-number</i></b> with a value from 0 through 11.</li> <li>Other routers—Replace <b><i>slot-number</i></b> with a value from 0 through 7.</li> <li>EX Series switches: <ul style="list-style-type: none"> <li>EX3200 switches and EX4200 standalone switches—Replace <b><i>slot-number</i></b> with 0.</li> <li>EX4200 switches in a Virtual Chassis configuration—Replace <b><i>slot-number</i></b> with a value from 0 through 9 (switch's member ID).</li> </ul> </li> </ul>

- 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 QFX3500 switch command output, FPC refers to a line card; FPC number equals the slot number for the line card. Both the FPC and PIC slot numbers are always 0.

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

**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, EX8216, and QFX3500 switches, replace **slot-number** with 0.

Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> <li>• request chassis pic on page 177</li> </ul>
List of Sample Output	<p>show chassis pic fpc-slot pic-slot on page 472</p> <p>show chassis pic fpc-slot pic-slot (PIC Offline) on page 472</p> <p>show chassis pic fpc-slot pic-slot (FPC Offline) on page 472</p> <p>show chassis pic fpc-slot pic-slot (FPC Not Present) on page 472</p> <p>show chassis pic fpc-slot pic-slot (PIC Not Present) on page 472</p> <p>show chassis pic fpc-slot 3 pic-slot 0 (M120 Router) on page 472</p> <p>show chassis pic fpc-slot pic-slot (MX960 Router Bidirectional Optics) on page 472</p> <p>show chassis pic fpc-slot pic-slot (T1600 Router with 100-Gigabit Ethernet PIC) on page 473</p> <p>show chassis pic fpc-slot pic-slot lcc (TX Matrix Router) on page 473</p> <p>show chassis pic fpc-slot pic-slot lcc (TX Matrix Plus Router) on page 473</p> <p>show chassis pic fpc-slot pic-slot (Next-generation SONET/SDH SFP) on page 473</p> <p>show chassis pic fpc-slot pic-slot (12-port T1/E1) on page 474</p> <p>show chassis pic fpc-slot 0 pic-slot 1 (4x CHOC3 SONET CE SFP) on page 474</p> <p>show chassis pic fpc-slot pic-slot (OTN) on page 474</p> <p>show chassis pic fpc-slot pic-slot (QFX Series) on page 474</p>
Output Fields	Table 84 on page 471 lists the output fields for the <b>show chassis pic</b> command. Output fields are listed in the approximate order in which they appear.

Table 84: show chassis pic Output Fields

Field Name	Field Description
Type	PIC type.
ASIC type	Type of ASIC on the PIC.
State	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>
PIC version	PIC hardware version.
Uptime	How long the PIC has been online.
Package	(MultiServices PICs only) Services package supported: <b>Layer-2</b> or <b>Layer-3</b> .
PIC Port Information	Port-level information for the PIC.
Port Number	Port number for the PIC.
Cable Type	Type of cable connected to the port: <b>LH</b> , <b>LX</b> , or <b>SX</b>
PIC Port Information (MX960 Router Bidirectional Optics)	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>
PIC Port Information (next-generation SONET/SDH SFP)	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>

## Sample Output

```

show chassis pic fpc-slot pic-slot 0
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
  Number        Type
  0             GIGE 1000LX
  6             GIGE 1000LX

show chassis pic fpc-slot pic-slot 0
(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 0
(PFC Offline)
user@host> show chassis pic fpc-slot 1 pic-slot 0
FPC 1 is not online

show chassis pic fpc-slot pic-slot 0
(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 0
(PIC Not Present)
user@host> show chassis pic fpc-slot 5 pic-slot 2
FPC 5, PIC 2 is empty

show chassis pic fpc-slot 3 pic-slot 0
(M120 Router)
user@host> show chassis pic fpc-slot 3 pic-slot 0
PC slot 3, PIC slot 0 information:
  Type          2x G/E IQ, 1000 BASE
  ASIC type      IQ GE 2 VLAN-TAG FPGA
  State          Online
  PIC version    1.16
  Uptime        3 hours, 3 minutes
PIC Port Information:
  Port          Cable          Xcvr          Xcvr Vendor
  Number        Type          Vendor Name   Part Number
  0             GIGE 1000SX     FINISAR CORP. FTRJ8519P1BNL-J3
  1             GIGE 1000SX     FINISAR CORP. FTRJ-8519-7D-JUN

show chassis pic fpc-slot pic-slot 0
(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)
  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    Wavelength
  Number        type          type          part number
  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  
(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 fpc-slot 0 pic-slot 0 lcc 0
lcc0-re0:
```

FPC slot 0, PIC slot 0 information:

```

Type          4x OC-192 SONET XFP
ASIC type     D16 chip
State         Online
PIC version   1.16
Uptime       1 hour, 40 minutes, 17 seconds

```

PIC port information:

Port	Cable type	Fiber type	Xcvr vendor	Xcvr vendor part number	Wavelength
0	OC192 short reach	n/a	SumitomoElectric	SXP3101NV-J3	1310 nm
1	OC192 short reach	n/a	SumitomoElectric	SXP3101NV-J3	1310 nm
2	OC192 short reach	n/a	AVAGO	HFCT-711XPD-JU1	1310 nm
3	OC192 short reach	n/a	AVAGO	HFCT-711XPD-JU1	1310 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	OCP	TRPA03MM3BAS-JE	1310 nm
2	OC3 short reach	MM	OCP	TRXA03MM3BAS-JW	1310 nm
3	OC12 inter reach	SM	FINISAR CORP.	FTLF1322P1BTR	1310 nm

**show chassis pic  
fpc-slot pic-slot  
(12-port T1/E1)**

```
user@host> show chassis pic fpc-slot 0 pic-slot 3
FPC slot 0, PIC slot 3 information:
  Type                12x T1/E1 CE
  State                Online
  PIC version          1.1
  CPU load average     1 percent
  Interrupt load average 0 percent
  Total DRAM size      128 MB
  Memory buffer utilization 100 percent
  Memory heap utilization 4 percent
  Uptime               1 day, 22 hours, 28 minutes, 12 seconds
  Internal Clock Synchronization Normal
```

**show chassis pic  
fpc-slot 0 pic-slot 1 (4x  
CHOC3 SONET CE  
SFP)**

```
user@host> show chassis pic fpc-slot 0 pic-slot 1
FPC slot 0, PIC slot 1 information:
  Type                4x CHOC3 SONET CE SFP
  State                Online
  PIC version          1.3
  CPU load average     1 percent
  Interrupt load average 0 percent
  Total DRAM size      128 MB
  Memory buffer utilization 99 percent
  Memory heap utilization 4 percent
  Uptime               1 day, 22 hours, 55 minutes, 37 seconds
  Internal Clock Synchronization Normal
```

PIC port information:

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 (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 (QFX  
Series)**

```
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 power-ratings

<b>Syntax</b>	show chassis power-ratings
<b>Release Information</b>	Command introduced in Junos OS Release 8.4.
<b>Description</b>	(J Series routers only) Display the low-power consumption, high-power consumption, and heat dissipation ratings of the router. Low-power consumption, high-power consumption, and heat dissipation values are represented in nondimensional tokens.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show chassis power-ratings on page 477 show chassis power-ratings (Power Management Disabled) on page 477
<b>Output Fields</b>	Table 85 on page 475 lists the output fields for the <b>show chassis power-ratings</b> command. Output fields are listed in the approximate order in which they appear.

**Table 85: show chassis power-ratings Output Fields**

Field Name	Field Description
<b>Device</b>	Physical Interface Module (PIM) slot. (PIM slot numbers appear as FPC numbers in the output.)
<b>Total Tokens</b>	Maximum number of low-power, high-power, and heat tokens available for the router: <ul style="list-style-type: none"> <li>• <b>Low Power</b>—Maximum number of low-power consumption tokens available for the router.</li> <li>• <b>High Power</b>—Maximum number of high-power consumption tokens available for the router.</li> <li>• <b>Heat</b>—Maximum number of heat tokens available for the router.</li> </ul>

Table 85: show chassis power-ratings Output Fields (*continued*)

Field Name	Field Description
<b>FPC number</b>	<p>PIM slot number and power and heat information for the PIM in this slot:</p> <ul style="list-style-type: none"> <li>• <b>Low Power</b>—PIM low-power consumption. The number of low-power tokens used by the PIM.</li> <li>• <b>High Power</b>—PIM high-power consumption. The number of high-power tokens used by the PIM.</li> <li>• <b>Heat</b>—The number of PIM heat dissipation tokens used by this PIM.</li> <li>• <b>Ratings</b>—Status of the PIM slot. The status of the slot is based on either the configuration of the slot or the power use and heat dissipation of the PIM in that slot:</li> </ul> <p><b>NOTE:</b> The <b>request chassis fpc</b> command has no effect on the status of the PIM slot.</p> <ul style="list-style-type: none"> <li>• <b>OK</b>—The PIM in this PIM slot can be brought online.</li> <li>• <b>Exceeded</b>—The PIM cannot be brought online because the PIM slot has been disabled by J Series power management. The PIM in this PIM slot exceeds the maximum number of low-power tokens, high-power tokens, or heat tokens.</li> <li>• <b>Empty</b>—No PIM is installed in the PIM slot.</li> <li>• <b>Cfg offline</b>—The PIM cannot be brought online because the PIM slot has been disabled by the <b>set chassis fpc offline</b> command.</li> </ul>
<b>Tokens Used</b>	<p>Total number of low-power, high-power, and heat tokens used by the router:</p> <ul style="list-style-type: none"> <li>• <b>Low Power</b>—The total number of low-power tokens used by the router.</li> <li>• <b>High Power</b>—The total number of high-power tokens used by the router.</li> <li>• <b>Heat</b>—Number of heat tokens used by the router.</li> <li>• <b>Ratings</b>—If blank, J Series power management is enabled. <b>No Power Mgmt</b> indicates that J Series power management has been disabled by the <b>set chassis disable_power_management</b> command.</li> </ul> <p><b>NOTE:</b> Use extreme caution when disabling J Series power management. To prevent equipment damage, do not install a combination of PIMs that exceeds the power and heat capacity of the router when J Series power management is disabled.</p>

## Sample Output

```

show chassis power-ratings user@host> show chassis power-ratings
Device          Low      High      Heat      Ratings
                  Power      Power
Total Tokens    83       83       83       -
FPC 1           6        27       21       OK
FPC 2           3        27       18       OK
FPC 3           0        0        0        Empty
FPC 4           0        0        0        Empty
FPC 5           2        0        2        Exceeded
Tokens Used     11       54       41       -

show chassis power-ratings (Power user@host> show chassis power-ratings
Management Disabled) Device          Low      High      Heat      Ratings
                  Power      Power
Total Tokens    83       83       83       -
FPC 1           6        27       21       OK
FPC 2           3        27       18       OK
FPC 3           0        0        0        Empty
FPC 4           0        0        0        Empty
FPC 5           2        0        2        Exceeded
Tokens Used     11       54       41       No Power Mgmt

```

## show chassis power

<b>Syntax</b>	show chassis power
<b>Release Information</b>	Command introduced in Junos OS Release 10.0
<b>Description</b>	(MX Series Ethernet Services Routers only) Display power limits and usage information for the AC or DC Power Entry Modules (PEMs).
<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>show chassis power sequence on page 482</li> </ul>
<b>List of Sample Output</b>	show chassis power (MX960 Router with DC PEM) on page 479 show chassis power (MX960 Router with AC PEM) on page 480 show chassis power (MX480 Router with AC PEM) on page 480 show chassis power (MX240 Router with DC PEM) on page 481
<b>Output Fields</b>	Table 86 on page 478 lists the output fields for the <b>show chassis power</b> command. Output fields are listed in the approximate order in which they appear.

**Table 86: show chassis power Output Fields**

Field Name	Field Description
<b>PEM number</b>	<p>AC or DC PEM number on the chassis. The following output fields are displayed for the PEM:</p> <ul style="list-style-type: none"> <li><b>State</b>—State of the PEM:               <ul style="list-style-type: none"> <li><b>Online</b>—PEM is present in the slot and online.</li> <li><b>Empty</b>—PEM is not present in the slot.</li> <li><b>Present</b>—PEM is present in the slot, but not online.</li> </ul> </li> <li><b>AC/DC Input—OK or Check</b>—State of the AC or DC input power feed with the number of active and expected feeds (one or two). For a DC input power feed, this output field also displays the reference voltage input with maximum input voltage displayed in mV (in parentheses) for the AC or DC PEM.</li> <li><b>Capacity</b>—Actual power input capacity with maximum capacity displayed (in parentheses) in watts.</li> </ul> <p><b>NOTE:</b> The maximum capacity for AC and DC PEMs is:</p> <ul style="list-style-type: none"> <li>MX960 AC PEM—4100 W if two feeds are connected. 1700 W if one feed is connected.</li> <li>MX960 DC PEM—4100 W if two feeds are connected. 1700 W if one feed is connected.</li> <li>MX480 AC PEM—2520 W if it is high-line. 1450 W if it is low-line.</li> <li>MX480 DC PEM—2400 W if the DIP switch is off. 2600 W if the DIP switch is on.</li> <li>MX240 AC PEM—2520 W if it is high-line. 1450 W if it is low-line.</li> <li>MX240 DC PEM—2400 W if the DIP switch is off. 2600 W if the DIP switch is on.</li> </ul> <ul style="list-style-type: none"> <li><b>DC Output</b>—DC power output in Watts for the specified zone, at the specified amps and voltage (A @ V), and load and percentage utilization of the maximum capacity) for the zone.</li> </ul>

Table 86: show chassis power Output Fields (*continued*)

Field Name	Field Description
<b>System</b>	<p>Overall power statistics for the system zone-wise:</p> <ul style="list-style-type: none"> <li>• <b>Zone number:</b> <ul style="list-style-type: none"> <li>• <b>Capacity</b>—Maximum power capacity applicable for the zone, in watts.</li> <li>• <b>Allocated power</b>—Actual capacity allocated for the zone, in watts, with remaining power displayed in parentheses.</li> <li>• <b>Actual usage</b>—Actual power usage for the zone, in watts.</li> </ul> </li> <li>• <b>Total system capacity</b>—Cumulative power capacity of all the zones, in watts.</li> <li>• <b>Total remaining capacity</b>—Difference between the <b>Total system capacity</b> and cumulative <b>Allocated power</b> of all the zones, in watts.</li> </ul>

## Sample Output

```

show chassis power user@host> show chassis power
(MX960 Router with PEM 0:
DC PEM)          State:      Online
                  DC input:  OK (2 feed expected, 2 feed connected)
                  DC input:  48.0 V input (57000 mV)
                  Capacity:  4100 W (maximum 4100 W)
                  DC output:  513 W (zone 0, 9 A at 57 V, 12% of capacity)

PEM 1:
State:      Online
DC input:   OK (2 feed expected, 2 feed connected)
DC input:   48.0 V input (57000 mV)
Capacity:   4100 W (maximum 4100 W)
DC output:  228 W (zone 1, 4 A at 57 V, 5% of capacity)

PEM 2:
State:      Online
DC input:   OK (2 feed expected, 2 feed connected)
DC input:   48.0 V input (57000 mV)
Capacity:   4100 W (maximum 4100 W)
DC output:  513 W (zone 0, 9 A at 57 V, 12% of capacity)

PEM 3:
State:      Online
DC input:   OK (2 feed expected, 2 feed connected)
DC input:   48.0 V input (57000 mV)
Capacity:   4100 W (maximum 4100 W)
DC output:  342 W (zone 1, 6 A at 57 V, 8% of capacity)

System:
Zone 0:
Capacity:      4100 W (maximum 4100 W)
Allocated power: 1680 W (2420 W remaining)
Actual usage:   1026 W
Zone 1:
Capacity:      4100 W (maximum 4100 W)
Allocated power: 1263 W (2837 W remaining)
Actual usage:   570 W
Total system capacity: 8200 W (maximum 8200 W)
Total remaining power: 5257 W

```

**show chassis power**  
**(MX960 Router with**  
**AC PEM)**

```
user@host> show chassis power
PEM 0:
  State:      Online
  AC input:   OK (2 feed expected, 2 feed connected)
  Capacity:   4100 W (maximum 4100 W)
  DC output:  0 W (zone 0, 0 A at 56 V, 0% of capacity)

PEM 1:
  State:      Present
  AC input:   Check (2 feed expected, 1 feed connected)
  Capacity:   1700 W (maximum 4100 W)

PEM 2:
  State:      Empty
  Input:      Absent

PEM 3:
  State:      Online
  AC input:   OK (1 feed expected, 1 feed connected)
  Capacity:   1700 W (maximum 1700 W)

System:
  Zone 0:
    Capacity:      4100 W (maximum 4100 W)
    Allocated power: 540 W (3560 W remaining)
    Actual usage:   0 W
  Zone 1:
    Capacity:      0 W (maximum 0 W)
    Allocated power: 0 W (0 W remaining)
    Actual usage:   0 W
  Total system capacity: 4100 W (maximum 4100 W)
  Total remaining power: 3560 W
```

**show chassis power**  
**(MX480 Router with**  
**AC PEM)**

```
user@host> show chassis power
PEM 0:
  State:      Online
  AC input:   OK (1 feed expected, 1 feed connected)
  Capacity:   2520 W (maximum 2520 W)
  DC output:  472 W (zone 0, 8 A at 59 V, 18% of capacity)

PEM 1:
  State:      Online
  AC input:   OK (1 feed expected, 1 feed connected)
  Capacity:   2520 W (maximum 2520 W)
  DC output:  472 W (zone 0, 8 A at 59 V, 18% of capacity)

PEM 2:
  State:      Online
  AC input:   OK (1 feed expected, 1 feed connected)
  Capacity:   2520 W (maximum 2520 W)
  DC output:  118 W (zone 0, 2 A at 59 V, 4% of capacity)

PEM 3:
  State:      Empty
  Input:      Absent

System:
  Maximum capacity: 5040 W
  Allocated capacity: 1675 W (33% of maximum)
```



```
Remaining capacity: 3365 W
Actual usage:      1062 W

show chassis power (MX240 Router with DC PEM) user@host> show chassis power
PEM 0:
  State:      Online
  DC input:   OK (1 feed expected, 1 feed connected)
  DC input:   48.0 V input (53500 mV)
  Capacity:   2400 W (maximum 2400 W)
  DC output:  318 W (zone 0, 6 A at 53 V, 13% of capacity)

PEM 1:
  State:      Online
  DC input:   OK (1 feed expected, 1 feed connected)
  DC input:   48.0 V input (54000 mV)
  Capacity:   2400 W (maximum 2400 W)
  DC output:  0 W (zone 0, 0 A at 54 V, 0% of capacity)

PEM 2:
  State:      Online
  DC input:   OK (1 feed expected, 1 feed connected)
  DC input:   48.0 V input (52500 mV)
  Capacity:   2400 W (maximum 2400 W)
  DC output:  312 W (zone 0, 6 A at 52 V, 13% of capacity)

PEM 3:
  State:      Online
  DC input:   OK (1 feed expected, 1 feed connected)
  DC input:   48.0 V input (55000 mV)
  Capacity:   2400 W (maximum 2400 W)
  DC output:  0 W (zone 0, 0 A at 55 V, 0% of capacity)

System:
  Maximum capacity: 2400 W
  Allocated capacity: 1270 W (52% of maximum)
  Remaining capacity: 1130 W
  Actual usage:      630 W
```

## show chassis power sequence

<b>Syntax</b>	show chassis power sequence
<b>Release Information</b>	Command introduced in Junos OS Release 10.0
<b>Description</b>	(MX Series Ethernet Services Routers only) Show power-on sequence for the chassis Dense Port Concentrators (DPCs).
<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="#">show chassis power on page 478</a></li></ul>
<b>List of Sample Output</b>	<a href="#">show chassis power sequence on page 482</a>
<b>Output Fields</b>	Table 87 on page 482 lists the output fields for the <b>show chassis power sequence</b> command. Output fields are listed in the approximate order in which they appear.

Table 87: show chassis power sequence Output Fields

Field Name	Field Description
Chassis FRU Power Sequence	Power-on sequence for the DPCs in the chassis. The numbers indicate the slot number of the DPCs.

### Sample Output

```
show chassis power sequence  user@host> show chassis power sequence
sequence                   Chassis FRU Power Sequence: 3 4 5 6 7 8 9 10 11 0 1 2
```

## show chassis psd

<b>Syntax</b>	<b>show chassis psd</b>
<b>Release Information</b>	Command introduced in Junos OS Release 9.1.
<b>Description</b>	(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 that is interconnected with the JCS1200 platform.
<b>Options</b>	This command has no options
<b>Additional Information</b>	For more information about PSDs, RSDs, and the JCS1200 platform, see the <i>Junos OS Protected System Domain Configuration Guide</i> .
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show chassis psd on page 483</b>
<b>Output Fields</b>	Table 88 on page 483 lists the output fields for the <b>show chassis psd</b> command. Output fields are listed in the approximate order in which they appear.

**Table 88: show chassis psd Output Fields**

Field Name	Field Description
<b>Slot Description</b>	PSD identification.
<b>State</b>	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>
<b>Uptime</b>	Length of time that the PSD has been up and running.

## Sample Output

```

show chassis psd {master}
user@host> show chassis psd
Slot Description      State      Uptime
1                    Online    12 hours, 19 minutes, 51 seconds
2                    Online    2 hours, 18 minutes, 17 seconds
3                    Online    12 hours, 19 minutes, 51 seconds

```

## show chassis redundancy feb

<b>Syntax</b>	show chassis redundancy feb <errors> <redundancy-group <i>group-name</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 8.2.
<b>Description</b>	(M120 routers only) Display information about the status of configured Forwarding Engine Board (FEB) redundancy groups.
<b>Options</b>	<p>none—Display information about the status of all configured FEB redundancy groups.</p> <p>redundancy-group <i>group-name</i>—(Optional) Display information about the specified configured redundancy group.</p> <p>errors—(Optional) Display information about any errors encountered on the components in configured redundancy groups or on links between a FEB and a Flexible PIC Concentrator (FPC).</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p>show chassis redundancy feb on page 485</p> <p>show chassis redundancy feb redundancy-group grp1 on page 485</p> <p>show chassis redundancy feb redundancy-group grp0 errors on page 485</p>
<b>Output Fields</b>	Table 89 on page 484 lists the output fields for the <b>show chassis redundancy feb</b> command. Output fields are listed in the approximate order in which they appear.

**Table 89: show chassis redundancy feb Output Fields**

Field name	Field Description
<b>Group</b>	Name of configured redundancy group.
<b>FEB</b>	Slot number of each FEB included in redundancy groups.
<b>State</b>	State of each FEB: <ul style="list-style-type: none"> <li>• <b>Online</b>—FEB is online and running.</li> <li>• <b>Offline</b>—FEB is powered down.</li> </ul>
<b>Priority</b>	(Standard and <b>redundancy-group</b> option) Status of FEB in the redundancy group: <b>Backup</b> , <b>Primary</b> , or null.
<b>Connected FPCs</b>	(Standard and <b>redundancy-group</b> option) Slot number of each FPC connected to the FEB. The status <b>Check</b> is displayed when an error might have occurred.

Table 89: show chassis redundancy feb Output Fields (*continued*)

Field name	Field Description
Redundancy State	(Standard and <b>redundancy-group</b> option) Status of the FEB: <ul style="list-style-type: none"> <li>• <b>Active</b>—FEB is currently active.</li> <li>• <b>Ready</b>—Backup FEB is ready for a switchover</li> <li>• <b>Not Ready</b>—Backup FEB is not ready for a switchover.</li> </ul>
Auto-failover	(Standard and <b>redundancy-group</b> option) Automatic failover status of redundancy group: <b>Enabled</b> or <b>Disabled</b> .
Switch-reason	(Standard and <b>redundancy-group</b> option) Reason a switchover occurred to the backup FEB in the redundancy group.
Hard error: Yes	( <b>errors</b> option only) Displayed when a hard error occurs on a FEB.
FPC	( <b>errors</b> option only) Slot number and status of FPC: <b>link ok</b> or <b>link error</b> .
Fabric plane	( <b>errors</b> option only) Slot number and status of fabric plane.

### Sample Output

```

show chassis redundancy feb user@host> show chassis redundancy feb
Group:          cfpc
FEB  State      Priority  Connected FPCs  Redundancy state
0    Offline     Backup
1    Online      5        Active
Auto-failover: Enabled
Group:          grp0
FEB  State      Priority  Connected FPCs  Redundancy state
3    Offline     Backup
5    Online      Primary  0        Active
Auto-failover: Enabled

show chassis redundancy feb user@host> show chassis redundancy feb redundancy-group grp1
redundancy-group grp1 Group: grp1
FEB  State      Priority  Connected FPC(s)  Redundancy state
0    Online     Backup   5                Active
3    Online     Primary  3                Active
5    Online     Primary
Auto-failover: Enabled
Switch-reason: Switchover from CLI

show chassis redundancy feb user@host> show chassis redundancy feb redundancy-group grp0 errors
redundancy-group grp0 errors Group: grp0
FEB: 0    State: Online
FPC 0 link OK
Fabric plane 0 OK
Fabric plane 1 OK
Fabric plane 2 OK
Fabric plane 3 OK
FEB: 1    State: Online
FPC 0 link OK
Fabric plane 0 OK

```

```
Fabric plane 1 OK
Fabric plane 2 OK
Fabric plane 3 OK
FEB: 2    State: Online
FPC 2 link OK
Fabric plane 0 OK
Fabric plane 1 OK
Fabric plane 2 OK
Fabric plane 3 OK
FEB: 3    State: Online
FPC 3 link OK
Fabric plane 0 OK
Fabric plane 1 OK
Fabric plane 2 OK
Fabric plane 3 OK
FEB: 4    State: Online
FPC 4 link OK
Fabric plane 0 OK
Fabric plane 1 OK
Fabric plane 2 OK
Fabric plane 3 OK
FEB: 5    State: Online
FPC 5 link OK
Fabric plane 0 OK
Fabric plane 1 OK
Fabric plane 2 OK
Fabric plane 3 OK
```

## show chassis routing-engine

<b>Syntax</b>	show chassis routing-engine <bios   <i>slot</i> >
<b>Syntax (EX Series Switch)</b>	show chassis routing-engine < <i>slot</i> >
<b>Syntax (TX Matrix Router)</b>	show chassis routing-engine <bios   <i>slot</i> > < <i>lcc number</i>   <i>scc</i> >
<b>Syntax (TX Matrix Plus Router)</b>	show chassis routing-engine <bios   <i>slot</i> > < <i>lcc number</i>   <i>sfc number</i> >
<b>Syntax (QFX Series)</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 the QFX Series.
<b>Description</b>	Display the status of the Routing Engine.
<b>Options</b>	<p>none—Display information about one or more Routing Engines. On a TX Matrix router, display information about all Routing Engines on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display information about all Routing Engines on the TX Matrix Plus router and its attached T1600 routers.</p> <p>bios—(Optional) Display the basic input/output system (BIOS) firmware version.</p> <p><i>lcc number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display Routing Engine information for a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display Routing Engine information for a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <b><i>number</i></b> with a value from <b>0</b> through <b>3</b>.</p> <p><i>scc</i>—(TX Matrix routers only) (Optional) Display Routing Engine information for the TX Matrix router (or switch-card chassis).</p> <p><i>sfc number</i>—(TX Matrix Plus routers only) (Optional) Display Routing Engine information for the TX Matrix Plus router (or switch-fabric chassis). Replace <b><i>number</i></b> with <b>0</b>.</p> <p><i>slot</i>—(Systems with multiple Routing Engines) (Optional) Display information for an individual Routing Engine. Replace <b><i>slot</i></b> with 0 or 1. For QFX3500 switches, there is only one Routing Engine, so you do not need to specify the slot number.</p>
<b>Required Privilege Level</b>	view

Related Documentation	<ul style="list-style-type: none"> <li>request chassis routing-engine master on page 181</li> </ul>
List of Sample Output	<ul style="list-style-type: none"> <li>show chassis routing-engine (M5 Router) on page 489</li> <li>show chassis routing-engine (M10 Router) on page 489</li> <li>show chassis routing-engine (M20 Router) on page 490</li> <li>show chassis routing-engine (M40 Router) on page 490</li> <li>show chassis routing-engine (M120 Router) on page 491</li> <li>show chassis routing-engine (M160 Router) on page 491</li> <li>show chassis routing-engine (MX240 Router) on page 492</li> <li>show chassis routing-engine (MX480 Router) on page 492</li> <li>show chassis routing-engine (MX960 Router) on page 493</li> <li>show chassis routing-engine (TX Matrix Router) on page 493</li> <li>show chassis routing-engine lcc (TX Matrix Router) on page 494</li> <li>show chassis routing-engine bios (TX Matrix Router) on page 495</li> <li>show chassis routing-engine (TX Matrix Plus Router) on page 495</li> <li>show chassis routing-engine lcc (TX Matrix Plus Router) on page 496</li> <li>show chassis routing-engine bios (TX Matrix Plus Router) on page 497</li> <li>show chassis routing-engine (QFX Series) on page 497</li> </ul>
Output Fields	Table 90 on page 488 lists the output fields for the <code>show chassis routing-engine</code> command. Output fields are listed in the approximate order in which they appear.

Table 90: 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.
DRAM	Total DRAM available to the Routing Engine's processor.
Memory utilization	Percentage of Routing Engine memory being used.
CPU utilization	Information about the Routing Engine's CPU utilization: <ul style="list-style-type: none"> <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>
Model	Routing Engine model number.
Serial ID	(Systems with multiple Routing Engines) Identification number of the Routing Engine in this slot.



Table 90: show chassis routing-engine Output Fields (*continued*)

Field Name	Field Description
Start time	Time at which the Routing Engine started running.
Uptime	How long the Routing Engine has been running.
Last reboot reason	Reason for last reboot, including: <ul style="list-style-type: none"> <li>• <b>power cycle/failure</b>—Reboot due to the switching off of the power button behind the Routing Engine, not the power button on the chassis.</li> <li>• <b>watchdog</b>—Reboot due to a hardware watchdog.</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.</li> <li>• <b>misc hardware reason</b>—Reboot due to miscellaneous hardware reasons.</li> <li>• <b>thermal shutdown</b>—Reboot due to the router reaching a critical temperature point at which it is unsafe to continue operations.</li> <li>• <b>hard disk failure</b>—Reboot due to a hard disk failure.</li> <li>• <b>reset from debugger</b>—Reboot due to reset from the debugger.</li> <li>• <b>chassis control reset</b>—Reboot due to a chassis control reset.</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.</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
routing-engine (M120 Router) user@host> show chassis routing-engine
Routing Engine status:
Slot 0:
  Current state          Master
  Election priority      Master (default)
  Temperature            46 degrees C / 114 degrees F
  CPU temperature        44 degrees C / 111 degrees F
  DRAM                   2048 MB
  Memory utilization     18 percent
  CPU utilization:
    User                 0 percent
    Background           0 percent
    Kernel               5 percent
    Interrupt            0 percent
    Idle                 95 percent
  Model                  RE-A-1000
  Serial ID              1000621154
  Start time             2006-10-31 17:10:05 PST
  Uptime                 14 minutes, 31 seconds
  Last reboot reason     Router rebooted after a normal shutdown
  Load averages:        1 minute   5 minute  15 minute
                        0.02       0.07     0.07
Routing Engine status:
Slot 1:
  Current state          Backup
  Election priority      Backup (default)
  Temperature            45 degrees C / 113 degrees F
  CPU temperature        42 degrees C / 107 degrees F
  DRAM                   2048 MB
  Memory utilization     15 percent
  CPU utilization:
    User                 0 percent
    Background           0 percent
    Kernel               0 percent
    Interrupt            0 percent
    Idle                 100 percent
  Model                  RE-A-1000
  Serial ID              1000621151
  Start time             2006-10-31 17:10:04 PST
  Uptime                 14 minutes, 30 seconds
  Last reboot reason     Router rebooted after a normal shutdown

```

```

show chassis routing-engine
routing-engine (M160 Router) user@host> show chassis routing-engine
Routing Engine status:
Slot 0:
  Current state          Master
  Election priority      Master (default)
  Temperature            43 degrees C / 109 degrees F
  DRAM                   2048 MB

```

```

Memory utilization      11 percent
CPU utilization:
  User                  1 percent
  Background            0 percent
  Kernel                2 percent
  Interrupt             0 percent
  Idle                  97 percent
Model                  RE-3.0
Serial ID              210865700403
Start time             2003-12-23 12:25:55 PST
Uptime                 6 days, 22 hours, 33 minutes, 24 seconds
Last reboot reason     Router rebooted after a normal shutdown
Load averages:         1 minute  5 minute 15 minute
                       0.24      0.13    0.04

Routing Engine status:
Slot 1:
  Current state         Backup
  Election priority     Backup (default)
  Temperature           40 degrees C / 104 degrees F
  DRAM                  2048 MB
  Memory utilization    9 percent
  CPU utilization:
    User                0 percent
    Background          0 percent
    Kernel              0 percent
    Interrupt           0 percent
    Idle                100 percent
  Model                 RE-3.0
  Serial ID             210865700332
  Start time            2003-12-23 12:25:55 PST
  Uptime                6 days, 22 hours, 33 minutes, 21 seconds
  Last reboot reason    Router rebooted after a normal shutdown

show chassis routing-engine user@host> show chassis routing-engine
routing-engine Routing Engine status:
(MX240 Router) Slot 0:
  Current state         Backup
  Election priority     Master (default)
  Temperature           40 degrees C / 104 degrees F
  CPU temperature       47 degrees C / 116 degrees F
  DRAM                  3584 MB
  Memory utilization    7 percent
  CPU utilization:
    User                0 percent
    Background          0 percent
    Kernel              0 percent
    Interrupt           0 percent
    Idle                100 percent
  Model                 RE-S-2000
  Serial ID             1000703522
  Start time            2007-12-19 10:35:40 PST
  Uptime                16 days, 3 hours, 15 minutes, 23 seconds
  Last reboot reason    Router rebooted after a normal shutdown

show chassis routing-engine user@host> show chassis routing-engine
routing-engine Routing Engine status:
(MX480 Router) 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 (TX  
Matrix Router)**

```

user@host> show chassis routing-engine
scc-re0:
-----
Routing Engine status:
Slot 0:
  Current state      Master
  Election priority  Master (default)
  Temperature        34 degrees C / 93 degrees F
  CPU temperature    33 degrees C / 91 degrees F
  DRAM               2048 MB
  Memory utilization 12 percent
  CPU utilization:
    User             0 percent
    Background       0 percent
    Kernel           2 percent
    Interrupt        0 percent
    Idle             98 percent
  Model              RE-4.0
  Serial ID          P11123900153
  Start time         2004-08-05 18:42:05 PDT
  Uptime             9 days, 22 hours, 49 minutes, 50 seconds
  Last reboot reason Router rebooted after a normal shutdown
  Load averages:    1 minute   5 minute   15 minute
                    0.00      0.08      0.07

```

```
lcc0-re0:
```

```
-----
Routing Engine status:
```

```
Slot 0:
```

```

Current state           Master
Election priority       Master (default)
Temperature             33 degrees C / 91 degrees F
CPU temperature         30 degrees C / 86 degrees F
DRAM                   2048 MB
Memory utilization      12 percent
CPU utilization:
  User                  0 percent
  Background            0 percent
  Kernel                1 percent
  Interrupt             0 percent
  Idle                  98 percent
Model                  RE-3.0
Serial ID              210865700363
Start time             2004-08-05 18:42:05 PDT
Uptime                 9 days, 22 hours, 48 minutes, 20 seconds
Last reboot reason     Router rebooted after a normal shutdown
Load averages:         1 minute   5 minute   15 minute
                       0.00       0.02       0.00
```

```
lcc2-re0:
```

```
-----
Routing Engine status:
```

```
Slot 0:
```

```

Current state           Master
Election priority       Master (default)
Temperature             34 degrees C / 93 degrees F
CPU temperature         35 degrees C / 95 degrees F
DRAM                   2048 MB
Memory utilization      12 percent
CPU utilization:
  User                  0 percent
  Background            0 percent
  Kernel                2 percent
  Interrupt             0 percent
  Idle                  98 percent
Model                  RE-4.0
Serial ID              P11123900126
Start time             2004-08-05 18:42:05 PDT
Uptime                 9 days, 22 hours, 49 minutes, 4 seconds
Last reboot reason     Router rebooted after a normal shutdown
Load averages:         1 minute   5 minute   15 minute
                       0.01       0.01       0.0
```

```

show chassis routing-engine lcc (TX
Matrix Router) user@host> show chassis routing-engine 0 lcc 0
lcc0-re0:
```

```
-----
Routing Engine status:
```

```
Slot 0:
```

```

Current state           Master
Election priority       Master (default)
Temperature             33 degrees C / 91 degrees F
CPU temperature         30 degrees C / 86 degrees F
DRAM                   2048 MB
Memory utilization      12 percent
CPU utilization:
```

```

User                0 percent
Background          0 percent
Kernel              1 percent
Interrupt           0 percent
Idle                98 percent
Model               RE-3.0
Serial ID            210865700363
Start time          2004-08-05 18:42:05 PDT
Uptime              7 days, 22 hours, 49 minutes, 6 seconds
Last reboot reason   Router rebooted after a normal shutdown
Load averages:      1 minute   5 minute   15 minute
                    0.00       0.00       0.00

```

**show chassis routing-engine bios (TX Matrix Router)**

```

user@host> show chassis routing-engine bios
scc-re0:

```

```

-----
Routing Engine BIOS Version: V1.0.0
lcc0-re0:

```

```

-----
Routing Engine BIOS Version: V1.0.17
lcc2-re0:

```

```

-----
Routing Engine BIOS Version: V1.0.0

```

**show chassis routing-engine (TX Matrix Plus Router)**

```

user@host> show chassis routing-engine
sfc0-re0:

```

```

-----
Routing Engine status:

```

Slot 0:

```

Current state          Master
Election priority       Master (default)
Temperature             27 degrees C / 80 degrees F
CPU temperature         42 degrees C / 107 degrees F
DRAM                   3327 MB
Memory utilization      12 percent
CPU utilization:
  User                  0 percent
  Background            0 percent
  Kernel                2 percent
  Interrupt             0 percent
  Idle                  98 percent
Model                  RE-TXP-SFC
Serial ID               737A-1024
Start time              2009-05-11 17:39:49 PDT
Uptime                  3 hours, 45 minutes, 25 seconds
Last reboot reason      Router rebooted after a normal shutdown.
Load averages:          1 minute   5 minute   15 minute
                        0.00       0.00       0.00

```

```

Routing Engine status:

```

Slot 1:

```

Current state          Backup
Election priority       Backup (default)
Temperature             29 degrees C / 84 degrees F
CPU temperature         43 degrees C / 109 degrees F
DRAM                   3327 MB
Memory utilization      11 percent
CPU utilization:
  User                  0 percent
  Background            0 percent
  Kernel                0 percent
  Interrupt             0 percent

```

```

Idle 100 percent
Model RE-TXP-SFC
Serial ID 737A-1024
Start time 2009-05-11 17:08:54 PDT
Uptime 4 hours, 16 minutes, 52 seconds
Last reboot reason 0x1:power cycle/failure

```

```
lcc0-re0:
```

```
-----
Routing Engine status:
```

```
Slot 0:
```

```

Current state Master
Election priority Master (default)
Temperature 30 degrees C / 86 degrees F
CPU temperature 43 degrees C / 109 degrees F
DRAM 3327 MB
Memory utilization 9 percent
CPU utilization:
  User 0 percent
  Background 0 percent
  Kernel 2 percent
  Interrupt 0 percent
  Idle 98 percent
Model RE-TXP-LCC
Serial ID 737F-1024
Start time 2009-05-11 17:40:32 PDT
Uptime 3 hours, 44 minutes, 51 seconds
Last reboot reason Router rebooted after a normal shutdown.
Load averages: 1 minute 5 minute 15 minute
                  0.00 0.00 0.00

```

```
Routing Engine status:
```

```
Slot 1:
```

```

Current state Backup
Election priority Backup (default)
Temperature 30 degrees C / 86 degrees F
CPU temperature 43 degrees C / 109 degrees F
DRAM 3327 MB
Memory utilization 9 percent
CPU utilization:
  User 0 percent
  Background 0 percent
  Kernel 0 percent
  Interrupt 0 percent
  Idle 100 percent
Model RE-TXP-LCC
Serial ID 737F-1024
Start time 2009-05-06 17:31:32 PDT
Uptime 5 days, 3 hours, 54 minutes, 19 seconds
Last reboot reason Router rebooted after a normal shutdown.

```

```

show chassis
routing-engine lcc (TX
Matrix Plus Router)

```

```
user@host> show chassis routing-engine 0 lcc 0
```

```
lcc0-re0:
```

```
-----
Routing Engine status:
```

```
Slot 0:
```

```

Current state Master
Election priority Master (default)
Temperature 30 degrees C / 86 degrees F
CPU temperature 43 degrees C / 109 degrees F
DRAM 3327 MB
Memory utilization 9 percent

```



```

CPU utilization:
  User          0 percent
  Background    0 percent
  Kernel        2 percent
  Interrupt     0 percent
  Idle          98 percent
Model          RE-TXP-LCC
Serial ID      737F-1024
Start time     2009-05-11 17:40:32 PDT
Uptime        3 hours, 45 minutes, 26 seconds
Last reboot reason Router rebooted after a normal shutdown.
Load averages: 1 minute 5 minute 15 minute
                0.00      0.00      0.00

Routing Engine status:
Slot 1:
  Current state Backup
  Election priority Backup (default)
  Temperature    30 degrees C / 86 degrees F
  CPU temperature 43 degrees C / 109 degrees F
  DRAM           3327 MB
  Memory utilization 9 percent
  CPU utilization:
    User          0 percent
    Background    0 percent
    Kernel        0 percent
    Interrupt     0 percent
    Idle          100 percent
  Model          RE-TXP-LCC
  Serial ID      737F-1024
  Start time     2009-05-06 17:31:32 PDT
  Uptime        5 days, 3 hours, 54 minutes, 59 seconds
  Last reboot reason Router rebooted after a normal shutdown.

show chassis routing-engine bios
(TX Matrix Plus Router)
user@host> show chassis routing-engine bios
sfc0-re0:
-----
Routing Engine BIOS Version: V0.0.Z

1cc0-re0:
-----
Routing Engine BIOS Version: V0.0.N

show chassis routing-engine (QFX Series)
user@switch> show chassis routing-engine
Routing Engine status:
Slot 0:
  Current state Master
  Election priority Master (default)
  DRAM 2820 MB
  Memory utilization 49 percent
  CPU utilization:
    User 1 percent
    Background 0 percent
    Kernel 1 percent
    Interrupt 0 percent
    Idle 97 percent
  Model QFX3500-48S4Q
  Serial ID S/N ED3709
  Uptime 3 days, 4 hours, 29 minutes, 42 seconds
  Last reboot reason 0x200:chassis control reset
  Load averages: 1 minute 5 minute 15 minute
                  0.37 0.26 0.19

```



## show chassis scb

<b>Syntax</b>	show chassis scb
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M40 router only) Display System Control Board (SCB) status information.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show chassis scb on page 500</b>
<b>Output Fields</b>	Table 91 on page 499 lists the output fields for the <b>show chassis scb</b> command. Output fields are listed in the approximate order in which they appear.

**Table 91: show chassis scb Output Fields**

Field Name	Field Description
Temperature	Temperature of the air passing by the SCB, in degrees Celsius.
CPU utilization	Total percentage of CPU being used by the SCB's processor.
Interrupt utilization	Of the total CPU being used by the SCB's processor, the percentage being used for interrupts.
Heap utilization	Percentage of heap space being used by the SCB's processor.
Buffer utilization	Percentage of buffer space being used by the SCB's processor.
DRAM	Total DRAM available to the SCB's processor.
Start time	Time when the SCB started running.
Uptime	How long the SCB has been running.
Internet Processor memory	Information about the memory of the Internet Processor ASIC on the SCB: <ul style="list-style-type: none"> <li>• <b>IP routes</b>—Number of IP routes known to the Internet Processor.</li> <li>• <b>MPLS routes</b>—Number of MPLS routes known to the Internet Processor.</li> <li>• <b>SRAM banks enabled</b>—Which SRAM banks are enabled.</li> <li>• <b>SRAM size</b>—Size of SCB SRAM, in bytes.</li> <li>• <b>SRAM used</b>—Amount of SRAM used, in bytes.</li> <li>• <b>SRAM utilization</b>—Percentage of SRAM used.</li> </ul>

## Sample Output

```
show chassis scb  user@host> show chassis scb
SCB status:
  Temperature:          30 Centigrade
  CPU utilization:      5 percent
  Interrupt utilization: 0 percent
  Heap utilization:     0 percent
  Buffer utilization:    2 percent
  DRAM:                 64 Mbytes
  Start time:           1998-10-28 18:35:46 UTC
  Uptime:               6 minutes, 16 seconds
  Internet Processor memory:
    IP routes:          16
    MPLS routes:        1
    SRAM banks enabled: [ 1 1 1 1 ]
    SRAM size:          4 Mbytes
    SRAM used:          256 bytes
    SRAM utilization:    0 percent
```

## show chassis sfm

<b>Syntax</b>	show chassis sfm <detail < <i>sfm-slot</i> >>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M40e and M160 routers only) Display Switching and Forwarding Module (SFM) status information.
<b>Options</b>	<p>none—Display standard status information about all SFMs.</p> <p>detail—(Optional) Display detailed SFM status information.</p> <p><i>sfm-slot</i>—(Optional) Display status information about the SFM in the specified slot only. For the M40e router, replace <i>sfm-slot</i> with 0 or 1. For the M160 router, replace <i>sfm-slot</i> with a value from 0 through 3.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>request chassis sfm on page 185</li> <li>request chassis sfm master switch on page 186</li> </ul>
<b>List of Sample Output</b>	<p>show chassis sfm (M160 Router) on page 502</p> <p>show chassis sfm detail (M40e Router) on page 502</p> <p>show chassis sfm detail (M160 Router) on page 503</p>
<b>Output Fields</b>	Table 92 on page 501 lists the output fields for the <b>show chassis sfm</b> command. Output fields are listed in the approximate order in which they appear.

Table 92: show chassis sfm Output Fields

Field Name	Field Description	Level of Output
<b>Slot</b>	Slot number.	All levels
<b>State</b>	<p>Status of the SFM. State can be any of the following:</p> <ul style="list-style-type: none"> <li><b>Online</b>—SFM is online and running.</li> <li><b>Online-Standby</b> (M40e router only)—SFM is online, operating as Standby.</li> <li><b>Offline</b>—SFM is powered down.</li> <li><b>Empty</b>—No SFM is present.</li> </ul>	All levels
<b>Reason</b>	If the status is <b>Offline</b> , reason for this state.	All levels
<b>Temp</b>	Temperature of air passing by the SFM, in degrees Celsius.	none specified
<b>CPU Utilization (%)</b>	Information about CPU usage.	none specified

Table 92: show chassis sfm Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Total</b>	Total percentage of the CPU being used by the SFM's processor.	All levels
<b>Interrupt</b>	Of the total CPU being used by the SFM's processor, the percentage being used for interrupts.	All levels
<b>Memory Utilization</b>	Information about memory usage.	none specified
<b>DRAM</b>	Total DRAM available to the SFM's processor, in megabytes (MB).	All levels
<b>Heap</b>	Percentage of heap space (dynamic memory) being used by the SFM's processor. If this number exceeds 80 percent, it might indicate a software problem (memory leak).	All levels
<b>Buffer</b>	Percentage of buffer space being used by the SFM's processor for buffering internal messages.	All levels
<b>SPP Temperature</b>	Temperature of air passing by the Switch Plane Processor card, in degrees Celsius and Fahrenheit	<b>detail</b>
<b>SPR Temperature</b>	Temperature of air passing by the Switch Plane Router card, in degrees Celsius and Fahrenheit.	<b>detail</b>
<b>Total CPU DRAM</b>	Total amount of CPU DRAM being used by the SFM's processor.	<b>detail</b>
<b>Total SSRAM</b>	Total amount of SSRAM being used by the SFM's processor.	<b>detail</b>
<b>Internet processor II</b>	(M160 router only) Processor type.	<b>detail</b>
<b>Start time</b>	Time this SFM became active.	<b>detail</b>
<b>Uptime</b>	How long the SFM has been up and running.	<b>detail</b>
<b>Packet scheduling mode</b>	(M160 router only) Enabled or disabled.	<b>detail</b>

## Sample Output

**show chassis sfm**  
**(M160 Router)**

```
user@host> show chassis sfm
SFM status:
```

Slot	State	Temp (C)	CPU Total	Utilization (%) Interrupt	Memory DRAM (MB)	Utilization (%) Heap	Utilization (%) Buffer
0	Online	39	0	0	64	0	6
1	Online	43	0	0	64	0	6
2	Empty	0	0	0	0	0	0
3	Empty	0	0	0	0	0	0

**show chassis sfm**  
**detail (M40e Router)**

```
user@host> show chassis sfm detail
```

```

Slot 0 information:
  State                Offline
  Reason:              - power configured off
Slot 1 information:
  State                Present
  SPP temperature       0 degrees C / 32 degrees F
  SPR temperature       0 degrees C / 32 degrees F
  Total CPU DRAM        0 MB
  Total SSRAM           0 MB

show chassis sfm    user@host> show chassis sfm detail
detail (M160 Router)
Slot 0 information:
  State                Online
  SPP temperature       37 degrees C / 98 degrees F
  SPR temperature       39 degrees C / 102 degrees F
  Total CPU DRAM        64 MB
  Total SSRAM           8 MB
  Internet Processor II Version 1, Foundry IBM, Part number 9
  Start time:          2004-08-17 09:23:08 PDT
  Uptime:               72 days, 1 hour, 15 minutes, 57 seconds
Slot 1 information:
  State                Online
  SPP temperature       36 degrees C / 96 degrees F
  SPR temperature       37 degrees C / 98 degrees F
  Total CPU DRAM        64 MB
  Total SSRAM           8 MB
  Internet Processor II Version 1, Foundry IBM, Part number 9
  Start time:          2004-08-17 09:23:08 PDT
  Uptime:               72 days, 1 hour, 15 minutes, 57 seconds
Slot 2 information:
  ....
Packet scheduling mode : Disabled

```

## show chassis sibs

<b>Syntax</b>	show chassis sibs
<b>Syntax (TX Matrix Router)</b>	show chassis sibs <fcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show chassis sibs <fcc <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>	(M320 and T Series routers only) Display Switch Interface Boards (SIBs) status information.
<b>Options</b>	<p>none—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, display the SIB status for the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display the SIB status for the TX Matrix Plus router and its attached T1600 routers.</p> <p>fcc <i>number</i>—(TX Matrix and TX Matrix Plus router only) (Optional) On a TX Matrix router, display SIB status information for a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display SIB status information for a specified T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) (Optional) Display SIB status information for the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) (Optional) Display SIB status information for the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>request chassis sib on page 187</li> <li>show chassis spmb sibs on page 517</li> </ul>
<b>List of Sample Output</b>	<p>show chassis sibs (T640 Router) on page 506</p> <p>show chassis sibs (TX Matrix Router) on page 506</p> <p>show chassis sibs (T1600 Router) on page 507</p> <p>show chassis sibs (TX Matrix Plus Router) on page 507</p> <p>show chassis sibs sfc (TX Matrix Plus Router) on page 508</p> <p>show chassis sibs fcc (TX Matrix Plus Router) on page 508</p> <p>show chassis sibs (M320 Router) on page 509</p>
<b>Output Fields</b>	Table 93 on page 505 lists the output fields for the <b>show chassis sibs</b> command. Output fields are listed in the approximate order in which they appear.



Table 93: show chassis sibs Output Fields

Field Name	Field Description
Slot	SIB slot number.
Type	(TX Matrix Plus router only) SIB type.
Uptime	How long the SIB has been up and running.
State	<p>SIB status:</p> <ul style="list-style-type: none"> <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 a T640 router are connected and trained but are either not online or are spare, because the plane on the TX Matrix router (or switch-card chassis) or the TX Matrix Plus router (or switch-fabric chassis) is still offline.</li> <li>• <b>Disconnected</b>—If a SIB on the TX Matrix router (or switch-card chassis) or TX Matrix Plus router (or switch-fabric chassis) goes offline, then the SIBs on all other T640 routers of the same plane are disconnected.</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> <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 the <b>Check</b> state because of the following reasons: <ul style="list-style-type: none"> <li>• SIB is not inserted properly.</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.</li> <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</li> </ul> </li> </ul> </li> </ul>

Table 93: show chassis sibs Output Fields (*continued*)

Field Name	Field Description
	<p>traffic. The <b>show chassis fabric fpcs</b> command shows <b>Link error</b> as the status for this link.</p> <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 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 (0 destination errors)</b>.</li> <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><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>

## 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 (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          Uptime
0     Offline      SIB F13      --- Offlined by cli command ---
1     Online       SIB F13      4 hours, 1 minute, 39 seconds
2     Invalid
3     Empty
4     Empty
5     Invalid
6     Empty
7     Empty
8     Empty
9     Empty
10    Invalid
11    Empty
12    Empty
13    Invalid
14    Invalid
15    Invalid
0/0   Online       SIB F2S      4 hours, 2 minutes, 17 seconds
0/2   Online       SIB F2S      4 hours, 2 minutes, 15 seconds
0/4   Online       SIB F2S      4 hours, 2 minutes, 14 seconds
0/6   Online       SIB F2S      4 hours, 2 minutes, 13 seconds
1/0   Online       SIB F2S      4 hours, 2 minutes, 25 seconds
1/2   Online       SIB F2S      4 hours, 2 minutes, 24 seconds
1/4   Online       SIB F2S      4 hours, 2 minutes, 23 seconds
1/6   Online       SIB F2S      4 hours, 2 minutes, 22 seconds
2/0   Online       SIB F2S      4 hours, 2 minutes, 20 seconds
2/2   Online       SIB F2S      4 hours, 2 minutes, 19 seconds
2/4   Online       SIB F2S      4 hours, 2 minutes, 18 seconds
2/6   Empty
3/0   Empty
3/2   Empty
3/4   Empty
3/6   Empty
4/0   Empty

```

```

4/2  Empty
4/4  Empty
4/6  Empty

```

```
lcc0-re0:
```

```

-----
Slot  State                      Uptime
  0    Check (destination errors)  2 hours, 23 minutes, 2 seconds
  1    Offline                    --- Offlined by cli command ---
  2    Check (destination errors)  2 hours, 23 minutes, 3 seconds
  3    Check (destination errors)  2 hours, 23 minutes, 3 seconds
  4    Check (destination errors)  2 hours, 23 minutes, 3 seconds

```

use "show chassis fabric fpcs" and "show chassis fabric sibs" for more details

**show chassis sibs sfc**  
(TX Matrix Plus  
Router)

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

```

-----
Slot  State                      Type      Uptime
  0    Online                    SIB F13   4 hours, 15 minutes, 29 seconds
  1    Offline                    --- Offlined by cli command ---
  2    Invalid
  3    Empty
  4    Empty
  5    Invalid
  6    Empty
  7    Empty
  8    Empty
  9    Empty
 10    Invalid
 11    Empty
 12    Empty
 13    Invalid
 14    Invalid
 15    Invalid
0/0    Online                    SIB F2S   4 hours, 15 minutes, 50 seconds
0/2    Online                    SIB F2S   4 hours, 15 minutes, 48 seconds
0/4    Online                    SIB F2S   4 hours, 15 minutes, 47 seconds
0/6    Online                    SIB F2S   4 hours, 15 minutes, 46 seconds
1/0    Online                    SIB F2S   4 hours, 15 minutes, 58 seconds
1/2    Online                    SIB F2S   4 hours, 15 minutes, 57 seconds
1/4    Online                    SIB F2S   4 hours, 15 minutes, 56 seconds
1/6    Online                    SIB F2S   4 hours, 15 minutes, 55 seconds
2/0    Online                    SIB F2S   4 hours, 15 minutes, 53 seconds
2/2    Online                    SIB F2S   4 hours, 15 minutes, 52 seconds
2/4    Online                    SIB F2S   4 hours, 15 minutes, 51 seconds
2/6    Empty
3/0    Empty
3/2    Empty
3/4    Empty
3/6    Empty
4/0    Empty
4/2    Empty
4/4    Empty
4/6    Empty

```

**show chassis sibs lcc**  
(TX Matrix Plus  
Router)

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

```

-----
Slot  State                      Uptime
  0    SFC error                  3 seconds

```

1	Offline	--- Offlined by cli command ---
2	Empty	
3	Online	1 hour, 18 minutes, 18 seconds
4	Online	1 hour, 18 minutes, 3 seconds

**show chassis sibs**  
(M320 Router)

```
user@host> show chassis sibs
```

0	Online	1 hour, 18 minutes, 3 seconds
1	Offline	--- Offlined by cli command ---
2	Online	1 hour, 18 minutes, 18 seconds
3	Online	1 hour, 18 minutes, 3 seconds

## show chassis spmb

<b>Syntax</b>	show chassis spmb
<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.
<b>Description</b>	(T Series routers only) Display Switch Processor Mezzanine Board (SPMB) status information.
<b>Options</b>	<p>none—(TX Matrix and TX Matrix Plus 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 T1600 routers.</p> <p><i>lcc number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display information about the SPMB on a specified T640 router (or 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 T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <b><i>number</i></b> with a value from <b>0</b> through <b>3</b>.</p> <p><i>scc</i>—(TX Matrix routers only) (Optional) Display information about the SPMB on the TX Matrix router (or switch-card chassis).</p> <p><i>sfc number</i>—(TX Matrix Plus routers only) (Optional) Display information about the SPMB on the TX Matrix Plus router (or switch-fabric chassis). Replace <b><i>number</i></b> with <b>0</b>.</p> <p><i>sibs</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) Display information about the SIBS on the TX Matrix router (or switch-card chassis) or TX Matrix Plus routers (or switch-fabric chassis). The <b>sibs</b> option has the following sub-options:</p> <p><b><i>lcc number</i></b> (TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display information about the SIBs on a specified T640 router (or 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 T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <b><i>number</i></b> with a value from <b>0</b> through <b>3</b>.</p> <p><b><i>scc number</i></b>—(TX Matrix routers only) (Optional) Display information about the SIBs on the TX Matrix router (or switch-card chassis). Replace <b><i>number</i></b> with <b>0</b>.</p>

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

**Required Privilege Level** view

**Related Documentation**

- request chassis sib on page 187
- show chassis spmb sibs on page 517

**List of Sample Output**

show chassis spmb on page 512  
 show chassis spmb lcc (TX Matrix Router) on page 512  
 show chassis spmb scc (TX Matrix Router) on page 512  
 show chassis spmb (T1600 Router) on page 512  
 show chassis spmb sibs (T1600 Router) on page 512  
 show chassis spmb (TX Matrix Plus Router) on page 513  
 show chassis spmb lcc (TX Matrix Plus Router) on page 514  
 show chassis spmb scc (TX Matrix Plus Router) on page 515  
 show chassis spmb sibs (TX Matrix Plus Router) on page 515

**Output Fields** Table 94 on page 511 lists the output fields for the **show chassis spmb** command. Output fields are listed in the approximate order in which they appear.

**Table 94: 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 lcc user@host> show chassis spmb lcc 0
(TX Matrix Router) 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 user@host> show chassis spmb scc
(TX Matrix Router) 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 user@host> show chassis spmb
(T1600 Router) 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 user@host> show chassis spmb sibs
sibs (T1600 Router) 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 user@host> show chassis spmb lcc 2
(TX Matrix Plus      lcc2-re1:
Router)
```

```
-----
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**      user@host> **show chassis spmb sfc 0**  
**(TX Matrix Plus**              sfc0-re0:

**Router)**

```
-----
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**      user@host> **show chassis spmb sibs**  
**sibs (TX Matrix Plus**      sfc0-re0:

**Router)**

```
-----
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 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>none—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, display the SIB status for the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display the SIB status for the TX Matrix Plus router and its attached T1600 routers.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display SIB status information for a specified T640 router (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display SIB status information for a specified T1600 router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix router only) (Optional) Display SIB status information for the TX Matrix router (or switch-card chassis).</p> <p>sfc—(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.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>request chassis spmb restart on page 193</li> </ul>
<b>List of Sample Output</b>	<p>show chassis spmb sibs (T320 Router) on page 518</p> <p>show chassis-spmb-sibs (T1600 Router) on page 518</p> <p>show chassis spmb sibs (TX Matrix Router) on page 519</p> <p>show chassis spmb sibs lcc (TX Matrix Router) on page 519</p> <p>show chassis spmb sibs scc (TX Matrix Router) on page 519</p> <p>show chassis spmb sibs (TX Matrix Plus Router) on page 519</p> <p>show chassis spmb sibs sfc (TX Matrix Plus Router) on page 520</p>

**Output Fields** Table 95 on page 518 lists the output fields for the **show chassis spmb sibs** command. Output fields are listed in the approximate order in which they appear.

**Table 95: show chassis spmb sibs Output Fields**

Field Name	Field Description
<b>Slot</b>	<p>SIB slot number:</p> <ul style="list-style-type: none"> <li>T640 router, T1600 router or TX Matrix router, and TX Matrix Plus router—0 through 4</li> <li>T320 router—0 through 2</li> </ul>
<b>State</b>	<p>SIB status:</p> <ul style="list-style-type: none"> <li><b>Disconnected</b>—On a routing matrix composed of a TX Matrix router and T640 routers, if a SIB on the SCC becomes <b>Offline</b> then the SIBs on all other LCCs of the same plane get disconnected. Likewise, on a routing matrix composed of a TX Matrix Plus router and T1600 routers, if a SIB on the SFC becomes <b>Offline</b> then the SIBs on all other LCCs of the same plane get disconnected.</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 (TX Matrix Router)**      user@host> show chassis spmb sibs

```

Slot  State
0     Online
1     Online
2     Empty
3     Online
4     Offline

```

**show chassis spmb sibs lcc (TX Matrix Router)**      user@host> show chassis spmb sibs lcc 0  
lcc0-re0:

```

-----
Slot  State          Uptime
0     Empty
1     Empty
2     Empty
3     Disconnected    8 days, 48 minutes, 58 seconds
4     Online           8 days, 48 minutes, 57 seconds

```

**show chassis spmb sibs scc (TX Matrix Router)**      user@host> show chassis spmb sibs scc  
scc-re0:

```

-----
Slot  State          Uptime
0     Empty
1     Empty
2     Empty
3     Offline
4     Online           8 days, 54 minutes, 1 second

```

**show chassis spmb sibs (TX Matrix Plus Router)**      user@host> show chassis spmb sibs  
sfc0-re0:

```

-----
Slot  State          Type          Uptime
0     Online          SIB F13      1 hour, 52 minutes, 55 seconds
1     Empty
2     Invalid
3     Online          SIB F13      1 hour, 53 minutes, 3 seconds
4     Empty
5     Invalid
6     Empty
7     Empty
8     Empty
9     Empty
10    Invalid
11    Empty
12    Empty
13    Invalid
14    Invalid
15    Invalid
0/0   Online          SIB F2S      1 hour, 53 minutes, 2 seconds
0/2   Online          SIB F2S      1 hour, 53 minutes, 1 second
0/4   Online          SIB F2S      1 hour, 52 minutes, 59 seconds
0/6   Online          SIB F2S      1 hour, 52 minutes, 58 seconds
1/0   Online          SIB F2S      1 hour, 53 minutes, 10 seconds
1/2   Online          SIB F2S      1 hour, 53 minutes, 8 seconds
1/4   Online          SIB F2S      1 hour, 53 minutes, 7 seconds
1/6   Online          SIB F2S      1 hour, 53 minutes, 6 seconds
2/0   Empty

```

```

2/2 Empty
2/4 Empty
2/6 Empty
3/0 Empty
3/2 Empty
3/4 Empty
3/6 Empty
4/0 Empty
4/2 Empty
4/4 Empty
4/6 Empty

```

```
lcc0-re0:
```

```

-----
Slot  State          Uptime
0   Online          1 hour, 53 minutes, 1 second
1   Online          1 hour, 53 minutes, 3 seconds
2   Empty
3   Empty
4   Empty

```

```
lcc1-re1:
```

```

-----
Slot  State          Uptime
0   Online          1 hour, 47 minutes, 13 seconds
1   Online          1 hour, 47 minutes, 15 seconds
2   Empty
3   Empty
4   Empty

```

```

show chassis spmb
sibs sfc (TX Matrix
Plus Router)

```

```

user@host> show chassis spmb sibs sfc 0
sfc0-re0:

```

```

-----
Slot 0 information:
  State                Online
  Total CPU Utilization 16%
  Interrupt CPU Utilization 0%
  Memory Heap Utilization 0%
  Buffer Utilization    24%
  Start time:          2009-06-17 20:59:47 PDT
  Uptime:              1 hour, 56 minutes, 30 seconds
Slot 1 information:
  State                Online - Standby
  Total CPU Utilization 0%
  Interrupt CPU Utilization 0%
  Memory Heap Utilization 0%
  Buffer Utilization    24%
  Start time:          2009-06-17 20:59:48 PDT
  Uptime:              1 hour, 56 minutes, 29 seconds

```



## show chassis ssb

<b>Syntax</b>	show chassis ssb <slot>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M20 routers only) Display status information about the System and Switch Board (SSB).
<b>Options</b>	<p>none—Display information about all SSBs.</p> <p>slot—(Optional) Display information about the SSB in the specified slot. 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>request chassis ssb master switch on page 194</li> </ul>
<b>List of Sample Output</b>	show chassis ssb on page 522
<b>Output Fields</b>	Table 96 on page 521 lists the output fields for the <b>show chassis ssb</b> command. Output fields are listed in the approximate order in which they appear.

**Table 96: show chassis ssb Output Fields**

Field Name	Field Description
<b>Failover</b>	Number of times mastership has changed.
<b>Slot</b>	SSB slot number.
<b>State</b>	<p>Current state of the SSB in this slot. State can be any one of the following:</p> <ul style="list-style-type: none"> <li><b>Master</b>—SSB is online, operating as master.</li> <li><b>Backup</b>—SSB running as backup.</li> <li><b>Empty</b>—No SSB is present.</li> </ul>
<b>Temperature</b>	Temperature of the air passing by the SSB, in degrees Celsius.
<b>CPU utilization</b>	Total percentage of the CPU being used by the SSB's processor.
<b>Interrupt utilization</b>	Of the total CPU being used by the SSB's processor, the percentage being used for interrupts.
<b>Heap utilization</b>	Percentage of heap space being used by the SSB's processor.
<b>Buffer utilization</b>	Percentage of buffer space being used by the SSB's processor.
<b>DRAM</b>	Total DRAM available to the SSB's processor.

Table 96: show chassis ssb Output Fields (*continued*)

Field Name	Field Description
Start time	Time when the SSB started running.
Uptime	How long the SSB has been up and running.

## Sample Output

```
show chassis ssb user@host> show chassis ssb
SSB status:
  Failover: 0 time
  Slot 0:
    State: Master
    Temperature: 33 Centigrade
    CPU utilization: 0 percent
    Interrupt utilization: 0 percent
    Heap utilization: 0 percent
    Buffer utilization: 6 percent
    DRAM: 64 Mbytes
    Start time: 1999-01-15 22:05:36 UTC
    Uptime: 21 hours, 21 minutes, 22 seconds
...
```

## show chassis synchronization

<b>Syntax</b>	show chassis synchronization <extensive> <backup   master>
<b>Release Information</b>	Command introduced in Junos OS Release 7.6 for M320 routers. Command introduced in Junos OS Release 8.3 for M40e routers. Command introduced in Junos OS Release 9.3 for M120 routers. Command introduced in Junos OS Release 10.2 for T320, T640, and T1600 routers.
<b>Description</b>	(M320, M40e, M120, T320, T640, and T1600 routers only) Display information about the external clock source currently used for chassis synchronization.
<b>Options</b>	extensive—(Optional) Display clock synchronization information in detail.  backup—(Optional) Display clock synchronization information about the backup clock.  master— (Optional) Display clock synchronization information about the master clock.
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>request chassis synchronization switch on page 196</li> </ul>
<b>List of Sample Output</b>	show chassis synchronization on page 524 show chassis synchronization master on page 524 show chassis synchronization backup on page 525 show chassis synchronization extensive on page 525 show chassis synchronization (T320, T640, and T1600 Routers) on page 525
<b>Output Fields</b>	Table 97 on page 523 lists the output fields for the <code>show chassis synchronization</code> command. Output fields are listed in the approximate order in which they appear.

**Table 97: show chassis synchronization Output Fields**

Field Name	Field Description
<b>Current state</b>	Indicates current status of external clock sources: <ul style="list-style-type: none"> <li><b>backup</b>—Source is currently the backup clock source.</li> <li><b>master</b>—Source is currently the master clock source.</li> </ul>
<b>Current clock state</b>	Indicates current source of external synchronization: <ul style="list-style-type: none"> <li><b>internal</b>—Source is providing its own clocking.</li> <li><b>locked to master CB</b>—(M320, M40e, and M120 routers) Source is locked to master clock source.</li> <li><b>locked to master SCG</b>—(T320, T640, and T1600 routers) Source is locked to master clock source.</li> </ul>
<b>Selected for</b>	Number of seconds this clock has been the master or backup clock source.

Table 97: show chassis synchronization Output Fields (*continued*)

Field Name	Field Description
<b>Selected since</b>	Time stamp for establishment as master or backup clock source.
<b>Deviation (in ppm)</b>	Difference in clock timing, in parts per million (ppm).
<b>Last deviation (in ppm)</b>	Previous difference in clock timing, if any, in ppm.
<b>Configured sources</b>	Information of clock sources eligible for selection as master clock.
<b>Source</b>	Information following concerns external source A or B.
<b>Priority</b>	Indicates priority of external clock sources: <ul style="list-style-type: none"> <li>• <b>primary</b>—Source is a primary reference.</li> <li>• <b>secondary</b>—Source is a secondary reference.</li> </ul>
<b>Deviation (in ppm)</b>	Current difference in clock timing, in ppm: <ul style="list-style-type: none"> <li>• <b>measuring</b>—Establishing source deviation.</li> <li>• <b>number</b>—Deviation in ppm.</li> </ul>
<b>Last deviation (in ppm)</b>	Previous difference in clock timing, in ppm: <ul style="list-style-type: none"> <li>• <b>number</b>—Deviation in ppm.</li> </ul>
<b>Status</b>	Indicates status of external sources: <ul style="list-style-type: none"> <li>• <b>present</b>—Source is configured and present.</li> <li>• <b>qualified</b>—Source is eligible for synchronization source.</li> </ul>

## Sample Output

```

show chassis synchronization user@host> show chassis synchronization
Clock Synchronization Status :
  Clock module on CB 0
    Current state           : master
    Current clock state     : internal
    Selected for            : 18 hours, 12 minutes, 43 seconds
    Selected since          : 2008-09-10 03:27:47 PDT
    Deviation (in ppm)      : +0.00
    Last deviation (in ppm) : +0.00
  Clock Synchronization Status :
  Clock module on CB 1
    Current state           : backup
    Current clock state     : locked to master CB
    Selected for            : 1 day, 12 hours, 49 minutes, 20 seconds
    Selected since          : 2008-09-09 08:51:10 PDT

show chassis synchronization master user@host> show chassis synchronization master
Clock Synchronization Status :
  Clock module on CB 0
    Current state           : master
    Current clock state     : internal

```

```

Selected for          : 8 days, 21 minutes, 12 seconds
Selected since        : 2008-08-27 21:05:40 PDT
Deviation (in ppm)    : +0.00
Last deviation (in ppm): +0.00

show chassis      user@host> show chassis synchronization backup
synchronization
backup           Clock Synchronization Status :
                  Clock module on CB 1
                  Current state          : backup
                  Current clock state    : locked to master CB
                  Selected for           : 34 days, 20 hours, 17 minutes, 8 seconds
                  Selected since         : 2008-08-01 01:22:16 PDT

show chassis      user@host> show chassis synchronization extensive
synchronization
extensive        Clock Synchronization Status :
                  Clock module on CB 0
                  Current state          : master
                  Current clock state    : internal
                  Selected for           : 8 days, 36 minutes, 29 seconds
                  Selected since         : 2008-08-27 21:05:40 PDT
                  Deviation (in ppm)    : +0.00
                  Last deviation (in ppm): +0.00
                  Clock Synchronization Status :
                  Clock module on CB 1
                  Current state          : backup
                  Current clock state    : locked to master CB
                  Selected for           : 34 days, 20 hours, 19 minutes, 53 seconds
                  Selected since         : 2008-08-01 01:22:16 PDT

show chassis      user@host> show chassis synchronization
synchronization (T320,
T640, and T1600
Routers)          Clock Synchronization Status :
                  Clock module on SCG 0
                  Current state          : master
                  Current clock state    : locked to external-a
                  Selected for           : 2 hours, 28 minutes, 4 seconds
                  Selected since         : 2006-02-17 01:12:58 PST
                  Configured sources
                  Source      Priority  Deviation    Last deviation  Status
                  (in ppm)    (in ppm)
                  external-a primary  measuring    -0.10           in-use
                  external-b secondary -0.10        -0.10           qualified
                  Clock Synchronization Status :
                  Clock module on SCG 1
                  Current state          : backup
                  Current clock state    : locked to master SCG
                  Selected for           : 19 hours, 49 minutes, 14 seconds
                  Selected since         : 2006-02-16 07:51:48 PST
                  Configured sources
                  Source      Priority  Deviation    Last deviation  Status
                  (in ppm)    (in ppm)
                  external-a primary  -0.25        -0.25           qualified
                  external-b secondary -0.25        -0.25           qualified

```

## show chassis temperature-thresholds

---

<b>Syntax</b>	show chassis temperature-thresholds
<b>Syntax (TX Matrix Router)</b>	show chassis temperature-thresholds <lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show chassis temperature-thresholds <lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (QFX Series)</b>	show chassis temperature-thresholds
<b>Release Information</b>	Command introduced in Junos OS Release 8.0. Command introduced in Junos OS Release 9.0 for EX Series switches. sfc command 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 chassis temperature threshold settings, in degrees Celsius.
<b>Options</b>	none—(QFX Series) Display the temperature threshold details of a QFX Series product.  lcc <i>number</i> —(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display the temperature threshold details of a specified T640 router (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display the temperature threshold details of a specified T1600 router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.  scc—(TX Matrix routers only) (Optional) Display the temperature threshold details of the TX Matrix router (or switch-card chassis).  sfc <i>number</i> —(TX Matrix Plus routers only) (Optional) Display the temperature threshold details of the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show chassis temperature-thresholds on page 527 show chassis temperature-thresholds (TX Matrix Plus Router) on page 527 show chassis temperature-thresholds lcc (TX Matrix Plus Router) on page 529 show chassis temperature-thresholds sfc (TX Matrix Plus Router) on page 529 show chassis temperature-thresholds (QFX Series) on page 530
<b>Output Fields</b>	Table 98 on page 527 lists the output fields for the <b>show chassis temperature-thresholds</b> command. Output fields are listed in the approximate order in which they appear.

Table 98: show chassis temperature-thresholds Output Fields

Field name	Field Description
<b>Item</b>	Chassis component. If per FRU per slot thresholds are configured, the components about which information is displayed include the chassis, the Routing Engines, FPCs, and FEBs. If per FRU per slot thresholds are not configured, the components about which information is displayed include the chassis and the Routing Engines.
<b>Fan speed</b>	<p>Temperature threshold settings, in degrees Celsius, for the fans to operate at normal and high speeds.</p> <ul style="list-style-type: none"> <li><b>Normal</b>—The fans operate at normal speed if the component is at or below this temperature and all the fans are present and functioning normally.</li> <li><b>High</b>—The fans operate at high speed if the component has exceeded this temperature or a fan has failed or is missing.</li> </ul> <p>An alarm is not triggered until the temperature exceeds the threshold settings for a yellow alarm or a red alarm.</p>
<b>Yellow alarm</b>	<p>Temperature threshold settings, in degrees Celsius, that trigger a yellow alarm.</p> <ul style="list-style-type: none"> <li><b>Normal</b>—The temperature that must be exceeded on the component to trigger a yellow alarm when the fans are running at full speed.</li> <li><b>Bad fan</b>—The temperature that must be exceeded on the component to trigger a yellow alarm when one or more fans have failed or are missing.</li> </ul>
<b>Red alarm</b>	<p>Temperature threshold settings, in degrees Celsius, that trigger a red alarm.</p> <ul style="list-style-type: none"> <li><b>Normal</b>—The temperature that must be exceeded on the component to trigger a red alarm when the fans are running at full speed.</li> <li><b>Bad fan</b>—The temperature that must be exceeded on the component to trigger a red alarm when one or more fans have failed or are missing.</li> </ul>

## Sample Output

```

show chassis temperature-thresholds user@host> show chassis temperature-thresholds
                                     Fan speed      Yellow alarm      Red alarm
                                     (degrees C)      (degrees C)      (degrees C)
Item      Normal  High    Normal  Bad fan  Normal  Bad fan
Chassis default      48    54      65      55      75      65
Routing Engine 0      70    80      95      95     110     110
Routing Engine 1      70    80      95      95     110     110
FPC 0              55    60      75      65      90      80
FPC 1              55    60      75      65      90      80
FPC 2              55    60      75      65      90      80
FPC 3              55    60      75      65      90      80
FPC 4              55    60      75      65      90      80
FPC 5              55    60      75      65      90      80
FPC 6              55    60      75      65      90      80
FPC 7              55    60      75      65      90      80
FPC 8              55    60      75      65      90      80
FPC 9              55    60      75      65      90      80
FPC 10             55    60      75      65      90      80
FPC 11             55    60      75      65      90      80

show chassis temperature-thresholds user@host> show chassis temperature-thresholds
sfc0-re0:
-----

```

**(TX Matrix Plus  
Router)**

Item	Fan speed (degrees C)		Yellow alarm (degrees C)		Red alarm (degrees C)	
	Normal	High	Normal	Bad fan	Normal	Bad fan
Chassis default	48	54	65	55	75	65
Routing Engine 0	55	65	85	85	100	100
Routing Engine 1	55	65	85	85	100	100
SIB F13 0	64	70	76	72	90	84
SIB F13 3	64	70	76	72	90	84
SIB F13 6	64	70	76	72	90	84
SIB F13 8	64	70	76	72	90	84
SIB F13 11	64	70	76	72	90	84
SIB F13 12	64	70	76	72	90	84
SIB F2S 16	64	70	76	72	90	84
SIB F2S 17	64	70	76	72	90	84
SIB F2S 18	64	70	76	72	90	84
SIB F2S 19	64	70	76	72	90	84
SIB F2S 20	64	70	76	72	90	84
SIB F2S 21	64	70	76	72	90	84
SIB F2S 22	64	70	76	72	90	84
SIB F2S 23	64	70	76	72	90	84
SIB F2S 24	64	70	76	72	90	84
SIB F2S 25	64	70	76	72	90	84
SIB F2S 26	64	70	76	72	90	84
SIB F2S 27	64	70	76	72	90	84
SIB F2S 28	64	70	76	72	90	84
SIB F2S 29	64	70	76	72	90	84
SIB F2S 30	64	70	76	72	90	84
SIB F2S 31	64	70	76	72	90	84
SIB F2S 32	64	70	76	72	90	84
SIB F2S 33	64	70	76	72	90	84
SIB F2S 34	64	70	76	72	90	84
SIB F2S 35	64	70	76	72	90	84

lcc0-re0:

Item	Fan speed (degrees C)		Yellow alarm (degrees C)		Red alarm (degrees C)	
	Normal	High	Normal	Bad fan	Normal	Bad fan
Chassis default	48	54	65	55	75	65
Routing Engine 0	55	65	85	85	100	100
Routing Engine 1	55	65	85	85	100	100
FPC 1	56	62	75	63	83	76
FPC 3	56	62	75	63	83	76
FPC 4	56	62	75	63	83	76
FPC 6	56	62	75	63	83	76
FPC 7	56	62	75	63	83	76
SIB 0	48	54	65	60	80	75
SIB 1	48	54	65	60	80	75
SIB 2	48	54	65	60	80	75
SIB 3	48	54	65	60	80	75
SIB 4	48	54	65	60	80	75

lcc1-re0:

Item	Fan speed (degrees C)		Yellow alarm (degrees C)		Red alarm (degrees C)	
	Normal	High	Normal	Bad fan	Normal	Bad fan
Chassis default	48	54	65	55	75	65
Routing Engine 0	55	65	85	85	100	100
Routing Engine 1	55	65	85	85	100	100
FPC 1	56	62	75	63	83	76



```

FPC 3          56    62    75    63    83    76
FPC 4          56    62    75    63    83    76
FPC 6          56    62    75    63    83    76
...

```

**show chassis  
temperature-thresholds  
lcc (TX Matrix Plus  
Router)**

```

user@host> show chassis temperature-thresholds lcc 1
lcc1-re0:

```

```

-----
Item              Fan speed      Yellow alarm      Red alarm
                  (degrees C)      (degrees C)      (degrees C)
                  Normal   High   Normal   Bad fan   Normal   Bad fan
Chassis default   48    54    65      55      75      65
Routing Engine 0   55    65    85      85     100     100
Routing Engine 1   55    65    85      85     100     100
FPC 1             56    62    75      63      83      76
FPC 3             56    62    75      63      83      76
FPC 4             56    62    75      63      83      76
FPC 6             56    62    75      63      83      76
SIB 0             48    54    65      60      80      75
SIB 1             48    54    65      60      80      75
SIB 2             48    54    65      60      80      75
SIB 3             48    54    65      60      80      75
SIB 4             48    54    65      60      80      75

```

**show chassis  
temperature-thresholds  
sfc (TX Matrix Plus  
Router)**

```

user@host> show chassis temperature-thresholds sfc 0
sfc0-re0:

```

```

-----
Item              Fan speed      Yellow alarm      Red alarm
                  (degrees C)      (degrees C)      (degrees C)
                  Normal   High   Normal   Bad fan   Normal   Bad fan
Chassis default   48    54    65      55      75      65
Routing Engine 0   55    65    85      85     100     100
Routing Engine 1   55    65    85      85     100     100
SIB F13 0         64    70    76      72      90      84
SIB F13 3         64    70    76      72      90      84
SIB F13 6         64    70    76      72      90      84
SIB F13 8         64    70    76      72      90      84
SIB F13 11        64    70    76      72      90      84
SIB F13 12        64    70    76      72      90      84
SIB F2S 16        64    70    76      72      90      84
SIB F2S 17        64    70    76      72      90      84
SIB F2S 18        64    70    76      72      90      84
SIB F2S 19        64    70    76      72      90      84
SIB F2S 20        64    70    76      72      90      84
SIB F2S 21        64    70    76      72      90      84
SIB F2S 22        64    70    76      72      90      84
SIB F2S 23        64    70    76      72      90      84
SIB F2S 24        64    70    76      72      90      84
SIB F2S 25        64    70    76      72      90      84
SIB F2S 26        64    70    76      72      90      84
SIB F2S 27        64    70    76      72      90      84
SIB F2S 28        64    70    76      72      90      84
SIB F2S 29        64    70    76      72      90      84
SIB F2S 30        64    70    76      72      90      84
SIB F2S 31        64    70    76      72      90      84
SIB F2S 32        64    70    76      72      90      84
SIB F2S 33        64    70    76      72      90      84
SIB F2S 34        64    70    76      72      90      84
SIB F2S 35        64    70    76      72      90      84

```

```
show chassis temperature-thresholds (QFX Series)
user@switch> show chassis temperature-thresholds
Fan speed Yellow alarm Red alarm
(degrees C) (degrees C) (degrees C)
Item Normal High Normal Bad fan Normal Bad fan
FPC Sensor TopLeft I 60 70 80 70 95 85
FPC Sensor TopRight I 60 70 80 70 95 85
FPC Sensor TopLeft E 60 70 80 70 95 85
FPC Sensor TopRight E 60 70 80 70 95 85
FPC Sensor TopMiddle I 60 70 80 70 95 85
FPC Sensor TopMiddle E 60 70 80 70 95 85
FPC Sensor Bottom I 60 70 80 70 95 85
FPC Sensor Bottom E 60 70 80 70 95 85
FPC Sensor Die Temp 60 70 80 70 95 85
FPC Sensor Mgmt Brd I 0 0 0 0 0 0
```

# Command-Line Interface Operational Mode Commands

Table 99 on page 531 summarizes the command-line interface (CLI) commands you can use to perform and monitor CLI management functions. Commands are listed in alphabetical order.

**Table 99: CLI Operational Mode Commands**

Task	Command
Clear the logical system view and return to a full router view.	<b>clear cli logical-system</b>
Set the CLI to complete partial command entries.	<b>set cli complete-on-space</b>
Set the current working directory.	<b>set cli directory</b>
Set the maximum time that an individual session can be idle before the user is logged off the router.	<b>set cli idle-timeout</b>
Set the CLI to the specified logical routing instance.	<b>set cli logical-system</b>
Set the CLI prompt.	<b>set cli prompt</b>
Set the CLI to prompt you to restart the router after a software upgrade.	<b>set cli restart-on-upgrade</b>
Set the number of lines on the screen.	<b>set cli screen-length</b>
Set the number of characters on a line.	<b>set cli screen-width</b>
Set the terminal type.	<b>set cli terminal</b>
Timestamp CLI output.	<b>set cli timestamp</b>
Set the system date and time.	<b>set date</b>
Display all CLI settings.	<b>show cli</b>

**Table 99: CLI Operational Mode Commands (*continued*)**

Task	Command
Display login permissions for the current user.	<b>show cli authorization</b>
Display the current working directory.	<b>show cli directory</b>
Display a list of previous CLI commands.	<b>show cli history</b>



**NOTE:** For information about how to configure CLI parameters, see the *Junos OS CLI User Guide*.

For information about related tasks performed by network operations center (NOC) personnel, see the *Junos Baseline Network Operations Guide*.

---

## clear cli logical-system

---

<b>Syntax</b>	clear cli logical-system
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Clear the logical system view and return to a full router view. In a logical system view, the output of the command displays information related to the logical system only.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	clear
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">set cli logical-system on page 537</a></li></ul>
<b>List of Sample Output</b>	<a href="#">clear cli logical-system on page 533</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

```
clear cli logical-system  user@host:1r1> clear cli logical-system
                           Cleared default logical system
                           user@host>
```

## set cli complete-on-space

---

<b>Syntax</b>	set cli complete-on-space (off   on)
<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>	Set the command-line interface (CLI) to complete a partial command entry when you type a space or a tab. This is the default behavior of the CLI.
<b>Options</b>	off—Turn off command completion.  on—Allow either a space or a tab to be used for command completion.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• CLI User Interface Overview</li><li>• <a href="#">show cli on page 545</a></li></ul>
<b>List of Sample Output</b>	<a href="#">set cli complete-on-space on page 534</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

<b>set cli complete-on-space</b>	<p>In the following example, pressing the Spacebar changes the partial command entry from <b>com</b> to <b>complete-on-space</b>. The example shows how adding the keyword <b>off</b> at the end of the command disables command completion.</p> <pre>user@host&gt; set cli com&lt;Space&gt; user@host&gt;set cli complete-on-space off Disabling complete-on-space</pre>
----------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

## set cli directory

---

<b>Syntax</b>	set cli directory <i>directory</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>	Set the current working directory.
<b>Options</b>	<i>directory</i> —Pathname of the working directory.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• CLI User Interface Overview</li><li>• <a href="#">show cli directory on page 550</a></li></ul>
<b>List of Sample Output</b>	<a href="#">set cli directory on page 535</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

<b>set cli directory</b>	user@host> set cli directory /var/home/regress Current directory: /var/home/regress
--------------------------	----------------------------------------------------------------------------------------

## set cli idle-timeout

---

<b>Syntax</b>	set cli idle-timeout < <i>minutes</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>	Set the maximum time that an individual session can be idle before the user is logged off the router or switch.
<b>Options</b>	<i>minutes</i> —(Optional) Maximum idle time. The range of values, in minutes, is 0 through 100,000. If you do not issue this command, and the user's login class does not specify this value, the user is never forced off the system after extended idle times. Setting the value to 0 disables the timeout.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• CLI User Interface Overview</li><li>• <a href="#">show cli on page 545</a></li></ul>
<b>List of Sample Output</b>	<a href="#">set cli idle-timeout on page 536</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

<b>set cli idle-timeout</b>	user@host> set cli idle-timeout 60 Idle timeout set to 60 minutes
-----------------------------	----------------------------------------------------------------------



## set cli logical-system

---

<b>Syntax</b>	set cli logical-system <i>logical-system</i>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Set the CLI to the specified logical system view.
<b>Options</b>	<i>logical-system</i> —logical system name.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	set cli logical-system on page 537
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

```
set cli logical-system  user@host> set cli logical-system log-router-A
                        logical system: log-router-A
                        user@host:log-router-A>
```

## set cli prompt

---

<b>Syntax</b>	set cli prompt <i>string</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>	Set the prompt so that it is displayed within the CLI.
<b>Options</b>	<i>string</i> —CLI prompt string. To include spaces in the prompt, enclose the string in quotation marks. By default, the string is <i>username@hostname</i> .
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• CLI User Interface Overview</li><li>• show cli on page 545</li></ul>
<b>List of Sample Output</b>	set cli prompt on page 538
<b>Output Fields</b>	When you enter this command, the new CLI prompt is displayed.

### Sample Output

set cli prompt	user@host> set cli prompt lab1-router> lab1-router>
----------------	--------------------------------------------------------

## set cli restart-on-upgrade

---

<b>Syntax</b>	set cli restart-on-upgrade string (off   on)
<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>	For an individual session, set the CLI to prompt you to restart the router or switch after upgrading the software.
<b>Options</b>	off—Disables the prompt.  on—Enables the prompt.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• CLI User Interface Overview</li><li>• <a href="#">show cli on page 545</a></li></ul>
<b>List of Sample Output</b>	<a href="#">set cli restart-on-upgrade on page 539</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

<b>set cli restart-on-upgrade</b>	user@host> set cli restart-on-upgrade on Enabling restart-on-upgrade
---------------------------------------	-------------------------------------------------------------------------

## set cli screen-length

---

<b>Syntax</b>	set cli screen-length <i>length</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>	Set terminal screen length.
<b>Options</b>	<i>length</i> —Number of lines of text that the terminal screen displays (0 through 10,000). The default is 24.
<b>Additional Information</b>	The point at which the ---( <b>more</b> )--- prompt appears on the screen is a function of this setting and the settings for the <b>set cli screen-width</b> and <b>set cli terminal</b> commands.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• CLI User Interface Overview</li><li>• <b>set cli screen-width</b> on page 541</li><li>• <b>set cli terminal</b> on page 542</li><li>• <b>show cli</b> on page 545</li></ul>
<b>List of Sample Output</b>	<b>set cli screen-length</b> on page 540
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

<b>set cli screen-length</b>	user@host> set cli screen-length 75 Screen length set to 75
------------------------------	----------------------------------------------------------------

## set cli screen-width

---

<b>Syntax</b>	set cli screen-width <i>width</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>	Set the terminal screen width.
<b>Options</b>	<i>width</i> —Number of characters (0 through 1024) in a line. The default is 80.
<b>Additional Information</b>	The point at which the ---( <b>more</b> )--- prompt appears on the screen is a function of this setting and the settings for the <b>set cli screen-length</b> and <b>set cli terminal</b> commands.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• CLI User Interface Overview</li><li>• <b>set cli screen-length</b> on page 540</li><li>• <b>set cli terminal</b> on page 542</li><li>• <b>show cli</b> on page 545</li></ul>
<b>List of Sample Output</b>	<b>set cli screen-width</b> on page 541
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

<b>set cli screen-width</b>	user@host> set cli screen-width Screen width set to 132
-----------------------------	------------------------------------------------------------

## set cli terminal

---

<b>Syntax</b>	set cli terminal <i>terminal-type</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>	Set the terminal type.
<b>Options</b>	<i>terminal-type</i> —Type of terminal that is connected to the Ethernet management port: <ul style="list-style-type: none"><li>• <b>ansi</b>—ANSI-compatible terminal (80 characters by 24 lines)</li><li>• <b>small-xterm</b>—Small xterm window (80 characters by 24 lines)</li><li>• <b>vt100</b>—VT100-compatible terminal (80 characters by 24 lines)</li><li>• <b>xterm</b>—Large xterm window (80 characters by 65 lines)</li></ul>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• CLI User Interface Overview</li><li>• <a href="#">set cli screen-length on page 540</a></li><li>• <a href="#">set cli screen-width on page 541</a></li><li>• <a href="#">show cli on page 545</a></li></ul>
<b>List of Sample Output</b>	<a href="#">set cli terminal on page 542</a>
<b>Output Fields</b>	This command provides no output.

## Sample Output

```
set cli terminal  user@host> set cli terminal xterm
```

## set cli timestamp

<b>Syntax</b>	set cli timestamp (format <i>timestamp-format</i>   disable)
<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>	Set a timestamp for CLI output.
<b>Options</b>	<p>format <i>timestamp-format</i>—Set the date and time format for the timestamp. The timestamp format you specify can include the following placeholders in any order:</p> <ul style="list-style-type: none"> <li>• <b>%m</b>—Two-digit month</li> <li>• <b>%d</b>—Two-digit date</li> <li>• <b>%T</b>—Six-digit hour, minute, and seconds</li> </ul> <p>disable—Remove the timestamp from the CLI.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• CLI User Interface Overview</li> <li>• <a href="#">show cli on page 545</a></li> </ul>
<b>List of Sample Output</b>	set cli timestamp on page 543
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

```

set cli timestamp  user@host> set cli timestamp format '%m-%d-%T'
                    '04-21-17:39:13'
                    CLI timestamp set to: '%m-%d-%T'

```

## set date

---

<b>Syntax</b>	<code>set date (<i>date-time</i> ntp &lt;<i>servers</i>&gt; &lt;<i>source-address source-address</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>	Set the date and time.
<b>Options</b>	<i>date-time</i> —Date and time. Enter this string inside quotation marks.  ntp—Use a Network Time Protocol (NTP) server to synchronize the current date and time setting on the router or switch.  <i>servers</i> —(Optional) Specify the IP address of one or more NTP servers.  <i>source-address source-address</i> —Specify the source address that the router or switch uses to contact the remote NTP server.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>Setting the Date and Time</li></ul>
<b>List of Sample Output</b>	<a href="#">set date on page 544</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```
set date user@host> set date ntp
21 Apr 17:22:02 ntpdate[3867]: step time server 172.17.27.46 offset 8.759252 sec
```



## show cli

<b>Syntax</b>	show cli
<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 configured CLI settings.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show cli on page 545
<b>Output Fields</b>	Table 100 on page 545 lists the output fields for the <b>show cli</b> command. Output fields are listed in the approximate order in which they appear.

**Table 100: show cli Output Fields**

Field Name	Field Description
CLI complete-on-space	Capability to complete a partial command entry when you type a space or a tab: <b>on</b> or <b>off</b> .
CLI idle-timeout	Maximum time that an individual session can be idle before the user is logged off the router or switch. When this feature is enabled, the number of minutes is displayed. Otherwise, the state is <b>disabled</b> .
CLI restart-on-upgrade	CLI is set to prompt you to restart the router or switch after upgrading the software: <b>on</b> or <b>off</b> .
CLI screen-length	Number of lines of text that the terminal screen displays.
CLI screen-width	Number of characters in a line on the terminal screen.
CLI terminal	Terminal type.
CLI is operating in	Mode: <b>enhanced</b> .
CLI timestamp	Date and time format for the timestamp. If the timestamp is not set, the state is <b>disabled</b> .
CLI working directory	Pathname of the working directory.

## Sample Output

```
show cli  user@host> show cli
          CLI complete-on-space set to on
          CLI idle-timeout disabled
          CLI restart-on-upgrade set to on
          CLI screen-length set to 47
          CLI screen-width set to 132
          CLI terminal is 'vt100'
```

```
CLI is operating in enhanced mode
CLI timestamp disabled
CLI working directory is '/var/home/regress'
```

## show cli authorization

<b>Syntax</b>	show cli authorization
<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 permissions for the current user.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show cli authorization on page 549
<b>Output Fields</b>	Table 101 on page 547 lists the output fields for the <b>show cli authorization</b> command. In the table, all possible permissions are displayed and output fields are listed in alphabetical order.

**Table 101: show cli authorization Output Fields**

Field Name	Field Description
access	Can view access configuration information.
access-control	Can modify access configuration.
admin	Can view user account information.
admin-control	Can modify user account information.
clear	Can clear learned network information.
configure	Can enter configuration mode.
control	Can modify any configuration.
edit	Can edit configuration files.
field	Reserved for field (debugging) support.
firewall	Can view firewall configuration information.
firewall-control	Can modify firewall configuration information.
floppy	Can read from and write to removable media.
flow-tap	Can view flow-tap configuration information.

Table 101: show cli authorization Output Fields (*continued*)

Field Name	Field Description
<b>flow-tap-control</b>	Can configure flow-tap configuration information.
<b>idp-profiler-operation</b>	Can configure Profiler data.
<b>interface</b>	Can view interface configuration information.
<b>interface-control</b>	Can modify interface configuration information.
<b>maintenance</b>	Can perform system maintenance.
<b>network</b>	Can access the network by entering the <b>ping</b> , <b>ssh</b> , <b>telnet</b> , and <b>traceroute</b> commands.
<b>pgcp-session-mirroring</b>	Can view pgcp session mirroring configuration.
<b>pgcp-session-mirroring-control</b>	Can modify pgcp session mirroring configuration all-control.
<b>reset</b>	Can reset or restart interfaces and system processes.
<b>rollback</b>	Can rollback to previous configurations.
<b>routing</b>	Can view routing configuration information.
<b>routing-control</b>	Can modify routing configuration information.
<b>secret</b>	Can view passwords and authentication keys in the configuration.
<b>secret-control</b>	Can modify passwords and authentication keys in the configuration.
<b>security</b>	Can view security configuration information.
<b>security-control</b>	Can modify security configuration information.
<b>shell</b>	Can start a local shell.
<b>snmp</b>	Can view SNMP configuration information.
<b>snmp-control</b>	Can modify SNMP configuration information.
<b>system</b>	Can view system configuration information.
<b>system-control</b>	Can modify system configuration information.
<b>trace</b>	Can view trace file settings information.
<b>trace-control</b>	Can modify trace file settings information.

Table 101: show cli authorization Output Fields (*continued*)

Field Name	Field Description
<b>view</b>	Can view current values and statistics.
<b>view-configuration</b>	Can view all configuration information (not including secrets).

## Sample Output

```

show cli authorization user@host> show cli authorization
Current user: 'remote' login: 'user' class ''
Permissions:
  admin      -- Can view user accounts
  admin-control-- Can modify user accounts
  clear      -- Can clear learned network information
  configure  -- Can enter configuration mode
  control    -- Can modify any configuration
  edit       -- Can edit full files
  field      -- Special for field (debug) support
  floppy     -- Can read and write from the floppy
  interface  -- Can view interface configuration
  interface-control-- Can modify interface configuration
  network    -- Can access the network
  reset      -- Can reset/restart interfaces and daemons
  routing    -- Can view routing configuration
  routing-control-- Can modify routing configuration
  shell      -- Can start a local shell
  snmp       -- Can view SNMP configuration
  snmp-control-- Can modify SNMP configuration
  system     -- Can view system configuration
  system-control-- Can modify system configuration
  trace      -- Can view trace file settings
  trace-control-- Can modify trace file settings
  view       -- Can view current values and statistics
  maintenance -- Can become the super-user
  firewall   -- Can view firewall configuration
  firewall-control-- Can modify firewall configuration
  secret     -- Can view secret configuration
  secret-control-- Can modify secret configuration
  rollback   -- Can rollback to previous configurations
  security   -- Can view security configuration
  security-control-- Can modify security configuration
  access     -- Can view access configuration
  access-control-- Can modify access configuration
  view-configuration-- Can view all configuration (not including secrets)
  flow-tap   -- Can view flow-tap configuration
  flow-tap-control-- Can configure flow-tap service
Individual command authorization:
  Allow regular expression: none
  Deny regular expression: none
  Allow configuration regular expression: none
  Deny configuration regular expression: none

```

## show cli directory

---

<b>Syntax</b>	show cli directory
<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 current working directory.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show cli directory on page 550
<b>Output Fields</b>	Table 102 on page 550 lists the output fields for the <b>show cli directory</b> command. Output fields are listed in the approximate order in which they appear.

**Table 102: show cli directory Output Fields**

Field Name	Field Description
Current directory	Pathname of the current working directory.

## Sample Output

```
show cli directory  user@host> show cli directory
Current directory: /var/home/regress
```

## show cli history

<b>Syntax</b>	show cli history <count>
<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 list of previous CLI commands.
<b>Options</b>	none—Display all previous CLI commands.  count—(Optional) Maximum number of commands to display.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show cli history on page 551
<b>Output Fields</b>	Table 103 on page 551 lists the output fields for the <b>show cli history</b> command. Output fields are listed in the approximate order in which they appear.

**Table 103: show cli history Output Fields**

Field Name	Field Description
<i>timestamp</i>	Time at which the command was entered.
<i>command-syntax</i>	Command that was entered.

## Sample Output

```
show cli history user@host> show cli history
11:14:14 -- show arp
11:22:10 -- show cli authorization
11:27:12 -- show cli history
```





## CHAPTER 9

# File Management Operational Mode Commands

Table 104 on page 553 summarizes the command-line interface (CLI) commands you can use to perform and monitor file management functions. Commands are listed in alphabetical order.

**Table 104: File Management Operational Mode Commands**

Task	Command
Remove contents of a log file.	<b>clear log</b>
Archive files or archive and compress files.	<b>file archive</b>
Calculate checksum using MD5 has algorithm.	<b>file checksum md5</b>
Calculate checksum using Secure Hash Algorithm SHA1.	<b>file checksum sha1</b>
Calculate checksum using Secure Hash Algorithm SHA-256.	<b>file checksum sha-256</b>
Compare two files.	<b>file compare</b>
Copy files.	<b>file copy</b>
Delete files.	<b>file delete</b>
List files and directories on the router.	<b>file list</b>
Rename files.	<b>file rename</b>
Display the contents of a file.	<b>file show</b>
List log files, display log file contents, and display information about users who have logged in to the router.	<b>show log</b>



.....

**NOTE:** See also the `monitor list`, `monitor start`, and `monitor stop` commands, which are documented in *Real-Time Router Monitoring Operational Mode Commands*.

For information about how to configure file parameters, see the *Junos OS System Basics Configuration Guide*.

For information about related tasks performed by network operations center (NOC) personnel, see the *Junos Baseline Network Operations Guide*.

.....

## clear log

<b>Syntax</b>	<code>clear log <i>filename</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>	Remove contents of a log file.
<b>Options</b>	<i>filename</i> —Name of the specific log file.  all—(Optional) Delete the specified log file and all archived versions of it.
<b>Required Privilege Level</b>	clear
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">show log on page 573</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">clear log on page 555</a>
<b>Output Fields</b>	See <a href="#">file list</a> for an explanation of output fields.

## Sample Output

**clear log** The following sample commands list log file information, clear the contents of a log file, and then display the updated log file information:

```
user@host> file list lcc0-re0:/var/log/sampled detail
lcc0-re0:
-----
-rw-r-----  1 root  wheel           26450 Jun 23 18:47 /var/log/sampled
total 1

user@host> clear log lcc0-re0:sampled
lcc0-re0:
-----

user@host> file list lcc0-re0:/var/log/sampled detail
lcc0-re0:
-----
-rw-r-----  1 root  wheel           57 Sep 15 03:44 /var/log/sampled
total 1
```

## file archive

---

<b>Syntax</b>	<code>file archive destination <i>destination</i> source <i>source</i> &lt;compress&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>	Archive, and optionally compress, one or multiple local system files as a single file, locally or at a remote location.
<b>Options</b>	<p><code>destination <i>destination</i></code>—Destination of the archived file or files. Specify the destination as a URL or filename. The Junos OS adds one of the following suffixes if the destination filename does not already have it:</p> <ul style="list-style-type: none"><li>• For archived files—The suffix <b>.tar</b></li><li>• For archived and compressed files—The suffix <b>.tgz</b></li></ul> <p><code>source <i>source</i></code>—Source of the original file or files. Specify the source as a URL or filename.</p> <p><code>compress</code>—(Optional) Compress the archived file with the GNU zip (gzip) compression utility. The compressed files have the suffix <b>.tgz</b>.</p>
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<b>file archive (Multiple Files)</b> on page 556 <b>file archive (Single File)</b> on page 556 <b>file archive (with Compression)</b> on page 556
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

<b>file archive (Multiple Files)</b>	<p>The following sample command archives all message files in the local directory <code>/var/log/messages</code> as the single file <b>messages-archive.tar</b>.</p> <pre>user@host&gt; file archive source /var/log/messages* destination /var/log/messages-archive.tar /usr/bin/tar: Removing leading / from absolute path names in the archive. user@host&gt;</pre>
<b>file archive (Single File)</b>	<p>The following sample command archives one message file in the local directory <code>/var/log/messages</code> as the single file <b>messages-archive.tar</b>.</p> <pre>user@host&gt; file archive source /var/log/messages destination /var/log/messages-archive.tar /usr/bin/tar: Removing leading / from absolute path names in the archive. user@host&gt;</pre>
<b>file archive (with Compression)</b>	<p>The following sample command archives and compresses all message files in the local directory <code>/var/log/messages</code> as the single file <b>messages-archive.tgz</b>.</p>

```
user@host> file archive compress source /var/log/messages* destination  
/var/log/messages-archive.tgz  
/usr/bin/tar: Removing leading / from absolute path names in the archive.
```

## file checksum md5

---

<b>Syntax</b>	<code>file checksum md5 &lt;pathname&gt; filename</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>	Calculate the Message Digest 5 (MD5) checksum of a file.
<b>Options</b>	<i>pathname</i> —(Optional) Path to a filename. <i>filename</i> —Name of a local file for which to calculate the MD5 checksum.
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• Configuring Checksum Hashes for a Commit Script in the <i>Junos OS Configuration and Operations Automation Guide</i></li><li>• Configuring Checksum Hashes for an Event Script in the <i>Junos OS Configuration and Operations Automation Guide</i></li><li>• Configuring Checksum Hashes for an Op Script in the <i>Junos OS Configuration and Operations Automation Guide</i></li><li>• Executing an Op Script from a Remote Site in the <i>Junos OS Configuration and Operations Automation Guide</i></li><li>• <a href="#">file checksum sha-256 on page 560</a></li><li>• <a href="#">file checksum sha1 on page 559</a></li><li>• <a href="#">op on page 709</a></li></ul>
<b>List of Sample Output</b>	<a href="#">file checksum md5 on page 558</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```
file checksum md5 user@host> file checksum md5 jbundle-5.3R2.4-export-signed.tgz
MD5 (jbundle-5.3R2.4-export-signed.tgz) = 2a3b69e43f9bd4893729cc16f505a0f5
```

## file checksum sha1

<b>Syntax</b>	<code>file checksum sha1 &lt;pathname&gt; filename</code>
<b>Release Information</b>	<p>Command introduced in Junos OS Release 9.5.</p> <p>Command introduced in Junos OS Release 9.5 for EX Series switches.</p> <p>Command introduced in Junos OS Release 11.1 for the QFX Series.</p>
<b>Description</b>	Calculate the Secure Hash Algorithm (SHA-1) checksum of a file.
<b>Options</b>	<p><i>pathname</i>—(Optional) Path to a filename.</p> <p><i>filename</i>—Name of a local file for which to calculate the SHA-1 checksum.</p>
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>Configuring Checksum Hashes for a Commit Script in the <i>Junos OS Configuration and Operations Automation Guide</i></li> <li>Configuring Checksum Hashes for an Event Script in the <i>Junos OS Configuration and Operations Automation Guide</i></li> <li>Configuring Checksum Hashes for an Op Script in the <i>Junos OS Configuration and Operations Automation Guide</i></li> <li>Executing an Op Script from a Remote Site in the <i>Junos OS Configuration and Operations Automation Guide</i></li> <li><a href="#">file checksum md5 on page 558</a></li> <li><a href="#">file checksum sha-256 on page 560</a></li> <li><a href="#">op on page 709</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">file checksum sha1 on page 559</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```

file checksum sha1 user@host> file checksum sha1 /var/db/scripts/opscript.slax

SHA1 (/var/db/scripts/commitscript.slax) = ba9e47120c7ce55cff29afd73eacd370e162c676

```

## file checksum sha-256

---

<b>Syntax</b>	<code>file checksum sha-256 &lt;pathname&gt; filename</code>
<b>Release Information</b>	Command introduced in Junos OS Release 9.5. Command introduced in Junos OS Release 9.5 for EX Series switches. Command introduced in Junos OS Release 11.1 for the QFX Series.
<b>Description</b>	Calculate the Secure Hash Algorithm 2 family (SHA-256) checksum of a file.
<b>Options</b>	<i>pathname</i> —(Optional) Path to a filename. <i>filename</i> —Name of a local file for which to calculate the SHA-256 checksum.
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• Configuring Checksum Hashes for a Commit Script in the <i>Junos OS Configuration and Operations Automation Guide</i></li><li>• Configuring Checksum Hashes for an Event Script in the <i>Junos OS Configuration and Operations Automation Guide</i></li><li>• Configuring Checksum Hashes for an Op Script in the <i>Junos OS Configuration and Operations Automation Guide</i></li><li>• Executing an Op Script from a Remote Site in the <i>Junos OS Configuration and Operations Automation Guide</i></li><li>• <b>file checksum md5</b> on page 558</li><li>• <b>file checksum sha1</b> on page 559</li><li>• <b>op</b> on page 709</li></ul>
<b>List of Sample Output</b>	<b>file checksum sha-256</b> on page 560
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

```
file checksum sha-256  user@host> file checksum sha-256 /var/db/scripts/commitscript.slax

SHA256 (/var/db/scripts/commitscript.slax) =
94c2b061fb55399e15babd2529453815601a602b5c98e5c12ed929c9d343dd71
```



## file compare

<b>Syntax</b>	<pre>file compare (files <i>filename filename</i>) &lt; context   unified&gt; &lt;ignore-white-space &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>
<b>Description</b>	<p>Compare two local files and describe the differences between them in default, context, or unified output styles:</p> <ul style="list-style-type: none"> <li>• <b>Default</b>—In the first line of output, <b>c</b> means lines were changed between the two files, <b>d</b> means lines were deleted between the two files, and <b>a</b> means lines were added between the two files. The numbers preceding this alphabetical marker represent the first file, and the lines after the alphabetical marker represent the second file. A left angle bracket (&lt;) in front of output lines refers to the first file. A right angle bracket (&gt;) in front of output lines refers to the second file.</li> <li>• <b>Context</b>—The display is divided into two parts. The first part is the first file; the second part is the second file. Output lines preceded by an exclamation point (!) have changed. Additions are marked with a plus sign (+), and deletions are marked with a minus sign (-).</li> <li>• <b>Unified</b>—The display is preceded by the line number from the first and the second file (xx,xxx,x). Before the line number, additions to the file are marked with a plus sign (+), and deletions to the file are marked with a minus sign (-). The body of the output contains the affected lines. Changes are viewed as additions plus deletions.</li> </ul>
<b>Options</b>	<p><i>files filename</i>—Names of two local files to compare.</p> <p>context—(Optional) Display output in context format.</p> <p>ignore-white-space—(Optional) Ignore changes in the amount of white space.</p> <p>unified—(Optional) Display output in unified format.</p>
<b>Required Privilege Level</b>	none
<b>List of Sample Output</b>	<p><b>file compare files on page 562</b></p> <p><b>file compare files context on page 562</b></p> <p><b>file compare files unified on page 562</b></p> <p><b>file compare files unified ignore-white-space on page 562</b></p>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```

file compare files user@host> file compare files /tmp/one /tmp/two
100c100
<          full-name "File 1";
---
>          full-name "File 2";
102c102
<          class foo; # 'foo' is not defined
---
>          class super-user;

file compare files user@host> file compare files /tmp/one /tmp/two context
context
*** /tmp/one   Wed Dec  3 17:12:50 2003
--- /tmp/two   Wed Dec  3 09:13:14 2003
*****
*** 97,104 ***
    }
  }
  user bill {
!    full-name "Bill Smith";
!    class foo; # 'foo' is not defined
    authentication {
        encrypted-password SECRET;
    }
--- 97,105 ----
    }
  }
  user bill {
!    full-name "Bill Smith";
!    uid 1089;
!    class super-user;
    authentication {
        encrypted-password SECRET;
    }
}

file compare files user@host> file compare files /tmp/one /tmp/two unified
unified
--- /tmp/one   Wed Dec  3 17:12:50 2003
+++ /tmp/two   Wed Dec  3 09:13:14 2003
@@ -97,8 +97,9 @@
    }
  }
  user bill {
-    full-name "Bill Smith";
-    class foo; # 'foo' is not defined
+    full-name "Bill Smith";
+    uid 1089;
+    class super-user;
    authentication {
        encrypted-passwordSECRET;
    }
}

file compare files user@host> file compare files /tmp/one /tmp/two unified ignore-white-space
unified ignore-white-space
--- /tmp/one   Wed Dec  3 09:13:10 2003
+++ /tmp/two   Wed Dec  3 09:13:14 2003
@@ -99,7 +99,7 @@
  user bill {
    full-name "Bill Smith";
    uid 1089;

```

```
-      class foo; # 'foo' is not defined
+      class super-user;
      authentication {
          encrypted-password <SECRET>; # SECRET-DATA
      }
```

## file copy

<b>Syntax</b>	<code>file copy <i>source destination</i></code> <code>&lt;source-address <i>address</i>&gt;</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. <b>source-address</b> option added in 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 switches.
<b>Description</b>	Copy files from one place to another on the local router or switch or between the local router or switch and a remote system.
<b>Options</b>	<i>source</i> —Source of the original file. Specify this as a URL or filename.  <i>destination</i> —Destination of the copied file. Specify this as a URL or filename. If you are copying a file to the current directory (your home directory on the local router or switch) and are not renaming the file, specify the destination with a period (.).  <i>source-address <i>address</i></i> —(Optional) Source IP host address. This option is useful for specifying the source address of a secure copy (scp) file transfer.
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<b>file copy (A File from the Router or Switch to a PC) on page 564</b> <b>file copy (A Configuration File Between Routing Engines) on page 564</b> <b>file copy (A Log File Between Routing Engines) on page 564</b> <b>file copy (A File from the TX Matrix Plus Router to a T1600 Router Connected to the TX Matrix Plus Router) on page 564</b>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

<b>file copy (A File from the Router or Switch to a PC)</b>	<pre>user@host&gt; file copy /var/tmp/rpd.core.4 berry:/c/junipero/tmp</pre> <pre>...transferring.file.....             0 KB     0.3 kB/s   ETA: 00:00:00   100%</pre>
<b>file copy (A Configuration File Between Routing Engines)</b>	<p>The following sample command copies a configuration file from Routing Engine 0 to Routing Engine 1:</p> <pre>user@host&gt; file copy /config/juniper.conf re1:/var/tmp/copied-juniper.conf</pre>
<b>file copy (A Log File Between Routing Engines)</b>	<p>The following sample command copies a log file from Routing Engine 0 to Routing Engine 1:</p> <pre>user@host&gt; file copy lcc0-re0:/var/log/chassisd lcc0-re1:/var/tmp</pre>
<b>file copy (A File from the TX Matrix Plus Router to a T1600 Router)</b>	<p>The following sample command copies a text file from Routing Engine 1 on the switch-fabric chassis <b>sfc0</b> to Routing Engine 1 on the line-card chassis <b>lcc0</b>:</p>

Router Connected to the TX Matrix Plus Router)

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

## file delete

---

<b>Syntax</b>	<code>file delete <i>filename</i></code> <code>&lt;purge&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>	Delete a file on the local router or switch.
<b>Options</b>	<i>filename</i> —Name of the file to delete. For a routing matrix, include chassis information in the filename if the file to be deleted is not local to the Routing Engine from which the command is issued.  <code>purge</code> —(Optional) Overwrite regular files before deleting them.
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<b>file delete on page 566</b> <b>file delete (Routing Matrix) on page 566</b>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

<b>file delete</b>	<pre>user@host&gt; file list /var/tmp dcd.core rpd.core snmpd.core  user@host&gt; file delete /var/tmp/snmpd.core user@host&gt; file list /var/tmp dcd.core rpd.core</pre>
<b>file delete (Routing Matrix)</b>	<pre>user@host&gt; file list lcc0-re0:/var/tmp dcd.core rpd.core snmpd.core  user@host&gt; file delete lcc0-re0:/var/tmp/snmpd.core user@host&gt; file list /var/tmp dcd.core rpd.core</pre>

## file list

<b>Syntax</b>	file list <detail   recursive> <filename>
<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 list of files on the local router or switch.
<b>Options</b>	<p>none—Display a list of all files for the current directory.</p> <p>detail   recursive—(Optional) Display detailed output or descend recursively through the directory hierarchy, respectively.</p> <p>filename—(Optional) Display a list of files. For a routing matrix, the filename must include the chassis information.</p>
<b>Additional Information</b>	The default directory is the home directory of the user logged in to the router or switch. To view available directories, enter a space and then a backslash (/) after the <b>file list</b> command. To view files within a specific directory, include a backslash followed by the directory and, optionally, subdirectory name after the <b>file list</b> command.
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	file list on page 567 file list (Routing Matrix) on page 567
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

<b>file list</b>	<pre>user@host&gt; file list /var/tmp dcd.core rpd.core snmpd.core</pre>
<b>file list (Routing Matrix)</b>	<pre>user@host&gt; file list lcc0-re0:var/tmp lcc0-re0: ----- /var/tmp/: .gdbinit .pccardd Test/ chassisd* chassisd.nathan* check_time* cores/ diagTestPrep* diagtest*</pre>

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\*



## file rename

<b>Syntax</b>	<code>file rename <i>source destination</i></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>	Rename a file on the local router or switch.
<b>Options</b>	<i>destination</i> —New name for the file.  <i>source</i> —Original name of the file. For a routing matrix, the filename must include the chassis information.
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<b>file rename on page 569</b> <b>file rename (Routing Matrix) on page 569</b>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

<b>file rename</b>	<p>The following example lists the files in <code>/var/tmp</code>, renames one of the files, and then displays the list of files again to reveal the newly named file.</p> <pre> user@host&gt; file list /var/tmp dcd.core rpd.core snmpd.core  user@host&gt; file rename /var/tmp/dcd.core /var/tmp/dcd.core.990413 user@host&gt; file list /var/tmp dcd.core.990413 rpd.core snmpd.core </pre>
<b>file rename (Routing Matrix)</b>	<p>The following example lists the files in <code>/var/tmp</code>, renames one of the files, and then displays the list of files again to reveal the newly named file.</p> <pre> user@host&gt; file list lcc0-re1:/var/tmp lcc0-re1: -----  /var/tmp: .pccardd sartre.conf snmpd syslogd.core-tarball.0.tgz  user@host&gt; file rename lcc0-re0:/var/tmp/snmpd /var/tmp/snmpd.rr user@host&gt; file list lcc0-re1:/var/tmp lcc0-re1: ----- </pre>

```
/var/tmp:  
.pccardd  
sartre.conf  
snmpd.rr  
syslogd.core-tarball.0.tgz
```

## file show

<b>Syntax</b>	<code>file show <i>filename</i></code> <code>&lt;encoding (base64   raw)&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 the contents of a file.
<b>Options</b>	<i>filename</i> —Name of a file. For a routing matrix, the filename must include the chassis information.  encoding (base64   raw)—(Optional) Encode file contents with base64 encoding or show raw text.
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<b>file show on page 571</b> <b>file show (Routing Matrix) on page 571</b>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```

file show user@host> file show /var/log/messages
Apr 13 21:00:08 romney /kernel: so-1/1/2: loopback suspected; going to standby.
Apr 13 21:00:40 romney /kernel: so-1/1/2: loopback suspected; going to standby.
Apr 13 21:02:48 romney last message repeated 4 times
Apr 13 21:07:04 romney last message repeated 8 times
Apr 13 21:07:13 romney /kernel: so-1/1/0: Clearing SONET alarm(s) RDI-P
Apr 13 21:07:29 romney /kernel: so-1/1/0: Asserting SONET alarm(s) RDI-P
...

file show user@host> file show lcc0-re0:/var/tmp/gdbinit
(Routing Matrix) lcc0-re0:
-----
#####
# Settings
#####

set print pretty

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

define msgbuf
    printf "%s", msgbufp->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
```

## show log

<b>Syntax</b>	show log <filename   user <username>>
<b>Syntax (TX Matrix Router)</b>	show log <all-lcc   lcc <i>number</i>   scc> <filename   user <username>>
<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>	List log files, display log file contents, or display information about users who have logged in to the router or switch.
<b>Options</b>	<p>none—List all log files.</p> <p>&lt;all-lcc   lcc <i>number</i>   scc&gt;—(Routing matrix only)(Optional) Display logging information about all T640 routers (or line-card chassis) or a specific T640 router (replace <i>number</i> with a value from 0 through 3) connected to a TX Matrix router. Or, display logging information about the TX Matrix router (or switch-card chassis).</p> <p><i>filename</i>—(Optional) Display the log messages in the specified log file. For the routing matrix, the filename must include the chassis information.</p> <p>user &lt;username&gt;—(Optional) Display logging information about users who have recently logged in to the router or switch. If you include <i>username</i>, display logging information about the specified user.</p>
<b>Required Privilege Level</b>	trace
<b>List of Sample Output</b>	<p>show log on page 573</p> <p>show log filename on page 574</p> <p>show log user on page 574</p>

## Sample Output

```

user@host> show log
total 57518
-rw-r--r--  1 root  bin      211663 Oct  1 19:44 dcd
-rw-r--r--  1 root  bin      999947 Oct  1 19:41 dcd.0
-rw-r--r--  1 root  bin      999994 Oct  1 17:48 dcd.1
-rw-r--r--  1 root  bin      238815 Oct  1 19:44 rpd
-rw-r--r--  1 root  bin     1049098 Oct  1 18:00 rpd.0
-rw-r--r--  1 root  bin     1061095 Oct  1 12:13 rpd.1
-rw-r--r--  1 root  bin     1052026 Oct  1 06:08 rpd.2
-rw-r--r--  1 root  bin     1056309 Sep 30 18:21 rpd.3
-rw-r--r--  1 root  bin     1056371 Sep 30 14:36 rpd.4
-rw-r--r--  1 root  bin     1056301 Sep 30 10:50 rpd.5
-rw-r--r--  1 root  bin     1056350 Sep 30 07:04 rpd.6

```

```
-rw-r--r--  1 root  bin      1048876 Sep 30 03:21 rpd.7
-rw-rw-r--  1 root  bin      19656 Oct  1 19:37 wtmp
```

```
show log filename user@host> show log rpd
Oct  1 18:00:18 trace_on: Tracing to ?/var/log/rpd? started
Oct  1 18:00:18 EVENT <MTU> ds-5/2/0.0 index 24 <Broadcast PointToPoint Multicast
Oct  1 18:00:18
Oct  1 18:00:19 KRT rcv len 56 V9 seq 148 op add Type route/if af 2 addr
13.13.13.21 nhop type local nhop 13.13.13.21
Oct  1 18:00:19 KRT rcv len 56 V9 seq 149 op add Type route/if af 2 addr
13.13.13.22 nhop type unicast nhop 13.13.13.22
Oct  1 18:00:19 KRT rcv len 48 V9 seq 150 op add Type ifaddr index 24 devindex
43
Oct  1 18:00:19 KRT rcv len 144 V9 seq 151 op chnge Type ifdev devindex 44
Oct  1 18:00:19 KRT rcv len 144 V9 seq 152 op chnge Type ifdev devindex 45
Oct  1 18:00:19 KRT rcv len 144 V9 seq 153 op chnge Type ifdev devindex 46
Oct  1 18:00:19 KRT rcv len 1272 V9 seq 154 op chnge Type ifdev devindex 47
...
```

```
show log user user@host> show log user
darius  mg2546          Thu Oct  1 19:37   still logged in
darius  mg2529          Thu Oct  1 19:08 - 19:36 (00:28)
darius  mg2518          Thu Oct  1 18:53 - 18:58 (00:04)
root    mg1575          Wed Sep 30 18:39 - 18:41 (00:02)
root    ttyt2    jun.site.per Wed Sep 30 18:39 - 18:41 (00:02)
alex    ttyt1    192.168.1.2   Wed Sep 30 01:03 - 01:22 (00:19)
```

# Packet Forwarding Engine Operational Mode Commands

Table 105 on page 575 summarizes the command-line interface (CLI) commands you can use to perform and monitor Packet Forwarding Engine management functions. Commands are listed in alphabetical order.

**Table 105: Packet Forwarding Engine Operational Mode Commands**

Task	Command
Display Packet Forwarding Engine Compact Forwarding Engine Board (CFEB) status and statistics information.	<b>show pfe cfeb</b>
Display Packet Forwarding Engine Forwarding Engine Board (FEB) status and statistics information.	<b>show pfe feb</b>
Display Packet Forwarding Engine statistics for the specified Flexible PIC Concentrator (FPC).	<b>show pfe fpc</b>
(J Series router only) Display Packet Forwarding Engine forwarding process (fwdd) status and statistics information.	<b>show pfe fwdd</b>
(Routing matrix only) Display Packet Forwarding Engine information for the specified T640 router (or line-card chassis).	<b>show pfe lcc</b>
Display Packet Forwarding Engine next-hop information.	<b>show pfe next-hop</b>
Display IPv4 Packet Forwarding Engine statistics.	<b>show pfe statistics ip</b>
(M320 and T320 routers, and T-640 only) Display Packet Forwarding Engine resource and L-chip SRAM memory usage statistics.	<b>show pfe resource usage memory</b>
Display the routes in the Packet Forwarding Engine forwarding table.	<b>show pfe route</b>
(M40 routers only) Display Packet Forwarding Engine System Control Board (SCB) status and statistics information.	<b>show pfe scb</b>

**Table 105: Packet Forwarding Engine Operational Mode Commands** (*continued*)

Task	Command
(M40e and M160 routers only) Display Packet Forwarding Engine Switching and Forwarding Module (SFM) status and statistics information.	<b>show pfe sfm</b>
(M20 routers only) Display Packet Forwarding Engine System and Switch Board (SSB) status and statistics information.	<b>show pfe ssb</b>
Display Packet Forwarding Engine direct memory access (DMA) statistics.	<b>show pfe statistics dma</b>
Display Packet Forwarding Engine error statistics.	<b>show pfe statistics error</b>
Display IPv4 Packet Forwarding Engine statistics.	<b>show pfe statistics ip</b>
Display Packet Forwarding Engine IPv6 statistics.	<b>show pfe statistics ip6</b>
Display Packet Forwarding Engine notification statistics.	<b>show pfe statistics notification</b>
Display Packet Forwarding Engine polled I/O (PIO) statistics.	<b>show pfe statistics pio</b>
Display Packet Forwarding Engine traffic statistics.	<b>show pfe statistics traffic</b>
Display Packet Forwarding Engine traffic statistics for Bidirectional Forwarding Detection (BFD).	<b>show pfe statistics traffic protocol bfd</b>
Display Packet Forwarding Engine traffic statistics for connectivity fault management (CFM).	<b>show pfe statistics traffic protocol cfm</b>
Display Packet Forwarding Engine traffic statistics for link fault management (LFM).	<b>show pfe statistics traffic protocol lfm</b>
Display Packet Forwarding Engine status information.	<b>show pfe terse</b>
(M320 and T320 routers, and T-640 only) Display Packet Forwarding Engine resource and L-chip SRAM memory usage statistics.	<b>show pfe resource usage memory</b>
Display Packet Forwarding Engine version information.	<b>show pfe version</b>



**NOTE:** For information about how to configure PFE parameters, see the *Junos OS System Basics Configuration Guide*.



## show pfe cfeb

<b>Syntax</b>	show pfe cfeb
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M7i routers only) Display Packet Forwarding Engine Compact Forwarding Engine Board (CFEB) status and statistics information.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	admin
<b>List of Sample Output</b>	show pfe cfeb on page 577

## Sample Output

```

user@host> show pfe cfeb
CFEB status:
  Slot:                Present
  State:                Online
  Last State Change:   2005-03-10 09:01:25 PST
  Uptime (total):      2d 00:44
  Failures:            0
  Pending:             0

Peer message type receive qualifiers:
Message Type      Receive Qualifier
-----
                TTP  All
                IFD  All
                IFL  All
                Nexthop All
                COS  All
                Route  All
                SW Firewall All
                HW Firewall All
                PFE Statistics All
                PIC Statistics All
                Sampling All
                Monitoring None
                ASP  None
                L2TP None
                Collector None
                PIC Configuration All
                Queue Statistics All
                (null) None

PFE listener statistics:
  Open:              1
  Close:             0
  Sleep:             0
  Wakeup:            0
  Resync Request:    0
  Resync Done:       1
  Resync Fail:       0
  Resync Time:       0

```

PFE IPC statistics:

type	TX Messages	RX messages
Header	0	0
Test	0	0
Interface	562	14582
Chassis	0	0
Boot	0	0
Next-hop	104	0
Jtree	0	0
Cprod	0	0
Route	103	1
Pfe	3770	2925
Dfw	10	0
Mastership	0	0
Sampling	0	0
GUCP	0	0
CoS	50	0
GCCP	0	0
GHCP	0	0
IRSD	0	0
Monitoring	0	0
RE	0	0
PIC	0	0
ASP cfg	0	0
ASP cmd	0	0
L2TP cfg	0	0
Collector	0	0
PIC state	0	0
Aggregator	0	0
Empty	0	0

PFE socket-buffer mbuf depth:

bucket	count
0	0
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0

PFE socket-buffer bytes pending transmit:

bucket	count
--------	-------

-----	-----
0	0
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0

## show pfe feb

<b>Syntax</b>	show pfe feb
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M5 and M10 routers only) Display Packet Forwarding Engine Forwarding Engine Board (FEB) status and statistics information.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	admin
<b>List of Sample Output</b>	show pfe feb on page 580

### Sample Output

```

user@host> show pfe feb
FEB status:
  Slot:                Present
  State:                Online
  Last State Change:    2005-03-11 00:33:57 PST
  Uptime (total):       1d 09:14
  Failures:             0
  Pending:              0

Peer message type receive qualifiers:
Message Type      Receive Qualifier
-----
                TTP  All
                IFD  All
                IFL  All
                Nexthop All
                COS  All
                Route  All
                SW Firewall All
                HW Firewall All
                PFE Statistics All
                PIC Statistics All
                Sampling All
                Monitoring None
                ASP  None
                L2TP  None
                Collector None
                PIC Configuration All
                Queue Statistics All
                (null) None

PFE listener statistics:
  Open:              1
  Close:             0
  Sleep:             0
  Wakeup:            0
  Resync Request:    0
  Resync Done:       1
  Resync Fail:       0
  Resync Time:       0

```

## PFE IPC statistics:

type	TX Messages	RX messages
Header	0	0
Test	0	0
Interface	639	11889
Chassis	0	0
Boot	0	0
Next-hop	104	0
Jtree	0	0
Cprod	0	0
Route	940	0
Pfe	3008	1995
Dfw	9	0
Mastership	0	0
Sampling	0	0
GUCP	0	0
CoS	35	0
GCCP	0	0
GHCP	0	0
IRSD	0	0
Monitoring	0	0
RE	0	0
PIC	0	0
ASP cfg	0	0
ASP cmd	0	0
L2TP cfg	0	0
Collector	0	0
PIC state	0	0
Aggregator	0	0
Empty	0	0

## PFE socket-buffer mbuf depth:

bucket	count
0	0
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0

PFE socket-buffer bytes pending transmit:

bucket	count
-----	-----
0	0
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0

## show pfe fpc

<b>Syntax</b>	show pfe fpc <i>slot</i> <detail   extensive>
<b>Syntax (TX Matrix and TX Matrix Plus Router)</b>	show pfe fpc <lcc <i>number</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Display Packet Forwarding Engine statistics for the specified Flexible PIC Concentrator (FPC).
<b>Options</b>	<p><i>slot</i>—FPC slot number. Replace <i>slot</i> with a value from 0 through 2.</p> <p>detail   extensive—(Optional) Display the specified level of detail.</p> <p><i>lcc number</i>—(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, <i>lcc number</i> represents the slot number of the T1600 router (or line-card chassis) that houses the FPC. Replace <i>number</i> with a value from 0 through 3.</p>
<b>Required Privilege Level</b>	admin
<b>List of Sample Output</b>	<p>show pfe fpc on page 583</p> <p>show pfe fpc lcc on page 584</p> <p>show pfe fpc 0 detail on page 586</p>

## Sample Output

```

user@host> show pfe fpc 1
FPC 1 status:
  Slot:                Present
  State:               Online
  Last State Change:   2000-01-10 18:12:27 UTC
  Uptime:              1d 03:31
  Failures:            0
  Pending:             0
  Route Memory Enhanced: 0
PFE listener statistics:
  Open:                1
  Close:               0
  Sleep:               0
  Wakeup:              0
  Resync Request:      0
  Resync Done:         0
  Resync Fail:         0
  Resync Time:         0

PFE IPC statistics:
  type      TX Messages  RX messages
  -----
    Header           0           0

```

Test	0	0
Interface	2251	2219
Chassis	0	0
Boot	0	0
Next-hop	0	0
Jtree	0	0
Cprod	0	0
Route	0	0
Pfe	0	1
Dfw		

**show pfe fpc lcc** user@host> show pfe fpc 0 lcc 0  
lcc0-re0:

-----  
GFPC 0 status:

Slot:	Present
State:	Online
Last State Change:	2009-06-17 21:00:35 PDT
Uptime (total):	02:31:45
Failures:	0
Pending:	0

Peer message type receive qualifiers [ non-NONE(s) only ]:

IPC Msg Type (subtype)	Receive Qualifier
------------------------	-------------------

Interface	(0)	All
Interface	(1)	All
Interface	(2)	All
Interface	(3)	All
Interface	(4)	All
Interface	(5)	All
Interface	(6)	All
Interface	(7)	All
Interface	(8)	All
Interface	(9)	All
Interface	(10)	All
Interface	(11)	All
Interface	(12)	All
Interface	(13)	All
Interface	(14)	All
Interface	(15)	All
Interface	(16)	All
Interface	(17)	All
Interface	(18)	All
Interface	(19)	All
Interface	(20)	Slot only
Interface	(21)	All
...		
Next-hop	(0)	All
Next-hop	(1)	All
Next-hop	(2)	All
Next-hop	(3)	All
Next-hop	(4)	All
Next-hop	(5)	Always TRUE
...		
Route	(0)	All
Route	(1)	All
Route	(2)	All
Route	(3)	All
Route	(4)	All
Route	(5)	All



```

Route          (6)      All
Route          (7)      All
Route          (8)      All

...
Pfe            (1)      Always TRUE
Pfe            (3)      Always TRUE
Pfe            (5)      Always TRUE
...
Dfw            (0)      All
Dfw            (1)      All
Dfw            (2)      All
Dfw            (3)      All

...
Sampling       (1)      All
Sampling       (2)      All
Sampling       (3)      All
CoS             (0)      All
CoS             (1)      All
CoS             (2)      All
CoS             (3)      All

...
PIC            (1)      Always TRUE
PIC            (3)      Always TRUE

...
GenCfg         (8)      All
GenCfg         (15)     All

...
IFSTATE BITS SET:
-----
IFD
IFL
IFF
IFA
RTTABLE
ROUTE
NEXTHOP
FIREWALL
NAME TABLE
COS_FABRIC
COS_POLICY
COS_RED
COS_REWRT_TABLE
COS_REWRT_IFLMAP
COS_CLASS_TABLE
COS_CLASS_IFLMAP
COS_POLICER
COS_SHAPER
SAMPLE
RTCOS
SYSCONF
IFVP
SADB
IFVC
COS_FC_QUEUE
COS_FRAGMAP_TABLE
COS_FRAGMAP_IFLMAP
Generic config
Mesh group

```

## PFE listener statistics:

```

Open:          1
Close:         0
Sleep:         0
Wakeup:        0
Resync Request: 0
Resync Done:   1
Resync Fail:   0
Resync Time:   0

```

## PFE IPC statistics:

Type (subtype)	TX Messages	RX messages
Interface ( 3)	165	0
Interface ( 4)	81	0
Interface ( 5)	0	190
Interface ( 8)	145	0
Interface ( 9)	425	0
Interface (10)	24	0

...

## PFE socket-buffer mbuf depth:

bucket	count
0	0
1	0
2	0

## PFE socket-buffer bytes pending transmit:

bucket	count
0	0
1	0

...

**show pfe fpc 0 detail**     user@host> show pfe fpc 0 detail

## GFPC 2 status:

```

Slot:          Present
State:         Online
Last State Change: 2010-11-16 03:55:25 PST
Uptime (total): 00:11:06
Failures:      1
Pending:       0
Route Memory Enhanced: 0
Filter Memory Enhanced: 1

```

## Peer message type receive qualifiers [ non-NONE(s) only ]:

IPC Msg Type (subtype)	Receive Qualifier
Interface (0)	All
Interface (1)	All
Interface (2)	All
Interface (3)	All
Interface (4)	All
Interface (5)	All
Interface (6)	All
Interface (7)	All
Interface (8)	All
Interface (9)	All
Interface (10)	All
Interface (11)	All

```

...
Next-hop      (0)      All
Next-hop      (1)      All
Next-hop      (2)      All
Next-hop      (3)      All
Next-hop      (4)      All
Next-hop      (5)      All
...
Route         (0)      All
Route         (1)      All
Route         (2)      All
Route         (3)      All
Route         (4)      All
Route         (5)      All
...
Pfe           (1)      Always TRUE
Pfe           (3)      Always TRUE
Pfe           (5)      Always TRUE
...
Dfw           (0)      All
Dfw           (1)      All
Dfw           (2)      All
Dfw           (3)      All
...
Sampling      (1)      All
Sampling      (2)      All
Sampling      (3)      All
CoS           (0)      All
CoS           (1)      All
CoS           (2)      All
CoS           (3)      All
CoS           (4)      All
...
PIC           (1)      Always TRUE
PIC           (3)      Always TRUE
...
GenCfg        (8)      All
GenCfg        (15)     All
...
IFSTATE BITS SET:
-----
IFD
IFL
IFF
IFA
RTTABLE
ROUTE
NEXTHOP
FIREWALL
NAME TABLE
COS_FABRIC
COS_POLICY
COS_RED
COS_REWRT_TABLE
COS_REWRT_IFLMAP
COS_CLASS_TABLE
COS_CLASS_IFLMAP
COS_POLICER
COS_SHAPER
SAMPLE
RTCOS

```

```

SYSCONF
IFVP
SADB
IFVC
COS_FC_QUEUE
COS_FRAGMAP_TABLE
COS_FRAGMAP_IFLMAP
Generic config
Mesh group

```

## PFE listener statistics:

```

Open:          2
Close:         1
Sleep:         0
Wakeup:        0
Resync Request: 0
Resync Done:   2
Resync Fail:   0
Resync Time:   0

```

## PFE IPC statistics:

Type (subtype)	TX Messages	RX messages
-----	-----	-----
Interface ( 3)	104	0
Interface ( 5)	0	8
Interface ( 8)	85	0
Interface ( 9)	67	0
Interface (10)	4	0
...		
Next-hop ( 1)	364	0
Next-hop ( 3)	12	0
Next-hop (11)	33	0
Next-hop (23)	39	0
Route ( 1)	331	0
Route ( 2)	34	0
Route ( 3)	1	0
Route ( 6)	1	0
Route ( 9)	48	0
Pfe ( 1)	0	1
Pfe ( 3)	1	0
Pfe ( 4)	0	1
Pfe ( 5)	1	0
...		
Dfw ( 1)	20	0
Dfw (18)	1	0
GenCfg ( 8)	45	0
GenCfg (15)	1	0

## show pfe fwdd

<b>Syntax</b>	show pfe fwdd
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(J Series routers only) Display Packet Forwarding Engine forwarding process (fwdd) status and statistics information.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show pfe fwdd on page 589

### Sample Output

```

user@host> show pfe fwdd
FWDD status:
  Slot:           Present
  State:          Online
  Last State Change: 2004-09-15 16:00:36 PDT
  Uptime (total):  1d 01:16
  Failures:        0
  Pending:         0

Peer message type receive qualifiers:
Message Type      Receive Qualifier
-----
                TTP Slot only
                IFD All
                IFL All
                Nexthop All
                COS All
                Route All
                SW Firewall All
                HW Firewall All
                PFE Statistics All
                PIC Statistics All
                Sampling All
                Monitoring All
                ASP Slot only
                L2TP None
                Collector None

PFE listener statistics:
  Open:           1
  Close:          0
  Sleep:          0
  Wakeup:         0
  Resync Request: 0
  Resync Done:    1
  Resync Fail:    0
  Resync Time:    0

PFE IPC statistics:
type              TX Messages  RX messages

```

Header	0	0
Test	0	0
Interface	221	3189
Chassis	0	0
Boot	0	0
Next-hop	40	0
Jtree	0	0
Cprod	0	0
Route	45	0
Pfe	1907	1520
Dfw	16	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	0	0
PIC	0	0
ASP cfg	0	0
ASP cmd	0	0
L2TP cfg	0	0
Collector	0	0
PIC state	0	0

## PFE socket-buffer mbuf depth:

bucket	count
-----	-----
0	0
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0

## PFE socket-buffer bytes pending transmit:

bucket	count
-----	-----
0	0
1	0
2	0
3	0

4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0

## show pfe lcc

**Syntax (TX Matrix and TX Matrix Plus Router)** `show pfe lcc number`

**Release Information** Command introduced before Junos OS Release 7.4.

**Description** (TX Matrix and TX Matrix Plus router only) On a TX Matrix router, display Packet Forwarding Engine status and statistics for the specified T640 router (or line-card chassis). On a TX Matrix Plus router, display Packet Forwarding Engine status and statistics for the specified T1600 router (or line-card chassis).

**Options** *lcc number*—On a TX Matrix router, the slot number of the T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, the slot number of the T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace *number* with a value from 0 through 3.

**Required Privilege Level** admin

**List of Sample Output** `show pfe lcc` on page 592

### Sample Output

```
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>	show pfe next-hop <interface <i>interface-name</i> >
<b>Syntax (TX Matrix and TX Matrix Plus router)</b>	show pfe next-hop <fpc <i>slot</i> > <interface <i>interface-name</i> > <lcc <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. 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>none—Display all Packet Forwarding Engine next-hop information.</p> <p>fpc <i>slot</i>—(TX Matrix and TX Matrix Plus router 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 <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. 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. 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>interface <i>interface-name</i>—(Optional) Display the Packet Forwarding Engine next-hop interface.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus router 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 T1600 router (or line-card chassis) that houses the FPC. Replace <b>number</b> with a value from 0 through 3.</p>
<b>Required Privilege Level</b>	admin
<b>List of Sample Output</b>	<p>show pfe next-hop on page 596</p> <p>show pfe next-hop fpc (TX Matrix Router) on page 596</p> <p>show pfe next-hop fpc (TX Matrix Plus Router) on page 596</p>

## 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>	<pre>show pfe route &lt;&lt;inet6   ip   iso&gt; &lt;prefix prefix&gt;   &lt;table &lt;table-name&gt; &lt;index index&gt; &lt;prefix prefix&gt;&gt;&gt; &lt;mpls&gt; &lt;summary&gt;</pre>
<b>Syntax (EX Series Switch and QFX Series)</b>	<pre>show pfe route &lt;&lt;inet6   ip&gt; &lt;prefix prefix&gt;   &lt;table &lt;table-name&gt; &lt;index index&gt; &lt;prefix prefix&gt;&gt;&gt; &lt;mpls&gt; &lt;summary&gt;</pre>
<b>Syntax (TX Matrix and TX Matrix Plus Router)</b>	<pre>show pfe route &lt;fpc slot&gt; &lt;&lt;inet6   ip   iso&gt; &lt;prefix prefix&gt;   &lt;table &lt;table-name&gt; &lt;index index&gt; &lt;prefix prefix&gt;&gt;&gt; &lt;lcc number&gt; &lt;mpls&gt; &lt;summary&gt;</pre>

**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 Routing Protocols and Policies Command Reference*.

**Options** none—Display all Packet Forwarding Engine forwarding table information.

`fpc slot`—(TX Matrix and TX Matrix Plus router 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. 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
```

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 router 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 T1600 router (or line-card chassis) that houses the FPC. Replace *number* with a value from 0 through 3.

mpls—(Optional) Display Packet Forwarding Engine Multiprotocol Label Switching (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*> <*index index*> <*prefix prefix*>—(Optional) Display table information. Optionally, specify the table name, index, or prefix.

**Required Privilege Level** admin

**List of Sample Output** show pfe route ip on page 600  
show pfe route iso on page 600  
show pfe route lcc summary (TX Matrix Router) on page 601  
show pfe route lcc summary (TX Matrix Plus Router) on page 602

## 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                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                192.168.220.0   Mcast     5
255.255.255.255         192.168.220.0   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 scb

<b>Syntax</b>	show pfe scb
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M40 routers only) Display Packet Forwarding Engine System Control Board (SCB) status and statistics information.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	admin
<b>List of Sample Output</b>	show pfe scb on page 604

### Sample Output

```

user@host> show pfe scb
SCB status:
  Slot:           Present
  State:          Online
  Last State Change: 1999-02-05 11:02:36 UTC
  Uptime:         1d 02:31
  Failures:       0
  Pending:        0

PFE listener statistics:
  Open:           1
  Close:          0
  Sleep:          1
  Wakeup:         0
  Resync Request: 1
  Resync Done:    1
  Resync Fail:    0
  Resync Time:    0

PFE IPC statistics:
type            TX Messages  RX messages
-----
  Header         0             0
  Test           0             0
  Interface     10715          10594
  Chassis        0             0
  Boot           0             0
  Next-hop       8             0
  Jtree          0             0
  Cprod          0             0
  Route         11             0
  Pfe           1592          1593
  Dfw            0             0
  Mastership     0             0
  Empty          0             0

PFE socket-buffer mbuf depth:
bucket          count
-----
  0              5298

```

1	0
2	0
3	0
4	0
5	0
6	0
7	0
...	

PFE socket-buffer bytes pending transmit:

bucket	count
-----	-----
0	5298
1	0
2	0
3	0
4	2
5	3
6	1
7	1
...	

## show pfe sfm

<b>Syntax</b>	<code>show pfe sfm slot</code> <detail   extensive>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M40e and M160 routers only) Display Packet Forwarding Engine Switching and Forwarding Module (SFM) status and statistics information.
<b>Options</b>	<p><i>slot</i>—Display statistics from the specified SFM slot. Replace <i>slot</i> with a value from 0 through 3.</p> <p>detail   extensive—(Optional) Display the specified level of detail.</p>
<b>Additional Information</b>	This command applies only to systems with multiple SFMs.
<b>Required Privilege Level</b>	admin
<b>List of Sample Output</b>	show pfe sfm on page 606

### Sample Output

```

show pfe sfm user@host> show pfe sfm 1
SFM 1 status:
  Slot:                Offline
  State:                Init
  Last State Change:    2000-03-01 07:45:55 UTC
  Downtime:             17:47:29
  Failures:             167
  Pending:              0

PFE listener statistics:
  Open:                 167
  Close:                 167
  Sleep:                 2
  Wakeup:                1
  Resync Request:        2
  Resync Done:           2
  Resync Fail:           0
  Resync Time:           1

PFE IPC statistics:
type          TX Messages  RX messages
-----
  Header      0           0
  Test        0           0
  Interface   0           0
  Chassis     0           0
  Boot        0           0
  Next-hop    0           0
  Jtree       0           0
  Cprod       0           0
  Route       0           0
  Pfe         0           0

```

Dfw	0	0
Mastership	0	0
Empty	0	0

PFE socket-buffer mbuf depth:

bucket	count
-----	-----
0	0
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0

PFE socket-buffer bytes pending transmit:

bucket	count
-----	-----
0	0
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0

## show pfe ssb

<b>Syntax</b>	show pfe ssb
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M20 routers only) Display Packet Forwarding Engine System and Switch Board (SSB) status and statistics information.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	admin
<b>List of Sample Output</b>	show pfe ssb on page 608

### Sample Output

```

user@host> show pfe ssb
SSB status:
  Slot:                Present
  State:                Online
  Last State Change:   2005-03-06 03:10:28 PST
  Uptime (total):      11:23:27
  Failures:            0
  Pending:             0

Peer message type receive qualifiers:
Message Type      Receive Qualifier
-----
                TTP Slot only
                IFD All
                IFL All
                Nexthop All
                COS All
                Route All
                SW Firewall All
                HW Firewall All
                PFE Statistics All
                PIC Statistics None
                Sampling All
                Monitoring None
                ASP None
                L2TP None
                Collector None
                PIC Configuration None
                Queue Statistics None
                (null) None

PFE listener statistics:
  Open:              1
  Close:             0
  Sleep:             0
  Wakeup:            0
  Resync Request:    0
  Resync Done:       1
  Resync Fail:       0

```



Resync Time: 0

PFE IPC statistics:

type	TX Messages	RX messages
-----	-----	-----
Header	0	0
Test	0	0
Interface	737	9911
Chassis	0	0
Boot	0	0
Next-hop	48	0
Jtree	0	0
Cprod	0	0
Route	94	0
Pfe	2034	683
Dfw	8	0
Mastership	0	0
Sampling	0	0
GUCP	0	0
CoS	73	0
GCCP	0	0
GHCP	0	0
IRSD	0	0
Monitoring	0	0
RE	0	0
PIC	0	0
ASP cfg	0	0
ASP cmd	0	0
L2TP cfg	0	0
Collector	0	0
PIC state	0	0
Aggregator	0	0
Empty	0	0

PFE socket-buffer mbuf depth:

bucket	count
-----	-----
0	0
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0

PFE socket-buffer bytes pending transmit:

bucket	count
-----	-----
0	0
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0

## show pfe statistics dma

<b>Syntax</b>	show pfe statistics dma
<b>Syntax (TX Matrix and TX Matrix Plus Router)</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>none—Display all Packet Forwarding Engine direct memory access statistics.</p> <p>fpc slot—(TX Matrix and TX Matrix Plus routers only) (Optional) Display statistics for a Flexible PIC Concentrator (FPC) slot.</p> <p>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. 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. 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>lcc number—(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 T1600 router (or line-card chassis) that is connected to a TX Matrix router. Replace <b>number</b> with a value from 0 through 3.</p>
<b>Required Privilege Level</b>	admin
<b>List of Sample Output</b>	<p>show pfe statistics dma on page 611</p> <p>show pfe statistics dma lcc (Routing Matrix) on page 612</p>

## 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 (Routing**  
**Matrix)**

user@host&gt; 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 error

<b>Syntax</b>	show pfe statistics error
<b>Syntax (TX Matrix and TX Matrix Plus Router)</b>	show pfe statistics error <fpc slot> <lcc number>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Display Packet Forwarding Engine error statistics.
<b>Options</b>	<p>none—Display all Packet Forwarding Engine error statistics.</p> <p>fpc slot—(TX Matrix and TX Matrix Plus routers only) (Optional) Display error statistics for a Flexible PIC Concentrator (FPC) slot. 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. 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. For example, the following commands have the same result:</p> <pre> user@host&gt; show pfe statistics error fpc 1 lcc 1 user@host&gt; show pfe statistics error fpc 9 </pre> <p>lcc number—(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. On a TX Matrix Plus router, display error statistics for a specific T1600 router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace <b>number</b> with a value from 0 through 3.</p>
<b>Required Privilege Level</b>	admin
<b>List of Sample Output</b>	<p>show pfe statistics error on page 615</p> <p>show pfe statistics error lcc (Routing Matrix) on page 616</p> <p>show pfe statistics error on page 617</p>

## Sample Output

```

show pfe statistics error
error
user@host> show pfe statistics error
PFE error statistics:
      C chip    A1 chip    A2 chip
-----
          0          0          0  scan fail
          0          0         N/A  A1<->C FCS error
          0         N/A          0  A2<->C FCS error
         N/A          0          0  A<->B FCS error
B chip slots:
          0          1          2          3
-----
          0          0          0          0  scan fail
          0          0          0          0  A1->B FCS error

```

0	0	0	0	A2->B FCS error
0	0	0	0	correctable ECC error
0	0	0	0	uncorrectable ECC error
0	0	0	0	multiple ECC errors
0	0	0	0	B->HS link error
0	0	0	0	A1->Bm error
0	0	0	0	A2->Bo error
0	0	0	0	write buffer overflow
0	0	0	0	Bo FIFO sync error
0	0	0	0	Bo FIFO size error
0	0	0	0	Bo stream stuck error
0	0	0	0	Bo SRAM parity error
4	5	6	7	
-----				
0	0	0	0	scan fail
0	0	0	0	A1->B FCS error
0	0	0	0	A2->B FCS error
0	0	0	0	correctable ECC error
0	0	0	0	uncorrectable ECC error
0	0	0	0	multiple ECC errors
0	0	0	0	B->HS link error
0	0	0	0	A1->Bm error
0	0	0	0	A2->Bo error
0	0	0	0	write buffer overflow
0	0	0	0	Bo FIFO sync error
0	0	0	0	Bo FIFO size error
0	0	0	0	Bo stream stuck error
0	0	0	0	Bo SRAM parity error

**show pfe statistics**    user@host> **show pfe statistics error lcc 2**  
**error lcc**  
**(Routing Matrix)**    Slot 0

LCHIP Error statistics:

LCHIP	0	1	2	3
-----				
Lin PIF:	0	0	0	0
Lin SRCTL:	0	0	0	0
Lout NLIF:	0	0	0	0
Lout DESRD:	0	0	0	0
Lout HDRF:	0	0	0	0

HSL Map for PFE complex 0 (Top):

Index	HST Name	----	Index	HSR Name	Errors
=====	=====		=====	=====	=====
***** No errors on this PFE *****					

HSL Map for PFE complex 1 (Bottom):

Index	HST Name	----	Index	HSR Name	Errors
=====	=====		=====	=====	=====
***** No errors on this PFE *****					

Slot 1

LCHIP Error statistics:



LCHIP	0	1	2	3
-----				
Lin PIF:	0	0	0	0
Lin SRCTL:	0	0	0	0
Lout NLIF:	0	0	0	0
Lout DESRD:	0	0	0	0
Lout HDRF:	0	0	0	0

HSL Map for PFE complex 1 (Bottom):

Index	HST Name	---->	Index	HSR Name	Errors
=====	=====		=====	=====	=====

\*\*\*\*\* No errors on this PFE \*\*\*\*\*

**show pfe statistics error**  
**error**

user@host> show pfe statistics error

Slot 1

ICHIP Error statistics:

ICHIP	0	1	2	3
-----				
SPI4 Sink(Rx):	0	0	0	0
SPI4 Src(Tx):	0	0	0	0
Iwi SPI Total:	0	0	0	0
Iwi PIF:	0	0	0	0
Iwo DESRD:	0	0	0	0
Iwo HDRF:	0	0	0	0
Ipktwr Drops:	0	0	0	0
f_burst_fc Drops:	0	0	0	0
f_burst_nfc Drops:	0	0	0	0
f_rord_fc Drops:	0	0	0	0
f_rord_nfc Drops:	0	0	0	0
HSL2 Errors:				
-----				

\*\*\*\*\* No errors on this PFE \*\*\*\*\*

## show pfe statistics ip

<b>Syntax</b>	show pfe statistics ip <icmp   options>
<b>Syntax (TX Matrix and TX Matrix Plus Router)</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>none—Display all IPv4 Packet Forward Engine statistics.</p> <p>fpc slot—(TX Matrix and TX Matrix Plus routers only) (Optional) Display statistics for a Flexible PIC Concentrator (FPC) slot. 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. 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. 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>icmp—(Optional) Display Packet Forwarding Engine IP ICMP statistics.</p> <p>lcc number—(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 specific T1600 router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace <b>number</b> with a value from 0 through 3.</p> <p>options—(Optional) Display Packet Forwarding Engine IP options statistics.</p>
<b>Required Privilege Level</b>	admin
<b>List of Sample Output</b>	<p>show pfe statistics ip icmp on page 619</p> <p>show pfe statistics ip options on page 620</p>
<b>Output Fields</b>	Table 106 on page 619 lists the output fields for the <b>show pfe statistics ip</b> command. Output fields are listed in the approximate order in which they appear.

Table 106: 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>
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 ifl</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>runs</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
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 Router)</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>none—Display all Packet Forwarding Engine IPv6 statistics.</p> <p>fpc slot—(TX Matrix and TX Matrix Plus router only) (Optional) Display statistics for a Flexible PIC Concentrator 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. Likewise, 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. 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>icmp—(Optional) Display Packet Forwarding Engine IP ICMP statistics.</p> <p>lcc number—(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 specific T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace number with a value from 0 through 3.</p>
<b>Required Privilege Level</b>	admin
<b>List of Sample Output</b>	<p>show pfe statistics ip6 icmp on page 622</p> <p>show pfe statistics ip6 lcc on page 623</p>
<b>Output Fields</b>	Table 107 on page 622 lists the output fields for the show pfe statistics ip6 command. Output fields are listed in the approximate order in which they appear.

Table 107: 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>
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 ifl</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 user@host> show pfe statistics ip6 lcc 0 fpc 0
lcc 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 Router)</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>none—(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 T1600 routers.</p> <p>fpc slot—(TX Matrix and TX Matrix Plus routers only) (Optional) Display notification for a Flexible PIC Concentrator (FPC) slot. 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 <i>slot</i> with a value from 0 through 7. 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 <i>slot</i> with a value from 0 through 7. Otherwise, replace <i>slot</i> with a value from 0 through 31. 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>lcc number—(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 T1600 router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace <b>number</b> with a value from 0 through 3.</p>
<b>Required Privilege Level</b>	admin
<b>List of Sample Output</b>	show pfe statistics notification on page 624 show pfe statistics notification lcc (Routing Matrix) on page 625

## Sample Output

```

show pfe statistics notification user@host> show pfe statistics notification
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          0
  Unclass     1733        1733        0          0
  Option       0          0          0          0
  Next-Hop    720          720         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

```

```

show pfe statistics user@host> show pfe statistics notification lcc 0
notification lcc
(Routing Matrix) 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 pio

<b>Syntax</b>	show pfe statistics pio
<b>Syntax (TX Matrix Router)</b>	show pfe statistics pio <fpc slot> < lcc number>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Display Packet Forwarding Engine polled I/O (PIO) statistics.
<b>Options</b>	<p>none—(TX Matrix routers only) Display statistics about the Packet Forwarding Engine polled I/O on the TX Matrix routers and its attached T640 routers.</p> <p>fpc slot—(TX Matrix routers only) (Optional) Display statistics for a Flexible PIC Concentrator (FPC) slot. 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. For example, the following commands have the same result:</p> <pre>user@host&gt; show pfe statistics pio fpc 1 lcc 1 user@host&gt; show pfe statistics pio fpc 9</pre> <p>lcc number—(TX Matrix routers only) (Optional) Display statistics for a specific T640 router (or line-card chassis) that is connected to a TX Matrix router. Replace <b>number</b> with a value from 0 through 3.</p>
<b>Required Privilege Level</b>	admin
<b>List of Sample Output</b>	<p>show pfe statistics pio on page 626</p> <p>show pfe statistics pio lcc (Routing Matrix) on page 626</p>

### Sample Output

```
show pfe statistics pio user@host> show pfe statistics pio
PIO Statistics:
8542732 PIO read requests
8542732 PIO read replies
586193 PIO write requests
586191 PIO write replies
0 PIO error replies
0 PIO bad requests
0 PIO bad replies
0 PIO bad address
0 PIO extra replies
0 PIO timeouts

show pfe statistics pio user@host> show pfe statistics pio lcc 0
lcc (Routing Matrix) Slot 0
PIO Statistics (chip 0):
425582 PIO reads
120303 PIO writes
PIO Statistics (chip 1):
```

```
406993 PIO reads
      117769 PIO writes
...
```

## show pfe statistics traffic

<b>Syntax</b>	show pfe statistics traffic <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.
<b>Description</b>	Display Packet Forwarding Engine traffic statistics.
<b>Options</b>	<p>none—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 T1600 routers</p> <p>fpc slot—(T Series and M320 router only) (Optional) Display statistics for a Flexible PIC Concentrator (FPC) slot. 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 <i>slot</i> with a value from 0 through 7. Otherwise, replace <i>slot</i> 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 <b>lcc number</b> option (the recommended method), replace <i>slot</i> with a value from 0 through 7. Otherwise, replace <i>slot</i> with a value from 0 through 31. 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>lcc number—(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 T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p>
<b>Required Privilege Level</b>	admin
<b>List of Sample Output</b>	show pfe statistics traffic on page 630
<b>Output Fields</b>	Table 108 on page 628 lists the output fields for the <b>show pfe statistics traffic</b> command. Output fields are listed in the approximate order in which they appear.

Table 108: 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 input packets.</li> <li><b>Output Packets</b>—Number and rate of output packets.</li> </ul>

Table 108: 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 local input packets.</li> <li>• <b>Local packets output</b>—Number of local output packets.</li> <li>• <b>Software input high drops</b>—Number of software input high-priority drops.</li> <li>• <b>Software input medium drops</b>—Number of software input medium-priority drops.</li> <li>• <b>Software input low drops</b>—Number of software input low-priority drops.</li> <li>• <b>Software output drops</b>—Number of software output drops.</li> <li>• <b>Hardware input drops</b>—Number of hardware input drops.</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 Operations, Administration, and Management (OAM) packets.</li> <li>• <b>Unknown</b>—Number of unknown packets not matching any of the packet types listed above.</li> </ul>
<b>Packet Forwarding Engine Hardware Discard statistics</b>	<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.</li> <li>• <b>Extended discard</b>—Number of packets discarded because of illegal next hops.</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>

## Sample Output

```

show pfe statistics user@host> show pfe statistics traffic
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 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>None—Display all Packet Forwarding Engine traffic protocol BFD statistics.</p> <p>fpc slot—(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>lcc number—(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 T1600 router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>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>	show pfe statistics traffic protocol bfd on page 632
<b>Output Fields</b>	Table 109 on page 631 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 109: 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.

Table 109: show pfe statistics traffic protocol bfd Output Fields (*continued*)

Field Name	Field Description
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 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>None—Display all PFE traffic protocol CFM statistics.</p> <p>fpc slot—(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>lcc number—(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 T1600 router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>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>	show pfe statistics traffic protocol cfm on page 635
<b>Output Fields</b>	Table 110 on page 634 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 110: 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.

Table 110: show pfe statistics traffic protocol cfm Output Fields (*continued*)

Field Name	Field Description
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 lfm

<b>Syntax</b>	show pfe statistics traffic protocol lfm <fpc slot >
<b>Syntax (TX Matrix and TX Matrix Plus Router)</b>	show pfe statistics traffic protocol lfm <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 link fault management (LFM) statistics.
<b>Options</b>	<p>none—Display all PFE traffic protocol LFM statistics.</p> <p>fpc slot—(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 lfm fpc 1</p> <p>lcc number—(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 T1600 router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>user@host&gt; show pfe statistics traffic protocol lfm fpc 1 lcc 1</p>
<b>Required Privilege Level</b>	admin
<b>List of Sample Output</b>	show pfe statistics traffic protocol lfm on page 637
<b>Output Fields</b>	Table 111 on page 636 lists the output fields for the <b>show pfe statistics traffic protocol lfm</b> command. Output fields are listed in the approximate order in which they appear.

**Table 111: show pfe statistics traffic protocol lfm 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 send to RE	Number of packets sent to the Routing Engine.
Packets absorbed	Number of packets absorbed.
Packets dropped (Invalid)	Number of invalid packets dropped.

## Sample Output

```
show pfe statistics      user@host> show pfe statistics traffic protocol lfm
traffic protocol lfm    user@host> show pfe statistics traffic protocol lfm

LFM protocol statistics:
Packets transmitted      : 0
Packets failed to transmit : 0
Packets received         : 0
Packets send to RE       : 0
Packets absorbed         : 0
Packets dropped (Invalid) : 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>
<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>none—Display brief information about the Packet Forwarding Engine.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix, display Packet Forwarding Engine information 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 information for a specific T1600 router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) (Optional) Display Packet Forwarding Engine information for the TX Matrix router (or switch-card chassis).</p> <p>sfc—(TX Matrix Plus routers only) (Optional) Display Packet Forwarding Engine information for the TX Matrix Plus router (or switch-fabric chassis).</p>
<b>Required Privilege Level</b>	admin
<b>List of Sample Output</b>	<p>show pfe terse (TX Matrix Router) on page 638</p> <p>show pfe terse (TX Matrix Plus Router) on page 638</p> <p>show pfe terse sfc (TX Matrix Plus Router) on page 639</p>

## 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 pfe resource usage memory

**Syntax** show pfe resource usage memory  
<extensive | brief>  
<fpc <0..n>>

**Release Information** Command introduced in Junos OS Release 9.3.

**Description** (M320 and T320 routers, and T-640 only) Display Packet Forwarding Engine resource and L-chip SRAM memory usage statistics.



**NOTE:** On M320 routers, this command is not supported for the following FPCs:

- M320 E3-FPC Type 1
- M320 E3-FPC Type 2
- M320 E3-FPC Type 3

**Options** brief | extensive—(Optional) Display the specified level of output.

fpc slot—(Optional) Display L-chip-based FPC SRAM usage statistics for a Flexible PIC Concentrator (FPC) slot.

user@host> show pfe resource usage memory fpc 1

**Required Privilege Level** admin

**List of Sample Output** show pfe resource usage memory on page 641

**Output Fields** Table 112 on page 640 lists the output fields for the **show pfe resource usage memory** command. Output fields are listed in the approximate order in which they appear.

**Table 112: show pfe resource usage memory Output Fields**

Field Name	Field Description
<b>Resource Name</b>	Name of the resource, including: <ul style="list-style-type: none"> <li>• FPC</li> <li>• Pfe</li> </ul>
<b>Free</b>	Free L-chip SRAM memory.
<b>Inuse</b>	L-chip SRAM memory that is currently in use.
<b>Total</b>	Total of <b>Free</b> and <b>Inuse</b> memory.
<b>%Use</b>	Percentage of <b>Total</b> L-chip memory that is in use.



## Sample Output

```

show pfe resource usage memory user@host> show pfe resource usage memory
Resource Name Free Inuse Total %Use

Fpc 0 (* - resource 80% used)

Pfe 1 Lin 2

SRAM Pages (Page = 4096 bytes) 510 2 512 0.39

Pfe 1 Lout 2

L2rw Zones (Bytes)
Multicast List Table 16384 0 16384 0.00
L2 Descriptor Table 2080744 24 2080768 0.00
L2 Tag Table 488 24 512 4.69

Pfe 1 Lin 3

SRAM Pages (Page = 4096 bytes) 511 1 512 0.20

Pfe 1 Lout 3

L2rw Zones (Bytes)
Multicast List Table 16384 0 16384 0.00
L2 Descriptor Table 2080768 0 2080768 0.00
L2 Tag Table 504 8 512 1.56

Resource Name Free Inuse Total %Use

Fpc 1 (* - resource 80% used)

Pfe 1 Lin 2

SRAM Pages (Page = 4096 bytes) 511 1 512 0.20

Pfe 1 Lout 2

L2rw Zones (Bytes)
Multicast List Table 16384 0 16384 0.00
L2 Descriptor Table 2080768 0 2080768 0.00
L2 Tag Table 504 8 512 1.56

Pfe 1 Lin 3

SRAM Pages (Page = 4096 bytes) 511 1 512 0.20

Pfe 1 Lout 3

L2rw Zones (Bytes)
Multicast List Table 16384 0 16384 0.00
L2 Descriptor Table 2080696 72 2080768 0.00
L2 Tag Table 496 16 512 3.12

Resource Name Free Inuse Total %Use

Fpc 3 (* - resource 80% used)

```

Fpc 5 (\* - resource 80% used)

user@host> show pfe resource usage memory fpc 0 extensive

Resource Name	Free	Inuse	Total	%Use
---------------	------	-------	-------	------

Fpc 0 (\* - resource 80% used)

Pfe 2 Lin 3

SRAM Pages (Page = 4096 bytes)	510	3	512	0.59
Channel Table Pages		1		
Accounting Pages		1		

Pfe 2 Lout 3

L2rw Zones (Bytes)				
Multicast List Table	16384	0	16384	0.00
L2 Descriptor Table	2080748	20	2080768	0.00
L2 Tag Table	488	24	512	4.69

Pfe 2 Lin 4

SRAM Pages (Page = 4096 bytes)	511	33	512	6.45
Channel Table Pages		0		
Accounting Pages		1		

Pfe 2 Lout 4

L2rw Zones (Bytes)				
Multicast List Table	16384	0	16384	0.00
L2 Descriptor Table	2080768	0	2080768	0.00
L2 Tag Table	504	8	512	1.56

## show pfe version

---

<b>Syntax</b>	show pfe version <brief   detail>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 11.1 for the QFX Series.
<b>Description</b>	Display Packet Forwarding Engine version information.
<b>Options</b>	brief   detail—Display the specified level of output.
<b>Required Privilege Level</b>	admin
<b>List of Sample Output</b>	show pfe version brief on page 643 show pfe version detail on page 643

## Sample Output

**show pfe version brief**    user@host> show pfe version brief  
PFED release 11.1D0 built by builder on 2010-11-11 05:16:11 UTC

**show pfe version detail**    user@host> show pfe version detail  
PFED release 11.1D0 built by builder on 2010-11-11 05:16:11 UTC  
  
junos-core01.juniper.net:/volume/build/junos/rpd\_feb11/11.1/development/20101111.0/dbj-i386/junos/usr/sbin/pfed



# Remote System Access Operational Mode Commands

Table 113 on page 645 summarizes the command-line interface (CLI) commands you can use to access remote systems. Commands are listed in alphabetical order.

**Table 113: Remote System Access Operational Mode Commands**

Task	Command
Open an SSH connection to a remote system.	<b>ssh</b>
Open a telnet session to a remote system.	<b>telnet</b>



**NOTE:** To configure SSH and Telnet parameters, see the *Junos OS System Basics Configuration Guide*.

## ssh

---

<b>Syntax</b>	<code>ssh host</code> <code>&lt;bypass-routing&gt;</code> <code>&lt;inet   inet6&gt;</code> <code>&lt;interface <i>interface-name</i>&gt;</code> <code>&lt;logical-system <i>logical-system-name</i>&gt;</code> <code>&lt;routing-instance <i>routing-instance-name</i>&gt;</code> <code>&lt;source <i>address</i>&gt;</code> <code>&lt;v1   v2&gt;</code>
<b>Syntax (EX Series and QFX Series)</b>	<code>ssh host</code> <code>&lt;bypass-routing&gt;</code> <code>&lt;inet   inet6&gt;</code> <code>&lt;interface <i>interface-name</i>&gt;</code> <code>&lt;routing-instance <i>routing-instance-name</i>&gt;</code> <code>&lt;source <i>address</i>&gt;</code> <code>&lt;v1   v2&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>	<p>Use the SSH program to open a connection between a local router or switch and a remote system and execute commands on the remote system. You can issue the <b>ssh</b> command from the Junos OS CLI to log in to a remote system or from a remote system to log in to the local router or switch. When executing this command, you include one or more CLI commands by enclosing them in quotation marks and separating the commands with semicolons:</p> <pre>ssh address '<i>cli-command1</i> ; <i>cli-command2</i> '</pre>
<b>Options</b>	<p><i>host</i>—Name or address of the remote system.</p> <p><i>bypass-routing</i>—(Optional) Bypass the normal routing tables and send ping requests directly to a system on an attached network. If the system is not on a directly attached network, an error is returned. Use this option to ping a local system through an interface that has no route through it.</p> <p><i>inet   inet6</i>—(Optional) Create an IPv4 or IPv6 connection, respectively.</p> <p><i>interface interface-name</i>—(Optional) Interface name for the SSH session. (This option does not work when <b>default-address-selection</b> is configured at the <b>[edit system]</b> hierarchy level, because this configuration uses the loopback interface as the source address for all locally generated IP packets.)</p> <p><i>logical-system logical-system-name</i>—(Optional) Name of a particular logical system for the SSH attempt.</p> <p><i>routing-instance routing-instance-name</i>—(Optional) Name of the routing instance for the SSH attempt.</p>

source *address*—(Optional) Source address of the SSH connection.

v1 | v2—(Optional) Use SSH version 1 or 2, respectively, when connecting to a remote host.

**Additional Information** To configure an SSH (version 1) key for your user account, include the **authentication ssh-rsa** statement at the **[edit system login user *user-name*]** hierarchy level. To configure an SSH (version 2) key for your user account, include the **authentication dsa-rsa** statement at the **[edit system login user *user-name*]** hierarchy level. For details, see the *Junos OS System Basics Configuration Guide*.

You can limit the number of times a user can attempt to enter a password while logging in through SSH. To specify the number of times a user can attempt to enter a password to log in through SSH, include the **retry-options** statement at the **[edit system login]** hierarchy level. For details, see the *Junos OS System Basics Configuration Guide*.

**Required Privilege Level** network

**Related Documentation**

- Configuring SSH Host Keys for Secure Copying of Data

**List of Sample Output** **ssh** on page 647

**Output Fields** When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```
ssh user@switch> ssh cree
Host key not found from the list of known hosts.
Are you sure you want to continue connecting (yes/no)? yes

Host ?cree' added to the list of known hosts.
boojun@cree's password:
Last login: Sun Jun 21 10:43:42 1998 from junos-router
% ...
```

## telnet

---

<b>Syntax</b>	<code>telnet <i>host</i></code> <code>&lt;8bit&gt;</code> <code>&lt;bypass-routing&gt;</code> <code>&lt;inet   inet6&gt;</code> <code>&lt;interface <i>interface-name</i>&gt;</code> <code>&lt;logical-system <i>logical-system-name</i>&gt;</code> <code>&lt;no-resolve&gt;</code> <code>&lt;port <i>port-number</i>&gt;</code> <code>&lt;routing-instance <i>routing-instance-name</i>&gt;</code> <code>&lt;source <i>source-address</i>&gt;</code>
<b>Syntax (EX Series Switch)</b>	<code>telnet <i>host</i></code> <code>&lt;8bit&gt;</code> <code>&lt;bypass-routing&gt;</code> <code>&lt;inet   inet6&gt;</code> <code>&lt;interface <i>interface-name</i>&gt;</code> <code>&lt;no-resolve&gt;</code> <code>&lt;port <i>port-number</i>&gt;</code> <code>&lt;routing-instance <i>routing-instance-name</i>&gt;</code> <code>&lt;source <i>source-address</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.
<b>Description</b>	Open a telnet session to a remote system. Type Ctrl+] to escape from the telnet session to the telnet command level, and then type <b>quit</b> to exit from telnet.
<b>Options</b>	<p><i>host</i>—Name or address of the remote system.</p> <p>8bit—(Optional) Use an 8-bit data path.</p> <p>bypass-routing—(Optional) Bypass the normal routing tables and send ping requests directly to a system on an attached network. If the system is not on a directly attached network, an error is returned. Use this option to ping a local system through an interface that has no route through it.</p> <p>inet   inet6—(Optional) Open an IPv4 or IPv6 session, respectively.</p> <p>interface <i>interface-name</i>—(Optional) Interface name for the telnet session. (This option does not work when <b>default-address-selection</b> is configured at the <b>[edit system]</b> hierarchy level, because this configuration uses the loopback interface as the source address for all locally generated IP packets.)</p> <p>logical-system <i>logical-system-name</i>—(Optional) Name of a particular logical system for the telnet attempt.</p> <p>no-resolve—(Optional) Do not attempt to determine the hostname that corresponds to the IP address.</p> <p>port <i>port-number</i>—(Optional) Port number or service name on the remote system.</p>



routing-instance *routing-instance-name*—(Optional) Name of the routing instance for the telnet attempt.

source *source-address*—(Optional) Source address of the telnet connection.

**Additional Information** You can limit the number of times a user can attempt to enter a password while logging in through telnet. To specify the number of times a user can attempt to enter a password to log in through telnet, include the **retry-options** statement at the **[edit system login]** hierarchy level. For details, see the *Junos OS System Basics Configuration Guide*.

**Required Privilege Level** network

**List of Sample Output** telnet on page 649

**Output Fields** When you enter this command, you are provided feedback on the status of your request.

### Sample Output

```
telnet user@host> telnet 192.154.1.254
Trying 192.154.169.254...
Connected to level5.company.net.
Escape character is '^]'.
ttypa
login:
```



# Simple Network Management Protocol Operational Mode Commands

Table 114 on page 651 summarizes the command-line interface (CLI) commands that allow you to monitor the Simple Network Management Protocol (SNMP). Commands are listed in alphabetical order.

**Table 114: SNMP Operational Commands**

Task	Command
Clear SNMP statistics.	<b>clear snmp statistics</b>
Spoof (mimic) the behavior of an SNMP trap.	<b>request snmp spoof-trap</b>
Display information about health monitor alarms.	<b>show snmp health-monitor</b>
Display statistics about SNMP informs.	<b>show snmp inform-statistics</b>
Display local Management Information Base (MIB) object values through the command-line interface (CLI).	<b>show snmp mib</b>
Display information about Remote Monitoring (RMON) alarms and events.	<b>show snmp rmon</b>
Display statistics about SNMP packets sent and received.	<b>show snmp statistics</b>
Display SNMP version 3 statistics.	<b>show snmp v3</b>



**NOTE:** For information about how to configure SNMP, see the *Junos OS Network Management Configuration Guide*.

## clear snmp statistics

---

<b>Syntax</b>	clear snmp statistics
<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>	Clear Simple Network Management Protocol (SNMP) statistics.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	clear
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show snmp statistics on page 676</a></li></ul>
<b>List of Sample Output</b>	<a href="#">clear snmp statistics on page 652</a>
<b>Output Fields</b>	See <a href="#">show snmp statistics</a> for an explanation of output fields.

## Sample Output

**clear snmp statistics** In the following example, SNMP statistics are displayed before and after the **clear snmp statistics** command is issued:

```
user@host> show snmp statistics
SNMP statistics:
  Input:
    Packets: 8, Bad versions: 0, Bad community names: 0,
    Bad community uses: 0, ASN parse errors: 0,
    Too bigs: 0, No such names: 0, Bad values: 0,
    Read onlys: 0, General errors: 0,
    Total request varbinds: 8, Total set varbinds: 0,
    Get requests: 0, Get nexts: 8, Set requests: 0,
    Get responses: 0, Traps: 0,
    Silent drops: 0, Proxy drops 0
  Output:
    Packets: 2298, Too bigs: 0, No such names: 0,
    Bad values: 0, General errors: 0,
    Get requests: 0, Get nexts: 0, Set requests: 0,
    Get responses: 8, Traps: 2290
```

```
user@host> clear snmp statistics
```

```
user@host> show snmp statistics
SNMP statistics:
  Input:
    Packets: 0, Bad versions: 0, Bad community names: 0,
    Bad community uses: 0, ASN parse errors: 0,
    Too bigs: 0, No such names: 0, Bad values: 0,
    Read onlys: 0, General errors: 0,
    Total request varbinds: 0, Total set varbinds: 0,
```

```
Get requests: 0, Get nexts: 0, Set requests: 0,  
Get responses: 0, Traps: 0,  
Silent drops: 0, Proxy drops 0  
Output:  
Packets: 0, Too bigs: 0, No such names: 0,  
Bad values: 0, General errors: 0,  
Get requests: 0, Get nexts: 0, Set requests: 0,  
Get responses: 0, Traps: 0
```

## request snmp spoof-trap

<b>Syntax</b>	<b>request snmp spoof-trap</b> <b>&lt;trap&gt; variable-bindings &lt;object&gt; &lt;instance&gt; &lt;value&gt;</b>
<b>Release Information</b>	Command introduced in Junos OS Release 8.2. 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>	Spoof (mimic) the behavior of a Simple Network Management Protocol (SNMP) trap.
<b>Options</b>	<p><b>&lt;trap&gt;</b>—Name of the trap to spoof.</p> <p><b>variable-bindings &lt;object&gt; &lt;instance&gt; &lt;value&gt;</b>—(Optional) List of variables and values to include in the trap. Each variable binding is specified as an object name, the object instance, and the value (for example, <b>ifIndex[14] = 14</b>). Enclose the list of variable bindings in quotation marks ( " ") and use a comma to separate each object name, instance, and value definition (for example, <b>variable-bindings "ifIndex[14] = 14, ifAdminStatus[14] = 1, ifOperStatus[14] = 2"</b>). Objects included in the trap definition that do not have instances and values specified as part of the command are included in the trap and spoofed with automatically generated instances and values.</p> <p><b>&lt;dummy name&gt;</b>—A dummy trap name to display the list of available traps.</p> <p><b>Question mark (?)</b>—Question mark? to display possible completions.</p>
<b>Required Privilege Level</b>	request
<b>List of Sample Output</b>	<p><b>request snmp spoof-trap (with Variable Bindings)</b> on page 654</p> <p><b>request snmp spoof-trap (Illegal Trap Name)</b> on page 654</p> <p><b>request snmp spoof-trap (Question Mark ?)</b> on page 658</p>

## Sample Output

<b>request snmp spoof-trap (with Variable Bindings)</b>	<pre>user@host&gt; request snmp spoof-trap linkUp variable-bindings "ifIndex[14] = 14, ifAdminStatus[14] = 1, ifOperStatus[14] = 2" Spoof trap request result: trap sent successfully</pre>
<b>request snmp spoof-trap (Illegal Trap Name)</b>	<pre>user@host&gt; request snmp spoof-trap xx Spoof trap request result: trap not found</pre> <p>Allowed Traps:</p> <pre>adslAtucInitFailureTrap adslAtucPerfESsThreshTrap adslAtucPerfLofsThreshTrap adslAtucPerfLossThreshTrap adslAtucPerfLprsThreshTrap adslAtucRateChangeTrap adslAturPerfESsThreshTrap adslAturPerfLofsThreshTrap adslAturPerfLossThreshTrap adslAturPerfLprsThreshTrap</pre>

ads1AturRateChangeTrap  
apsEventChannelMismatch  
apsEventFEPLF  
apsEventModeMismatch  
apsEventPSBF  
apsEventSwitchover  
authenticationFailure  
bfdSessDown  
bfdSessUp  
bgpBackwardTransition  
bgpEstablished  
coldStart  
dlswTrapCircuitDown  
dlswTrapCircuitUp  
dlswTrapTConnDown  
dlswTrapTConnPartnerReject  
dlswTrapTConnProtViolation  
dlswTrapTConnUp  
dsx1LineStatusChange  
dsx3LineStatusChange  
entConfigChange  
fallingAlarm  
frDLCIStatusChange  
ggsnTrapChanged  
ggsnTrapCleared  
ggsnTrapNew  
gmp1sTunnelDown  
ifMauJabberTrap  
ipv6IfStateChange  
isisAreaMismatch  
isisAttemptToExceedMaxSequence  
isisAuthenticationFailure  
isisAuthenticationTypeFailure  
isisCorruptedLSPDetected  
isisDatabaseOverload  
isisIDLenMismatch  
isisLSPTooLargeToPropagate  
isisManualAddressDrops  
isisMaxAreaAddressesMismatch  
isisOriginatingLSPBufferSizeMismatch  
isisOwnLSPPurge  
isisProtocolsSupportedMismatch  
isisRejectedAdjacency  
isisSequenceNumberSkip  
isisVersionSkew  
jnxAccessAuthServerDisabled  
jnxAccessAuthServerEnabled  
jnxAccessAuthServiceDown  
jnxAccessAuthServiceUp  
jnxBfdSessDetectionTimeHigh  
jnxBfdSessTxIntervalHigh  
jnxBgpM2BackwardTransition  
jnxBgpM2Established  
jnxCmCfgChange  
jnxCmRescueChange  
jnxCollFlowOverload  
jnxCollFlowOverloadCleared  
jnxCollFtpSwitchover  
jnxCollMemoryAvailable  
jnxCollMemoryUnavailable  
jnxCollUnavailableDest

jnxCollUnavailableDestCleared  
jnxCollUnsuccessfulTransfer  
jnxDfcHardMemThresholdExceeded  
jnxDfcHardMemUnderThreshold  
jnxDfcHardPpsThresholdExceeded  
jnxDfcHardPpsUnderThreshold  
jnxDfcSoftMemThresholdExceeded  
jnxDfcSoftMemUnderThreshold  
jnxDfcSoftPpsThresholdExceeded  
jnxDfcSoftPpsUnderThreshold  
jnxEventTrap  
jnxExampleStartup  
jnxFEBSwitchover  
jnxFanFailure  
jnxFanOK  
jnxFruCheck  
jnxFruFailed  
jnxFruInsertion  
jnxFruOK  
jnxFruOffline  
jnxFruOnline  
jnxFruPowerOff  
jnxFruPowerOn  
jnxFruRemoval  
jnxHardDiskFailed  
jnxHardDiskMissing  
jnxJsAvPatternUpdateTrap  
jnxJsChassisClusterSwitchover  
jnxJsFwAuthCapacityExceeded  
jnxJsFwAuthFailure  
jnxJsFwAuthServiceDown  
jnxJsFwAuthServiceUp  
jnxJsNatAddrPoolThresholdStatus  
jnxJsScreenAttack  
jnxJsScreenCfgChange  
jnxLdpLspDown  
jnxLdpLspUp  
jnxLdpSesDown  
jnxLdpSesUp  
jnxMIMstCistPortLoopProtectStateChangeTrap  
jnxMIMstCistPortRootProtectStateChangeTrap  
jnxMIMstErrTrap  
jnxMIMstGenTrap  
jnxMIMstInvalidBpduRxdTrap  
jnxMIMstMstiPortLoopProtectStateChangeTrap  
jnxMIMstMstiPortRootProtectStateChangeTrap  
jnxMIMstNewRootTrap  
jnxMIMstProtocolMigrationTrap  
jnxMIMstRegionConfigChangeTrap  
jnxMIMstTopologyChgTrap  
jnxMacChangedNotification  
jnxMplsLdpInitSesThresholdExceeded  
jnxMplsLdpPathVectorLimitMismatch  
jnxMplsLdpSessionDown  
jnxMplsLdpSessionUp  
jnxOspfV3IfConfigError  
jnxOspfV3IfRxBadPacket  
jnxOspfV3IfStateChange  
jnxOspfV3LsdbApproachingOverflow  
jnxOspfV3LsdbOverflow  
jnxOspfV3NbrRestartHelperStatusChange



jnxOspfV3NbrStateChange  
jnxOspfV3NssaTranslatorStatusChange  
jnxOspfV3RestartStatusChange  
jnxOspfV3VirtIfConfigError  
jnxOspfV3VirtIfRxBadPacket  
jnxOspfV3VirtIfStateChange  
jnxOspfV3VirtNbrRestartHelperStatusChange  
jnxOspfV3VirtNbrStateChange  
jnxOtnAlarmCleared  
jnxOtnAlarmSet  
jnxOverTemperature  
jnxPMonOverloadCleared  
jnxPMonOverloadSet  
jnxPingEgressJitterThresholdExceeded  
jnxPingEgressStdDevThresholdExceeded  
jnxPingEgressThresholdExceeded  
jnxPingIngressJitterThresholdExceeded  
jnxPingIngressStdDevThresholdExceeded  
jnxPingIngressThresholdExceeded  
jnxPingRttJitterThresholdExceeded  
jnxPingRttStdDevThresholdExceeded  
jnxPingRttThresholdExceeded  
jnxPortBpduErrorStatusChangeTrap  
jnxPortLoopProtectStateChangeTrap  
jnxPortRootProtectStateChangeTrap  
jnxPowerSupplyFailure  
jnxPowerSupplyOK  
jnxRedundancySwitchover  
jnxRmonAlarmGetFailure  
jnxRmonGetOk  
jnxSecAccessIfMacLimitExceeded  
jnxSecAccessSdsRateLimitCrossed  
jnxSonetAlarmCleared  
jnxSonetAlarmSet  
jnxSpSvcSetCpuExceeded  
jnxSpSvcSetCpuOk  
jnxSpSvcSetZoneEntered  
jnxSpSvcSetZoneExited  
jnxStormEventNotification  
jnxSyslogTrap  
jnxTemperatureOK  
jnxVccpPortDown  
jnxVccpPortUp  
jnxVpnIfDown  
jnxVpnIfUp  
jnxVpnPwDown  
jnxVpnPwUp  
jnxl2aldGlobalMacLimit  
jnxl2aldInterfaceMacLimit  
jnxl2aldRoutingInstMacLimit  
linkDown  
linkUp  
lldpRemTablesChange  
mfrMibTrapBundleLinkMismatch  
mplsLspChange  
mplsLspDown  
mplsLspInfoChange  
mplsLspInfoDown  
mplsLspInfoPathDown  
mplsLspInfoPathUp  
mplsLspInfoUp

mplsLspPathDown  
mplsLspPathUp  
mplsLspUp  
mplsNumVrfRouteMaxThreshExceeded  
mplsNumVrfRouteMidThreshExceeded  
mplsNumVrfSecIllglLb1ThrshExcd  
mplsTunnelDown  
mplsTunnelReoptimized  
mplsTunnelRerouted  
mplsTunnelUp  
mplsVrfIfDown  
mplsVrfIfUp  
mplsXCDown  
mplsXCUp  
msdpBackwardTransition  
msdpEstablished  
newRoot  
ospfIfAuthFailure  
ospfIfConfigError  
ospfIfRxBadPacket  
ospfIfStateChange  
ospfLsdbApproachingOverflow  
ospfLsdbOverflow  
ospfMaxAgeLsa  
ospfNbrStateChange  
ospfOriginateLsa  
ospfTxRetransmit  
ospfVirtIfAuthFailure  
ospfVirtIfConfigError  
ospfVirtIfRxBadPacket  
ospfVirtIfStateChange  
ospfVirtIfTxRetransmit  
ospfVirtNbrStateChange  
pethMainPowerUsageOffNotification  
pethMainPowerUsageOnNotification  
pethPsePortOnOffNotification  
pingProbeFailed  
pingTestCompleted  
pingTestFailed  
ptopoConfigChange  
risingAlarm  
rpMauJabberTrap  
sdlcLSStatusChange  
sdlcPortStatusChange  
topologyChange  
traceRoutePathChange  
traceRouteTestCompleted  
traceRouteTestFailed  
vrrpTrapAuthFailure  
vrrpTrapNewMaster  
warmStart

**request snmp  
spoof-trap (Question  
Mark ?)**

user@host> request snmp spoof-trap ?  
Possible completions:  
<trap> The name of the trap to spoof  
adslAtucInitFailureTrap  
adslAtucPerfESsThreshTrap  
adslAtucPerfLofsThreshTrap  
adslAtucPerfLolsThreshTrap  
adslAtucPerfLossThreshTrap  
adslAtucPerfLprsThreshTrap

```
adslAtucRateChangeTrap
adslAturPerfESsThreshTrap
adslAturPerfLofsThreshTrap
adslAturPerfLossThreshTrap
adslAturPerfLprsThreshTrap
adslAturRateChangeTrap
apsEventChannelMismatch
apsEventFEPLF
apsEventModeMismatch
apsEventPSBF
apsEventSwitchover
authenticationFailure
bfdSessDown
bfdSessUp
bgpBackwardTransition
bgpEstablished
coldStart
dlsWTrapCircuitDown
dlsWTrapCircuitUp
---(more 10%)---
```

## show snmp health-monitor

<b>Syntax</b>	show snmp health-monitor <alarms <detail>>   <logs>
<b>Release Information</b>	Command introduced in Junos OS Release 8.0. Command introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 11.1 for the QFX Series.
<b>Description</b>	Display information about Simple Network Management Protocol (SNMP) health monitor alarms and logs.
<b>Options</b>	none—Display information about all health monitor alarms and logs.  alarms <detail>—(Optional) Display detailed information about health monitor alarms.  logs—(Optional) Display information about health monitor logs.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show snmp health-monitor on page 662 show snmp health-monitor alarms detail on page 664
<b>Output Fields</b>	Table 115 on page 660 describes the output fields for the <b>show snmp health-monitor</b> command. Output fields are listed in the approximate order in which they appear.

**Table 115: show snmp health-monitor Output Fields**

Field Name	Field Description	Level of Output
<b>Alarm Index</b>	Alarm identifier.	All levels
<b>Variable description</b>	Description of the health monitor object instance being monitored.	All levels
<b>Variable name</b>	Name of the health monitor object instance being monitored.	All levels
<b>Value</b>	Current value of the monitored variable in the most recent sample interval.	All levels

Table 115: show snmp health-monitor Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>State</b>	<p>State of the alarm or event entry:</p> <ul style="list-style-type: none"> <li>Alarms: <ul style="list-style-type: none"> <li><b>active</b>—Entry is fully configured and activated.</li> <li><b>falling threshold crossed</b>—Value of the variable has crossed the lower threshold limit.</li> <li><b>rising threshold crossed</b>—Value of the variable has crossed the upper threshold limit.</li> <li><b>under creation</b>—Entry is being configured and is not yet activated.</li> <li><b>startup</b>—Alarm is waiting for the first sample of the monitored variable.</li> <li><b>object not available</b>—Monitored variable of that type is not available to the health monitor agent.</li> <li><b>instance not available</b>—Monitored variable's instance is not available to the health monitor agent.</li> <li><b>object type invalid</b>—Monitored variable is not a numeric value.</li> <li><b>object processing errored</b>—An error occurred when the monitored variable was processed.</li> <li><b>unknown</b>—State is not one of the above.</li> </ul> </li> </ul>	All levels
<b>Variable OID</b>	Object ID to which the variable name is resolved. The format is x.x.x.x.	detail
<b>Sample type</b>	Method of sampling the monitored variable and calculating the value to compare against the upper and lower thresholds. It can have the value of <b>absolute value</b> or <b>delta value</b> .	detail
<b>Startup alarm</b>	<p>Alarm that might be sent when this entry is first activated, depending on the following criteria:</p> <ul style="list-style-type: none"> <li>Alarm is sent when one of the following situations exists: <ul style="list-style-type: none"> <li>Value of the alarm is above or equal to the rising threshold and the startup type is either <b>rising alarm</b> or <b>rising or falling alarm</b>.</li> <li>Value of the alarm is below or equal to the falling threshold and the startup type is either <b>falling alarm</b> or <b>rising or falling alarm</b>.</li> </ul> </li> <li>Alarm is <i>not</i> sent when one of the following situations exists: <ul style="list-style-type: none"> <li>Value of the alarm is above or equal to the rising threshold and the startup type is <b>falling alarm</b>.</li> <li>Value of the alarm is below or equal to the falling threshold and the startup type is <b>rising alarm</b>.</li> <li>Value of the alarm is between the thresholds.</li> </ul> </li> </ul>	detail
<b>Owner</b>	Name of the entry configured by the user. If the entry was created through the CLI, the owner has <b>monitor</b> prepended to it.	detail
<b>Creator</b>	Mechanism by which the entry was configured ( <b>Health Monitor</b> ).	detail
<b>Sample interval</b>	Time period between samples (in seconds).	detail
<b>Rising threshold</b>	Upper limit threshold value as a percentage of the maximum possible value.	detail

Table 115: show snmp health-monitor Output Fields (*continued*)

Field Name	Field Description	Level of Output
Falling threshold	Lower limit threshold value as a percentage of the maximum possible value.	detail
Rising event index	Event triggered when the rising threshold is crossed.	detail
Falling event index	Event triggered when the falling threshold is crossed.	detail

### Sample Output

```

show snmp health-monitor user@host> show snmp health-monitor

Alarm
Index  Variable description                                     Value State
-----
32768 Health Monitor: root file system utilization
      jnxHrStoragePercentUsed.1                          58 active
32769 Health Monitor: /config file system utilization
      jnxHrStoragePercentUsed.2                          0 active
32770 Health Monitor: RE 0 CPU utilization
      jnxOperatingCPU.9.1.0.0                            0 active
32773 Health Monitor: RE 0 Memory utilization
      jnxOperatingBuffer.9.1.0.0                         35 active
32775 Health Monitor: jkernel daemon CPU utilization
      Init daemon                                         0 active
      Chassis daemon                                     50 active
      Firewall daemon                                    0 active
      Interface daemon                                    5 active
      SNMP daemon                                         11 active
      MIB2 daemon                                         42 active
      Sonet APS daemon                                   0 active
      VRRP daemon                                         0 active
      Alarm daemon                                        3 active
      PFE daemon                                          0 active
      CRAFT daemon                                        0 active
      Traffic sampling control daemon                    0 active
      Ilmi daemon                                         0 active
      Remote operations daemon                           0 active
      CoS daemon                                          0 active
      Pic Services Logging daemon                        0 active
      Internal Routing Service Daemon                    3 active
      Network Access Service daemon                      0 active
      Forwarding UDP daemon                              0 active
      Routing socket proxy daemon                        0 active
      Disk Monitoring daemon                             1 active
      Inet daemon                                         0 active
      Syslog daemon                                       0 active
      Adaptive Services PIC daemon                       0 active
      ECC parity errors logging Daemon                   0 active
      Layer 2 Tunneling Protocol daemon                  0 active
      PPPoE daemon                                        3 active
      Redundancy device daemon                           0 active

```

```

PPP daemon                                0 active
Dynamic Flow Capture Daemon               0 active

32776 Health Monitor: jroute daemon CPU utilization
Routing protocol daemon                   1 active
Management daemon                         0 active
Management daemon                         0 active
Command line interface                    4 active
Periodic Packet Management daemon         0 active
Link Management daemon                    0 active
Pragmatic General Multicast daemon        0 active
Bidirectional Forwarding Detection daemon 0 active
SRC daemon                               0 active
audit daemon                             0 active
Event daemon                             0 active

32777 Health Monitor: jcrypto daemon CPU utilization
IPSec Key Management daemon               0 active

32779 Health Monitor: jkernel daemon Memory utilization
Init daemon                              47384 active
Chassis daemon                           20204 active
Firewall daemon                          1956 active
Interface daemon                         3340 active
SNMP daemon                              4540 active
MIB2 daemon                              3880 active
Sonet APS daemon                         2632 active
VRRP daemon                              2672 active
Alarm daemon                             1856 active
PFE daemon                               2600 active
CRAFT daemon                             2000 active
Traffic sampling control daemon           3164 active
Ilmi daemon                              2132 active
Remote operations daemon                  2964 active
CoS daemon                               3044 active
Pic Services Logging daemon               1944 active
Internal Routing Service Daemon           1392 active
Network Access Service daemon             1992 active
Forwarding UDP daemon                     1876 active
Routing socket proxy daemon               1296 active
Disk Monitoring daemon                    1180 active
Inet daemon                              1296 active
Syslog daemon                             1180 active
Adaptive Services PIC daemon              3220 active
ECC parity errors logging Daemon          1100 active
Layer 2 Tunneling Protocol daemon         3372 active
PPPoE daemon                             1424 active
Redundancy device daemon                  1820 active
PPP daemon                               2060 active
Dynamic Flow Capture Daemon               10740 active

32780 Health Monitor: jroute daemon Memory utilization
Routing protocol daemon                   8104 active
Management daemon                        13360 active
Management daemon                        19252 active
Command line interface                    9912 active
Periodic Packet Management daemon         1484 active
Link Management daemon                    2016 active
Pragmatic General Multicast daemon        1968 active
Bidirectional Forwarding Detection daemon 1956 active
SRC daemon                               1772 active
audit daemon                             1772 active

```

Event daemon 1808 active

32781 Health Monitor: jcrypto daemon Memory utilization  
IPSec Key Management daemon 5600 active

**show snmp** user@host> **show snmp health-monitor alarms detail**  
**health-monitor alarms**  
**detail**

```
Alarm Index 32768:
Variable name          jnxHrStoragePercentUsed.1
Variable OID           1.3.6.1.4.1.2636.3.31.1.1.1.1.1
Sample type            absolute value
Startup alarm          rising alarm
Owner                  Health Monitor: root file system
                       utilization
Creator                Health Monitor
State                  active
Sample interval        300 seconds
Rising threshold       80
Falling threshold      70
Rising event index     32768
Falling event index    32768
Instance Value: 58
Instance State: active

Alarm Index 32769:
Variable name          jnxHrStoragePercentUsed.2
Variable OID           1.3.6.1.4.1.2636.3.31.1.1.1.1.2
Sample type            absolute value
Startup alarm          rising alarm
Owner                  Health Monitor: /config file system
                       utilization
Creator                Health Monitor
State                  active
Sample interval        300 seconds
Rising threshold       80
Falling threshold      70
Rising event index     32768
Falling event index    32768
Instance Value: 0
Instance State: active

Alarm Index 32770:
Variable name          jnxOperatingCPU.9.1.0.0
Variable OID           1.3.6.1.4.1.2636.3.1.13.1.8.9.1.0.0
Sample type            absolute value
Startup alarm          rising alarm
Owner                  Health Monitor: RE 0 CPU utilization

Creator                Health Monitor
State                  active
Sample interval        300 seconds
Rising threshold       80
Falling threshold      70
Rising event index     32768
Falling event index    32768
Instance Value: 0
Instance State: active

Alarm Index 32773:
Variable name          jnxOperatingBuffer.9.1.0.0
```



Variable OID	1.3.6.1.4.1.2636.3.1.13.1.11.9.1.0.0
Sample type	absolute value
Startup alarm	rising alarm
Owner	Health Monitor: RE 0 Memory utilization

Creator	Health Monitor
State	active
Sample interval	300 seconds
Rising threshold	80
Falling threshold	70
Rising event index	32768
Falling event index	32768
Instance Value:	35
Instance State:	active

## Alarm Index 32775:

Variable name	sysAppElmtRunCPU.3
Variable OID	1.3.6.1.2.1.54.1.2.3.1.9.3
Sample type	delta value
Startup alarm	rising alarm
Owner	Health Monitor: jkernel daemon CPU utilization

Creator	Health Monitor
State	active
Sample interval	300 seconds
Rising threshold	24000
Falling threshold	21000
Rising event index	32768
Falling event index	32768
Instance Name:	sysAppElmtRunCPU.3.1.1
Instance Description:	Init daemon
Instance Value:	0
Instance State:	active

Instance Name:	sysAppElmtRunCPU.3.2.2786
Instance Description:	Chassis daemon
Instance Value:	50
Instance State:	active

Instance Name:	sysAppElmtRunCPU.3.3.2938
Instance Description:	Firewall daemon
Instance Value:	0
Instance State:	active

Instance Name:	sysAppElmtRunCPU.3.4.2942
Instance Description:	Interface daemon
Instance Value:	5
Instance State:	active

Instance Name:	sysAppElmtRunCPU.3.7.7332
Instance Description:	SNMP daemon
Instance Value:	11
Instance State:	active

Instance Name:	sysAppElmtRunCPU.3.9.2914
Instance Description:	MIB2 daemon
Instance Value:	42
Instance State:	active

Instance Name:	sysAppElmtRunCPU.3.12.2916
----------------	----------------------------

Instance Description: Sonet APS daemon  
Instance Value: 0  
Instance State: active

Instance Name: sysAppElmtRunCPU.3.13.2917  
Instance Description: VRRP daemon  
Instance Value: 0  
Instance State: active

Instance Name: sysAppElmtRunCPU.3.14.2787  
Instance Description: Alarm daemon  
Instance Value: 3  
Instance State: active

Instance Name: sysAppElmtRunCPU.3.15.2940  
Instance Description: PFE daemon  
Instance Value: 0  
Instance State: active

Instance Name: sysAppElmtRunCPU.3.16.2788  
Instance Description: CRAFT daemon  
Instance Value: 0  
Instance State: active

Instance Name: sysAppElmtRunCPU.3.17.2918  
Instance Description: Traffic sampling control daemon

---(more 23%)---

## show snmp inform-statistics

<b>Syntax</b>	show snmp inform-statistics
<b>Release Information</b>	Command introduced in Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Display information about Simple Network Management Protocol (SNMP) inform requests.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show snmp inform-statistics on page 667
<b>Output Fields</b>	Table 116 on page 667 describes the output fields for the <b>show snmp inform-statistics</b> command. Output fields are listed in the approximate order in which they appear.

**Table 116: show snmp inform-statistics Output Fields**

Field Name	Field Description
<b>Target Name</b>	Name of the device configured to receive and respond to SNMP informs.
<b>Address</b>	IP address of the target device.
<b>Sent</b>	Number of informs sent to the target device and acknowledged by the target device.
<b>Pending</b>	Number of informs held in memory pending a response from the target device.
<b>Discarded</b>	Number of informs discarded after the specified number of retransmissions to the target device were attempted.
<b>Timeouts</b>	Number of informs that did not receive an acknowledgement from the target device within the timeout specified.
<b>Probe Failures</b>	Connection failures that occurred (for example, when the target server returned invalid content or you incorrectly configured the target address).

## Sample Output

```

show snmp user@host> show snmp inform-statistics
inform-statistics Inform Request Statistics:
Target Name: TA1_v3_md5_none Address: 172.17.20.184
Sent: 176, Pending: 0
Discarded: 0, Timeouts: 0, Probe Failures: 0
Target Name: TA2_v3_sha_none Address: 192.168.110.59
Sent: 0, Pending: 4
Discarded: 84, Timeouts: 0, Probe Failures: 258
Target Name: TA5_v2_none Address: 172.17.20.184

```

Sent: 0, Pending: 0  
Discarded: 2, Timeouts: 10, Probe Failures: 0

## show snmp mib

<b>Syntax</b>	<code>show snmp mib (get   get-next   walk) (ascii   decimal) <i>object-id</i> .</code>
<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>ascii</b> and <b>decimal</b> options introduced in Junos OS Release 9.6.</p> <p><b>ascii</b> and <b>decimal</b> options introduced in Junos OS Release 9.6 for EX Series switches.</p> <p>Command introduced in Junos OS Release 11.1 for the QFX Series.</p>
<b>Description</b>	Display local Simple Network Management Protocol (SNMP) Management Information Base (MIB) object values.
<b>Options</b>	<p><b>get</b>—Retrieve and display one or more SNMP object values.</p> <p><b>get-next</b>—Retrieve and display the next SNMP object values.</p> <p><b>walk</b>—Retrieve and display the SNMP object values that are associated with the requested object identifier (OID). When you use this option, the Junos OS displays the objects below the subtree that you specify.</p> <p><b>ascii</b>—Display the SNMP object's string indices as an ascii-key representation.</p> <p><b>decimal</b>—Display the SNMP object values in the decimal (default) format. The <b>decimal</b> option is the default option for this command. Therefore, issuing the <b>show snmp mib (get   get-next   walk) decimal object-id</b> and the <b>show snmp mib (get   get-next   walk) object-id</b> commands display the same output.</p> <p><b>object-id</b>—The object can be represented by a sequence of dotted integers (such as 1.3.6.1.2.1.2) or by its subtree name (such as <b>interfaces</b>). When entering multiple objects, enclose the objects in quotation marks.</p>
<b>Required Privilege Level</b>	snmp—To view this statement in the configuration.
<b>List of Sample Output</b>	<p><code>show snmp mib get</code> on page 670</p> <p><code>show snmp mib get (Multiple Objects)</code> on page 670</p> <p><code>show snmp mib get-next</code> on page 670</p> <p><code>show snmp mib get-next (Specify an OID)</code> on page 670</p> <p><code>show snmp mib walk</code> on page 670</p> <p><code>show snmp mib walk (QFX Series)</code> on page 670</p> <p><code>show snmp mib walk decimal</code> on page 670</p> <p><code>show snmp mib walk (ASCII)</code> on page 670</p> <p><code>show snmp mib walk (Multiple Indices)</code> on page 670</p> <p><code>show snmp mib walk decimal (Multiple Indices)</code> on page 671</p>
<b>Output Fields</b>	Table 117 on page 670 describes the output fields for the <b>show snmp mib</b> command. Output fields are listed in the approximate order in which they appear.

Table 117: show snmp mib Output Fields

Field Name	Field Description
<i>name</i>	Object name and numeric instance value.
<i>object value</i>	Object value. The Junos OS translates OIDs into the corresponding object names.

### Sample Output

```

show snmp mib get      user@host> show snmp mib get sysObjectID.0
                        sysObjectID.0 = jnxProductNameM20

show snmp mib get      user@host> show snmp mib get ?sysObjectID.0 sysUpTime.0?
(Multiple Objects)    sysObjectID.0 = jnxProductNameM20
                        sysUpTime.0 = 1640992

show snmp mib          user@host> show snmp mib get-next jnxMibs
get-next              jnxBoxClass.0 = jnxProductLineM20.0

show snmp mib          user@host> show snmp mib get-next 1.3.6.1
get-next (Specify an  sysDescr.0 = Juniper Networks, Inc. m20 internet router, kernel
OID)                  Junos OS Release: 2004-1 Build date: build date UTC Copyright (c) 1996-2004 Juniper
                        Networks, Inc.

show snmp mib walk     user@host> show snmp mib walk system
                        sysDescr.0 = Juniper Networks, Inc. m20 internet router, kernel
                        Junos OS Release #0: 2004-1 Build date: build date UTC Copyright (c) 1996-2004
                        Juniper Networks, Inc.
                        sysObjectID.0 = jnxProductNameM20
                        sysUpTime.0 = 1640992
                        sysContact.0 = Your contact
                        sysName.0 = my router
                        sysLocation.0 = building 1
                        sysServices.0 = 4

show snmp mib walk     user@switch> show snmp mib walk system
(QFX Series)          sysDescr.0 = Juniper Networks, Inc. qfx3500s internet router, kernel JUNOS
                        11.1-20100926.0 #0: 2010-09-26 06:17:38 UTC Build date: 2010-09-26 06:00:10
                        sysObjectID.0 = jnxProductQFX3500
                        sysUpTime.0 = 138980301
                        sysContact.0 = System Contact
                        sysName.0 = LabQFX3500
                        sysLocation.0 = Lab
                        sysServices.0 = 4

show snmp mib walk     user@host> show snmp mib walk decimal jnxUtilData
decimal                jnxUtilCounter32Value.102.114.101.100 = 100

show snmp mib walk     show snmp mib walk ascii jnxUtilData
(ASCII)                jnxUtilCounter32Value."fred" = 100

show snmp mib walk     show snmp mib walk ascii jnxFWCounterByteCount
(Multiple Indices)    jnxFWCounterByteCount."fe-1/3/0.0-i"."CLASS_BE-fe-1/3/0.0-i".2 = 0
                        jnxFWCounterByteCount."fe-1/3/0.0-i"."CLASS_CC-fe-1/3/0.0-i".2 = 0

```

```
jnxFWCounterByteCount."fe-1/3/0.0-i"."CLASS_RT-fe-1/3/0.0-i".2 = 0
.....
```

**show snmp mib walk**  
**decimal (Multiple**  
**Indices)**

```
show snmp mib walk ascii jnxFWCounterByteCount
jnxFWCounterByteCount."fe-1/3/0.0-i"."CLASS_BE-fe-1/3/0.0-i".2 = 0
jnxFWCounterByteCount."fe-1/3/0.0-i"."CLASS_CC-fe-1/3/0.0-i".2 = 0
jnxFWCounterByteCount."fe-1/3/0.0-i"."CLASS_RT-fe-1/3/0.0-i".2 = 0
.....
```

## show snmp rmon

<b>Syntax</b>	show snmp rmon <alarms <brief   detail>   events <brief   detail>   logs>
<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 information about Simple Network Management Protocol (SNMP) Remote Monitoring (RMON) alarms and events.
<b>Options</b>	none—Display information about all RMON alarms and events.  alarms—(Optional) Display information about RMON alarms.  brief   detail—(Optional) Display brief or detailed information about RMON alarms or events.  events—(Optional) Display information about RMON events.  logs—(Optional) Display information about RMON monitoring logs.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show snmp rmon on page 674 show snmp rmon alarms detail on page 674 show snmp rmon events detail on page 675
<b>Output Fields</b>	Table 118 on page 672 describes the output fields for the <b>show snmp rmon</b> command. Output fields are listed in the approximate order in which they appear.

Table 118: show snmp rmon Output Fields

Field Name	Field Description	Level of Output
Alarm Index	Alarm identifier.	All levels



Table 118: show snmp rmon Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>State</b>	<p>State of the alarm or event entry:</p> <p>Alarms:</p> <ul style="list-style-type: none"> <li>• <b>active</b>—Entry is fully configured and activated.</li> <li>• <b>falling threshold crossed</b>—Value of the variable has crossed the lower threshold limit.</li> <li>• <b>rising threshold crossed</b>—Value of the variable has crossed the upper threshold limit.</li> <li>• <b>under creation</b>—Entry is being configured and is not yet activated.</li> <li>• <b>startup</b>—Alarm is waiting for the first sample of the monitored variable.</li> <li>• <b>object not available</b>—Monitored variable of that type is not available to the SNMP agent.</li> <li>• <b>instance not available</b>—Monitored variable's instance is not available to the SNMP agent.</li> <li>• <b>object type invalid</b>—Monitored variable is not a numeric value.</li> <li>• <b>object processing errored</b>—An error occurred when the monitored variable was processed.</li> <li>• <b>unknown</b>—State is not one of the above.</li> </ul> <p>Events:</p> <ul style="list-style-type: none"> <li>• <b>active</b>—Entry has been fully configured and activated.</li> <li>• <b>under creation</b>—Entry is being configured and is not yet activated.</li> <li>• <b>unknown</b>—State is not one of the above.</li> </ul>	All levels
<b>Variable name</b>	Name of the SNMP object instance being monitored.	All levels
<b>Event Index</b>	Event identifier.	All levels
<b>Type</b>	<p>Type of notification made when an event is triggered. It can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>log</b>—A system log message is generated and an entry is made to the log table.</li> <li>• <b>snmptrap</b>—An SNMP trap is sent to the configured destination.</li> <li>• <b>log and trap</b>—A system log message is generated, an entry is made to the log table, and an SNMP trap is sent to the configured destination.</li> <li>• <b>none</b>—Neither log nor trap will be sent.</li> </ul>	<b>detail</b>
<b>Last Event</b>	Date and time of the last event. It has the format <i>yyyy-mm-dd hh:mm:ss timezone</i> .	<b>brief</b>
<b>Community</b>	Identifies the trap group used for sending the SNMP trap.	<b>detail</b>
<b>Variable OID</b>	Object ID to which the variable name is resolved. The format is x.x.x.x.	<b>detail</b>
<b>Sample type</b>	Method of sampling the monitored variable and calculating the value to compare against the upper and lower thresholds. It can have the value of <b>absolute value</b> or <b>delta value</b> .	<b>detail</b>

Table 118: show snmp rmon Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Startup alarm</b>	Alarm that might be sent when this entry is first activated, depending on the following criteria: <ul style="list-style-type: none"> <li>Alarm is sent when one of the following situations exists: <ul style="list-style-type: none"> <li>Value of the alarm is above or equal to the rising threshold and the startup type is either <b>rising alarm</b> or <b>rising or falling alarm</b>.</li> <li>Value of the alarm is below or equal to the falling threshold and the startup type is either <b>falling alarm</b> or <b>rising or falling alarm</b>.</li> </ul> </li> <li>Alarm is <i>not</i> sent when one of the following situations exists: <ul style="list-style-type: none"> <li>Value of the alarm is above or equal to the rising threshold and the startup type is <b>falling alarm</b>.</li> <li>Value of the alarm is below or equal to the falling threshold and the startup type is <b>rising alarm</b>.</li> <li>Value of the alarm is between the thresholds.</li> </ul> </li> </ul>	<b>detail</b>
<b>Owner</b>	Name of the entry configured by the user. If the entry was created through the CLI, the owner has <b>monitor</b> prepended to it.	<b>detail</b>
<b>Creator</b>	Mechanism by which the entry was configured ( <b>CLI</b> or <b>SNMP</b> ).	<b>detail</b>
<b>Sample interval</b>	Time period between samples (in seconds).	<b>detail</b>
<b>Rising threshold</b>	Upper limit threshold value configured by the user.	<b>detail</b>
<b>Falling threshold</b>	Lower limit threshold value configured by the user.	<b>detail</b>
<b>Rising event index</b>	Event triggered when the rising threshold is crossed.	<b>detail</b>
<b>Falling event index</b>	Event triggered when the falling threshold is crossed.	<b>detail</b>
<b>Current value</b>	Current value of the monitored variable in the most recent sample interval.	<b>detail</b>

## Sample Output

```

show snmp rmon      user@host> show snmp rmon
                    Alarm
                    Index  State                      Variable name
                      1  falling threshold crossed    ifInOctets.1

                    Event
                    Index  Type                      Last Event
                      1  log and trap                2002-01-30 01:13:01 PST

show snmp rmon      user@host> show snmp rmon alarms detail
alarms detail
Alarm Index 1:
Variable name                      ifInOctets.1
Variable OID                        1.3.6.1.2.1.2.2.1.10.1

```

Sample type		delta value
Startup alarm		rising or falling alarm
Owner		monitor
Creator		CLI
State		falling threshold crossed
Sample interval	60	seconds
Rising threshold	100000	
Falling threshold	80000	
Rising event index	1	
Falling event index	1	
Current value	0	

```
show snmp rmon events detail user@host> show snmp rmon events detail
Event Index 1:
  Type          log and trap
  Community     boy-elroy
  Last event    2002-01-30 01:13:01 PST
  Creator       CLI
  State         active
```

## show snmp statistics

<b>Syntax</b>	show snmp statistics
<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 statistics about Simple Network Management Protocol (SNMP) packets sent and received by the router or switch.
<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>clear snmp statistics on page 652</li> </ul>
<b>List of Sample Output</b>	show snmp statistics on page 679
<b>Output Fields</b>	Table 119 on page 676 describes the output fields for the <b>show snmp statistics</b> command. Output fields are listed in the approximate order in which they appear.

Table 119: show snmp statistics Output Fields

Field Name	Field Description
<b>Input</b>	<p>Information about received packets:</p> <ul style="list-style-type: none"> <li><b>Packets(snmplnPkts)</b>—Total number of messages delivered to the SNMP entity from the transport service.</li> <li><b>Bad versions—(snmplnBadVersions)</b> Total number of messages delivered to the SNMP entity that were for an unsupported SNMP version.</li> <li><b>Bad community names—(snmplnBadCommunityNames)</b> Total number of messages delivered to the SNMP entity that used an SNMP community name not known to the entity.</li> <li><b>Bad community uses—(snmplnBadCommunityUses)</b> Total number of messages delivered to the SNMP entity that represented an SNMP operation that was not allowed by the SNMP community named in the message.</li> <li><b>ASN parse errors—(snmplnASNParseErrs)</b> Total number of ASN.1 or BER errors encountered by the SNMP entity when decoding received SNMP messages.</li> <li><b>Too big—(snmplnTooBig)</b> Total number of SNMP PDUs delivered to the SNMP entity with an error status field of <b>tooBig</b>.</li> <li><b>No such names—(snmplnNoSuchNames)</b> Total number of SNMP PDUs delivered to the SNMP entity with an error status field of <b>noSuchName</b>.</li> <li><b>Bad values—(snmplnBadValues)</b> Total number of SNMP PDUs delivered to the SNMP entity with an error status field of <b>badValue</b>.</li> <li><b>Read only—(snmplnReadOnly)</b> Total number of valid SNMP PDUs delivered to the SNMP entity with an error status field of <b>readOnly</b>. Only incorrect implementations of SNMP generate this error.</li> </ul>

Table 119: show snmp statistics Output Fields (*continued*)

Field Name	Field Description
Input (continued)	<ul style="list-style-type: none"> <li>• <b>General errors—(snmpInGenErrs)</b> Total number of SNMP PDUs delivered to the SNMP entity with an error status field of <b>genErr</b>.</li> <li>• <b>Total requests varbinds—(snmpInTotalReqVars)</b> Total number of MIB objects retrieved successfully by the SNMP entity as a result of receiving valid SNMP <b>GetRequest</b> and <b>GetNext</b> PDUs.</li> <li>• <b>Total set varbinds—(snmpInSetVars)</b> Total number of MIB objects modified successfully by the SNMP entity as a result of receiving valid SNMP <b>SetRequest</b> PDUs.</li> <li>• <b>Get requests—(snmpInGetRequests)</b> Total number of SNMP <b>GetRequest</b> PDUs that have been accepted and processed by the SNMP entity.</li> <li>• <b>Get nexts—(snmpInGetNexts)</b> Total number of SNMP <b>GetNext</b> PDUs that have been accepted and processed by the SNMP entity.</li> <li>• <b>Set requests—(snmpInSetRequests)</b> Total number of SNMP <b>SetRequest</b> PDUs that have been accepted and processed by the SNMP entity.</li> <li>• <b>Get responses—(snmpInGetResponses)</b> Total number of SNMP <b>GetResponse</b> PDUs that have been accepted and processed by the SNMP entity.</li> <li>• <b>Traps—(snmpInTraps)</b> Total number of SNMP traps generated by the SNMP entity.</li> <li>• <b>Silent drops—(snmpSilentDrops)</b> Total number of <b>GetRequest</b>, <b>GetNextRequest</b>, <b>GetBulkRequest</b>, <b>SetRequests</b>, and <b>InformRequest</b> PDUs delivered to the SNMP entity that were silently dropped because the size of a reply containing an alternate response PDU with an empty variable-bindings field was greater than either a local constraint or the maximum message size associated with the originator of the requests.</li> <li>• <b>Proxy drops—(snmpProxyDrops)</b> Total number of <b>GetRequest</b>, <b>GetNextRequest</b>, <b>GetBulkRequest</b>, <b>SetRequests</b>, and <b>InformRequest</b> PDUs delivered to the SNMP entity that were silently dropped because the transmission of the message to a proxy target failed in such a way (other than a timeout) that no response PDU could be returned.</li> <li>• <b>Commit pending drops</b>—Number of SNMP packets for <b>Set</b> requests dropped because of a previous pending SNMP <b>Set</b> request on the committed configuration.</li> <li>• <b>Throttle drops</b>—Number of SNMP packets for any requests dropped reaching the throttle limit.</li> </ul>

Table 119: show snmp statistics Output Fields (*continued*)

Field Name	Field Description
<b>V3 Input</b>	<p>Information about SNMP version 3 packets:</p> <ul style="list-style-type: none"> <li>• <b>Unknown security models—(snmpUnknownSecurityModels)</b> Total number of packets received by the SNMP engine that were dropped because they referenced a security model that was not known to or supported by the SNMP engine.</li> <li>• <b>Invalid messages—(snmpInvalidMsgs)</b> Number of packets received by the SNMP engine that were dropped because there were invalid or inconsistent components in the SNMP message.</li> <li>• <b>Unknown pdu handlers—(snmpUnknownPDUHandlers)</b> Number of packets received by the SNMP engine that were dropped because the PDU contained in the packet could not be passed to an application responsible for handling the PDU type.</li> <li>• <b>Unavailable contexts—(snmpUnavailableContexts)</b> Number of requests received for a context that is known to the SNMP engine, but is currently unavailable.</li> <li>• <b>Unknown contexts—(snmpUnknownContexts)</b> Total number of requests received for a context that is unknown to the SNMP engine.</li> <li>• <b>Unsupported security levels—(usmStatsUnsupportedSecLevels)</b> Total number of packets received by the SNMP engine that were dropped because they requested a security level unknown to the SNMP engine (or otherwise unavailable).</li> <li>• <b>Not in time windows—(usmStatsNotInTimeWindows)</b> Total number of packets received by the SNMP engine that were dropped because they appeared outside the authoritative SNMP engine's window.</li> <li>• <b>Unknown user names—(usmStatsUnknownUserNames)</b> Total number of packets received by the SNMP engine that were dropped because they referenced a user that was not known to the SNMP engine.</li> <li>• <b>Unknown engine ids—(usmStatsUnknownEngineIDs)</b> Total number of packets received by the SNMP engine that were dropped because they referenced an SNMP engine ID that was not known to the SNMP engine.</li> <li>• <b>Wrong digests—(usmStatsWrongDigests)</b> Total number of packets received by the SNMP engine that were dropped because they did not contain the expected digest value.</li> <li>• <b>Decryption errors—(usmStatsDecryptionErrors)</b> Total number of packets received by the SNMP engine that were dropped because they could not be decrypted.</li> </ul>

Table 119: show snmp statistics Output Fields (*continued*)

Field Name	Field Description
<b>Output</b>	<p>Information about transmitted packets:</p> <ul style="list-style-type: none"> <li>• <b>Packets—(snmpOutPkts)</b> Total number of messages passed from the SNMP entity to the transport service.</li> <li>• <b>Too big—(snmpOutTooBig)</b> Total number of SNMP PDUs generated by the SNMP entity with an error status field of <b>tooBig</b>.</li> <li>• <b>No such names—(snmpOutNoSuchNames)</b> Total number of SNMP PDUs delivered to the SNMP entity with an error status field of <b>noSuchName</b>.</li> <li>• <b>Bad values—(snmpOutBadValues)</b> Total number of SNMP PDUs generated by the SNMP entity with an error status field of <b>badValue</b>.</li> <li>• <b>General errors—(snmpOutGenErrs)</b> Total number of SNMP PDUs generated the SNMP entity with an error status field of <b>genErr</b>.</li> <li>• <b>Get requests—(snmpOutGetRequests)</b> Total number of SNMP <b>GetRequest</b> PDUs generated by the SNMP entity.</li> <li>• <b>Get nexts—(snmpOutGetNexts)</b> Total number of SNMP <b>GetNext</b> PDUs generated by the SNMP entity.</li> <li>• <b>Set requests—(snmpOutSetRequests)</b> Total number of SNMP <b>SetRequest</b> PDUs generated by the SNMP entity.</li> <li>• <b>Get responses—(snmpOutGetResponses)</b> Total number of SNMP <b>GetResponse</b> PDUs generated by the SNMP entity.</li> <li>• <b>Traps—(snmpOutTraps)</b> Total number of SNMP traps generated by the SNMP entity.</li> </ul>

## Sample Output

```

show snmp statistics  user@host> show snmp statistics
SNMP statistics:
  Input:
    Packets: 246213, Bad versions: 12, Bad community names: 12,
    Bad community uses: 0, ASN parse errors: 96,
    Too big: 0, No such names: 0, Bad values: 0,
    Read onlys: 0, General errors: 0,
    Total request varbinds: 227084, Total set varbinds: 67,
    Get requests: 44942, Get nexts: 190371, Set requests: 10712,
    Get responses: 0, Traps: 0,
    Silent drops: 0, Proxy drops: 0, Commit pending drops: 0,
    Throttle drops: 0,
  V3 Input:
    Unknown security models: 0, Invalid messages: 0
    Unknown pdu handlers: 0, Unavailable contexts: 0
    Unknown contexts: 0, Unsupported security levels: 1
    Not in time windows: 0, Unknown user names: 0
    Unknown engine ids: 44, Wrong digests: 23, Decryption errors: 0
  Output:
    Packets: 246093, Too big: 0, No such names: 31561,
    Bad values: 0, General errors: 2,
    Get requests: 0, Get nexts: 0, Set requests: 0,
    Get responses: 246025, Traps: 0

```

## show snmp v3

---

<b>Syntax</b>	<code>show snmp v3</code> <code>&lt;access &lt;brief   detail&gt;   community   general   groups   notify &lt;filter&gt;   target &lt;address   parameters&gt;   users&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.
<b>Description</b>	Display the Simple Network Management Protocol version 3 (SNMPv3) operating configuration.
<b>Options</b>	<p><code>none</code>—Display all of the SNMPv3 operating configuration.</p> <p><code>access</code>—(Optional) Display SNMPv3 access information.</p> <p><code>brief   detail</code>—(Optional) Display brief or detailed information about SNMPv3 access information.</p> <p><code>community</code>—(Optional) Display SNMPv3 community information.</p> <p><code>general</code>—(Optional) Display SNMPv3 general information.</p> <p><code>groups</code>—(Optional) Display SNMPv3 security-to-group information.</p> <p><code>notify &lt;filter&gt;</code>—(Optional) Display SNMPv3 notify and, optionally, notify filter information.</p> <p><code>target &lt;address   parameters&gt;</code>—(Optional) Display SNMPv3 target and, optionally, either target address or target parameter information.</p> <p><code>users</code>—(Optional) Display SNMPv3 user information.</p>
<b>Additional Information</b>	To edit the default display of the <b>show snmp v3</b> command, specify options in the <b>show</b> statement at the <b>[edit snmp v3]</b> hierarchy level.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show snmp v3 on page 682</b>
<b>Output Fields</b>	Table 120 on page 681 describes the output fields for the <b>show snmp v3</b> command. Output fields are listed in the approximate order in which they appear.



Table 120: show snmp v3 Output Fields

Field Name	Field Description
<b>Access control</b>	<p>Information about access control:</p> <ul style="list-style-type: none"> <li>• <b>Group</b>—Group name for which the configured access privileges apply. The group, together with the context prefix and the security model and security level, forms the index for this table.</li> <li>• <b>Context prefix</b>—SNMPv3 context for which the configured access privileges apply.</li> <li>• <b>Security model/level</b>—Security model and security level for which the configuration access privileges apply.</li> <li>• <b>Read view</b>—Identifies the MIB view applied to SNMPv3 read operations.</li> <li>• <b>Write view</b>—Identifies the MIB view applied to SNMPv3 write operations.</li> <li>• <b>Notify view</b>—Identifies the MIB view applied to outbound SNMP notifications.</li> </ul>
<b>Engine</b>	<p>Information about local engine configuration:</p> <ul style="list-style-type: none"> <li>• <b>Local engine ID</b>—Identifier that uniquely and unambiguously identifies the local SNMPv3 engine.</li> <li>• <b>Engine boots</b>—Number of times the local SNMPv3 engine has rebooted or reinitialized since the engine ID was last changed.</li> <li>• <b>Engine time</b>—Number of seconds since the local SNMPv3 engine was last rebooted or reinitialized.</li> <li>• <b>Max msg size</b>—Maximum message size the sender can accommodate.</li> </ul>
<b>Engine ID</b>	<p>Information about engine ID:</p> <ul style="list-style-type: none"> <li>• <b>Local engine ID</b>—Identifier that uniquely and unambiguously identifies the local SNMPv3 engine.</li> <li>• <b>Engine boots</b>—Number of times the local SNMPv3 engine has rebooted or reinitialized since the engine ID was last changed.</li> <li>• <b>Engine time</b>—Number of seconds since the local SNMPv3 engine was last rebooted or reinitialized.</li> <li>• <b>Max msg size</b>—Maximum message size the sender can accommodate.</li> <li>• <b>Engine ID</b>—SNMPv3 engine ID associated with each user.</li> <li>• <b>User</b>—SNMPv3 user.</li> <li>• <b>Auth/Priv</b>—Authentication and encryption algorithm available for use by each user.</li> <li>• <b>Storage</b>—Indicates whether a user is saved to the configuration file (nonvolatile) or not (volatile). Applies only to users with active status.</li> <li>• <b>Status</b>—Status of the conceptual row. Only rows with an active status are used by the SNMPv3 engine.</li> </ul>
<b>Group name</b>	Name of the group to which this entry belongs.
<b>Security model</b>	Identifies the security model context for the security name.
<b>Security name</b>	Used with the security model; identifies a specific security name instance. Each security model/security name combination can be assigned to a specific group.
<b>Storage type</b>	Indicates whether a user is saved to the configuration file (nonvolatile) or not (volatile). Applies only to users with active status.
<b>Status</b>	Status of the conceptual row. Only rows with active status are used by the SNMPv3 engine.

## Sample Output

```

user@host> show snmp v3
show snmp v3
Local engine ID: 80 00 0a 4c e04 31 32 33 34
Engine boots:      38
Engine time:       64583 seconds
Max msg size:      2048 bytes

Engine ID: local
  User          Auth/Priv  Storage  Status
  user1         md5/des   nonvolatile active
  user2         sha/none  nonvolatile active
  user3         none/none nonvolatile active

Engine ID: 81 00 0a 4c 04 64 64 64 64
  User          Auth/Priv  Storage  Status
  UNEW         md5/none  nonvolatile active

Group name      Security model  Security name      Storage type      Status
g1              usm             user1              nonvolatile active
g2              usm             user2              nonvolatile active
g3              usm             user3              nonvolatile active

Access control:
Group           Context prefix  Security model/level  Read view  Write view  Notify view
g1              usm/privacy  v1                  v1
g2              usm/authent  v1                  v1
g3              usm/none     v1                  v1

```

# System Software Operational Mode Commands

Table 121 on page 683 summarizes the command-line interface (CLI) commands you can use to perform and monitor system software management functions. Commands are listed in alphabetical order.

**Table 121: System Software Operational Mode Commands**

Task	Command
Clear the Address Resolution Protocol (ARP) table.	<b>clear arp</b>
Clear the binding state of a Dynamic Host Configuration Protocol (DHCP) client from the client table on the extended DHCP local server.	<b>clear dhcp server binding</b>
Clear all extended DHCP local server statistics.	<b>clear dhcp server statistics</b>
Clear the binding state from the client table on the DHCPv6 local server.	<b>clear dhcpv6 server binding</b>
Clear all DHCPv6 local server statistics.	<b>clear dhcpv6 server statistics</b>
Clear AAA statistics.	<b>clear network-access aaa statistics</b>
Log out AAA subscribers and clear the AAA subscriber statistics.	<b>clear network-access aaa subscriber</b>
Clear a pending commit operation.	<b>clear system commit</b>
Clear a pending system halt or reboot.	<b>clear system reboot</b>
(J Series routers only) Remove obsolete IP address bindings on a Dynamic Host Configuration Protocol (DHCP) server.	<b>clear system services dhcp binding</b>
(J Series routers only) Clear IP addresses from the DHCP server conflicts list.	<b>clear system services dhcp conflict</b>

Table 121: System Software Operational Mode Commands (*continued*)

Task	Command
(J Series routing routers only) Clear DHCP server statistics.	<b>clear system services dhcp statistics</b>
Enter configuration mode.	<b>configure</b>
Execute an operation (op) script.	<b>op</b>
Force lease renewal for DHCPv4 clients.	<b>request dhcp server reconfigure</b>
Initiate reconfiguration processing for DHCPv6 clients.	<b>request dhcpv6 server reconfigure</b>
Send messages to users currently logged in to the router.	<b>request message</b>
On a router with two Routing Engines, specify a tty connection for login.	<b>request routing-engine login</b>
Resets the state of an interface group on which static subscribers were forcibly logged out.	<b>request services static-subscribers login group</b>
Forces static subscribers on the interfaces in the group to be logged out.	<b>request services static-subscribers login interface</b>
Resets the state of an interface on which a static subscriber was forcibly logged out.	<b>request services static-subscribers logout group</b>
Forces static subscriber on the interface to be logged out.	<b>request services static-subscribers logout interface</b>
Collect information for customer support.	<b>request support information</b>
Delete an existing rescue configuration.	<b>request system configuration rescue delete</b>
Save the most recently committed configuration as the rescue configuration.	<b>request system configuration rescue save</b>
(J Series routers only) Upgrade or downgrade firmware.	<b>request system firmware</b>
Stop the routing software.	<b>request system halt</b>
Add a license key.	<b>request system license add</b>
Delete a license key.	<b>request system license delete</b>
(J Series routers only) Save installed license keys to a file or URL.	<b>request system license save</b>

Table 121: System Software Operational Mode Commands (*continued*)

Task	Command
Log out a user from the configuration database.	<b>request system logout</b>
Abort a previously scheduled partition request.	<b>request system partition abort</b>
Schedule the hard disk for partitioning.	<b>request system partition hard-disk</b>
Power off the routing software.	<b>request system power-off</b>
Reboot the routing software.	<b>request system reboot</b>
Convert an Extensible Stylesheet Language Transformations (XSLT) script to Stylesheet Language, Alternative syntax (SLAX), or convert a SLAX script to XSLT.	<b>request system scripts convert</b>
Back up the file systems on the router.	<b>request system snapshot</b>
(M320 router, T320 router, and T640 router only) Abort a unified in-service software upgrade (ISSU).	<b>request system software abort</b>
Install software bundles or packages onto the router.	<b>request system software add</b>
Remove software bundles or packages from the router.	<b>request system software delete</b>
(J Series routers only) Delete the backup Junos OS file (if it exists) to free up compact flash drive space.	<b>request system software delete-backup</b>
(M320 router, T320 router, and T640 router only) Perform a unified ISSU.	<b>request system software in-service-upgrade</b>
Roll back to a previously installed version.	<b>request system software rollback</b>
Check candidate software compatibility against the current configuration.	<b>request system software validate</b>
Free storage space on the router by rotating log files and deleting unnecessary files.	<b>request system storage cleanup</b>
Restart a Junos OS process.	<b>restart</b>
Display the contents of the ARP table.	<b>show arp</b>
Display the current running system configuration.	<b>show configuration</b>

Table 121: System Software Operational Mode Commands (*continued*)

Task	Command
Display the address bindings in the client table on the extended DHCP local server.	<b>show dhcp server binding</b>
Display extended DHCP local server statistics.	<b>show dhcp server statistics</b>
Display the address bindings in the client table on the extended DHCPv6 local server.	<b>show dhcpv6 server binding</b>
Display extended DHCPv6 local server statistics.	<b>show dhcpv6 server statistics</b>
Display Domain Name System (DNS) hostname information.	<b>show host</b>
Display AAA statistics.	<b>show network-access aaa statistics</b>
Display information about AAA subscribers.	<b>show network-access aaa subscribers</b>
Display information about AAA subscriber sessions.	<b>show network-access aaa subscribers session-id</b>
Display state information for address-assignment pools.	<b>show network-access address-assignment pool</b>
Display information for domain maps.	<b>show network-access domain-map</b>
Display Network Time Protocol (NTP) peers.	<b>show ntp associations</b>
Display variables returned by NTP peers.	<b>show ntp status</b>
Display Information about static subscriber sessions.	<b>show static-subscribers sessions</b>
Display information about active subscribers	<b>show subscribers</b>
Show system alarms.	<b>show system alarms</b>
Display state and checksum values for files in a file system.	<b>show system audit</b>
(J Series routers only) Display autoinstallation status information.	<b>show system autoinstallation status</b>
Display boot messages.	<b>show system boot-messages</b>
Display system memory and buffer usage information.	<b>show system buffers</b>
Display information about a pending commit operation.	<b>show system commit</b>

Table 121: System Software Operational Mode Commands (*continued*)

Task	Command
Display directory and number of files queued for archival transfer.	<b>show system configuration archival</b>
Display information about the rescue configuration.	<b>show system configuration rescue</b>
Display information about active IP sockets on the Routing Engine.	<b>show system connections</b>
Display directory usage information.	<b>show system directory-usage</b>
(J Series routers only) Display system firmware information.	<b>show system firmware</b>
Display a list of installed licenses.	<b>show system license</b>
Display dynamic hostname to IP address mappings.	<b>show system name-resolution</b>
Display software processes running on the router.	<b>show system processes</b>
Display statistics about queues on interfaces.	<b>show system queues</b>
Display any pending system reboots or halts.	<b>show system reboot</b>
View or compare previous configurations.	<b>show system rollback</b>
(J Series routers only) Display client binding information.	<b>show system services dhcp binding</b>
(J Series routers only) Display DHCP client-detected conflicts for IP addresses.	<b>show system services dhcp conflict</b>
(J Series routers only) Display global configuration settings for a DHCP server.	<b>show system services dhcp global</b>
(J Series routers only) Display IP address pools defined for a DHCP server.	<b>show system services dhcp pool</b>
(J Series routers only) Display statistics associated with a DHCP server.	<b>show system services dhcp statistics</b>
Display information about a Session and Resource Control (SRC) client.	<b>show system services service-deployment</b>
Display information about the backup software that located in the <b>/altroot</b> and <b>/altconfig</b> file systems.	<b>show system snapshot</b>

Table 121: System Software Operational Mode Commands (*continued*)

Task	Command
Display Junos OS extensions.	<b>show system software</b>
Display system-wide protocol-related statistics.	<b>show system statistics</b>
Display system-wide Address Resolution Protocol (ARP) statistics.	<b>show system statistics arp</b>
Display system-wide Connectionless Network Service (CLNS) statistics.	<b>show system statistics clns</b>
Display system-wide End System-to-Intermediate System (ES-IS) statistics.	<b>show system statistics esis</b>
Display system-wide Internet Control Message Protocol (ICMP) statistics.	<b>show system statistics icmp</b>
Display system-wide ICMP version 6 statistics.	<b>show system statistics icmp6</b>
Display system-wide Internet Group Management Protocol (IGMP) statistics.	<b>show system statistics igmp</b>
Display system-wide IPv4 statistics.	<b>show system statistics ip</b>
Display system-wide IPv6 statistics.	<b>show system statistics ip6</b>
Display system-wide Multiprotocol Label Switching (MPLS) statistics.	<b>show system statistics mpls</b>
Display system-wide Reliable Datagram Protocol (RDP) statistics.	<b>show system statistics rdp</b>
Display system-wide Transmission Control Protocol (TCP) statistics.	<b>show system statistics tcp</b>
Display system-wide Trivial Network Protocol (TNP) statistics.	<b>show system statistics tnp</b>
Display system-wide Trivial User Datagram Protocol (TUDP) statistics.	<b>show system statistics tudp</b>
Display system-wide User Datagram Protocol (UDP) statistics.	<b>show system statistics udp</b>
Display system-wide Virtual Private LAN Services (VPLS) statistics.	<b>show system statistics vpls</b>
Display statistics about the amount of free disk space in the router's file systems.	<b>show system storage</b>



Table 121: System Software Operational Mode Commands (*continued*)

Task	Command
View configurations of the primary and secondary Routing Engines.	<b>show system switchover</b>
Display the current time and information about how long the router, router software, and routing protocols have been running.	<b>show system uptime</b>
Display users currently logged in to the router.	<b>show system users</b>
Display Junos kernel memory usage.	<b>show system virtual-memory</b>
Display routing protocol tasks on the Routing Engine.	<b>show task</b>
Display I/O statistics for routing protocol tasks on the Routing Engine.	<b>show task io</b>
Display memory utilization for routing protocol tasks on the Routing Engine.	<b>show task memory</b>
Display whether or not graceful Routing Engine switchover (GRES) and nonstop active routing (NSR) are configured on the router.	<b>show task replication</b>
Display the hostname and version information about the software running on the router.	<b>show version</b>
Create a UNIX-level shell.	<b>start shell</b>
Verify the syntax of a configuration file.	<b>test configuration</b>



**NOTE:** For information about the request system certificate add and show system certificate commands, see IP Security Operational Mode Commands.



**NOTE:** For information about how to configure system software parameters, see the *Junos OS System Basics Configuration Guide*.

For information about related tasks performed by network operations center (NOC) personnel, see the *Junos Baseline Network Operations Guide*.

## clear arp

---


<b>Syntax</b>	<code>clear arp</code> <code>&lt;hostname <i>hostname</i>&gt;</code> <code>&lt;logical-system <i>logical-system-name</i>&gt;</code> <code>&lt;vpn <i>vpn</i>&gt;</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Remove entries from the Address Resolution Protocol (ARP) table for the current CLI view. To clear entries for a specific logical system, you must first enter the <b>set cli logical-system <i>logical-system-name</i></b> command, and then issue the <b>clear arp</b> command.
<b>Options</b>	<code>none</code> —Clear all entries from the ARP table.  <code>hostname <i>hostname</i></code> —(Optional) Clear the specified host entry only.  <code>logical-system <i>logical-system-name</i></code> —(Optional) Clear entries for the specified logical system; only available in main router context.  <code>vpn <i>vpn</i></code> —(Optional) Clear entries from the ARP table for the specified virtual private network (VPN).
<b>Required Privilege Level</b>	clear
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">set cli logical-system on page 537</a></li><li>• <a href="#">show arp on page 794</a></li></ul>
<b>List of Sample Output</b>	<a href="#">clear arp on page 690</a> <a href="#">clear arp logical-system ls1 on page 690</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```
clear arp      user@host> clear arp
               192.168.71.254    deleted
               192.168.65.46     deleted
               192.168.64.10     deleted
               10.0.12.14        deleted
               10.0.17.14        deleted

clear arp      user@host> clear arp logical-system ls1
logical-system ls1 192.168.71.254    deleted
                   192.168.65.46     deleted
                   192.168.64.10     deleted
                   10.0.12.14        deleted
                   10.0.17.14        deleted
```

## clear dhcp server binding

<b>Syntax</b>	clear dhcp server binding <all   <i>ip-address</i>   <i>mac-address</i> > <interface <i>interface-name</i> > <logical-system <i>logical-system-name</i> > <routing-instance <i>routing-instance-name</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 9.0.
<b>Description</b>	Clear the binding state of a Dynamic Host Configuration Protocol (DHCP) client from the client table on the extended DHCP local server.
<b>Options</b>	<p>all—(Optional) Clear the binding state for all DHCP clients.</p> <p><i>ip-address</i>—(Optional) Clear the binding state for the DHCP client with the specified IP address.</p> <p><i>mac-address</i>—(Optional) Clear the binding state for the DHCP client with the specified MAC address.</p> <p>interface <i>interface-name</i>—(Optional) Clear the binding state for DHCP clients on the specified interface.</p> <div style="margin-top: 10px;">  <p><b>NOTE:</b> This option clears all bindings whose initial login requests were received over the specified interface. Dynamic demux login requests are not received over the dynamic demux interface, but rather the underlying interface of the dynamic demux interface. To clear a specific dynamic demux interface, use the <i>ip-address</i> or <i>mac-address</i> options.</p> </div> <p>logical-system <i>logical-system-name</i>—(Optional) Clear the binding state for DHCP clients on the specified logical system.</p> <p>routing-instance <i>routing-instance-name</i>—(Optional) Clear the binding state for DHCP clients on the specified routing instance.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	clear dhcp server binding on page 692 clear dhcp server binding all on page 692 clear dhcp server binding interface on page 692
<b>Output Fields</b>	See <b>show dhcp server binding</b> for an explanation of output fields.

## Sample Output

**clear dhcp server binding** The following sample output displays the address bindings in the DHCP client table on the extended DHCP local server before and after the **clear dhcp server binding** command is issued.

```
user@host> show dhcp server binding
```

```
2 clients, (0 bound, 0 selecting, 0 renewing, 0 rebinding)
```

IP address	Hardware address	Type	Lease expires at
100.20.32.1	90:00:00:01:00:01	active	2007-01-17 11:38:47 PST
100.20.32.3	90:00:00:02:00:01	active	2007-01-17 11:38:41 PST

```
user@host> clear dhcp server binding 10.20.32.1
```

```
user@host> show dhcp server binding
```

```
1 clients, (0 bound, 0 selecting, 0 renewing, 0 rebinding)
```

IP address	Hardware address	Type	Lease expires at
100.20.32.3	90:00:00:02:00:01	active	2007-01-17 11:38:41 PST

**clear dhcp server binding all** user@host> clear dhcp server binding all

**clear dhcp server binding interface** user@host> clear dhcp server binding interface fe-0/0/2

## clear dhcp server statistics

<b>Syntax</b>	<b>clear dhcp server statistics</b> <code>&lt;logical-system <i>logical-system-name</i>&gt;</code> <code>&lt;routing-instance <i>routing-instance-name</i>&gt;</code>
<b>Release Information</b>	Command introduced in Junos OS Release 9.0.
<b>Description</b>	Clear all extended Dynamic Host Configuration Protocol (DHCP) local server statistics.
<b>Options</b>	<p><code>logical-system <i>logical-system-name</i></code>—(Optional) Clear the statistics for DHCP clients on the specified logical system. If you do not specify a logical system, statistics are cleared for the default logical system.</p> <p><code>routing-instance <i>routing-instance-name</i></code>—(Optional) Clear the statistics for DHCP clients on the specified routing instance. If you do not specify a routing instance, statistics are cleared for the default routing instance.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>clear dhcp server statistics on page 693</b>
<b>Output Fields</b>	See <b>show dhcp server statistics</b> for an explanation of output fields.

## Sample Output

**clear dhcp server statistics** The following sample output displays the extended DHCP local server statistics before and after the **clear dhcp server statistics** command is issued.

```

user@host> show dhcp server statistics
Packets dropped:
  Total                0

Messages received:
  BOOTREQUEST          89163
  DHCPDECLINE          0
  DHCPDISCOVER         8110
  DHCPINFORM           0
  DHCPRELEASE          0
  DHCPREQUEST         81053

Messages sent:
  BOOTREPLY            32420
  DHCPOFFER            8110
  DHCPACK              8110
  DHCPNAK              8100

user@host> clear dhcp server statistics
user@host> show dhcp server statistics
Packets dropped:
  Total                0

Messages received:
```

BOOTREQUEST	0
DHCPDECLINE	0
DHCPDISCOVER	0
DHCPINFORM	0
DHCPRELEASE	0
DHCPREQUEST	0
Messages sent:	
BOOTREPLY	0
DHCPOFFER	0
DHCPACK	0
DHCPNAK	0

## clear dhcpv6 server binding

<b>Syntax</b>	<pre>clear dhcpv6 server binding &lt;all   <i>client-id</i>   <i>ip-address</i>   <i>session-id</i>&gt; &lt;interface <i>interface-name</i>&gt; &lt;logical-system <i>logical-system-name</i>&gt; &lt;routing-instance <i>routing-instance-name</i>&gt;</pre>
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	Clear the binding state of a Dynamic Host Configuration Protocol for IPv6 (DHCPv6) client from the client table on the extended DHCPv6 local server.
<b>Options</b>	<p><b>all</b>—(Optional) Clear the binding state for all DHCPv6 clients.</p> <p><i>client-id</i>—(Optional) Clear the binding state for the DHCPv6 client with the specified client ID (option 1).</p> <p><i>ip-address</i>—(Optional) Clear the binding state for the DHCPv6 client with the specified address.</p> <p><i>session-id</i>—(Optional) Clear the binding state for the DHCPv6 client with the specified subscriber session ID.</p> <p>interface <i>interface-name</i>—(Optional) Clear the binding state for DHCPv6 clients on the specified interface.</p> <p>logical-system <i>logical-system-name</i>—(Optional) Clear the binding state for DHCPv6 clients on the specified logical system.</p> <p>routing-instance <i>routing-instance-name</i>—(Optional) Clear the binding state for DHCPv6 clients on the specified routing instance.</p>
<b>Required Privilege Level</b>	clear
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">show dhcpv6 server binding on page 809</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">clear dhcpv6 server binding on page 695</a> <a href="#">clear dhcpv6 server binding all on page 695</a> <a href="#">clear dhcpv6 server binding prefix on page 696</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```
clear dhcpv6 server binding  user@host> clear dhcpv6 server binding
clear dhcpv6 server binding all user@host> clear dhcpv6 server binding all
```

**clear dhcpv6 server**    user@host> **clear dhcpv6 server binding** 14/0x00010001/0x02b3be8f/0x00109400/0x0005  
**binding prefix**



## clear dhcpv6 server statistics

<b>Syntax</b>	<code>clear dhcpv6 server statistics</code> <code>&lt;logical-system <i>logical-system-name</i>&gt;</code> <code>&lt;routing-instance <i>routing-instance-name</i>&gt;</code>
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	Clear all extended Dynamic Host Configuration Protocol for IPv6 (DHCPv6) local server statistics.
<b>Options</b>	<p><code>logical-system <i>logical-system-name</i></code>—(Optional) Clear the statistics for DHCPv6 clients on the specified logical system. If you do not specify a logical system, statistics are cleared for the default logical system.</p> <p><code>routing-instance <i>routing-instance-name</i></code>—(Optional) Clear the statistics for DHCPv6 clients on the specified routing instance. If you do not specify a routing instance, statistics are cleared for the default routing instance.</p>
<b>Required Privilege Level</b>	clear
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">show dhcpv6 server statistics on page 813</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">clear dhcpv6 server statistics on page 697</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```
clear dhcpv6 server statistics  user@host> clear dhcpv6 server statistics
```

## clear network-access aaa statistics

---

<b>Syntax</b>	<code>clear network-access aaa statistics</code> <code>&lt;accounting&gt;</code> <code>&lt;address-assignment (client   pool <i>pool-name</i>)&gt;</code> <code>&lt;authentication&gt;</code> <code>&lt;dynamic-requests&gt;</code> <code>&lt;re-authentication&gt;</code>
<b>Release Information</b>	Command introduced in Junos OS Release 10.0.
<b>Description</b>	Clear AAA statistics.
<b>Options</b>	<code>accounting</code> —Clear AAA accounting statistics.  <code>address-assignment client</code> —Clear AAA address-assignment statistics for the client.  <code>address-assignment pool <i>pool-name</i></code> —Clear AAA address-assignment pool statistics.  <code>authentication</code> —Clear AAA authentication statistics.  <code>dynamic-requests</code> —Clear AAA dynamic-request statistics.  <code>re-authentication</code> —Clear AAA reauthentication statistics.
<b>Required Privilege Level</b>	<code>maintenance</code>
<b>List of Sample Output</b>	<code>clear network-access aaa statistics accounting</code> on page 698 <code>clear network-access aaa statistics address-assignment pool</code> on page 698
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

```
clear network-access user@host> clear network-access aaa statistics accounting
aaa statistics
accounting
```

```
clear network-access user@host> clear network-access aaa statistics address-assignment pool isp_1
aaa statistics
address-assignment
pool
```

## clear network-access aaa subscriber

<b>Syntax</b>	clear network-access aaa subscriber <statistics username <i>username</i> > <username <i>username</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 9.1.
<b>Description</b>	Clear AAA subscriber statistics and log out subscribers.
<b>Options</b>	statistics username <i>username</i> —Clear AAA subscriber statistics and log out the subscriber.  username <i>username</i> —Log out the AAA subscriber.
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	clear network-access aaa subscriber statistics username on page 699 clear network-access aaa subscriber username on page 699
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

```
clear network-access  user@host> clear network-access aaa subscriber statistics username dsmith@isp5555.com
aaa subscriber
statistics username

clear network-access  user@host> clear network-access aaa subscriber username dsmith@isp5555.com
aaa subscriber
username
```

## clear system commit

---

<b>Syntax</b>	clear 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>	Clear any pending commit operation.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	maintenance (or the actual user who scheduled the commit)
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show system commit on page 860</a></li></ul>
<b>List of Sample Output</b>	<a href="#">clear system commit on page 700</a> <a href="#">clear system commit (None Pending) on page 700</a> <a href="#">clear system commit (User Does Not Have Required Privilege Level) on page 700</a> <a href="#">clear system commit (QFX Series) on page 700</a> <a href="#">clear system commit (None Pending) on page 700</a> <a href="#">clear system commit (User Does Not Have Required Privilege Level) on page 700</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

clear system commit	user@host> clear system commit Pending commit cleared.
clear system commit (None Pending)	user@host> clear system commit No commit scheduled.
clear system commit (User Does Not Have Required Privilege Level)	user@host> clear system commit error: Permission denied

### Sample Output

clear system commit (QFX Series)	user@switch> clear system commit Pending commit cleared.
clear system commit (None Pending)	user@switch> clear system commit No commit scheduled.
clear system commit (User Does Not Have Required Privilege Level)	user@switch> clear system commit error: Permission denied

## clear system reboot

<b>Syntax</b>	clear system reboot <both-routing-engines>
<b>Syntax (EX Series Switch)</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
<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 routers connected to the TX Matrix Plus router.
<b>Options</b>	<p>none—Clear all pending system software reboots or halts.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Clear all halt or reboot requests for all the Routing Engines in the chassis.</p> <p>all-lcc—(TX Matrix 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 for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Clear all halt or reboot requests on all members of the Virtual Chassis configuration.</p> <p>both-routing-engines—(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 Plus router, clear both Routing Engines on all chassis connected to the TX Matrix Plus router.</p>

*lcc number*—(TX Matrix 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 T1600 router that is connected to the TX Matrix Plus router. Replace *number* with a value from 0 through 3.

*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.

*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 (or switch-fabric chassis). Replace *number* with 0.

**Required Privilege Level** maintenance

**Related Documentation**

- [request system reboot on page 748](#)
- [request system reboot](#)
- [Rebooting and Halting a QFX Series Product](#)

**List of Sample Output**

[clear system reboot on page 703](#)  
[clear system reboot \(TX Matrix Router\) on page 703](#)  
[clear system reboot \(QFX Series\) on page 703](#)

**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**    user@host> clear system reboot  
**(TX Matrix Router)**    scc-re0:

-----  
No shutdown/reboot scheduled.  
lcc0-re0:

-----  
No shutdown/reboot scheduled.  
lcc2-re0:

-----  
No shutdown/reboot scheduled.

**clear system reboot**    user@switch> clear system reboot  
**(QFX Series)**            No shutdown/reboot scheduled.

## clear system services dhcp binding

---

<b>Syntax</b>	clear system services dhcp binding <address>
<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>	(J Series routers and EX Series switches only) Remove obsolete IP address bindings on a Dynamic Host Configuration Protocol (DHCP) server and return them to the IP address pool.
<b>Options</b>	<i>address</i> —(Optional) Remove a specific IP address binding and return it to the address pool.
<b>Required Privilege Level</b>	view and system
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show system services dhcp binding on page 932</a></li></ul>
<b>List of Sample Output</b>	<a href="#">clear system services dhcp binding on page 704</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

clear system services dhcp binding	user@host> clear system services dhcp binding
---------------------------------------	-----------------------------------------------



## clear system services dhcp conflict

---

<b>Syntax</b>	clear system services dhcp conflict <address>
<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>	(J Series routers and EX Series switches only) Remove IP addresses from the Dynamic Host Configuration Protocol (DHCP) server conflict list and return them to the IP address pool.
<b>Options</b>	<i>address</i> —(Optional) Remove a specific IP address from the conflict list and return it to the address pool.
<b>Required Privilege Level</b>	view and system
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show system services dhcp conflict on page 935</a></li></ul>
<b>List of Sample Output</b>	<a href="#">clear system services dhcp conflict on page 705</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

clear system services dhcp conflict	user@host> clear system services dhcp conflict
----------------------------------------	------------------------------------------------

## clear system services dhcp statistics

---

<b>Syntax</b>	clear system services dhcp statistics
<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>	(J Series routers and EX Series switches only) Clear Dynamic Host Configuration Protocol (DHCP) server statistics.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view and system
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show system services dhcp statistics on page 940</a></li></ul>
<b>List of Sample Output</b>	<a href="#">clear system services dhcp statistics on page 706</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

clear system services dhcp statistics	user@host> clear system services dhcp statistics
------------------------------------------	--------------------------------------------------

## configure

<b>Syntax</b>	configure <dynamic> <exclusive> <private>
<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>	Enter configuration mode. When this command is entered without any optional keywords, everyone can make configuration changes and commit all changes made to the configuration.
<b>Options</b>	<p>none—Enter configuration mode.</p> <p>dynamic—(Optional) Configure routing policies and certain routing policy objects in a dynamic database that is not subject to the same verification required in the standard configuration database. As a result, the time it takes to commit changes to the dynamic database is much shorter than for the standard configuration database. You can then reference these policies and policy objects in routing policies you configure in the standard database.</p> <p>exclusive—(Optional) Lock the candidate configuration for as long as you remain in configuration mode, allowing you to make changes without interference from other users. Other users can enter and exit configuration mode, but they cannot change the configuration.</p> <p>private—(Optional) Allow multiple users to edit different parts of the configuration at the same time and to commit only their own changes, or to roll back without interfering with one another's changes. You cannot commit changes in configure private mode when another user is in configure exclusive mode.</p>
<b>Additional Information</b>	For more information about the different methods of entering configuration mode and the restrictions that apply, see the <i>Junos OS System Basics Configuration Guide</i> .
<b>Required Privilege Level</b>	configure
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>show configuration on page 796</li> </ul>
<b>List of Sample Output</b>	configure on page 707
<b>Output Fields</b>	When you enter this command, you are placed in configuration mode and the system prompt changes from <i>hostname&gt;</i> to <i>hostname#</i> .

## Sample Output

```
configure  user@host> configure
```

```
Entering configuration mode  
[edit]  
user@host#
```

## op

<b>Syntax</b>	<code>op filename</code> <code>&lt;detail&gt;</code> <code>&lt;argument-name argument-value&gt;</code> <code>&lt;key (md5   sha-256   sha1) key-value</code> <code>&lt;url url&gt;</code>
<b>Release Information</b>	<p>Command introduced in Junos OS Release 7.6.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p><b>key</b> option introduced in Junos OS Release 10.0.</p> <p><b>url</b> option introduced in Junos OS Release 10.0.</p>
<b>Description</b>	<p>Execute an op script stored in one of the following locations:</p> <ul style="list-style-type: none"> <li>On the router or switch in the <code>/var/db/scripts/op</code> directory</li> <li>At a remote URL</li> </ul>
<b>Options</b>	<p><code>detail</code>—(Optional) Display detailed output.</p> <p><code>argument-name argument-value</code>—(Optional) Specify one or more arguments to the script. For each argument you include on the command line, you must specify a corresponding value for the argument.</p> <p><code>key (md5   sha-256   sha1) key-value</code>—(Optional) With the <code>&lt;url&gt;</code> option, specify a checksum hash to verify the integrity of the script. You can include the <code>&lt;key&gt;</code> option if the <b>checksum</b> statement is included at the <code>[edit system scripts op file <i>filename</i>]</code> hierarchy level.</p> <p><code>url url</code>—(Optional) Specify a URL where the script is located.</p>
<b>Additional Information</b>	For more information about Junos op scripts, see the <i>Junos OS Configuration and Operations Automation Guide</i> .
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>Executing an Op Script in the <i>Junos OS Configuration and Operations Automation Guide</i></li> <li>Executing an Op Script from a Remote Site in the <i>Junos OS Configuration and Operations Automation Guide</i></li> <li>checksum</li> <li>file checksum md5 on page 558</li> <li>file checksum sha-256 on page 560</li> <li>file checksum sha1 on page 559</li> </ul>
<b>List of Sample Output</b>	op on page 710


**op url** on page 710

**Output Fields** When you enter this command, you are provided feedback on the status of your request.

### Sample Output

```
op    user@host> op script1 interface ge-0/2/0.0 protocol inet
op url user@host> op url https://www.juniper.net/fa/2009-04-01.01.slax key md5
      8de24d09e1d90b2581bb937d2a5ad590 interface ge-0/2/0.0 protocol inet
```

## request dhcp server reconfigure

<b>Syntax</b>	<code>request dhcp server reconfigure (all   <i>address</i>   interface <i>interface-name</i>   logical-system <i>logical-system-name</i>   routing-instance <i>routing-instance-name</i>)</code>
<b>Release Information</b>	Command introduced in JUNOS Release 10.0.
<b>Description</b>	<p>Initiate reconfiguration processing for the specified DHCP clients if they are in the bound state. If the clients are in the reconfiguring state, this command has no effect. If the clients are in any state other than bound or reconfiguring, this command has the same effect as the <b>clear dhcp server binding</b> command.</p> <p>When the local server state machine starts the reconfiguration process on a bound client, the client transitions to the reconfiguring state and the local server sends a <b>forcerenew</b> message to the client. Because the client was in the bound state before entering the reconfiguring state, all subscriber services, such as forwarding and statistics, continue to work. An exponential back-off timer determines the interval at which the <b>forcerenew</b> message is sent. If the final attempt is unsuccessful, the client is returned to its original state by default. You can optionally include the <b>clear-on-abort</b> statement to configure the client to be cleared when reconfiguration fails.</p>
<b>Options</b>	<p><b>all</b>—Initiate reconfiguration for all DHCP clients.</p> <p><i>address</i>—Initiate reconfiguration for DHCP client with the specified IP address or MAC address.</p> <p>interface <i>interface-name</i>—Initiate reconfiguration for all DHCP clients on this logical interface (clients whose initial login requests were received over the specified interface).</p> <div style="margin-top: 10px;">  <p><b>NOTE:</b> You cannot use the interface <i>interface-name</i> option with the <b>request dhcp server reconfigure</b> command for DHCP passive clients (clients that are added as a result of DHCP snooped packets). For passive clients, the interface is not guaranteed to be the next-hop interface to the client, as is the case for active clients.</p> </div> <p>logical-system <i>logical-system-name</i>—Initiate reconfiguration for all DHCP clients on the specified logical system.</p> <p>routing-instance <i>routing-instance-name</i>—Initiate reconfiguration reconfigured for all DHCP clients in the specified routing instance.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>Configuring Extended DHCP Local Server Dynamic Client Reconfiguration</li> </ul>

**List of Sample Output**    [request dhcp server reconfigure on page 712](#)

**Output Fields**    When you enter this command, you are provided feedback on the status of your request.

### Sample Output

```
request dhcp server    user@host> request dhcp server reconfigure interface fe-0/0/0.100
reconfigure
```



## request dhcpv6 server reconfigure

<b>Syntax</b>	<code>request dhcpv6 server reconfigure (all   <i>address</i>   <i>client-id</i>   interface <i>interface-name</i>   logical-system <i>logical-system-name</i>   routing-instance <i>routing-instance-name</i>   <i>session-id</i>)</code>
<b>Release Information</b>	Command introduced in Junos OS Release 10.4.
<b>Description</b>	<p>Initiate reconfiguration processing for the specified DHCPv6 clients if they are in the bound state. If the clients are in the reconfiguring state, this command has no effect. If the clients are in any state other than bound or reconfiguring, this command has the same effect as the <b>clear dhcpv6 server binding</b> command.</p> <p>When the local server state machine starts the reconfiguration process on a bound client, the client transitions to the reconfigure state and the local server sends a reconfigure message to the client. Because the client was in the bound state before entering the reconfiguring state, all subscriber services, such as forwarding and statistics, continue to work. An exponential back-off timer determines the interval at which the reconfigure message is sent. If the final attempt is unsuccessful, the client is returned to its original state by default. You can optionally include the <b>clear-on-abort</b> statement to configure the client to be cleared when reconfiguration fails.</p>
<b>Options</b>	<p><b>all</b>—Initiate reconfiguration for all DHCPv6 clients.</p> <p><i>address</i>—Initiate reconfiguration for DHCPv6 client with the specified IPv6 address.</p> <p><i>client-id</i>—Initiate reconfiguration for DHCPv6 client with the specified client ID.</p> <p>interface <i>interface-name</i>—Initiate reconfiguration for all DHCPv6 clients on this logical interface (clients whose initial login requests were received over the specified interface).</p> <p>logical-system <i>logical-system-name</i>—Initiate reconfiguration for all DHCPv6 clients on the specified logical system.</p> <p>routing-instance <i>routing-instance-name</i>—Initiate reconfiguration reconfigured for all DHCPv6 clients in the specified routing instance.</p> <p><i>session-id</i>—Initiate reconfiguration for DHCPv6 client with the specified session ID.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>Configuring Extended DHCP Local Server Dynamic Client Reconfiguration</li> </ul>
<b>List of Sample Output</b>	<b>request dhcpv6 server reconfigure on page 714</b>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```
request dhcpv6 server user@host> request dhcpv6 server reconfigure 2001::2/16
reconfigure
```

## request message

<b>Syntax</b>	request message all message " <i>text</i> " request message message " <i>text</i> " (terminal <i>terminal-name</i>   user <i>user-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. Command introduced in Junos OS Release 11.1 for the QFX Series.
<b>Description</b>	Display a message on the screens of all users who are logged in to the router or switch or on specific screens.
<b>Options</b>	all—Display a message on the terminal of all users who are currently logged in.  message " <i>text</i> "—Message to display.  terminal <i>terminal-name</i> —Name of the terminal on which to display the message.  user <i>user-name</i> —Name of the user to whom to direct the message.
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	request message message on page 715 request message message (QFX Series) on page 715
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

```
request message user@host> request message message "Maintenance window in 10 minutes" user maria
message Message from user@host on tty0 at 20:27 ...
Maintenance window in 10 minutes
EOF
```

### Sample Output

```
request message user@switch> request message message "Maintenance window in 10 minutes" user maria
message (QFX Series) Message from user@switch on tty0 at 20:27 ...
Maintenance window in 10 minutes
EOF
```

## 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) <fcc <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) <fcc <i>number</i> > <sfc <i>number</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>fcc <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 T1600 router (or line-card chassis) that is connected to the TX Matrix router. Replace <i>number</i> with a value from 0 through 3.</p> <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> <p><b>psd <i>n</i></b>—(RSD only) Log in to the specified Protected System Domain (PSD). Replace <i>n</i> 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.</p> <p><b>re0</b>—Log in to the Routing Engine in slot 0.</p> <p><b>re1</b>—Log in to the Routing Engine in slot 1.</p> <p><b>rsd</b>—(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.</p> <p><b>sfc <i>number</i></b>—(TX Matrix Plus routers only) Log in to the specified Routing Engine on the TX Matrix Plus router (or switch-fabric chassis):</p>

- **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 Configuration Guide*.

**Required Privilege Level** maintenance

**List of Sample Output** **request routing-engine login other-routing-engine on page 717**  
**request routing-engine login psd on page 717**

**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 services static-subscribers login group

---

<b>Syntax</b>	<b>request services static-subscribers login group</b> <i>group-name</i>
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	Resets the state of an interface group on which static subscribers were forcibly logged out by the <b>request services static-subscribers logout group</b> command. This action enables static subscriber to login on the interfaces in the group.
<b>Options</b>	<i>group group-name</i> —Group of static subscriber interfaces on which static subscribers have been created.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>request services static-subscribers login group</b> on page 718
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

<b>request services static-subscribers login group</b>	<pre>user@host&gt; request services static-subscribers login group boston</pre>
--------------------------------------------------------	---------------------------------------------------------------------------------

## request services static-subscribers login interface

---

<b>Syntax</b>	<code>request services static-subscribers login interface <i>interface-name</i></code>
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	Resets the state of an interface on which a static subscriber was forcibly logged out by the <b>request services static-subscribers logout interface</b> command. This action enables a static subscriber to login on the interface.
<b>Options</b>	interface <i>interface-name</i> —Static interface on which a static subscriber has been created.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>request services static-subscribers login interface on page 719</b>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

<code>request services static-subscribers login interface</code>	<code>user@host&gt; request services static-subscribers login interface ge-2/0/1.5</code>
--------------------------------------------------------------------------	-------------------------------------------------------------------------------------------

## request services static-subscribers logout group

---

<b>Syntax</b>	<b>request services static-subscribers logout group <i>igroup-name</i></b>
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	Force static subscribers on the interfaces in the group to be logged out. No subscriber can subsequently log in on the interface group until the interface state is reset by a router reset or the <b>request services static-subscribers login group</b> command.
<b>Options</b>	<i>group group-name</i> —Group of static subscriber interfaces on which static subscribers have been created.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>request services static-subscribers logout group on page 720</b>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

<b>request services static-subscribers logout group</b>	<b>user@host&gt; request services static-subscribers logout group boston</b>
-----------------------------------------------------------------	------------------------------------------------------------------------------



---

## request services static-subscribers logout interface

---

<b>Syntax</b>	<code>request services static-subscribers logout interface <i>interface-name</i></code>
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	Force static subscriber on the interface to be logged out. No subscriber can subsequently log in on the interface until the interface state is reset by a router reset or the <b>request services static-subscribers login interface</b> command.
<b>Options</b>	interface <i>interface-name</i> —Static interface on which a static subscriber has been created.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<a href="#">request services static-subscribers logout interface on page 721</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

<code>request services static-subscribers logout interface</code>	<code>user@host&gt; request services static-subscribers logout interface ge-2/0/1.5</code>
---------------------------------------------------------------------------	--------------------------------------------------------------------------------------------

## request support information

---

<b>Syntax</b>	request support information
<b>Syntax (TX Matrix Router)</b>	request support information <all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	request support information <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. <b>show chassis alarms</b> added to output in Junos OS Release 8.0. <b>show route summary</b> added to output in Junos OS Release 8.5. <b>show krt queue</b> added to output in Junos OS Release 8.5. <b>show krt state</b> added to output in Junos OS Release 8.5. <b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
<b>Description</b>	Display information about the system. Issue this command before contacting customer support, and then include the command output in your support request.
<b>Options</b>	<p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system information for all chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system information for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system information for all chassis for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system information for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system storage information for a specific T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) (Optional) Display system information for the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) (Optional) Display system information for the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p>
<b>Additional Information</b>	<p>The output of this command can be lengthy. We recommend that you redirect the output to a file. This command is a combination of the following commands:</p> <ul style="list-style-type: none"><li>• <b>show chassis alarms</b></li><li>• <b>show chassis environment</b></li><li>• <b>show chassis firmware</b></li><li>• <b>show chassis fpc detail</b></li></ul>

- show chassis hardware detail
- show chassis hardware extensive
- show chassis routing-engine
- show configuration | except SECRET DATA
- show configuration chassis network-services
- show interfaces extensive
- show krt queue
- show krt state
- show pfe statistics error
- show route summary
- show system boot messages
- show system core-dumps
- show system processes extensive
- show system queues
- show system statistics
- show system storage
- show system uptime
- show system virtual memory
- show version

**Required Privilege Level** maintenance

**List of Sample Output** request support information | save on page 723  
 request support information scc (TX Matrix Router) on page 723  
 request support information sfc (TX Matrix Plus Router) on page 725

**Output Fields** For information about output fields, see the description for the specific command (listed in the “Additional Information” section) in which you are interested.

## Sample Output

```

request support information | save user@host> request support information | save  goose
                                   Wrote 1143 lines of output to 'goose'

                                   user@host>

request support information scc (TX user@host> request support information scc
  Matrix Router)

                                   user@host> show system uptime

                                   scc-re0:
```

```
-----  
Current time: 2004-09-15 00:49:06 PDT  
System booted: 2004-09-14 12:53:26 PDT (11:55:40 ago)  
Protocols started: 2004-09-14 12:54:19 PDT (11:54:47 ago)  
Last configured: 2004-09-14 13:07:47 PDT (11:41:19 ago) by regress  
12:49AM PDT up 11:56, 3 users, load averages: 0.00, 0.02, 0.03
```

lcc0-re0:

```
-----  
Current time: 2004-09-15 00:49:06 PDT  
System booted: 2004-09-14 15:36:41 PDT (09:12:25 ago)  
Last configured: 2004-09-14 15:38:06 PDT (09:11:00 ago) by root  
12:49AM PDT up 9:12, 0 users, load averages: 0.13, 0.05, 0.02
```

lcc2-re0:

```
-----  
Current time: 2004-09-15 00:49:06 PDT  
System booted: 2004-09-14 15:36:47 PDT (09:12:19 ago)  
Last configured: 2004-09-14 15:38:09 PDT (09:10:57 ago) by root  
12:49AM PDT up 9:12, 0 users, load averages: 0.00, 0.00, 0.00
```

user@host> show version

scc-re0:

```
-----  
Hostname: hostA  
Model: TX Matrix  
JUNOS Base OS boot [7.0I20040914_1707_mapte]  
JUNOS Base OS Software Suite [7.0I20040907_1922_rtuplur]  
JUNOS Kernel Software Suite [7.0I20040914_1707_mapte]  
JUNOS Packet Forwarding Engine Support (T Series) [7.0I20040914_1707_mapte]  
JUNOS Routing Software Suite [7.0I20040914_1707_mapte]  
JUNOS Online Documentation [7.0I20040914_1707_mapte]  
JUNOS Crypto Software Suite [7.0I20040914_1707_mapte]  
JUNOS Support Tools Package [7.0-20040908.0]
```

lcc0-re0:

```
-----  
Hostname: hostB  
Model: t640  
JUNOS Base OS boot [7.0I20040914_1707_mapte]  
JUNOS Base OS Software Suite [7.0I20040907_1922_rtuplur]  
JUNOS Kernel Software Suite [7.0I20040914_1707_mapte]  
JUNOS Packet Forwarding Engine Support (T-Series) [7.0I20040914_1707_mapte]  
JUNOS Routing Software Suite [7.0I20040914_1707_mapte]  
JUNOS Online Documentation [7.0I20040914_1707_mapte]  
JUNOS Crypto Software Suite [7.0I20040914_1707_mapte]
```

lcc2-re0:

```
-----  
Hostname: dewey  
Model: t640  
JUNOS Base OS boot [7.0I20040914_1707_mapte]  
JUNOS Base OS Software Suite [7.0I20040907_1922_rtuplur]  
JUNOS Kernel Software Suite [7.0I20040914_1707_mapte]  
JUNOS Packet Forwarding Engine Support (T-Series) [7.0I20040914_1707_mapte]  
JUNOS Routing Software Suite [7.0I20040914_1707_mapte]  
JUNOS Online Documentation [7.0I20040914_1707_mapte]
```

```

JUNOS Crypto Software Suite [7.0I20040914_1707_mapte]
...

request support
information sfc (TX
Matrix Plus Router)

user@host> request support information sfc 0
sfc0-re0:
-----

root@host> show system uptime no-forwarding

Current time: 2009-05-25 03:43:28 PDT
System booted: 2009-05-25 01:15:04 PDT (02:28:24 ago)
Protocols started: 2009-05-25 01:16:01 PDT (02:27:27 ago)
Last configured: 2009-05-25 03:03:42 PDT (00:39:46 ago) by regress
3:43AM up 2:28, 7 users, load averages: 0.00, 0.00, 0.00

root@host> show version detail no-forwarding

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]
...
root@host> show system core-dumps no-forwarding

-rw----- 1 root wheel 152223744 May 25 03:10 /var/crash/vmcore.0
-rw-r--r-- 1 bdeleon field 139417 May 22 10:17
/var/tmp/aj-core-apps-config-n-gres.txt
...
root@host> show chassis alarms no-forwarding

9 alarms currently active
Alarm time          Class Description
2009-05-25 01:27:08 PDT Minor LCC 0 Minor Errors
2009-05-25 01:27:08 PDT Minor Spare SIB F13 6 Fault
...
root@host> show chassis hardware detail no-forwarding

Hardware inventory:
Item          Version Part number Serial number Description
Chassis              REV 05 710-022574 TS4027 SFC Midplane
FPM Display          REV 03 710-024027 DX0282 TXP FPM Display
...
root@host> show system processes extensive no-forwarding

last pid: 6639; load averages: 0.00, 0.00, 0.00 up 0+02:28:54 03:43:28
161 processes: 5 running, 138 sleeping, 18 waiting

Mem: 236M Active, 227M Inact, 104M Wired, 392M Cache, 69M Buf, 2296M 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    143:00 96.78% idle
1530 root        1   96   0 38160K 24812K select  2:54  1.12% chassisd
1343 root        1   76   0    OK    12K      0:18  0.00% bcMLINK.0
1345 root        1   76   0    OK    12K      0:15  0.00% brq17: uhci1
uhci*
...

```

```
root@host> show pfe statistics error
```

```
Slot 4
```

```
SLCHIP Error statistics:
```

SLCHIP	0	1
Lin XIF	0	0
Lin SRCTL	0	0

```
...
```

```
root@host> show chassis routing-engine no-forwarding
```

```
Routing Engine status:
```

```
Slot 0:
```

Current state	Master
Election priority	Master (default)
Temperature	32 degrees C / 89 degrees F
CPU temperature	46 degrees C / 114 degrees F
DRAM	3327 MB

```
...
```

```
root@host> show chassis environment no-forwarding
```

Class	Item	Status	Measurement
Temp	PEM 0	OK	30 degrees C / 86 degrees F

```
...
```

```
root@host> show chassis firmware no-forwarding
```

Part	Type	Version
Global FPC 4		
Global FPC 6		
Global FPC 7		

```
...
```

```
root@host> show system boot-messages no-forwarding
```

```
...
```

## request system configuration rescue delete

<b>Syntax</b>	request system configuration rescue delete
<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>	Delete an existing rescue configuration.
<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>• request system configuration rescue save on page 728</li> <li>• request system software rollback on page 774</li> <li>• show system commit on page 860</li> </ul>
<b>List of Sample Output</b>	request system configuration rescue delete on page 727 request system configuration rescue delete on page 727
<b>Output Fields</b>	This command produces no output.

### Sample Output

```
request system user@host> request system configuration rescue delete
configuration rescue
delete
```

### Sample Output

```
request system user@switch> request system configuration rescue delete
configuration rescue
delete
```

## request system configuration rescue save

---

<b>Syntax</b>	request system configuration rescue save
<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>	Save the most recently committed configuration as the rescue configuration so that you can return to it at any time by using the <b>rollback</b> command.
<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>• request system software delete on page 766</li><li>• request system software rollback on page 774</li><li>• show system commit on page 860</li></ul>
<b>List of Sample Output</b>	request system configuration rescue save on page 728 request system configuration rescue save on page 728
<b>Output Fields</b>	This command produces no output.

### Sample Output

```
request system user@host> request system configuration rescue save
configuration rescue
save
```

### Sample Output

```
request system user@switch> request system configuration rescue save
configuration rescue
save
```



## request system firmware

<b>Syntax</b>	request system firmware ( <i>upgrade</i>   <i>downgrade</i> ) ( <i>fpc</i> < <i>slot slot-number</i> >   <i>pic</i> < <i>assembly-id assembly-id</i> > < <i>fpc-slot fpc-slot-number</i> > < <i>partnumber partnumber</i> > < <i>pic-slot pic-slot-number</i> > < <i>tag tag</i> >)
<b>Release Information</b>	Command introduced in Junos OS Release 7.4.
<b>Description</b>	(J Series routers only) Upgrade or downgrade firmware on a Physical Interface Modules (PIM).
<b>Options</b>	<p><i>fpc</i>—Flexible PIM concentrator (FPC).</p> <p><i>slot slot-number</i>—(Optional) Location of the FPC to upgrade or downgrade.</p> <p><i>pic</i>—Physical interface card (PIC).</p> <p><i>assembly-id assembly-id</i>—(Optional) Component assembly identifier.</p> <p><i>fpc-slot fpc-slot-number</i>—(Optional) Physical location of the PIC to upgrade or downgrade.</p> <p><i>partnumber partnumber</i>—(Optional) Part number of the component to upgrade or downgrade.</p> <p><i>pic-slot pic-slot-number</i>—(Optional) Location of the PIC to upgrade or downgrade.</p> <p><i>tag tag</i>—(Optional) Firmware release number.</p>
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<b>request system firmware upgrade on page 729</b>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```
request system  user@host> request system configuration firmware upgrade fpc
firmware upgrade
```

## request system halt

---

<b>Syntax</b>	request system halt <at <i>time</i> > <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 Switch)</b>	request system halt <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 halt <all-lcc   lcc <i>number</i>   scc> <at <i>time</i> > <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> > <both-routing-engines> <other-routing-engine> <in <i>minutes</i> > <media (compact-flash   disk)> <message " <i>text</i> ">
<b>Syntax (QFX Series)</b>	request system halt <at <i>time</i> > <in <i>minutes</i> > <media > <message " <i>text</i> ">
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. <b>other-routing-engine</b> option introduced in Junos OS Release 8.0. 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>	Stop the router or switch software.

- Options** none—Stop the router or switch software immediately.
- all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Halt all chassis.
- all-lcc—(TX Matrix 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 routers (or line-card chassis) connected to the TX Matrix Plus router.
- all-members—(EX4200 switches only) (Optional) Halt all members of the Virtual Chassis configuration.
- 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.
- both-routing-engines—(Optional) Halt both Routing Engines at the same time.
- lcc *number*—(TX Matrix 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 T1600 router that is connected to the TX Matrix Plus router. Replace *number* with a value from 0 through 3.
- local—(EX4200 switches 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 next boot. (The options **removable-compact-flash** and **usb** pertain to J Series routers only.)
- media (external | internal)—(EX Series switches only) (Optional) Halt the boot media:
- **external**—Halt the external mass storage device.
  - **internal**—Halt the internal flash device.
- member *member-id*—(EX4200 switches only) (Optional) Halt the specified member of the Virtual Chassis configuration. Replace *member-id* with a value from 0 through 9.
- 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 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 or 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. If you issue the **request system halt both-routing-engines** command on the TX Matrix or TX Matrix Plus router, all the Routing Engines on 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), 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 701](#)
- [Rebooting and Halting a QFX Series Product](#)

**List of Sample Output**

[request system halt on page 734](#)  
[request system halt \(in 2 Hours\) on page 734](#)  
[request system halt \(Immediately\) on page 734](#)  
[request system halt \(at 1:20 AM\) on page 734](#)  
[request system halt \(in 2 Hours\) on page 734](#)  
[request system halt \(Immediately\) on page 734](#)

**request system halt (at 1:20 AM) on page 734**

**request system halt (QFX Series) on page 734**

**Output Fields** When you enter this command, you are provided feedback on the status of your request.

## Sample Output

<b>request system halt</b>	<pre>user@host&gt; 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.</pre>
<b>request system halt (in 2 Hours)</b>	<p>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:</p> <pre>user@host&gt; request system halt at +120 user@host&gt; request system halt in 120 user@host&gt; request system halt at 19:00</pre>
<b>request system halt (Immediately)</b>	<pre>user@host&gt; request system halt at now</pre>
<b>request system halt (at 1:20 AM)</b>	<p>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.</p> <pre>user@host&gt; request system halt at yymmdd120 request system halt at 120 Halt the system at 120? [yes,no] (no) yes</pre>

## Sample Output

<b>request system halt (in 2 Hours)</b>	<p>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:</p> <pre>user@switch&gt; request system halt at +120 user@switch&gt; request system halt in 120 user@switch&gt; request system halt at 19:00</pre>
<b>request system halt (Immediately)</b>	<pre>user@switch&gt; request system halt at now</pre>
<b>request system halt (at 1:20 AM)</b>	<p>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.</p> <pre>user@switch&gt; request system halt at yymmdd120 request system halt at 120 Halt the system at 120? [yes,no] (no) yes</pre>
<b>request system halt (QFX Series)</b>	<pre>user@switch&gt; 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</pre>

The operating system has halted.  
Please press any key to reboot.

## request system license add

---

<b>Syntax</b>	<code>request system license add (<i>filename</i>   terminal)</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>	Add a license key.
<b>Options</b>	<i>filename</i> —License key from a file or URL. Specify the filename or the URL where the key is located.  terminal—License key from the terminal.
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>Adding New Licenses</li></ul>
<b>List of Sample Output</b>	<code>request system license add</code> on page 736 <code>request system license add (QFX Series)</code> on page 736
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

`request system license add`     `user@host> request system license add terminal`

### Sample Output

`request system license add (QFX Series)`     `user@switch> request system license add terminal`



## request system license delete

<b>Syntax</b>	<code>request system license delete <i>license-id</i></code>
<b>Syntax (QFX Series)</b>	<code>request system license delete <i>license-identifier</i></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>	Delete a license key. You can delete only one license at a time.
<b>Options</b>	<i>license-id</i> —License ID that uniquely identifies a license key. <i>license-identification</i> —(QFX Series) License ID that uniquely identifies a license key.
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>Deleting a License</li> </ul>
<b>List of Sample Output</b>	<a href="#">request system license delete on page 737</a> <a href="#">request system license delete (QFX Series) on page 737</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

```
request system license delete user@host> request system license delete G03000002223
```

### Sample Output

```
request system license delete (QFX Series) user@switch> request system license delete G03000002223
```

## request system license save

---

<b>Syntax</b>	request system license save ( <i>filename</i>   terminal)
<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>	Save installed license keys to a file or URL.
<b>Options</b>	<i>filename</i> —License key from a file or URL. Specify the filename or the URL where the key is located.  terminal—License key from the terminal.
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• Saving License Keys</li></ul>
<b>List of Sample Output</b>	<b>request system license save on page 738</b> <b>request system license save (QFX Series) on page 738</b>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

request system license save    user@host> request system license save ftp://user@host/license.conf

### Sample Output

request system license save (QFX Series)    user@switch> request system license save ftp://user@switcht/license.conf

## request system logout

<b>Syntax</b>	request system logout (pid <i>pid</i>   terminal <i>terminal</i>   user <i>username</i> ) <all>
<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>	all—(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.)  pid <i>pid</i> —Log out the user session using the specified management process identifier (PID). The PID type must be management process.  terminal <i>terminal</i> —Log out the user for the specified terminal session.  user <i>username</i> —Log out the specified user.
<b>Required Privilege Level</b>	configure
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">Junos OS System Basics Configuration Guide</a></li> </ul>
<b>List of Sample Output</b>	request system logout on page 739 request system logout (QFX Series) on page 739
<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.

### Sample Output

**request system logout (QFX Series)**     user@switch> request system logout user tammy all  
Connection closed by foreign host.

## request system partition abort

---

<b>Syntax</b>	request system partition abort
<b>Syntax (TX Matrix Router)</b>	request system partition abort <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	request system partition abort <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>	Terminate a previously scheduled storage media partition operation. If the command is issued between the time of a partition request and a reboot, the partition request is aborted and the storage media is not affected.
<b>Options</b>	<p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Abort a previously scheduled partition operation for all chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, abort a previously scheduled partition operation on all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, abort a previously scheduled partition operation on all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix Plus router, abort a previously scheduled partition operation on a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, abort a previously scheduled partition operation on a specific T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) (Optional) Abort a previously scheduled partition operation on the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) (Optional) Abort a previously scheduled partition operation on the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p>
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>request system partition hard-disk on page 742</li></ul>
<b>List of Sample Output</b>	request system partition abort on page 741
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

```
request system  user@host> request partition abort
partition abort  The hard disk is no longer scheduled to be partitioned.
```

## 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>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>	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>all-chassis—(TX Matrix 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>all-lcc—(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 (or line-card chassis) 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 T1600 routers (or line-card connected to the TX Matrix Plus router).</p> <p>lcc <i>number</i>—(TX Matrix 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 T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) (Optional) Schedule a partition of the hard disk on the T640 router connected to the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) (Optional) Schedule a partition of the hard disk on the T1600 router connected to the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p>
<b>Additional Information</b>	To immediately partition the hard disk, use the <b>request system reboot</b> command. To cancel the partition request, use the <b>request system partition abort</b> command.
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>request system partition abort on page 740</li> </ul>
<b>List of Sample Output</b>	request system partition hard-disk on page 743

**Output Fields** When you enter this command, you are provided feedback on the status of your request.

### Sample Output

```
request system user@host> request partition hard-disk
partition hard-disk
```

## request system power-off

---

<b>Syntax</b>	request system power-off <both-routing-engines> <other-routing-engine> <at <i>time</i> > <in <i>minutes</i> > <media (compact-flash   disk   removable-compact-flash   usb)> <message " <i>text</i> ">
<b>Syntax (EX Series Switch)</b>	request system power-off <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 power-off <all-chassis   all-lcc   lcc <i>number</i>   scc> <both-routing-engines> <other-routing-engine> <at <i>time</i> > <in <i>minutes</i> > <media (compact-flash   disk)> <message " <i>text</i> ">
<b>Syntax (TX Matrix Plus Router)</b>	request system power-off <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> > <both-routing-engines> <other-routing-engine> <at <i>time</i> > <in <i>minutes</i> > <media (compact-flash   disk)> <message " <i>text</i> ">
<b>Syntax (QFX Series)</b>	request system power-off <at <i>time</i> > <in <i>minutes</i> > <message " <i>text</i> ">
<b>Release Information</b>	Command introduced in Junos OS Release 8.0. 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>	Power off the software.
<b>Options</b>	none—Power off the router or switch software immediately.



**all-chassis**—(Optional) (TX Matrix and TX Matrix Plus router only) Power off all Routing Engines in the chassis.

**all-lcc**—(Optional) (TX Matrix and TX Matrix Plus router only) On a TX Matrix router, power off all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, power off all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.

**all-members**—(EX4200 switches only) (Optional) Power off all members of the Virtual Chassis configuration.

**at *time***—(Optional) Time at which to power off the software, specified in one of the following ways:

- **now**—Power off the software immediately. This is the default.
- **+*minutes***—Number of minutes from now to power off the software.
- ***yymmddhhmm***—Absolute time at which to power off the software, specified as year, month, day, hour, and minute.
- ***hh:mm***—Absolute time on the current day at which to power off the software.

**both-routing-engines**—(Optional) Power off both Routing Engines at the same time.

**in *minutes***—(Optional) Number of minutes from now to power off the software. This option is an alias for the **at +*minutes*** option.

**lcc *number***—(Optional) (TX Matrix and TX Matrix Plus router only) On a TX Matrix router, power off a T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, power off a T1600 router that is connected to the TX Matrix Plus router. Replace ***number*** with a value from 0 through 3.

**local**—(EX4200 switches only) (Optional) Power off 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 only) (Optional) Power off the boot media:

- **external**—Power off the external mass storage device.
- **internal**—Power off the internal flash device.

**member *member-id***—(EX4200 switches only) (Optional) Power off the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value from 0 through 9.

**message "*text*"**—(Optional) Message to display to all system users before powering off the software.

**other-routing-engine**—(Optional) Power off 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**—(Optional) (TX Matrix router only) Power off only the master Routing Engine or the backup Routing Engine on the TX Matrix router (or switch-card chassis). If you issue the command from the master Routing Engine, the master SCC is powered off. If you issue the command from the backup Routing Engine, the backup SCC is powered off.

**sfc number**—(Optional) (TX Matrix Plus router only) Power off only the master Routing Engine or the backup Routing Engine on the TX Matrix Plus router (or switch-fabric chassis). If you issue the command from the master Routing Engine, the master SFC is powered off. If you issue the command from the backup Routing Engine, the backup SFC is powered off. Replace *number* with zero.

**slice slice**—(EX-series switches only) (Optional) Power off 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** On a routing matrix composed of a TX Matrix router and T640 routers, if you issue the **request system power-off** command on the TX Matrix master Routing Engine, all the master Routing Engines connected to the routing matrix are powered off. If you issue this command on the backup Routing Engine, all the backup Routing Engines connected to the routing matrix are powered off.

Likewise, on a routing matrix composed of a TX Matrix Plus router and T1600 routers, if you issue the **request system power-off** command on the TX Matrix Plus master Routing Engine, all the master Routing Engines connected to the routing matrix are powered off. If you issue this command on the backup Routing Engine, all the backup Routing Engines connected to the routing matrix are powered off.

If you issue the **request system power-off both-routing-engines** command on the TX Matrix or TX Matrix Plus router, all the Routing Engines on the routing matrix are powered off.

**Required Privilege Level** maintenance

**List of Sample Output** **request system power-off** on page 747  
**request system power-off (QFX Series)** on page 747

**Output Fields** When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```

request system      user@host> request system power-off message "This router will be powered off in 30 minutes.
power-off           Please save your data and log out immediately."
                        warning: This command will not halt the other routing-engine.
                        If planning to switch off power, use the both-routing-engines option.
                        Power Off the system ? [yes,no] (no) yes

                        *** FINAL System shutdown message from remote@nutmeg ***
                        System going down IMMEDIATELY

                        This router will be powered off in 30 minutes. Please save your data and log out
                        immediately.

                        Shutdown NOW!
                        [pid 5177]

request system      user@switch> request system power-off message "This switch will be powered off in 30 minutes.
power-off (QFX      Please save your data and log out immediately."
Series)             warning: This command will not halt the other routing-engine.
                        If planning to switch off power, use the both-routing-engines option.
                        Power Off the system ? [yes,no] (no) yes

                        *** FINAL System shutdown message from remote@nutmeg ***
                        System going down IMMEDIATELY

                        This router will be powered off in 30 minutes. Please save your data and log out
                        immediately.

                        Shutdown NOW!
                        [pid 5177]

```

## request system reboot

---

<b>Syntax</b>	request system reboot <other-routing-engine> <at <i>time</i> > <in <i>minutes</i> > <media (compact-flash   disk   removable-compact-flash   usb)> <message " <i>text</i> ">
<b>Syntax (EX Series Switch)</b>	request system reboot <all-members> <at <i>time</i> > <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> <other-routing-engine> <at <i>time</i> > <in <i>minutes</i> > <media (compact-flash   disk)> <message " <i>text</i> ">
<b>Syntax (TX Matrix Plus Router)</b>	request system reboot <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> > <other-routing-engine> <partition (1   2   alternate)> <at <i>time</i> > <in <i>minutes</i> > <media (compact-flash   disk)> <message " <i>text</i> ">
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. <b>other-routing-engine</b> option added in Junos OS Release 8.0. 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>	Reboot the software.
<b>Options</b>	none—Reboot the software immediately.  all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, reboot all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, reboot all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.

**all-lcc**—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, reboot all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, reboot all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.

**all-members**—(EX4200 switches only) (Optional) Reboot 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.

**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 and TX Matrix Plus routers only) (Optional) On a TX Matrix router, the number of a T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, the number of a T1600 router that is connected to the TX Matrix Plus router. Replace ***number*** with a value from 0 through 3.

**local**—(EX4200 switches only) (Optional) Reboot 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 only) (Optional) Reboot the boot media:

- **external**—Reboot the external mass storage device.
- **internal**—Reboot the internal flash device.

**member *member-id***—(EX4200 switches only) (Optional) Reboot the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value from 0 through 9.

**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 router (or 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 router (or 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:** 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 701](#)
- [request system halt on page 730](#)
- [request system reboot](#)
- [Rebooting and Halting a QFX Series Product](#)

**List of Sample Output**

- request system reboot on page 751
- request system reboot (at 2300) on page 751
- request system reboot (in 2 Hours) on page 751
- request system reboot (Immediately) on page 751
- request system reboot (at 1:20 AM) on page 751

**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 scripts convert

---


<b>Syntax</b>	<b>request system scripts convert (slax-to-xslt   xslt-to-slax) source <i>source/filename</i> destination <i>destination/&lt;filename&gt;</i></b>
<b>Release Information</b>	Command introduced in Junos OS Release 8.2. Command introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Convert an Extensible Stylesheet Language Transformations (XSLT) script to Stylesheet Language, Alternative syntax (SLAX), or convert a SLAX script to XSLT.
<b>Options</b>	<p><i>destination destination/&lt;filename&gt;</i>—Specify a destination for the converted file.</p> <p>Optionally, you can specify a filename for the converted file. If you do not specify a filename, the software assigns one automatically. The default destination filename is the same as the source filename, except the file extension is altered. For example, the software converts a source file called <b>test.xml</b> to <b>test.slax</b>. The software converts a source file called <b>test1.slax</b> to <b>test1.xml</b>.</p> <p><i>slax-to-xslt</i>—Convert a SLAX script to XSLT.</p> <p><i>source source/filename</i>—Specify a source file that you want to convert.</p> <p><i>xslt-to-slax</i>—Convert an XSLT script to SLAX.</p>
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<b>request system scripts convert slax-to-xslt on page 752</b> <b>request system scripts convert xslt-to-slax on page 752</b>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

<b>request system scripts convert slax-to-xslt</b>	<pre>user@host&gt; request system scripts convert slax-to-xslt source /var/db/scripts/op/script1.slax destination /var/db/scripts/op conversion complete</pre>
<b>request system scripts convert xslt-to-slax</b>	<pre>user@host&gt; request system scripts convert xslt-to-slax source /var/db/scripts/commit/script1.xml destination /var/db/scripts/commit conversion complete</pre>



## request system snapshot

<b>Syntax</b>	request system snapshot <partition>
<b>Syntax (TX Matrix Router)</b>	request system snapshot <all-chassis   all-lcc   lcc <i>number</i>   scc> <partition>
<b>Syntax (TX Matrix Plus Router)</b>	request system snapshot <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> > <partition>
<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>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Back up the currently running and active file system partitions on the router to standby partitions that are not running. Specifically, the root file system (/) is backed up to <b>/altroot</b> , and <b>/config</b> is backed up to <b>/altconfig</b> . The root and <b>/config</b> file systems are on the router's flash drive, and the <b>/altroot</b> and <b>/altconfig</b> file systems are on the router's hard drive.
<div style="display: flex; align-items: center;">  <div style="margin-left: 10px;"> <p><b>CAUTION:</b> After you run the <b>request system snapshot</b> command, you cannot return to the previous version of the software, because the running and backup copies of the software are identical.</p> </div> </div>	
<b>Options</b>	<p>none—Back up the currently running and active file system partitions on the router to standby partitions that are not running.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus router only) (Optional) 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.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus router only) (Optional) 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 T1600 routers (or line-card chassis) connected to a TX Matrix Plus router.</p>

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

**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**.

**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-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***—(Optional) Specify the boot device the software is copied to:

- **compact-flash**—Copy software to the primary compact flash drive.
- **removable-compact-flash**—Copy software to the removable compact flash drive.
- **usb**—(M320, T640, MX960 and J Series routers only) Copy software to the device connected to the USB 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. 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 System Basics Configuration Guide*.

**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.

**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** 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.

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.

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 System Basics Configuration Guide*.

**Required Privilege Level** maintenance

**Related Documentation** • [show system snapshot on page 943](#)

**List of Sample Output** [request system snapshot on page 755](#)  
[request system snapshot \(When Partition Flag Is On\) on page 756](#)  
[request system snapshot \(When Mirroring Is Enabled\) on page 756](#)  
[request system snapshot all-lcc \(Routing Matrix\) on page 756](#)

**Output Fields** When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```
request system snapshot 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 (When  
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 (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 software abort

<b>Syntax</b>	<b>request system software abort in-service-upgrade</b>
<b>Release Information</b>	Command introduced in JUNOS Release 9.0. Command introduced in Junos OS Release 11.1 for the QFX Series.
<b>Description</b>	Abort a unified in-service software upgrade (ISSU). The unified ISSU must be in progress and you must issue this command from a router session other than the one on which you issued the <b>request system in-service-upgrade</b> command that launched the unified ISSU.
<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 system software in-service-upgrade on page 770</a></li> <li>• <a href="#">show chassis in-service-upgrade on page 459</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">request system software abort (New Router Session) on page 757</a> <a href="#">request system software in-service-upgrade (Unified ISSU Session) on page 757</a> <a href="#">request system software abort (New Router Session) on page 758</a> <a href="#">request system software in-service-upgrade (Unified ISSU Session) on page 758</a>
<b>Output Fields</b>	When you enter the <b>request system software abort</b> command on a new router session, you are provided feedback on the status of your request in the router session on which you issued the <b>request system software in-service-upgrade</b> command.

## Sample Output

<b>request system software abort (New Router Session)</b>	user@host> request system software abort
<b>request system software in-service-upgrade (Unified ISSU Session)</b>	<pre> user@host&gt; request system software in-service-upgrade /var/tmp/jinstall-9.0-20080117.0-domestic-signed.tgz ISSU: Preparing Backup RE Pushing bundle to re1 Checking compatibility with configuration Initializing... Using jbase-9.0-20080116.2 Verified manifest signed by PackageProduction_9_0_0 Using /var/tmp/jinstall-9.0-20080117.0-domestic-signed.tgz Verified jinstall-9.0-20080117.0-domestic.tgz signed by PackageProduction_9_0_0 Using jinstall-9.0-20080117.0-domestic.tgz Using jbundle-9.0-20080117.0-domestic.tgz Checking jbundle requirements on / Using jbase-9.0-20080117.0.tgz Verified manifest signed by PackageProduction_9_0_0 Using jkernel-9.0-20080117.0.tgz Verified manifest signed by PackageProduction_9_0_0 Using jcrypto-9.0-20080117.0.tgz Verified manifest signed by PackageProduction_9_0_0 Using jpfe-9.0-20080117.0.tgz Using jdocs-9.0-20080117.0.tgz Verified manifest signed by PackageProduction_9_0_0 Using jroute-9.0-20080117.0.tgz Verified manifest signed by PackageProduction_9_0_0 </pre>

```

Hardware Database regeneration succeeded Validating against /config/juniper.conf.gz
mgd: commit complete
Validation succeeded
Installing package '/var/tmp/jinstall-9.0-20080117.0-domestic-signed.tgz'
...
Verified jinstall-9.0-20080117.0-domestic.tgz signed by PackageProduction_9_0_0
Adding jinstall...
Verified manifest signed by PackageProduction_9_0_0

WARNING: This package will load JUNOS 9.0-20080117.0 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/jinstall-9.0-20080117.0-domestic-signed.tgz ...
Saving state for rollback ...
Backup upgrade done
Rebooting Backup RE

Rebooting re1
error: ISSU Aborted! Backup RE maybe in inconsistent state, Please restore backup
RE
ISSU: IDLE

{master}
user@host>

```

## Sample Output

```

request system software abort (New Router Session) user@switch> request system software abort

request system software in-service-upgrade (Unified ISSU Session) user@host> request system software in-service-upgrade
/var/tmp/jinstall-9.0-20080117.0-domestic-signed.tgz
ISSU: Preparing Backup RE
Pushing bundle to re1
Checking compatibility with configuration Initializing...
Using jbase-9.0-20080116.2
Verified manifest signed by PackageProduction_9_0_0 Using
/var/tmp/jinstall-9.0-20080117.0-domestic-signed.tgz
Verified jinstall-9.0-20080117.0-domestic.tgz signed by PackageProduction_9_0_0
Using jinstall-9.0-20080117.0-domestic.tgz
Using jbundle-9.0-20080117.0-domestic.tgz
Checking jbundle requirements on /
Using jbase-9.0-20080117.0.tgz

```

```

Verified manifest signed by PackageProduction_9_0_0 Using
jkernel-9.0-20080117.0.tgz Verified manifest signed by PackageProduction_9_0_0
Using jcrypto-9.0-20080117.0.tgz Verified manifest signed by
PackageProduction_9_0_0 Using jpfe-9.0-20080117.0.tgz Using
jdocs-9.0-20080117.0.tgz Verified manifest signed by PackageProduction_9_0_0 Using
jroute-9.0-20080117.0.tgz Verified manifest signed by PackageProduction_9_0_0
Hardware Database regeneration succeeded Validating against /config/juniper.conf.gz
mgd: commit complete
Validation succeeded
Installing package '/var/tmp/jinstall-9.0-20080117.0-domestic-signed.tgz'
...
Verified jinstall-9.0-20080117.0-domestic.tgz signed by PackageProduction_9_0_0
Adding jinstall...
Verified manifest signed by PackageProduction_9_0_0

WARNING:      This package will load JUNOS 9.0-20080117.0 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/jinstall-9.0-20080117.0-domestic-signed.tgz ...
Saving state for rollback ...
Backup upgrade done
Rebooting Backup RE

Rebooting re1
error: ISSU Aborted! Backup RE maybe in inconsistent state, Please restore backup
RE
ISSU: IDLE

{master}
user@host>

```

## request system software add

---

<b>Syntax</b>	<code>request system software add <i>package-name</i></code> <code>&lt;best-effort-load&gt;</code> <code>&lt;delay-restart&gt;</code> <code>&lt;force&gt;</code> <code>&lt;no-copy&gt;</code> <code>&lt;no-validate&gt;</code> <code>&lt;re0   re1&gt;</code> <code>&lt;reboot&gt;</code> <code>&lt;unlink&gt;</code> <code>&lt;validate&gt;</code>
<b>Syntax (EX Series Switches)</b>	<code>request system software add <i>package-name</i></code> <code>&lt;best-effort-load&gt;</code> <code>&lt;delay-restart&gt;</code> <code>&lt;force&gt;</code> <code>&lt;no-copy&gt;</code> <code>&lt;no-validate&gt;</code> <code>&lt;re0   re1&gt;</code> <code>&lt;reboot&gt;</code> <code>&lt;set [<i>package-name package-name</i>]&gt;</code> <code>&lt;unlink&gt;</code> <code>&lt;validate&gt;</code>
<b>Syntax (TX Matrix Router)</b>	<code>request system software add <i>package-name</i></code> <code>&lt;best-effort-load&gt;</code> <code>&lt;delay-restart&gt;</code> <code>&lt;force&gt;</code> <code>&lt;lcc <i>number</i>   scc&gt;</code> <code>&lt;no-copy&gt;</code> <code>&lt;no-validate&gt;</code> <code>&lt;re0   re1&gt;</code> <code>&lt;reboot&gt;</code> <code>&lt;unlink&gt;</code> <code>&lt;validate&gt;</code>
<b>Syntax (TX Matrix Plus Router)</b>	<code>request system software add <i>package-name</i></code> <code>&lt;best-effort-load&gt;</code> <code>&lt;delay-restart&gt;</code> <code>&lt;force&gt;</code> <code>&lt;lcc <i>number</i>   sfc <i>number</i>&gt;</code> <code>&lt;no-copy&gt;</code> <code>&lt;no-validate&gt;</code> <code>&lt;re0   re1&gt;</code> <code>&lt;reboot&gt;</code> <code>&lt;unlink&gt;</code> <code>&lt;validate&gt;</code>
<b>Syntax (QFX Series)</b>	<code>request system software add <i>package-name</i></code> <code>&lt;best-effort-load&gt;</code> <code>&lt;delay-restart&gt;</code> <code>&lt;force&gt;</code> <code>&lt;no-copy&gt;</code>



<no-validate>  
 <reboot>  
 <unlink>  
 <validate>

<b>Release Information</b>	<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>The <b>set [package-name package-name]</b> option added in Junos OS Release 11.1 for EX Series switches.</p>
<b>Description</b>	Install a software package or bundle on the router or switch.
<b>Options</b>	<p><i>package-name</i>—Location from which the software package or bundle is to be installed.</p> <p>For example:</p> <ul style="list-style-type: none"> <li>• <b>/var/tmp/package-name</b>—For a software package or bundle that is being installed from a local directory on the router or switch.</li> <li>• <b>protocol://hostname/pathname/package-name</b>—For a software package or bundle that is to be downloaded and installed from a remote location. Replace <b>protocol</b> with one of the following:           <ul style="list-style-type: none"> <li>• <b>ftp</b>—File Transfer Protocol.                Use <b>ftp://hostname/pathname/package-name</b>. To specify authentication credentials, use <b>ftp://&lt;username&gt;:&lt;password&gt;@hostname/pathname/package-name</b>. To have the system prompt you for the password, specify <b>prompt</b> in place of the password. If a password is required, and you do not specify the password or <b>prompt</b>, an error message is displayed.</li> <li>• <b>http</b>—Hypertext Transfer Protocol.                Use <b>http://hostname/pathname/package-name</b>. To specify authentication credentials, use <b>http://&lt;username&gt;:&lt;password&gt;@hostname/pathname/package-name</b>. If a password is required and you omit it, you are prompted for it.</li> <li>• <b>scp</b>—Secure copy (available only for Canada and U.S. version).                Use <b>scp://hostname/pathname/package-name</b>. To specify authentication credentials, use <b>scp://&lt;username&gt;:&lt;password&gt;@hostname/pathname/package-name</b>.</li> </ul> </li> </ul>



---

**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 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.

`delay-restart`—(Optional) Install 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 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 (or line-card chassis) 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 T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace *number* with a value from 0 through 3.

`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 (or switch-fabric chassis). Replace *number* with 0.

`no-copy`—(Optional) Install a software package or bundle, but do not save copies of 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 that support dual or redundant Routing Engines, load a software package or bundle on the Routing Engine in slot 0 (**re0**) or Routing Engine in slot 1 (**re1**).

**reboot**—(Optional) After adding the software package or bundle, reboot the system.

**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.

**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 and T Series routers, use the **unlink** option to remove the software package from this directory after a successful upgrade is completed.

**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.

**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.

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, **jkernl**, last. Add the operating system package, **jkernl**, 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/jkernl
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 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 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 766</a></li> <li>• <a href="#">request system software rollback on page 774</a></li> <li>• <a href="#">request system storage cleanup on page 784</a></li> <li>• <a href="#">Upgrading Software</a></li> </ul>
List of Sample Output	<a href="#">request system software add validate on page 764</a> <a href="#">request system software add (Mixed EX4200 and EX4500 Virtual Chassis) on page 765</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

<b>request system</b>	user@switch> request system software add set
<b>software add (Mixed</b>	[/var/tmp/jinstall-ex-4200-11.1R1.1-domestic-signed.tgz
<b>EX4200 and EX4500</b>	/var/tmp/jinstall-ex-4500-11.1R1.1-domestic-signed.tgz]
<b>Virtual Chassis)</b>	...

## request system software delete

<b>Syntax</b>	request system software delete <i>software-package</i> <force>
<b>Syntax (TX Matrix Router)</b>	request system software delete <i>software-package</i> <force> <lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	request system software delete <i>software-package</i> <force> <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 11.1 for the QFX Series.
<b>Description</b>	Remove a software package or bundle from the router or switch.



**CAUTION:** 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.

**Options** *software-package*—Software package or bundle name. You can delete any or all of the following software bundles or packages:

- **jbase**—(Optional) Junos base software suite
- **jcrypto**—(Optional, in domestic version only) Junos security software
- **jdocs**—(Optional) Junos online documentation file
- **jkernel**—(Optional) Junos kernel software suite
- **jpfe**—(Optional) Junos Packet Forwarding Engine support
- **jroute**—(Optional) Junos routing software suite
- **junos**—(Optional) Junos base software

**force**—(Optional) Ignore warnings and force removal of the software.

**lcc *number***—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, remove an extension or upgrade package from a specific T640 router (or 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 T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace ***number*** with a value from 0 through 3.

**scc**—(TX Matrix routers only) (Optional) Remove an extension or upgrade package from the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Remove an extension or upgrade package from the TX Matrix Plus router (or switch-fabric chassis). 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. 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. 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 760
- **request system software rollback** on page 774
- **request system software validate** on page 778
- **request system software abort?**

**List of Sample Output** **request system software delete jdocs** on page 767

**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 delete-backup

---

<b>Syntax</b>	request system software delete-backup
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(J Series router only) Delete the backup Junos OS file (if it exists) to free up CompactFlash card space. After running this command, you can no longer use the <b>request system software rollback</b> command to revert to the earlier version of the Junos OS.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<b>request system software delete-backup on page 769</b>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

request system	user@host> request system software delete-backup
software	Delete backup system software package [yes,no] (no) yes
delete-backup	

## request system software in-service-upgrade

---

<b>Syntax</b>	<code>request system software in-service-upgrade <i>package-name</i></code> <code>&lt;no-old-master-upgrade&gt;</code> <code>&lt;reboot&gt;</code>
<b>Release Information</b>	Command introduced in Junos OS Release 9.0.
<b>Description</b>	Perform a unified in-service software upgrade (ISSU). A unified ISSU enables you to upgrade from one Junos OS Release to another with no disruption on the control plane and with minimal disruption of traffic. A unified ISSU is only supported by dual Routing Engine platforms. In addition, graceful Routing Engine switchover (GRES) and nonstop active routing (NSR) must be enabled.
<b>Options</b>	<p><i>package-name</i>—Location from which the software package or bundle is to be installed. For example:</p> <ul style="list-style-type: none"><li>• <code>/var/tmp/<i>package-name</i></code>—For a software package or bundle that is being installed from a local directory on the router.</li><li>• <code><i>protocol</i>://<i>hostname</i>/<i>pathname</i>/<i>package-name</i></code>—For a software package or bundle that is to be downloaded and installed from a remote location. Replace <i>protocol</i> with one of the following:<ul style="list-style-type: none"><li>• <code>ftp</code>—File Transfer Protocol</li><li>• <code>http</code>—Hypertext Transfer Protocol</li><li>• <code>scp</code>—Secure copy (available only for Canada and U.S. version)</li></ul></li></ul> <p><code>no-old-master-upgrade</code>—(Optional) When the <code>no-old-master-upgrade</code> option is included, after the backup Routing Engine is rebooted with the new software package and a switchover occurs to make it the new master Routing Engine, the former master (new backup) Routing Engine will not be upgraded to the new software. In this case, you must manually upgrade the former master (new backup) Routing Engine. If you do not include the <code>no-old-master-upgrade</code> option, the system will automatically upgrade the former master Routing Engine.</p> <p><code>reboot</code>—(Optional) When the <code>reboot</code> option is included, the former master (new backup) Routing Engine is automatically rebooted after being upgraded to the new software. When the <code>reboot</code> option is not included, you must manually reboot the former master (new backup) Routing Engine using the <code>request system reboot</code> command.</p>
<b>Additional Information</b>	<p>The following conditions apply to unified ISSUs:</p> <ul style="list-style-type: none"><li>• Unified ISSUs are supported on M320 and T320 routers and on T640 routers only.</li><li>• Unsupported PICs are restarted during a unified ISSU. For information about supported PICs, see the <i>Junos High Availability Configuration Guide</i>.</li></ul>

- Unsupported protocols will experience packet loss during a unified ISSU. For information about supported protocols, see the *Junos High Availability Configuration Guide*.
- During a unified ISSU, you cannot bring any PICs online or offline.

For more information, see the *Junos OS High Availability Configuration Guide*.

Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> <li>• <a href="#">request system software abort on page 757</a></li> <li>• <a href="#">show chassis in-service-upgrade on page 459</a></li> </ul>
List of Sample Output	<a href="#">request system software-in-service upgrade reboot on page 771</a>
Output Fields	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```
request system software-in-service upgrade reboot
{master}
user@host> request system software in-service-upgrade
/var/tmp/jinstall-9.0-20080114.2-domestic-signed.tgz reboot
ISSU: Validating Image
PIC 0/3 will be offlined (In-Service-Upgrade not supported)
Do you want to continue with these actions being taken ? [yes,no] (no) yes

ISSU: Preparing Backup RE
Pushing bundle to re1
Checking compatibility with configuration
Initializing...
Using jbase-9.0-20080114.2
Verified manifest signed by PackageProduction_9_0_0
Using /var/tmp/jinstall-9.0-20080114.2-domestic-signed.tgz
Verified jinstall-9.0-20080114.2-domestic.tgz signed by PackageProduction_9_0_0
Using jinstall-9.0-20080114.2-domestic.tgz
Using jbundle-9.0-20080114.2-domestic.tgz
Checking jbundle requirements on /
Using jbase-9.0-20080114.2.tgz
Verified manifest signed by PackageProduction_9_0_0
Using jkernel-9.0-20080114.2.tgz
Verified manifest signed by PackageProduction_9_0_0
Using jcrypto-9.0-20080114.2.tgz
Verified manifest signed by PackageProduction_9_0_0
Using jpfe-9.0-20080114.2.tgz
Using jdocs-9.0-20080114.2.tgz
Verified manifest signed by PackageProduction_9_0_0
Using jroute-9.0-20080114.2.tgz
Verified manifest signed by PackageProduction_9_0_0
Hardware Database regeneration succeeded
Validating against /config/juniper.conf.gz
mgd: commit complete
Validation succeeded
Installing package '/var/tmp/jinstall-9.0-20080114.2-domestic-signed.tgz' ...
Verified jinstall-9.0-20080114.2-domestic.tgz signed by PackageProduction_9_0_0
Adding jinstall...
Verified manifest signed by PackageProduction_9_0_0
```

```

WARNING: This package will load JUNOS 9.0-20080114.2 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/jinstall-9.0-20080114.2-domestic-signed.tgz

...

Saving state for rollback ...

Backup upgrade done

Rebooting Backup RE

Rebooting re1

ISSU: Backup RE Prepare Done

Waiting for Backup RE reboot

GRES operational

Initiating Chassis In-Service-Upgrade

Chassis ISSU started

ISSU: Backup RE Prepare Done

ISSU: Preparing Daemons

ISSU: Daemons Ready for ISSU

ISSU: Starting Upgrade for FRUs

ISSU: Preparing for Switchover

ISSU: Ready for Switchover

Checking In-Service-Upgrade status

Item	Status	Reason
FPC 0	Online (ISSU)	
FPC 1	Online (ISSU)	
FPC 2	Online (ISSU)	
FPC 6	Online (ISSU)	
FPC 7	Online (ISSU)	

Resolving mastership...

Complete. The other routing engine becomes the master.

ISSU: RE switchover Done

ISSU: Upgrading Old Master RE

Installing package '/var/tmp/paKEuy' ...

Verified jinstall-9.0-20080114.2-domestic.tgz signed by PackageProduction\_9\_0\_0

Adding jinstall...

Verified manifest signed by PackageProduction\_9\_0\_0

```

WARNING: This package will load JUNOS 9.0-20080114.2 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/jinstall-9.0-20080114.2-domestic-signed.tgz
...
cp: /var/tmp/paKEuy is a directory (not copied).
Saving state for rollback ...
ISSU: Old Master Upgrade Done
ISSU: IDLE
Shutdown NOW!
Reboot consistency check bypassed - jinstall 9.0-20080114.2 will complete
installation upon reboot
[pid 30227]

*** FINAL System shutdown message from root@host ***

System going down IMMEDIATELY

Connection to host closed.
```

## request system software rollback

---

<b>Syntax</b>	request system software rollback
<b>Syntax (EX Series Switch)</b>	request system software rollback <all-members> <local> <member <i>member-id</i> >
<b>Syntax (TX Matrix Router)</b>	request system software rollback <lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	request system software rollback <lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (QFX Series)</b>	request system software rollback
<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>	Revert to the software that was loaded at the last successful <b>request system software add</b> command.
<b>Options</b>	<p>none—Revert to the set of software as of the last successful <b>request system software add</b>.</p> <p>all-members—(EX4200 switches only) (Optional) Attempt to roll back to the previous set of packages on all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix 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 (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, attempt to roll back to the previous set of packages on a T1600 router (or line-card chassis) connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Attempt to roll back to the previous set of packages on the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Attempt to roll back to the previous set of packages on the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value from 0 through 9.</p> <p>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).</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) (Optional) Attempt to roll back to the previous set of packages on the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p>

<b>Additional Information</b>	<p>On the J Series router, you can use this command to roll back to a previous software package when the current upgrade has been successful or has failed. On M Series and T Series routers, use this command only to recover from a failed software upgrade—you cannot issue this command to return to the previously installed software after using a <b>jinstall</b> package. To return to the previously installed software, use the corresponding <b>jinstall</b> package.</p> <p>A software rollback fails if any required package (or a <b>jbundle</b> package containing the required package) cannot be found in <b>/var/sw/pkg</b>.</p>
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">request system software abort on page 757</a></li><li>• <a href="#">request system software add on page 760</a></li><li>• <a href="#">request system software delete on page 766</a></li><li>• <a href="#">request system software validate on page 778</a></li><li>• <a href="#">request system configuration rescue delete on page 727</a></li><li>• <a href="#">request system configuration rescue save on page 728</a></li></ul>
<b>List of Sample Output</b>	<a href="#">request system software rollback on page 776</a> <a href="#">request system software rollback on page 776</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```

request system user@host> request system software rollback
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 pppoe ...
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

```

## Sample Output

```

request system user@switch> request system software rollback
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 pppoe ...
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>
<b>Syntax (EX Series Switch)</b>	request system software validate <member <i>member-id</i> >
<b>Syntax (TX Matrix Router)</b>	request system software validate <i>package-name</i> <lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	request system software validate <i>package-name</i> <lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (QFX Series)</b>	request system software validate < <i>package-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>	Validate candidate software against the current configuration of the router or switch.
<b>Options</b>	<p><b>lcc <i>number</i></b>—(TX Matrix 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 on a specific T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <b><i>number</i></b> with a value from 0 through 3.</p> <p><b>member <i>member-id</i></b>—(EX4200 switches only) (Optional) Validate the software bundle or package on the specified member of the Virtual Chassis configuration. Replace <b><i>member-id</i></b> with a value from 0 through 9.</p> <p><b><i>package-name</i></b>—Name of the software bundle or package to test.</p> <p><b>scc</b>—(TX Matrix routers only) (Optional) Validate the software bundle or package for the TX Matrix router (or switch-card chassis).</p> <p><b>sfc <i>number</i></b>—(TX Matrix Plus routers only) (Optional) Validate the software bundle or package for the TX Matrix Plus router (or switch-fabric chassis).</p>
<b>Additional Information</b>	<p>By default, when you issue the <b>request system software validate</b> 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.</p> <p>Likewise, if you issue the <b>request system software validate</b> command on a TX Matrix Plus master Routing Engine, all the T1600 master Routing Engines that are connected to it are validated. If you issue the same command on a TX Matrix Plus backup Routing Engine,</p>

all the T1600 backup Routing Engines that are connected to it are upgraded to the same version of software.

**Required Privilege Level** maintenance

**Related Documentation**

- [request system software abort on page 757](#)
- [request system software add on page 760](#)
- [request system software delete on page 766](#)
- [request system software rollback on page 774](#)

**List of Sample Output**

[request system software validate \(Successful Case\) on page 780](#)  
[request system software validate \(Failure Case\) on page 780](#)  
[request system software validate \(Failure Case\) \(QFX Series\) on page 780](#)

**Output Fields** When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```

request system      user@host> request system software validate /var/sw/pkg/jbundle-5.3I20020124_0520_sjg.tgz
software validate  Checking compatibility with configuration
(Successful Case)  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      user@host> request system software validate 6.3/
software validate  Pushing bundle to lcc0-re0
(Failure Case)    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

request system      user@switch> request system software validate 6.3/
software validate  Pushing bundle to lcc0-re0
(Failure Case) (QFX error: Failed to transfer package to lcc0-re0
Series)

                    user@switch> request system software validate test (QFX Series)
                    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

```

## request system software validate-in-service-upgrade

<b>Syntax</b>	<code>request system software validate in-service-upgrade <i>package-name</i></code>
<b>Release Information</b>	Command introduced in Junos OS Release 9.6
<b>Description</b>	Perform a compatibility check to ensure that the software and hardware components and the configuration on the device support unified ISSU. The <b>request system software validate in-service-upgrade</b> command enables you to detect any compatibility issues before actually issuing the <b>request system software in-service upgrade</b> command to initiate unified ISSU.
<b>Options</b>	<p><i>package-name</i>—Location from which the software package or bundle is to be installed. For example:</p> <ul style="list-style-type: none"> <li>• <code>/var/tmp/<i>package-name</i></code>—For a software package or bundle that is being installed from a local directory on the router.</li> <li>• <code><i>protocol</i>://<i>hostname</i>/<i>pathname</i>/<i>package-name</i></code>—For a software package or bundle that is to be downloaded and installed from a remote location. Replace <i>protocol</i> with one of the following: <ul style="list-style-type: none"> <li>• <b>ftp</b>—File Transfer Protocol</li> <li>• <b>http</b>—Hypertext Transfer Protocol</li> <li>• <b>scp</b>—Secure copy (available only for Canada and U.S. version)</li> </ul> </li> </ul>
<b>Additional Information</b>	<p>Unified ISSU is supported on M320, M10i (with Enhanced Compact Forwarding Engine Board), MX Series, T320, T640, T1600, and TX Matrix routers only.</p> <p>For more information, see the <i>Junos OS High Availability Configuration Guide</i>.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">request system software in-service-upgrade on page 770</a></li> <li>• <a href="#">request system software abort on page 757</a></li> <li>• <a href="#">request system software abort on page 757</a></li> <li>• <a href="#">show chassis in-service-upgrade on page 459</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">request system software-validate in-service upgrade on page 782</a>
<b>Output Fields</b>	When you enter this command, Junos OS displays the status of your request.

## Sample Output

```

request system {master}
software-validate user@host> request system software validate in-service-upgrade
in-service upgrade /var/tmp/jinstall-9.0-20080114.2-domestic-signed.tgz reboot
Checking compatibility with configuration
Initializing...
Using jbase-9.5-20090127.0
Verified manifest signed by PackageProduction_9_5_0
Using /var/tmp/jinstall-9.6-daily-domestic-signed.tgz
Verified jinstall-9.6-20090706.0-domestic.tgz signed by PackageProduction_9_6_0
Using jinstall-9.6-20090706.0-domestic.tgz
Using jbundle-9.6-20090706.0-domestic.tgz
Checking jbundle requirements on /
Using jbase-9.6-20090706.0.tgz
Verified manifest signed by PackageProduction_9_6_0
Using jkernel-9.6-20090706.0.tgz
Verified manifest signed by PackageProduction_9_6_0
Using jcrypto-9.6-20090706.0.tgz
Verified manifest signed by PackageProduction_9_6_0
Using jpfe-9.6-20090706.0.tgz
Using jdocs-9.6-20090706.0.tgz
Verified manifest signed by PackageProduction_9_6_0
Using jroute-9.6-20090706.0.tgz
Verified manifest signed by PackageProduction_9_6_0
Using jservices-9.6-20090706.0.tgz
[: /var/validate/chroot/tmp/jservices/packages/jservices-voice-9.6-20090706.0.tgz:
  unexpected operator
Auto-deleting old jservices-voice ...
Removing /opt/sdk/jservices-voice ...
Removing jservices-voice-bsg-9.5-20090127.0.tgz from /var/sw/pkg ...
Notifying mspd ...
Installing new jservices-voice ...
Verified jservices-voice-bsg-9.6-20090706.0.tgz signed by PackageProduction_9_6_0
Creating /var/sw/pkg ...
Creating /opt/sdk/jservices-voice ...
Storing jservices-voice-bsg-9.6-20090706.0.tgz in /var/sw/pkg ...
Link: /opt/sdk/jservices-voice/jservices-voice-bsg ->
/var/sw/pkg/jservices-voice-bsg-9.6-20090706.0.tgz...
Installing new jservices-bgf ...
Verified jservices-bgf-pic-9.6-20090706.0.tgz signed by PackageProduction_9_6_0
Creating /opt/sdk/jservices-bgf ...
Storing jservices-bgf-pic-9.6-20090706.0.tgz in /var/sw/pkg ...
Link: /opt/sdk/jservices-bgf/jservices-bgf-pic ->
/var/sw/pkg/jservices-bgf-pic-9.6-20090706.0.tgz...
Auto-deleting old jservices-aac1 ...
Removing /opt/sdk/jservices-aac1 ...
Removing jservices-aac1-pic-9.5-20090127.0.tgz from /var/sw/pkg ...
Notifying mspd ...
Installing new jservices-aac1 ...
Verified jservices-aac1-pic-9.6-20090706.0.tgz signed by PackageProduction_9_6_0
Creating /opt/sdk/jservices-aac1 ...
Storing jservices-aac1-pic-9.6-20090706.0.tgz in /var/sw/pkg ...
Link: /opt/sdk/jservices-aac1/jservices-aac1-pic ->
/var/sw/pkg/jservices-aac1-pic-9.6-20090706.0.tgz...
Auto-deleting old jservices-llpdf ...
Removing /opt/sdk/jservices-llpdf ...
Removing jservices-llpdf-pic-9.5-20090127.0.tgz from /var/sw/pkg ...
Notifying mspd ...
Installing new jservices-llpdf ...

```

```
Verified jservices-llpdf-pic-9.6-20090706.0.tgz signed by PackageProduction_9_6_0
Creating /opt/sdk/jservices-llpdf ...
Storing jservices-llpdf-pic-9.6-20090706.0.tgz in /var/sw/pkg ...
Link: /opt/sdk/jservices-llpdf/jservices-llpdf-pic ->
/var/sw/pkg/jservices-llpdf-pic-9.6-20090706.0.tgz...
Auto-deleting old jservices-sfw ...
Removing /opt/sdk/jservices-sfw ...
Removing jservices-sfw-pic-9.5-20090127.0.tgz from /var/sw/pkg ...
Notifying mspd ...
Installing new jservices-sfw ...
Verified jservices-sfw-pic-9.6-20090706.0.tgz signed by PackageProduction_9_6_0
Creating /opt/sdk/jservices-sfw ...
Storing jservices-sfw-pic-9.6-20090706.0.tgz in /var/sw/pkg ...
Link: /opt/sdk/jservices-sfw/jservices-sfw-pic ->
/var/sw/pkg/jservices-sfw-pic-9.6-20090706.0.tgz...
Auto-deleting old jservices-appid ...
Removing /opt/sdk/jservices-appid ...
Removing jservices-appid-pic-9.5-20090127.0.tgz from /var/sw/pkg ...
Notifying mspd ...
Installing new jservices-appid ...
Verified jservices-appid-pic-9.6-20090706.0.tgz signed by PackageProduction_9_6_0
Creating /opt/sdk/jservices-appid ...
Storing jservices-appid-pic-9.6-20090706.0.tgz in /var/sw/pkg ...
Link: /opt/sdk/jservices-appid/jservices-appid-pic ->
/var/sw/pkg/jservices-appid-pic-9.6-20090706.0.tgz...
Auto-deleting old jservices-idp ...
Removing /opt/sdk/jservices-idp ...
Removing jservices-idp-pic-9.5-20090127.0.tgz from /var/sw/pkg ...
Notifying mspd ...
Installing new jservices-idp ...
Verified jservices-idp-pic-9.6-20090706.0.tgz signed by PackageProduction_9_6_0
Creating /opt/sdk/jservices-idp ...
Storing jservices-idp-pic-9.6-20090706.0.tgz in /var/sw/pkg ...
Link: /opt/sdk/jservices-idp/jservices-idp-pic ->
/var/sw/pkg/jservices-idp-pic-9.6-20090706.0.tgz...
Hardware Database regeneration succeeded
Validating against /config/juniper.conf.gz
mgd: commit complete
Validation succeeded
PIC 7/0 will be offlined (In-Service-Upgrade not supported)
PIC 7/1 will be offlined (In-Service-Upgrade not supported)
PIC 4/2 will be offlined (In-Service-Upgrade not supported)
PIC 4/3 will be offlined (In-Service-Upgrade not supported)
```

## request system storage cleanup

---

<b>Syntax</b>	request system storage cleanup <dry-run>
<b>Syntax (EX Series Switch)</b>	request system storage cleanup <all-members> <dry-run> <local> <member <i>member-id</i> >
<b>Syntax (QFX Series)</b>	request system storage cleanup <dry-run>
<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.
<b>Options</b>	<p>all-members—(EX4200 switches only) (Optional) Delete files on all members of the Virtual Chassis configuration.</p> <p>dry-run—(Optional) List files proposed for deletion (without deleting them).</p> <p>local—(EX4200 switches only) (Optional) Delete files on the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Delete files on the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value from 0 through 9.</p>
<b>Additional Information</b>	If logging is configured and being used, the <b>dry-run</b> option will rotate the log files. In that case, the output displays the message "Currently rotating log files, please wait." If no logging is currently underway, the output displays only a list of files to delete.
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<a href="#">request system storage cleanup dry-run on page 784</a> <a href="#">request system storage cleanup on page 785</a> <a href="#">request system storage cleanup dry-run (QFX Series) on page 785</a> <a href="#">request system storage cleanup (QFX Series) on page 786</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### 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 user@host> request system storage cleanup
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 user@switcht> request system storage cleanup dry-run
storage cleanup List of files to delete:
dry-run (QFX Series)

```

	Size	Date	Name
46.2K	Aug 27 08:12	/var/log/dcd.0.gz	
44.7K	Aug 25 11:32	/var/log/dcd.1.gz	
124B	Aug 28 07:27	/var/log/default-log-messages.0.gz	
17.1K	Aug 28 07:27	/var/log/messages.0.gz	
16.3K	Aug 28 06:15	/var/log/messages.1.gz	
12.1K	Aug 27 23:00	/var/log/messages.2.gz	
8182B	Aug 27 07:30	/var/log/messages.3.gz	
18.2K	Aug 27 07:00	/var/log/messages.4.gz	
7901B	Aug 26 02:00	/var/log/messages.5.gz	
7286B	Aug 24 14:00	/var/log/messages.6.gz	
7628B	Aug 23 00:15	/var/log/messages.7.gz	
7531B	Aug 21 11:00	/var/log/messages.8.gz	
7441B	Aug 19 21:45	/var/log/messages.9.gz	
4017B	Aug 28 07:27	/var/log/security.0.gz	
10.0K	Aug 28 03:00	/var/log/security.1.gz	
9152B	Aug 25 08:45	/var/log/security.2.gz	

```

7034B Aug 7 12:15 /var/log/security.3.gz
7054B Aug 7 12:00 /var/log/security.4.gz
7035B Aug 7 11:45 /var/log/security.5.gz
7037B Aug 7 11:30 /var/log/security.6.gz
7077B Aug 7 11:15 /var/log/security.7.gz
7016B Aug 7 11:00 /var/log/security.8.gz
6950B Aug 7 10:45 /var/log/security.9.gz
2172B Aug 28 07:24 /var/log/wtmp.0.gz
 95B Aug 6 16:50 /var/log/wtmp.1.gz
164B Aug 9 20:51 /var/lost+found/#07558
16.0K Aug 6 16:57 /var/lost+found/#07584
164B Aug 14 07:18 /var/lost+found/#07590
164B Aug 8 09:39 /var/lost+found/#07593
164B Aug 8 01:22 /var/lost+found/#07595
212B Aug 6 17:02 /var/lost+found/#07610
 0B Aug 6 17:02 /var/lost+found/#07615
146B Aug 6 16:57 /var/lost+found/#07629
164B Aug 28 04:46 /var/lost+found/#07680
164B Aug 7 03:10 /var/lost+found/#07699
 46B Aug 6 16:57 /var/lost+found/#07705
 0B Aug 6 16:57 /var/lost+found/#07707
1221B Aug 6 16:59 /var/lost+found/#07716
6872B Aug 6 16:57 /var/lost+found/#07735
1879B Aug 6 16:59 /var/lost+found/#07764
1887B Aug 6 16:57 /var/lost+found/#07766
 952B Aug 6 16:57 /var/lost+found/#07767
 0B Aug 28 07:04 /var/tmp/chassism.core.0.gz
124.0K Aug 28 07:04 /var/tmp/gres-tp/env.dat
 0B Aug 6 16:50 /var/tmp/gres-tp/lock
 76B Aug 28 07:06 /var/tmp/krt_gencfg_filter.txt
292.8K Aug 8 00:01 /var/tmp/vccpd.core.857.gz

```

```

request system user@switcht> request system storage cleanup
storage cleanup (QFX List of files to delete:
Series)

```

	Size	Date	Name
46.2K	Aug 27 08:12	/var/log/dcd.0.gz	
44.7K	Aug 25 11:32	/var/log/dcd.1.gz	
138B	Aug 28 07:29	/var/log/default-log-messages.0.gz	
124B	Aug 28 07:27	/var/log/default-log-messages.1.gz	
126B	Aug 28 07:29	/var/log/messages.0.gz	
17.1K	Aug 28 07:27	/var/log/messages.1.gz	
16.3K	Aug 28 06:15	/var/log/messages.2.gz	
12.1K	Aug 27 23:00	/var/log/messages.3.gz	
8182B	Aug 27 07:30	/var/log/messages.4.gz	
18.2K	Aug 27 07:00	/var/log/messages.5.gz	
7901B	Aug 26 02:00	/var/log/messages.6.gz	
7286B	Aug 24 14:00	/var/log/messages.7.gz	
7628B	Aug 23 00:15	/var/log/messages.8.gz	
7531B	Aug 21 11:00	/var/log/messages.9.gz	
291B	Aug 28 07:29	/var/log/security.0.gz	
4017B	Aug 28 07:27	/var/log/security.1.gz	
10.0K	Aug 28 03:00	/var/log/security.2.gz	
9152B	Aug 25 08:45	/var/log/security.3.gz	
7034B	Aug 7 12:15	/var/log/security.4.gz	
7054B	Aug 7 12:00	/var/log/security.5.gz	
7035B	Aug 7 11:45	/var/log/security.6.gz	
7037B	Aug 7 11:30	/var/log/security.7.gz	
7077B	Aug 7 11:15	/var/log/security.8.gz	
7016B	Aug 7 11:00	/var/log/security.9.gz	
27B	Aug 28 07:27	/var/log/wtmp.0.gz	

```
2172B Aug 28 07:24 /var/log/wtmp.1.gz
 95B Aug  6 16:50 /var/log/wtmp.2.gz
164B Aug  9 20:51 /var/lost+found/#07558
16.0K Aug  6 16:57 /var/lost+found/#07584
Delete these files ? [yes,no] (no)
```

## restart

<b>Syntax</b>	restart <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   mib-process   pgcp-service   pgm   pic-services-logging   ppp   pppoe   protected-system-domain-service   redundancy-interface-process   remote-operations   root-system-domain-service   routing <logical-system <i>logical-system-name</i> >   sampling   service-deployment   services pgcp gateway <i>gateway-name</i>   sbc-configuration-process   snmp   usb-control   web-management> <gracefully   immediately   soft>
<b>Syntax (EX Series Switch)</b>	restart <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> <gracefully   immediately   soft>
<b>Syntax (TX Matrix Router)</b>	restart <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 <logical-system <i>logical-system-name</i> >   sampling   service-deployment   snmp> <all-chassis   all-lcc   lcc <i>number</i>   scc> <gracefully   immediately   soft>
<b>Syntax (TX Matrix Plus Router)</b>	restart <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 <logical-system <i>logical-system-name</i> >   sampling   service-deployment   snmp> <all-chassis   all-lcc   all-sfc   lcc <i>number</i>   sfc <i>number</i> > <gracefully   immediately   soft>
<b>Syntax (J Series Router)</b>	restart <adaptive-services   audit-process   chassis-control   class-of-service   dhcp   dhcp-service   dialer-services   diameter-services   dlsr   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 <logical-system <i>logical-system-name</i> >   sampling   service-deployment   snmp   usb-control   web-management> <gracefully   immediately   soft>
<b>Syntax (QFX Series)</b>	restart

```
<adaptive-services | audit-process | chassis-control | class-of-service | dialer-services |
diameter-services | dlsw | 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 | logical-system-name >
| sampling | service-deployment | snmp | usb-control | web-management >
<gracefully | immediately | soft>
```

**Release Information** Command introduced before Junos OS Release 7.4.  
**dynamic-flow-capture** option added in Junos OS Release 7.4.  
**dlsw** option added in Junos OS Release 7.5.  
**event-processing** option added in Junos OS Release 7.5.  
**ppp** option added in Junos OS Release 7.5.  
**l2ald** option added in Junos OS Release 8.0.  
**link-management** option added in Release 8.0.  
**pgcp-service** option added in Junos OS Release 8.4.  
Command introduced in Junos OS Release 9.0 for EX Series switches.  
**sbc-configuration-process** option added in Junos OS Release 9.5.  
**services pgcp gateway** option added in Junos OS Release 9.6.  
**sfc** and **all-sfc** options introduced for the TX Matrix Router in Junos OS Release 9.6.  
Command introduced in Junos OS Release 11.1 for the QFX Series.

**Description** Restart a Junos OS process.



**CAUTION:** 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.

**Options** none—Same as **gracefully**.

**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-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).

**audit-process**—(Optional) Restart the RADIUS accounting process.

**autoinstallation**—(EX Series switch only) (Optional) Restart the autoinstallation process.

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.

database-replication—(EX Series switch only) (Optional) Restart the database replication process.

dhcp—(J Series router and EX Series switch 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—(EX Series switch only) (Optional) Restart the Dynamic Host Configuration Protocol process.

dialer-services—(J Series router 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.

dlswh—(J Series router only) (Optional) Restart the data link switching (DLSw) service.

dot1x-protocol—(EX Series switch 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 correcting (ECC) process, which logs ECC parity errors in memory on the Routing Engine.

ethernet-link-fault-management—(EX Series switch only) (Optional) Restart the Ethernet OAM link fault management process.

ethernet-switching—(EX Series switch only) (Optional) Restart the Ethernet switching process.

event-processing—(Optional) Restart the event process (eventd).

firewall—(Optional) Restart the firewall management process, which manages firewall configuration.

general-authentication-service—(EX Series switch only) (Optional) Restart the general authentication process.

gracefully—(Optional) Restart the software 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 router 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 is configured.

`l2-learning`—(Optional) Restart the Layer 2 address flooding and learning process.

`l2tp-service`—(Optional) (M10, M10i, and M7i routers only) Restart the Layer 2 Tunneling Protocol (L2TP) process, which establishes L2TP tunnels and Point-to-Point Protocol (PPP) sessions through L2TP tunnels.

`lacp`—(Optional) Restart the Link Aggregation Control Protocol process.

`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 T1600 router that is connected to the TX Matrix Plus router. Replace *number* with a value from 0 through 3.

`license-service`—(EX Series switch 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 switch only) (Optional) Restart the Link Layer Discovery Protocol process.

`mib-process`—(Optional) Restart the Management Information Base (MIB) II process, which provides the router's MIB II agent.

`mountd-service`—(EX Series switch only) (Optional) Restart the service for NFS mounts requests.

`multicast-snooping`—(EX Series switch only) (Optional) Restart the multicast snooping process.

`network-access-service`—(J Series router only) (Optional) Restart the network access process, which provides the router's Challenge Handshake Authentication Protocol (CHAP) authentication service.

`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.

`ppp`—(Optional) Restart the Point-to-Point Protocol (PPP) process.

`pppoe`—(Optional) Restart the Point-to-Point Protocol over Ethernet (PPPoE) process.

`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`—(EX Series switch 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 and cflowd export.

`scc`—(TX Matrix routers only) Restart the software process on the TX Matrix router (or switch-card chassis).

`secure-neighbor-discovery`—(EX Series switch only) (Optional) Restart the secure Neighbor Discovery Protocol process.

`sfc number`—(TX Matrix Plus routers only) 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 service process.

`services pgcp gateway gateway-name`—(Optional) Restart the `pgcpd` process for a specific BGP 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 switch only) (Optional) Restart the flow sampling (sFlow technology) process.

`snmp`—(Optional) Restart the SNMP process, which 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.



usb-control—(J Series router only) (Optional) Restart the USB control process.

vrrp—(EX Series switch only) (Optional) Restart the Virtual Router Redundancy Protocol process.

web-management—(J Series router and EX Series switch 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 793**

**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 arp

<b>Syntax</b>	<pre>show arp   &lt;expiration-time&gt;   &lt;logical-system <i>logical-system-name</i>&gt;   &lt;no-resolve&gt;   &lt;vpn <i>vpn-name</i>&gt;</pre>
<b>Release Information</b>	<p>Command introduced before Junos OS Release 7.4.</p> <p><b>expiration-time</b> option added in Junos OS Release 8.1.</p> <p><b>logical-system</b> and <b>vpn</b> options added in Junos OS Release 10.1.</p>
<b>Description</b>	Display all entries in the Address Resolution Protocol (ARP) table. To display entries for a particular logical system only, first enter the <b>set cli logical-system <i>logical-system-name</i></b> command, and then enter the <b>show arp</b> command.
<b>Options</b>	<p><b>none</b>—Display the entries in the ARP table.</p> <p><b>expiration-time</b>—(Optional) Display the amount of time, in seconds, until each ARP entry is set to expire.</p> <p><b>logical-system <i>logical-system-name</i></b>—(Optional) Display ARP entries for the specified logical system; only available on the main router context.</p> <p><b>no-resolve</b>—(Optional) Do not attempt to determine the hostname that corresponds to the IP address.</p> <p><b>vpn <i>vpn-name</i></b>—(Optional) Display entries in the ARP table for the specified virtual private network's (VPN) routing table.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>clear arp on page 690</li> <li>set cli logical-system on page 537</li> </ul>
<b>List of Sample Output</b>	<p>show arp on page 795</p> <p>show arp no-resolve on page 795</p> <p>show arp expiration-time on page 795</p>
<b>Output Fields</b>	Table 122 on page 794 describes the output fields for the <b>show arp</b> command. Output fields are listed in the approximate order in which they appear.

**Table 122: show arp Output Fields**

Field Name	Field Description
MAC Address	Media access control (MAC) address that corresponds to the IP address.
Address	IP address that corresponds to the hostname.

Table 122: show arp Output Fields (*continued*)

Field Name	Field Description
<b>Name</b>	Hostname.
<b>Interface</b>	Interface name.
<b>Flags</b>	( <b>no-resolve</b> option only) Indicates how mappings between IP and MAC addresses are defined: <ul style="list-style-type: none"> <li>• <b>Permanent</b>—Static mapping.</li> <li>• <b>Permanent and published</b>—Static mapping that is published.</li> <li>• <b>None</b>—Dynamic mapping.</li> </ul>
<b>TTE</b>	( <b>expiration-time</b> option only) Amount of time, in seconds, until ARP entry is set to expire.

## Sample Output

```

show arp user@host> show arp
MAC Address      Address      Name          Interface
00:e0:81:22:fd:74 192.168.64.10 firewall.my.net fxp0.0
00:04:5a:65:78:e1 192.168.65.13 lab.my net     fxp0.0

```

```

show arp no-resolve user@host> show arp no-resolve
MAC Address      Address      Interface      Flags
00:90:69:96:00:01 10.10.45.5   fe-0/0/1.0     none
00:00:00:00:00:01 200.200.200.1 fe-0/0/0.0     permanent published
00:00:00:00:00:02 200.200.200.2 fe-0/0/0.0     permanent
00:90:69:91:b0:00 200.200.200.3 fe-0/0/0.0     none
Total entries: 4

```

```

show arp expiration-time user@host> show arp expiration-time
MAC Address      Address      Name          Interface      Flags TTE
00:a0:a5:12:3e:d4 10.0.0.5     10.0.0.5      fxp1.0         none
00:e0:81:22:fd:74 192.168.64.10 supernova.englab.juniper. fxp0.0 none 1491
00:30:48:84:03:56 192.168.65.46 kgb.englab.juniper.net   fxp0.0 none 1279
00:03:ba:12:f7:5e 192.168.65.226 nmssun1-eri0.englab.junip fxp0.0 none 452
00:90:69:8e:b0:fc 192.168.71.254 stonewall-ge-200.englab.j fxp0.0 none 1421
Total entries: 5

```

## show configuration

---

<b>Syntax</b>	<code>show configuration</code> <code>&lt;statement-path&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.
<b>Description</b>	Display the configuration that currently is running on the router or switch, which is the last committed configuration.
<b>Options</b>	<p><code>none</code>—Display the entire configuration.</p> <p><code>statement-path</code>—(Optional) Display one of the following hierarchies in a configuration. (Each <b><i>statement-path</i></b> option has additional suboptions not described here. See the appropriate configuration guide or EX Series switch documentation for more information.)</p> <ul style="list-style-type: none"><li>• <b><code>access</code></b>—Network access configuration.</li><li>• <b><code>access-profile</code></b>—Access profile configuration.</li><li>• <b><code>accounting-options</code></b>—Accounting data configuration.</li><li>• <b><code>applications</code></b>—Applications defined by protocol characteristics.</li><li>• <b><code>apply-groups</code></b>—Groups from which configuration data is inherited.</li><li>• <b><code>chassis</code></b>—Chassis configuration.</li><li>• <b><code>chassis network-services</code></b>—Current running mode.</li><li>• <b><code>class-of-service</code></b>—Class-of-service configuration.</li><li>• <b><code>diameter</code></b>—Diameter base protocol layer configuration.</li><li>• <b><code>ethernet-switching-options</code></b>—(EX Series switch only) Ethernet switching configuration.</li><li>• <b><code>event-options</code></b>—Event processing configuration.</li><li>• <b><code>firewall</code></b>—Firewall configuration.</li><li>• <b><code>forwarding-options</code></b>—Options that control packet sampling.</li><li>• <b><code>groups</code></b>—Configuration groups.</li><li>• <b><code>interfaces</code></b>—Interface configuration.</li><li>• <b><code>jsrc</code></b>—JSRC partition configuration.</li><li>• <b><code>jsrc-partition</code></b>—JSRC partition configuration.</li><li>• <b><code>logical-systems</code></b>—Logical system configuration.</li><li>• <b><code>poe</code></b>—(EX Series switch only) Power over Ethernet configuration.</li><li>• <b><code>policy-options</code></b>—Routing policy option configuration.</li><li>• <b><code>protocols</code></b>—Routing protocol configuration.</li></ul>

- **routing-instances**—Routing instance configuration.
- **routing-options**—Protocol-independent routing option configuration.
- **security**—Security configuration.
- **services**—Service PIC applications configuration.
- **snmp**—Simple Network Management Protocol configuration.
- **system**—System parameters configuration.
- **virtual-chassis**—(EX Series switch only) Virtual Chassis configuration.
- **vlan**—(EX Series switch only) VLAN configuration.

<b>Additional Information</b>	The portions of the configuration that you can view depend on the user class that you belong to and the corresponding permissions. If you do not have permission to view a portion of the configuration, the text <b>ACCESS-DENIED</b> is substituted for that portion of the configuration. If you do not have permission to view authentication keys and passwords in the configuration, because the <b>secret</b> permission bit is not set for your user account, the text <b>SECRET-DATA</b> is substituted for that portion of the configuration. If an identifier in the configuration contains a space, the identifier is displayed in quotation marks.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• Displaying the Current Junos OS Configuration</li> <li>• Overview of Junos OS CLI Operational Mode Commands</li> </ul>
<b>List of Sample Output</b>	<b>show configuration on page 797</b> <b>show configuration policy-options on page 798</b>
<b>Output Fields</b>	This command displays information about the current running configuration.

## Sample Output

```

show configuration user@host> show configuration
## Last commit: 2006-10-31 14:13:00 PST by alant version "8.2I0 [builder]"; ##
last changed: 2006-10-31 14:05:53 PST
system {
    host-name nestor;
    domain-name east.net;
    backup-router 192.1.1.254;
    time-zone America/Los_Angeles;
    default-address-selection;
    name-server {
        192.154.169.254;
        192.154.169.249;
        192.154.169.176;
    }
    services {
        telnet;
    }
    tacplus-server {

```

```
        1.2.3.4 {
            secret /* SECRET-DATA */;
            ...
        }
    }
interfaces {
    ...
}
protocols {
    isis {
        export "direct routes";
    }
}
policy-options {
    policy-statement "direct routes" {
        from protocol direct;
        then accept;
    }
}
```

```
show configuration user@host> show configuration policy-options
policy-options    policy-options {
                    policy-statement "direct routes" {
                        from protocol direct;
                        then accept;
                    }
                }
```

## show database-replication statistics

<b>Syntax</b>	show database-replication statistics
<b>Release Information</b>	Command introduced in Junos OS Release 9.3.
<b>Description</b>	Display statistics regarding the replication of the subscriber management session database.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show database-replication statistics on page 799
<b>Output Fields</b>	Table 123 on page 799 lists the output fields for the <b>show database-replication statistics</b> command. Output fields are listed in the approximate order in which they appear.

**Table 123: show database-replication statistics Output Fields**

Field Name	Field Description
General	Number of dropped connections and the maximum buffer count.
Message Received	Total size of messages received and the number of received messages that have been processed.
Message Sent	Total size of messages sent and the number of sent messages that have been processed.
Message Queue	Number of messages in the queue and the maximum size of the queue.

## Sample Output

```

show database-replication statistics user@host> show database-replication statistics
General:
  Dropped connections      0
  Max buffer count        0
Message received:
  Size (bytes)            0
  Processed               0
Message sent:
  Size (bytes)            0
  Processed               0
Message queue:
  Queue full              0
  Max queue size          0

```

## show database-replication summary

<b>Syntax</b>	show database-replication summary
<b>Release Information</b>	Command introduced in Junos OS Release 9.3.
<b>Description</b>	Display summary information regarding database replication for the subscriber management session database.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show database-replication summary on page 801
<b>Output Fields</b>	Table 124 on page 800 lists the output fields for the <b>show database-replication summary</b> command. Output fields are listed in the approximate order in which they appear.

**Table 124: show database-replication summary Output Fields**

Field Name	Field Description
Graceful Restart	State of graceful Routing Engine switchover (GRES): <ul style="list-style-type: none"><li>• Enabled</li><li>• Disabled</li></ul>
Mastership	State of the Routing Engine: <ul style="list-style-type: none"><li>• Master</li><li>• Standby</li></ul>
Connection	State of the connection: <ul style="list-style-type: none"><li>• Up</li><li>• Down</li></ul>
Database	State of the subscriber management database: <ul style="list-style-type: none"><li>• Available</li><li>• Unavailable</li><li>• Synchronized</li></ul>
Message Queue	State of the message queue: <ul style="list-style-type: none"><li>• Full</li><li>• Init</li><li>• Not Ready</li><li>• Ready</li></ul>



## Sample Output

```
show database-replication summary
user@host> show database-replication summary
General:
  Graceful Restart      Enabled
  Mastership            Standby
  Connection            Up
  Database              Available
  Message Queue         Ready
```

## show dhcp server binding

---

Syntax	<code>show dhcp server binding</code> <code>&lt;brief   detail   summary&gt;</code> <code>&lt;interface <i>interface-name</i>&gt;</code> <code>&lt;ip-address   mac-address&gt;</code> <code>&lt;logical-system <i>logical-system-name</i>&gt;</code> <code>&lt;routing-instance <i>routing-instance-name</i>&gt;</code>
Release Information	Command introduced in Junos OS Release 9.0.
Description	Display the address bindings in the client table on the extended Dynamic Host Configuration Protocol (DHCP) local server.
Options	<p><code>brief   detail   summary</code>—(Optional) Display the specified level of output about active client bindings. The default is <b>brief</b>, which produces the same output as <b>show dhcp server binding</b>.</p> <p><code>interface <i>interface-name</i></code>—(Optional) Display information about active client bindings on the specified interface. You can optionally filter on VLAN ID and SVLAN ID.</p> <p><code>ip-address</code>—(Optional) IP address of the DHCP client.</p> <p><code>mac-address</code>—(Optional) MAC address of the DHCP client.</p> <p><code>logical-system <i>logical-system-name</i></code>—(Optional) Display information about active client bindings for DHCP clients on the specified logical system.</p> <p><code>routing-instance <i>routing-instance-name</i></code>—(Optional) Display information about active client bindings for DHCP clients on the specified routing instance.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"><li>• <a href="#">clear dhcp server binding on page 691</a></li></ul>
List of Sample Output	<a href="#">show dhcp server binding on page 804</a> <a href="#">show dhcp server binding detail on page 804</a> <a href="#">show dhcp server binding interface vlan-id on page 804</a> <a href="#">show dhcp server binding interface svlan-id on page 804</a> <a href="#">show dhcp server binding ip-address on page 804</a> <a href="#">show dhcp server binding session-id on page 805</a> <a href="#">show dhcp server binding summary on page 805</a>
Output Fields	Table 125 on page 803 lists the output fields for the <b>show dhcp server binding</b> command. Output fields are listed in the approximate order in which they appear.

Table 125: show dhcp server binding Output Fields

Field Name	Field Description	Level of Output
<i>number</i> clients, ( <i>number</i> init, <i>number</i> bound, <i>number</i> selecting, <i>number</i> requesting, <i>number</i> renewing, <i>number</i> releasing)	Summary counts of the total number of DHCP clients and the number of DHCP clients in each state.	summary
IP address	IP address of the DHCP client.	brief detail
Session Id	Session ID of the subscriber session.	brief detail
Hardware address	Hardware address of the DHCP client.	brief detail
Expires	Number of seconds in which lease expires.	brief detail
State	State of the address binding table on the extended DHCP local server: <ul style="list-style-type: none"> <li>• <b>BOUND</b>—Client has active IP address lease.</li> <li>• <b>FORCERENEW</b>—Client has received forcerenew message from server.</li> <li>• <b>INIT</b>—Initial state.</li> <li>• <b>RELEASE</b>—Client is releasing IP address lease.</li> <li>• <b>RENEWING</b>—Client sending request to renew IP address lease.</li> <li>• <b>REQUESTING</b>—Client requesting a DHCP server.</li> <li>• <b>SELECTING</b>—Client receiving offers from DHCP servers.</li> </ul>	brief detail
Interface	Interface on which the request was received.	brief
Lease Expires	Date and time at which the client's IP address lease expires.	detail
Lease Expires in	Number of seconds in which lease expires.	detail
Lease Start	Date and time at which the client's IP address lease started.	detail
Incoming Client Interface	Client's incoming interface.	detail
Server IP Address	IP address of DHCP server.	detail
Server Interface	Interface of DHCP server.	detail
Client Pool Name	Name of address pool used to assign client IP address lease.	detail

## Sample Output

```

show dhcp server binding      user@host> show dhcp server binding
IP address      Session Id  Hardware address  Expires  State  Interface
100.20.20.15    6          00:10:94:00:00:01 86180    BOUND  ge-1/0/0.0
100.20.20.16    7          00:10:94:00:00:02 86180    BOUND  ge-1/0/0.0
100.20.20.17    8          00:10:94:00:00:03 86180    BOUND  ge-1/0/0.0
100.20.20.18    9          00:10:94:00:00:04 86180    BOUND  ge-1/0/0.0
100.20.20.19    10         00:10:94:00:00:05 86180    BOUND  ge-1/0/0.0

show dhcp server binding detail user@host> show dhcp server binding detail
Client IP Address: 100.20.20.15
  Hardware Address:      00:10:94:00:00:01
  State:                  BOUND(LOCAL_SERVER_STATE_BOUND_ON_INTF_DELETE)

  Lease Expires:         2009-07-21 10:10:25 PDT
  Lease Expires in:      86151 seconds
  Lease Start:           2009-07-20 10:10:25 PDT
  Incoming Client Interface: ge-1/0/0.0
  Server Ip Address:     100.20.20.9
  Server Interface:      none
  Session Id:             6
  Client Pool Name:      6
Client IP Address: 100.20.20.16
  Hardware Address:      00:10:94:00:00:02
  State:                  BOUND(LOCAL_SERVER_STATE_BOUND_ON_INTF_DELETE)

  Lease Expires:         2009-07-21 10:10:25 PDT
  Lease Expires in:      86151 seconds
  Lease Start:           2009-07-20 10:10:25 PDT
  Incoming Client Interface: ge-1/0/0.0
  Server Ip Address:     100.20.20.9
  Server Interface:      none
  Session Id:             7
  Client Pool Name:      7

show dhcp server binding interface vlan-id user@host> show dhcp server binding interface ge-1/1/0:100
IP address      Session Id  Hardware address  Expires  State  Interface
200.20.20.15    6          00:10:94:00:00:01 86124    BOUND  ge-1/1/0:100

show dhcp server binding interface svlan-id user@host> show dhcp server binding interface ge-1/1/0:10-100
IP address      Session Id  Hardware address  Expires  State  Interface
200.20.20.16    7          00:10:94:00:00:02 86124    BOUND  ge-1/1/0:10-100

show dhcp server binding ip-address user@host> show dhcp server binding 100.20.20.19
IP address      Session Id  Hardware address  Expires  State  Interface
100.20.20.19    10         00:10:94:00:00:05 86081    BOUND  ge-1/0/0.0

```

```
show dhcp server user@host> show dhcp server binding 6
binding session-id IP address      Session Id  Hardware address  Expires    State    Interface
200.20.20.15      6           00:10:94:00:00:01 86124          BOUND      ge-1/0/0.0
```

```
show dhcp server user@host> show dhcp server binding summary
binding summary 3 clients, (2 init, 1 bound, 0 selecting, 0 requesting, 0 renewing, 0 releasing)
```

## show dhcp server statistics

---

<b>Syntax</b>	<b>show dhcp server statistics</b> <b>&lt;logical-system <i>logical-system-name</i>&gt;</b> <b>&lt;routing-instance <i>routing-instance-name</i>&gt;</b>
<b>Release Information</b>	Command introduced in Junos OS Release 9.0.
<b>Description</b>	Display extended Dynamic Host Configuration Protocol (DHCP) local server statistics.
<b>Options</b>	<p><b>logical-system <i>logical-system-name</i></b>—(Optional) Display information about extended DHCP local server statistics on the specified logical system. If you do not specify a logical system, statistics are displayed for the default logical system.</p> <p><b>routing-instance <i>routing-instance-name</i></b>—(Optional) Display information about extended DHCP local server statistics on the specified routing instance. If you do not specify a routing instance, statistics are displayed for the default routing instance.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">clear dhcp server statistics on page 693</a></li></ul>
<b>List of Sample Output</b>	<a href="#">show dhcp server statistics on page 807</a>
<b>Output Fields</b>	Table 126 on page 807 lists the output fields for the <b>show dhcp server statistics</b> command. Output fields are listed in the approximate order in which they appear.

Table 126: show dhcp server statistics Output Fields

Field Name	Field Description
<b>Packets dropped</b>	<p>Number of packets discarded by the extended DHCP local server because of errors. Only nonzero statistics appear in the Packets dropped output. When all of the Packets dropped statistics are 0 (zero), only the Total field appears.</p> <ul style="list-style-type: none"> <li>• <b>Total</b>—Total number of packets discarded by the extended DHCP local server</li> <li>• <b>Bad hardware address</b>—Number of packets discarded because an invalid hardware address was specified</li> <li>• <b>Bad opcode</b>—Number of packets discarded because an invalid operation code was specified</li> <li>• <b>Bad options</b>—Number of packets discarded because invalid options were specified</li> <li>• <b>Invalid server address</b>—Number of packets discarded because an invalid server address was specified</li> <li>• <b>No available addresses</b>—Number of packets discarded because there were no addresses available for assignment</li> <li>• <b>No interface match</b>—Number of packets discarded because they did not belong to a configured interface</li> <li>• <b>No routing instance match</b>—Number of packets discarded because they did not belong to a configured routing instance</li> <li>• <b>No valid local address</b>—Number of packets discarded because there was no valid local address</li> <li>• <b>Packet too short</b>—Number of packets discarded because they were too short</li> <li>• <b>Read error</b>—Number of packets discarded because of a system read error</li> <li>• <b>Send error</b>—Number of packets that the extended DHCP local server could not send</li> </ul>
<b>Messages received</b>	<p>Number of DHCP messages received.</p> <ul style="list-style-type: none"> <li>• <b>BOOTREQUEST</b>—Number of BOOTP protocol data units (PDUs) received</li> <li>• <b>DHCPDECLINE</b>—Number of DHCP PDUs of type DECLINE received</li> <li>• <b>DHCPDISCOVER</b>—Number of DHCP PDUs of type DISCOVER received</li> <li>• <b>DHCPINFORM</b>—Number of DHCP PDUs of type INFORM received</li> <li>• <b>DHCPRELEASE</b>—Number of DHCP PDUs of type RELEASE received</li> <li>• <b>DHCPREQUEST</b>—Number of DHCP PDUs of type REQUEST received</li> </ul>
<b>Messages sent</b>	<p>Number of DHCP messages sent.</p> <ul style="list-style-type: none"> <li>• <b>BOOTREPLY</b>—Number of BOOTP PDUs transmitted</li> <li>• <b>DHCPOFFER</b>—Number of DHCP OFFER PDUs transmitted</li> <li>• <b>DHCPACK</b>—Number of DHCP ACK PDUs transmitted</li> <li>• <b>DHCPNACK</b>—Number of DHCP NACK PDUs transmitted</li> <li>• <b>DHCPFORCERENEW</b>—Number of DHCP FORCERENEW PDUs transmitted</li> </ul>

## Sample Output

```

show dhcp server statistics  user@host> show dhcp server statistics
                             Packets dropped:
                             Total                  0

                             Messages received:
                             BOOTREQUEST             25
                             DHCPDECLINE             0
                             DHCPDISCOVER            10
                             DHCPINFORM              0

```

DHCPRELEASE	4
DHCPREQUEST	10
Messages sent:	
BOOTREPLY	20
DHCPOFFER	10
DHCPACK	10
DHCPNAK	0
DHCPFORCERENEW	0



## show dhcpv6 server binding

<b>Syntax</b>	<pre>show dhcpv6 server binding &lt;brief   detail   summary&gt; &lt;interface <i>interface-name</i>&gt; &lt;<i>ip-address</i>&gt; &lt;logical-system <i>logical-system-name</i>&gt; &lt;routing-instance <i>routing-instance-name</i>&gt;</pre>
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	Display the address bindings in the client table on the extended Dynamic Host Configuration Protocol for IPv6 (DHCPv6) local server.
<b>Options</b>	<p>brief   detail   summary—(Optional) Display the specified level of output about active client bindings. The default is <b>brief</b>, which produces the same output as <b>show dhcpv6 server binding</b>.</p> <p>interface <i>interface-name</i>—(Optional) Display information about active client bindings on the specified interface. You can optionally filter on VLAN ID and SVLAN ID.</p> <p><i>ip-address</i>—(Optional) IP address of the DHCPv6 client, or client ID of the DHCPv6 client, or session ID associated with the DHCPv6 client.</p> <p>logical-system <i>logical-system-name</i>—(Optional) Display information about active client bindings for DHCPv6 clients on the specified logical system.</p> <p>routing-instance <i>routing-instance-name</i>—(Optional) Display information about active client bindings for DHCPv6 clients on the specified routing instance.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>clear dhcpv6 server binding on page 695</li> </ul>
<b>List of Sample Output</b>	<pre>show dhcpv6 server binding on page 811 show dhcpv6 server binding detail on page 811 show dhcpv6 server binding interface on page 811 show dhcpv6 server binding interface detail on page 811 show dhcpv6 server binding prefix on page 812 show dhcpv6 server binding session-id on page 812 show dhcpv6 server binding summary on page 812</pre>
<b>Output Fields</b>	Table 127 on page 810 lists the output fields for the <b>show dhcpv6 server binding</b> command. Output fields are listed in the approximate order in which they appear.

Table 127: show dhcpv6 server binding Output Fields

Field Name	Field Description	Level of Output
<i>number</i> clients, ( <i>number</i> init, <i>number</i> bound, <i>number</i> selecting, <i>number</i> requesting, <i>number</i> renewing, <i>number</i> releasing)	Summary counts of the total number of DHCPv6 clients and the number of DHCPv6 clients in each state.	summary
Prefix	Client's DHCPv6 prefix.	brief detail
Session Id	Session ID of the subscriber session.	brief detail
Expires	Number of seconds in which lease expires.	brief detail
State	State of the address binding table on the extended DHCPv6 local server: <ul style="list-style-type: none"> <li>• <b>BOUND</b>—Client has active IP address lease.</li> <li>• <b>INIT</b>—Initial state.</li> <li>• <b>RECONFIGURE</b>—Server has sent reconfigure message to client.</li> <li>• <b>RELEASE</b>—Client is releasing IP address lease.</li> <li>• <b>RENEWING</b>—Client sending request to renew IP address lease.</li> <li>• <b>REQUESTING</b>—Client requesting a DHCPv6 server.</li> <li>• <b>SELECTING</b>—Client receiving offers from DHCPv6 servers.</li> </ul>	brief detail
Interface	Interface on which the DHCPv6 request was received.	brief
Client DUID	Client's DHCP Unique Identifier (DUID).	brief detail
Lease expires	Date and time at which the client's IP address lease expires.	detail
Lease expires in	Number of seconds in which lease expires.	detail
Lease Start	Date and time at which the client's address lease was obtained.	detail
Incoming Client Interface	Client's incoming interface.	detail
Server IP Address	IP address of DHCPv6 server.	detail
Server Interface	Interface of DHCPv6 server.	detail
Client Id length	Length of the DHCPv6 client ID, in bytes.	detail
Client Id	ID of the DHCPv6 client.	detail

## Sample Output

```

show dhcpv6 server binding user@host> show dhcpv6 server binding

Prefix          Session Id Expires State Interface Client DUID
2001:bd8:1111:2222::/64 6      86321 BOUND ge-1/0/0.0
LL_TIME0x1-0x2e159c0-00:10:94:00:00:01
2001:bd8:1111:2222::/64 7      86321 BOUND ge-1/0/0.0
LL_TIME0x1-0x2e159c0-00:10:94:00:00:02
2001:bd8:1111:2222::/64 8      86321 BOUND ge-1/0/0.0
LL_TIME0x1-0x2e159c0-00:10:94:00:00:03
2001:bd8:1111:2222::/64 9      86321 BOUND ge-1/0/0.0
LL_TIME0x1-0x2e159c1-00:10:94:00:00:04
2001:bd8:1111:2222::/64 10     86321 BOUND ge-1/0/0.0
LL_TIME0x1-0x2e159c1-00:10:94:00:00:05

show dhcpv6 server binding detail user@host> show dhcpv6 server binding detail
Session Id: 6
Client IPv6 Prefix: 2001:bd8:1111:2222::/64
Client DUID: LL_TIME0x1-0x2e159c0-00:10:94:00:00:01

State:
BOUND(LOCAL_SERVER_STATE_BOUND_ON_INTF_DELETE)
Lease Expires: 2009-07-21 10:41:15 PDT
Lease Expires in: 86308 seconds
Lease Start: 2009-07-20 10:41:15 PDT
Incoming Client Interface: ge-1/0/0.0
Server Ip Address: 0.0.0.0
Server Interface: none
Client Id Length: 14
Client Id:
/0x00010001/0x02e159c0/0x00109400/0x0001

Session Id: 7
Client IPv6 Prefix: 2001:bd8:1111:2222::/64
Client DUID: LL_TIME0x1-0x2e159c0-00:10:94:00:00:02

State:
BOUND(LOCAL_SERVER_STATE_BOUND_ON_INTF_DELETE)
Lease Expires: 2009-07-21 10:41:15 PDT
Lease Expires in: 86308 seconds
Lease Start: 2009-07-20 10:41:15 PDT
Incoming Client Interface: ge-1/0/0.0
Server Ip Address: 0.0.0.0
Server Interface: none
Client Id Length: 14
Client Id:
/0x00010001/0x02e159c0/0x00109400/0x0002

show dhcpv6 server binding interface user@host> show dhcpv6 server binding interface ge-1/0/0:10-101
Prefix          Session Id Expires State Interface Client DUID
2001:bd8:1111:2222::/64 1      86055 BOUND ge-1/0/0.100
LL_TIME0x1-0x4b0a53b9-00:10:94:00:00:01

show dhcpv6 server binding interface detail user@host> show dhcpv6 server binding interface ge-1/0/0:10-101 detail
Session Id: 7

```

```

Client IPv6 Prefix:      2001:bd8:1111:2222::/64
Client DUID:             LL_TIME0x1-0x2e159c0-00:10:94:00:00:02

State:                   BOUND(bound)
Lease Expires:           2009-07-21 10:41:15 PDT
Lease Expires in:       86136 seconds
Lease Start:            2009-07-20 10:41:15 PDT
Incoming Client Interface: ge-1/0/0.0
Server Ip Address:      0.0.0.0
Server Interface:       none
Client Id Length:       14
Client Id:
/0x00010001/0x02e159c0/0x00109400/0x0002

show dhcpv6 server binding prefix
user@host> show dhcpv6 server binding 14/0x00010001/0x02b3be8f/0x00109400/0x0005
detail
Session Id: 7
Client IPv6 Prefix:      2001:bd8:1111:2222::/64
Client DUID:             LL_TIME0x1-0x2e159c0-00:10:94:00:00:02

State:                   BOUND(bound)
Lease Expires:           2009-07-21 10:41:15 PDT
Lease Expires in:       86136 seconds
Lease Start:            2009-07-20 10:41:15 PDT
Incoming Client Interface: ge-1/0/0.0
Server Ip Address:      0.0.0.0
Server Interface:       none
Client Id Length:       14
Client Id:
/0x00010001/0x02e159c0/0x00109400/0x0002

show dhcpv6 server binding session-id
user@host> show dhcpv6 server binding 8
Prefix      Session Id Expires State Interface Client DUID
2001:bd8:1111:2222::/64 8 86235 BOUND ge-1/0/0.0
LL_TIME0x1-0x2e159c0-00:10:94:00:00:03

show dhcpv6 server binding summary
user@host> show dhcpv6 server binding summary
5 clients, (0 init, 5 bound, 0 selecting, 0 requesting, 0 renewing, 0 releasing)

```

## show dhcpv6 server statistics

---

<b>Syntax</b>	<b>show dhcpv6 server statistics</b> <code>&lt;logical-system <i>logical-system-name</i>&gt;</code> <code>&lt;routing-instance <i>routing-instance-name</i>&gt;</code>
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	Display extended Dynamic Host Configuration Protocol for IPv6 (DHCPv6) local server statistics.
<b>Options</b>	<p><code>logical-system <i>logical-system-name</i></code>—(Optional) Display information about extended DHCPv6 local server statistics on the specified logical system. If you do not specify a logical system, statistics are displayed for the default logical system.</p> <p><code>routing-instance <i>routing-instance-name</i></code>—(Optional) Display information about extended DHCPv6 local server statistics on the specified routing instance. If you do not specify a routing instance, statistics are displayed for the default routing instance.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">clear dhcpv6 server statistics on page 697</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">show dhcpv6 server statistics on page 814</a>
<b>Output Fields</b>	Table 128 on page 814 lists the output fields for the <b>show dhcpv6 server statistics</b> command. Output fields are listed in the approximate order in which they appear.

Table 128: show dhcpv6 server statistics Output Fields

Field Name	Field Description
<b>Packets dropped</b>	<p>Number of packets discarded by the extended DHCPv6 local server because of errors. Only nonzero statistics appear in the Packets dropped output. When all of the Packets dropped statistics are 0 (zero), only the Total field appears.</p> <ul style="list-style-type: none"> <li>• <b>Total</b>—Total number of packets discarded by the extended DHCPv6 local server</li> <li>• <b>Strict Reconfigure</b>—Number of solicit messages discarded because the client does not support reconfiguration</li> <li>• <b>Bad hardware address</b>—Number of packets discarded because an invalid hardware address was specified</li> <li>• <b>Bad opcode</b>—Number of packets discarded because an invalid operation code was specified</li> <li>• <b>Bad options</b>—Number of packets discarded because invalid options were specified</li> <li>• <b>Invalid server address</b>—Number of packets discarded because an invalid server address was specified</li> <li>• <b>No available addresses</b>—Number of packets discarded because there were no addresses available for assignment</li> <li>• <b>No interface match</b>—Number of packets discarded because they did not belong to a configured interface</li> <li>• <b>No routing instance match</b>—Number of packets discarded because they did not belong to a configured routing instance</li> <li>• <b>No valid local address</b>—Number of packets discarded because there was no valid local address</li> <li>• <b>Packet too short</b>—Number of packets discarded because they were too short</li> <li>• <b>Read error</b>—Number of packets discarded because of a system read error</li> <li>• <b>Send error</b>—Number of packets that the extended DHCPv6 local server could not send</li> </ul>
<b>Messages received</b>	<p>Number of DHCPv6 messages received.</p> <ul style="list-style-type: none"> <li>• <b>DHCPV6_CONFIRM</b>—Number of DHCPv6 CONFIRM PDUs received.</li> <li>• <b>DHCPV6_DECLINE</b>—Number of DHCPv6 DECLINE PDUs received.</li> <li>• <b>DHCPV6_INFORMATION_REQUEST</b>—Number of DHCPv6 INFORMATION-REQUEST PDUs received.</li> <li>• <b>DHCPV6_REBIND</b>—Number of DHCPv6 REBIND PDUs received.</li> <li>• <b>DHCPV6_RELAY_FORW</b>—Number of DHCPv6 RELAY-FORW PDUs received.</li> <li>• <b>DHCPV6_RELAY_REPL</b>—Number of DHCPv6 RELAY-REPL PDUs received.</li> <li>• <b>DHCPV6_RELEASE</b>—Number of DHCPv6 RELEASE PDUs received.</li> <li>• <b>DHCPV6_RENEW</b>—Number of DHCPv6 RENEW PDUs received.</li> <li>• <b>DHCPV6_REQUEST</b>—Number of DHCPv6 REQUEST PDUs received.</li> <li>• <b>DHCPV6_SOLICIT</b>—Number of DHCPv6 SOLICIT PDUs received.</li> </ul>
<b>Messages sent</b>	<p>Number of DHCPv6 messages sent.</p> <ul style="list-style-type: none"> <li>• <b>DHCPV6_ADVERTISE</b>—Number of DHCPv6 ADVERTISE PDUs transmitted.</li> <li>• <b>DHCPV6_REPLY</b>—Number of DHCPv6 ADVERTISE PDUs transmitted.</li> <li>• <b>DHC6_RECONFIGURE</b>—Number of DHCPv6 RECONFIGURE PDUs transmitted.</li> </ul>

## Sample Output

```

show dhcpv6 server statistics  user@host> show dhcpv6 server statistics
                               Dhcpv6 Packets dropped:
                               Total                  0

```

```
Messages received:
  DHCPV6_DECLINE          0
  DHCPV6_SOLICIT          9
  DHCPV6_INFORMATION_REQUEST 0
  DHCPV6_RELEASE          0
  DHCPV6_REQUEST          5
  DHCPV6_CONFIRM          0
  DHCPV6_RENEW            0
  DHCPV6_REBIND           0
  DHCPV6_RELAY_FORW       0
  DHCPV6_RELAY_REPL       0

Messages sent:
  DHCPV6_ADVERTISE        9
  DHCPV6_REPLY            5
  DHCPV6_RECONFIGURE      0
```

## show host

---

<b>Syntax</b>	<code>show host <i>hostname</i></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 Domain Name System (DNS) hostname information.
<b>Options</b>	<i>hostname</i> —Hostname or address.
<b>Additional Information</b>	The <b>show host</b> command displays the raw data received from the DNS server.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show host on page 816

## Sample Output

```
show host user@host> show host snark
snark.boojum.net has address 192.168.1.254

user@host> show host 192.168.1.254
Name: snark.boojum.net
Address: 192.168.1.254
Aliases:
```



## show network-access aaa statistics

<b>Syntax</b>	<pre>show network-access aaa statistics &lt;accounting&gt; &lt;address-assignment (client <i>client</i>   pool <i>pool-name</i>)&gt; &lt;authentication&gt; &lt;dynamic-requests&gt;</pre>
<b>Release Information</b>	<p>Command introduced in Junos OS Release 9.1.</p> <p><b>address-assignment</b> option introduced in Junos OS Release 10.0.</p>
<b>Description</b>	Display AAA accounting, authentication, address-assignment, and dynamic request statistics.
<b>Options</b>	<p><b>accounting</b>—(Optional) Display AAA accounting statistics.</p> <p><b>address-assignment (client   pool <i>pool-name</i>)</b>—(Optional) Display AAA address-assignment client and pool statistics.</p> <p><b>authentication</b>—(Optional) Display AAA authentication statistics.</p> <p><b>dynamic-requests</b>—(Optional) Display AAA dynamic requests.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p><b>show network-access aaa statistics accounting on page 818</b></p> <p><b>show network-access aaa statistics address-assignment client on page 818</b></p> <p><b>show network-access aaa statistics address-assignment pool on page 819</b></p> <p><b>show network-access aaa statistics authentication on page 819</b></p> <p><b>show network-access aaa statistics dynamic-requests on page 819</b></p>
<b>Output Fields</b>	Table 129 on page 817 lists the output fields for the <b>show network-access aaa statistics</b> command. Output fields are listed in the approximate order in which they appear.

**Table 129: show network-access aaa statistics Output Fields**

Field Name	Field Description
<b>Requests received</b>	<ul style="list-style-type: none"> <li>Number of authentication requests received from clients.</li> <li>Number of accounting requests generated by the AAA framework.</li> <li>Number of dynamic requests received from the external server.</li> </ul>
<b>Accounting Response failures</b>	Number of accounting requests not acknowledged (NAK) by the accounting server.
<b>Accounting Response Success</b>	Number of accounting requests acknowledged by the accounting server.
<b>Requests timedout</b>	Number of accounting requests to the accounting server that timed out.

Table 129: show network-access aaa statistics Output Fields (*continued*)

Field Name	Field Description
Client	Client type; for example, DHCP, Mobile IP, PPP.
Out of Memory	Number of times an address was not given to the client due to memory issues.
No Matches	Number of times there were no network matches for the pool.
Pool Name	Name of the address-assignment pool for this client.
Out of Addresses	Number of times there were no available addresses in the pool.
Address total	Number of addresses in the pool.
Addresses in use	Number of addresses in use.
Address Usage	Percentage of total addresses in use.
Accepts	Number of authentication requests accepted by the authentication server.
Rejects	Number of authentication requests rejected by the authentication server.
Challenges	Number of authentication requests challenged by the authentication server.
processed successfully	Number of dynamic requests processed successfully by the AAA framework.
errors during processing	Number of dynamic requests that resulted in processing errors by the AAA framework.
Link Name	Name of the secondary address-assignment pool to which the primary pool is linked.
Pool Usage	Percentage of allocated addresses in the specified address pool.
silently dropped	Number of dynamic requests dropped by the AAA framework due to multiple back-to-back or duplicate requests.

## Sample Output

```

show network-access user@host> show network-access aaa statistics accounting
aaa statistics      Accounting module statistics
accounting          Requests received: 0
                   Accounting Response failures: 0
                   Accounting Response Success: 0
                   Requests timeout: 0

show network-access user@host> show network-access aaa statistics address-assignment client
aaa statistics      Address-assignment statistics
address-assignment Client: jdncpd
client             Out of Memory: 0
                   No Matches: 2

```

```
show network-access user@host> show network-access aaa statistics address-assignment pool isp_1
  aaa statistics Address-assignment statistics
  address-assignment Pool Name: isp_1
                    Out of Memory: 0
                    Out of Addresses: 0
                    Address total: 255
                    Addresses in use: 15
                    Address Usage: 6%

show network-access user@host> show network-access aaa statistics authentication
  aaa statistics Requests received: 0
  authentication Accepts: 0
                  Rejects: 0
                  Challenges: 0

show network-access user@host> show network-access aaa statistics dynamic-requests
  aaa statistics requests received: 0
  dynamic-requests processed successfully: 0
                  errors during processing: 0
                  silently dropped: 0
```

## show network-access aaa subscribers

<b>Syntax</b>	<pre>show network-access aaa subscribers &lt;logical-system <i>logical-system-name</i>&gt; &lt;routing-instance <i>routing-instance-name</i>&gt; &lt;statistics&gt; &lt;username&gt;</pre>
<b>Release Information</b>	Command introduced in Junos OS Release 9.1.
<b>Description</b>	Display subscriber-specific AAA statistics.
<b>Options</b>	<p><i>logical-system logical-system-name</i>—(Optional) List subscribers in the specific logical system.</p> <p><i>routing-instance routing-instance-name</i>—(Optional) List subscribers for the specific routing instance. If you do not specify a routing instance name, the default routing instance is assumed.</p> <p><i>statistics</i>—(Optional) Display statistics for the subscriber events.</p> <p><i>username</i>—(Optional) Display information for the specified subscriber.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p><b>show network-access aaa subscribers logical-system</b> on page 821</p> <p><b>show network-access aaa subscribers</b> on page 821</p> <p><b>show network-access aaa subscribers statistics username</b> on page 821</p> <p><b>show network-access aaa subscribers username</b> on page 822</p>
<b>Output Fields</b>	Table 130 on page 820 lists the output fields for the <b>show network-access aaa subscribers</b> command. Output fields are listed in the approximate order in which they appear.

**Table 130: show network-access aaa subscribers Output Fields**

Field Name	Field Description
Challenge requests	Number of authentication requests challenged by the authentication server for this subscriber.
Challenge responses	Number of challenge responses sent by the subscriber to the authentication server.
START sent successfully	Number of accounting start requests generated by the AAA framework for this subscriber.
START send failures	Number of accounting start requests that failed to make it to the accounting server for this subscriber.
START ack received	Number of accounting start requests acknowledged by the accounting server for this subscriber.
INTERIM sent successfully	Number of accounting interim requests generated by the AAA framework for this subscriber.

Table 130: show network-access aaa subscribers Output Fields (*continued*)

Field Name	Field Description
INTERIM send failures	Number of accounting interim requests that failed to make it to the accounting server for this subscriber.
INTERIM ack received	Number of accounting interim requests acknowledged by the accounting server for this subscriber.
Requests received	Number of reauthentication requests received by the authentication server.
Successful responses	Number of successful reauthentication requests granted by the authentication server.
Aborts handled	Number of reauthentication requests aborted by the authentication server.
Service name	Name of the subscriber service.
Creation requests	Number of requests to create the service.
Deletion requests	Number of requests to delete the service.
Request timeouts	Number of times the service request was timed out.

## Sample Output

```

show network-access user@host> show network-access aaa subscribers logical-system
aaa subscribers      Username                Virtual router name      Client type
logical-system      cbenson@address.net    default                   ppp
                    00010e020304.1231     isp-bos-metro-12:isp-cmbrg-12-32
                    conley@isp3.com        default:isp-gtown-r3-00   dhcp
                    0020df980102.2334     isp-bos-metro-16:isp-cmbrg-12-32   dhcp

show network-access user@host> show network-access aaa subscribers logical-system isp-bos-metro-16
aaa subscribers      routing-instance isp-cmbrg-12-32
                    Username                Client type              Original routing context
                    00010e020304.1231     dhcp                    default
                    peter@isp5.net        dhcp                    isp-bos-metro-1:isp-alwf-01-02
                    conley@isp5.net        dhcp                    isp-bos-metro-16:isp-cmbrg-12-32

show network-access user@host> show network-access aaa subscribers statistics username 00010e020304.1231
aaa subscribers      Authentication statistics
statistics username  Challenge requests: 0
                    Challenge responses: 0
                    Accounting statistics
                        START sent successfully: 1
                        START send failures: 0
                        START ack received: 1
                        INTERIM sent successfully: 0
                        INTERIM send failures: 0
                        INTERIM ack received: 0
                    Re-authentication statistics
                        Requests received: 0
                        Successful responses: 0
                        Aborts handled: 0
                    Service statistics
                        Service name: filter-serv

```

Creation requests: 1  
Deletion requests: 0  
Request timeouts: 0  
Service name: filter-serv2  
Creation requests: 144  
Deletion requests: 0  
Request timeouts: 144

**show network-access**    user@host> **show network-access aaa subscribers username fred@isp5.net**  
**aaa subscribers**       Virtual router name       Client type    Session uptime    Accounting  
                         isp-bos-metro-16:isp-cmbrg-12-32    dhcp            1d 12h 56m       on/volume  
**username**

Service name	Service type	Quota	Accounting
I-Cast	volume	1200 Mbps	on/volume+time
Voip			on/volume
GamingBurst	time	6000 secs	on/volume

## show network-access aaa subscribers session-id

<b>Syntax</b>	<b>show network-access aaa subscribers session-id</b> <i>session-id</i> <brief   detail>
<b>Release Information</b>	Command introduced in Junos OS Release 10.0.
<b>Description</b>	Display information about the specified subscriber session.
<b>Options</b>	<i>session-id</i> —ID of the subscriber session.  brief   detail—(Optional) Display the specified level of information.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show network-access aaa subscribers session-id brief</b> on page 824 <b>show network-access aaa subscribers session-id detail</b> on page 824
<b>Output Fields</b>	Table 131 on page 823 lists the output fields for the <b>show network-access aaa subscribers session-id</b> command. Output fields are listed in the approximate order in which they appear.

**Table 131: show network-access aaa subscribers session-id Output Fields**

Field Name	Field Description
<b>Type and Client type</b>	Type of client.
<b>Username</b>	Name of the user logged in to the session.
Stripped username	The username after the domain has been removed.
<b>AAA Logical system/Routing instance</b>	Name of the routing instance, logical system name, or both used for the session.
Target Logical system/Routing instance	Logical system/routing instance to which the session is mapped.
Access-profile	Access profile used for AAA services for the session.
<b>Session ID</b>	ID of the subscriber session.  The session ID value displayed under <b>Service name</b> is the service session ID.
<b>Accounting Session ID</b>	ID of the accounting session (RADIUS attribute 44). The ID appears in decimal or description format, as specified by the <b>accounting-session-id-format</b> statement.
<b>Multi Accounting Session ID</b>	Bundle ID for MLPPP sessions. Acct-Multi-Session-Id (RADIUS attribute 50) uses the value of the session database bundle session ID to enable RADIUS to link together multiple related sessions. The value of this field is zero when no MLPPP sessions exist.

Table 131: show network-access aaa subscribers session-id Output Fields (*continued*)

Field Name	Field Description
IP Address	IP address of the subscriber.
Authentication State	State of the subscriber authentication session: AuthInit, AuthStart, AuthChallenge, AuthRedirect, AuthClntRespWait, AuthAcctVolStatsAckWait, AuthAcctStopAckWait, AuthServCreateRespWait, AuthLogoutStart, AuthStateActive, AuthClntLogoutRespWait, AuthProfileUpdateWait, AuthProvisionRespWait, AuthProvisionServiceCreationWait
Accounting State	State of the subscriber accounting session: Acc-Init, Acc-Start-Sent, Imm-Update-Stats-Pending, Acc-Interim-Sent, Acc-Stop-Stats-Pending, Acc-Stop-Sent, Acc-Stop-On-Fail-Deny-Sent, Acc-Stop-Ackd
Number Services Attached	Number of services currently attached for this subscriber.
Service name	Name of the attached service or policy. For RADIUS-activated services, this field displays the actual service name. For JSRC-activated policies, this field displays the policy name.
Session uptime	How long the session has been up, in HH:MM:SS.

## Sample Output

```

show network-access user@host> show network-access aaa subscribers session-id 6 brief
aaa subscribers Logical system/Routing instance Client type Session uptime Accounting
session-id brief default:default dhcp 00:01:29 on/time
Service name Service type Quota Accounting
filter-service -na- -na- off
1337994190863204450 -na- -na- off

```

```

show network-access user@host> show network-access aaa subscribers session-id 5 detail
aaa subscribers Type: dhcp
session-id detail Username: larry@isp5.net
Stripped username: larry
AAA Logical system/Routing instance: default:default
Target Logical system/Routing instance: default:retail-onlinecompany-ca
Access-profile:retailer-onlinecompany-sjc
Session ID: 5
Accounting Session ID: jnpr ge-1/0/0.101:1
Multi Accounting Session ID: 0
IP Address: 192.168.44.104
Authentication State: AuthStateActive
Accounting State: Acc-Interim-Sent
Number Services Attached: 2
Service name: filter-service-1
Service State: SvcActive
Session ID: 7
Session uptime: 00:01:33
Service name: 1337994190863204450
Service State: SvcActive
Session ID: 8
Session uptime: 00:01:33

```



## show network-access address-assignment pool

<b>Syntax</b>	show network-access address-assignment pool <i>pool-name</i> <logical-system <i>logical-system-name</i> > <routing-instance <i>routing-instance-name</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 9.0.
<b>Description</b>	Display state information for each address-assignment pool.
<b>Options</b>	<p>none—Display information about clients that have obtained addresses from the address-assignment pool.</p> <p>pool <i>pool-name</i>—Display information about the specified address-assignment pool.</p> <p>logical-system <i>logical-system-name</i>—(Optional) Perform this operation on the specified logical system.</p> <p>routing-instance <i>routing-instance-name</i>—(Optional) Perform this operation on the specified routing instance.</p>
<b>Required Privilege Level</b>	view and system
<b>List of Sample Output</b>	show network-access address-assignment pool on page 825
<b>Output Fields</b>	Table 132 on page 825 lists the output fields for the <b>show address-assignment pool</b> command. Output fields are listed in the approximate order in which they appear.

**Table 132: show network-access address-assignment pool Output Fields**

Field Name	Field Description
IP address	IP address of the client.
Hardware address	MAC address of the client.
Type	Type of client.

## Sample Output

```

user@host> show network-access address-assignment pool sunnywest logical-system ls1
routing-instance routinst2
IP address      Hardware address  Type
192.168.2.1     00:05:1b:00:b9:01 DHCP
192.168.2.2     00:05:1b:00:b9:02 DHCP
192.168.2.3     00:05:1b:00:b9:03 DHCP
192.168.2.4     00:05:1b:00:b9:04 DHCP

```

## show ntp associations

<b>Syntax</b>	show ntp associations <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. Command introduced in Junos OS Release 11.1 for the QFX Series.
<b>Description</b>	Display Network Time Protocol (NTP) peers and their state.
<b>Options</b>	none—Display NTP peers and their state.  no-resolve—(Optional) Suppress symbolic addressing.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">show ntp status on page 828</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">show ntp associations on page 827</a> <a href="#">show ntp associations (QFX Series) on page 827</a>
<b>Output Fields</b>	Table 133 on page 826 describes the output fields for the <b>show ntp associations</b> command. Output fields are listed in the approximate order in which they appear.

**Table 133: show ntp associations Output Fields**

Field Name	Field Description
remote	Address or name of the remote NTP peer.
refid	Reference identifier of the remote peer. If the reference identifier is not known, this field shows a value of 0.0.0.0.
st	Stratum of the remote peer.
t	Type of peer: <b>b</b> (broadcast), <b>l</b> (local), <b>m</b> (multicast), or <b>u</b> (unicast).
when	When the last packet from the peer was received.
poll	Polling interval, in seconds.
reach	Reachability register, in octal.
delay	Current estimated delay of the peer, in milliseconds.
offset	Current estimated offset of the peer, in milliseconds.
disp	Current estimated dispersion of the peer, in milliseconds.

Table 133: show ntp associations Output Fields (*continued*)

Field Name	Field Description
<i>peer-name</i>	<p>Peer name and status of the peer in the clock selection process:</p> <ul style="list-style-type: none"> <li>• space—Discarded because of a high stratum value or failed sanity checks.</li> <li>• x—Designated "falseticker" by the intersection algorithm.</li> <li>• .—Culled from the end of the candidate list.</li> <li>• — —Discarded by the clustering algorithm.</li> <li>• +—Included in the final selection set.</li> <li>• #—Selected for synchronization, but the distance exceeds the maximum.</li> <li>• *—Selected for synchronization.</li> <li>• o—Selected for synchronization, but the packets-per-second (pps) signal is in use.</li> </ul>

### Sample Output

```

show ntp associations user@host> show ntp associations
      remote          refid      st t when poll reach  delay  offset  disp
=====
*wolfe-gw.junipe tick.ucla.edu    2 u  43   64  377    1.86   0.319   0.08

show ntp associations user@switch> show ntp associations
(QFX Series)         remote          refid      st t when poll reach  delay  offset  disp
=====
*wolfe-gw.junipe tick.ucla.edu    2 u  43   64  377    1.86   0.319   0.08

```

## show ntp status

---

<b>Syntax</b>	show ntp status <no-resolve>
<b>Release Information</b>	Command introduced in Junos OS Release 11.1 for the QFX Series.
<b>Description</b>	Display the values of internal variables returned by Network Time Protocol (NTP) peers.
<b>Options</b>	none—Display the values of internal variables returned by NTP peers.  no-resolve—(Optional) Suppress symbolic addressing.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show ntp associations on page 826</a></li></ul>
<b>List of Sample Output</b>	<a href="#">show ntp status on page 828</a>

### Sample Output

```
show ntp status  user@host> show ntp status
status=0644 leap_none, sync_ntp, 4 events, event_peer/strat_chg,
version="ntpd 4.1.0-a Fri Jun 24 06:40:56 GMT 2005 (1)",
processor="i386", system="JUNOS7.4-20050624.0", leap=00, stratum=2,
precision=-28, rootdelay=6.849, rootdispersion=10.615, peer=38788,
refid=ntp-server.company-a.net,
reftime=c66705d9.06ee0f3c Fri, Jun 24 2005 15:21:13.027, poll=6,
clock=c6670602.cf6db940 Fri, Jun 24 2005 15:21:54.810, state=4,
offset=0.205, frequency=75.911, jitter=0.396, stability=0.005
```

## show static-subscribers sessions

<b>Syntax</b>	<b>show static-subscribers sessions</b> <group <i>group-name</i> > <interface <i>interface-name</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	Display information about the subscriber sessions for all static subscribers, all static subscribers on an interface group, or a single subscriber on an interface.
<b>Options</b>	<i>group-name</i> —(Optional) Display session information for static subscribers on all interfaces in the specified group.  <i>interface-name</i> —(Optional) Display session information for the static subscriber on the specified in the specified group.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show static-subscribers sessions on page 830</b> <b>show static-subscribers sessions group on page 830</b> <b>show static-subscribers sessions interface on page 830</b>
<b>Output Fields</b>	Table 134 on page 829 lists the output fields for the <b>show static-subscribers sessions</b> command. Output fields are listed in the approximate order in which they appear.

**Table 134: show static-subscribers sessions Output Fields**

Field Name	Field Description	Level of Output
<b>Interface</b>	Name of the interface.	None specified
<b>State</b>	State of the static subscriber session: <ul style="list-style-type: none"> <li>• <b>authenticating</b>—Subscriber is being authenticated.</li> <li>• <b>activating client</b>—Client is being activated.</li> <li>• <b>activating services</b>—Subscriber services are being activated.</li> <li>• <b>deactivating client</b>—Client is being deactivated.</li> <li>• <b>deactivating services</b>—Subscriber services are being deactivated.</li> <li>• <b>initializing</b>—Process is initializing.</li> <li>• <b>logged in</b>—Subscriber is logged in to the interface.</li> <li>• <b>logged out</b>—Subscriber is logged out of the interface.</li> <li>• <b>processing statistics</b>—Session statistics are being processed.</li> <li>• <b>terminating session</b>—Subscriber session is being terminated.</li> </ul>	None specified
<b>Group</b>	Name of the interface group to which the interface belongs.	None specified
<b>User Name</b>	Username used for the static subscriber. Can be the interface name.	None specified

## Sample Output

```

show          user@host> show static-subscribers sessions
static-subscribers
sessions      Static subscriber information:
                Interface      State      Group      User Name
                ge-9/1/0.1     logged out SS1         ge-9-1-0.1
                ge-9/1/0.10    logged out SS1         ge-9-1-0.10
                ge-9/1/0.100   logged out SS1         ge-9-1-0.100
                ge-9/1/0.11    logged out SS1         ge-9-1-0.11
                ge-9/1/0.12    logged out SS1         ge-9-1-0.12
                ge-9/1/0.13    logged out SS1         ge-9-1-0.13
                ge-9/1/0.14    logged out SS1         ge-9-1-0.14
                ge-9/1/0.15    logged out SS1         ge-9-1-0.15
                ge-9/1/0.16    logged out SS1         ge-9-1-0.16
                ge-9/1/0.17    logged out SS1         ge-9-1-0.17
                ge-9/1/0.18    logged out SS1         ge-9-1-0.18
                ge-9/1/0.19    logged out SS1         ge-9-1-0.19
                ge-9/1/0.2     logged out SS1         ge-9-1-0.2
                ge-9/1/0.20    logged out SS1         ge-9-1-0.20
                ge-9/1/0.21    logged out SS1         ge-9-1-0.21

show          user@host> show static-subscribers sessions group boston
static-subscribers
sessions group Interface      State      Group      User Name
                ge-0/0/1.1     logged in  boston     ge-0/0/1.1
                ge-0/0/1.2     logged in  boston     ge-0/0/1.2

show          user@host> show static-subscribers sessions interface ge-0/0/1.1
static-subscribers
sessions interface Interface      State      Group      User Name
                ge-0/0/1.1     logged in  foo        ge-0/0/1.1

```

## show subscribers

**Syntax** `show subscribers`  
`<address address>`  
`<client-type client-type>`  
`<interface interface>`  
`<logical-system logical-system>`  
`<mac-address mac-address>`  
`<profile-name profile-name>`  
`<routing-instance routing-instance>`  
`<stacked-vlan-id stacked-vlan-id>`  
`<subscriber-state subscriber-state>`  
`<vlan-id vlan-id>`  
`<count | detail | extensive | summary (all | logical-system logical-system | routing-instance routing-instance) | terse>`

**Release Information** Command introduced in Junos OS Release 9.3.  
 Command introduced in Junos OS Release 9.3 for EX Series switches.  
**client-type**, **mac-address**, **subscriber-state**, **extensive**, and **summary** options introduced in Junos OS Release 10.2.  
**count** option usage with other options introduced in Junos OS Release 10.2.  
 Command introduced in Junos OS Release 11.1 for the QFX Series.

**Description** Display information for active subscribers.

**Options** *address*—(Optional) Display subscribers whose IP address matches the specified address.

*client-type*—(Optional) Display subscribers whose client type matches the specified client type (DHCP, L2TP, PPP, PPPOE, or VLAN).

*count*—(Optional) Display the count of total subscribers and active subscribers for any specified option. You can use the count option alone or with the **address**, **client-type**, **interface**, **logical-system**, **mac-address**, **profile-name**, **routing-instance**, **stacked-vlan-id**, **subscriber-state**, and **vlan-id** options.

*interface*—(Optional) Display subscribers whose interface matches the specified interface.

*logical system*—(Optional) Display subscribers whose logical system matches the specified logical system.

*mac-address*—(Optional) Display subscribers whose MAC address matches the specified MAC address.

*profile name*—(Optional) Display subscribers whose dynamic profile matches the specified profile name.

*routing instance*—(Optional) Display subscribers whose routing instance matches the specified routing instance.

*subscriber-state*—(Optional) Display subscribers whose subscriber state matches the specified subscriber state (ACTIVE, CONFIGURED, INIT, TERMINATED, or TERMINATING).

*vlan-id*—(Optional) Display subscribers whose VLAN ID matches the specified VLAN ID.

*stacked-vlan-id*—(Optional) Display subscribers whose stacked VLAN ID matches the specified stacked VLAN ID.

*detail | extensive | terse*—(Optional) Display the specified level of output.

*summary*—(Optional) Display summary output.



**NOTE:** Due to display limitations, logical system and routing instance output values are truncated when necessary.

**Required Privilege Level** view

**List of Sample Output**

- show subscribers on page 834
- show subscribers detail (IPv4) on page 834
- show subscribers detail (IPv6) on page 835
- show subscribers detail (Tunneled Subscriber) on page 835
- show subscribers logical-system on page 835
- show subscribers count on page 835
- show subscribers routing-instance inst1 count on page 835
- show subscribers vlan-id on page 835
- show subscribers vlan-id detail on page 835
- show subscribers stacked-vlan-id detail on page 836
- show subscribers stacked-vlan-id vlan-id detail (Combined Output) on page 836
- show subscribers stacked-vlan-id vlan-id interface detail (Combined Output for a Specific Interface) on page 836
- show subscribers client-type dhcp detail on page 836
- show subscribers extensive on page 837
- show subscribers summary on page 837
- show subscribers summary all on page 837
- show subscribers terse on page 838

**Output Fields** Table 135 on page 832 lists the output fields for the **show subscribers** command. Output fields are listed in the approximate order in which they appear.

**Table 135: show subscribers Output Fields**

Field Name	Field Description
User Name	Name of subscriber.
Type	Subscriber client type (DHCP, VLAN, PPP, PPPOE, or L2TP).
IP Address	Subscriber IPv4 address.
IP Netmask	Subscriber IP netmask.



Table 135: show subscribers Output Fields (*continued*)

Field Name	Field Description
IPv6 Address	Subscriber IPv6 address.
IPv6 Prefix	Subscriber IPv6 prefix.
IPv6 Prefix Length	Length of the subscriber IPv6 prefix.
Logical System	Logical system associated with the subscriber.
Routing Instance	Routing instance associated with the subscriber.
Interface	Interface associated with the subscriber. The router displays subscribers whose interface matches or begins with the specified interface.
Interface Type	Whether the subscriber interface is static or dynamic.
Dynamic Profile Name	Dynamic profile used for the subscriber.
MAC Address	MAC address associated with the subscriber.
State	Current state of the subscriber session (Init, Configured, Active, Terminating, Terminated, Tunneled).
VLAN Id	VLAN ID associated with the subscriber in the form <i>tpid.vlan-id</i> .
Stacked VLAN Id	Stacked VLAN ID associated with the subscriber in the form <i>tpid.vlan-id</i> .
RADIUS Accounting ID	RADIUS accounting ID associated with the subscriber.
Agent Circuit ID	Option 82 agent circuit ID associated with the subscriber.
Agent Remote ID	Option 82 agent remote ID associated with the subscriber.
DHCP Relay IP Address	IP address used by the DHCP relay agent.
Login Time	Date and time at which the subscriber logged in.
Session ID	ID number for a subscriber service session.
Service Sessions	Number of service sessions (that is, a service activated using RADIUS CoA) associated with the subscribers.
Service Session Name	Service session profile name.
Session Timeout (seconds)	Number of seconds of access provided to the subscriber before the session is automatically terminated.
Idle Timeout (seconds)	Number of seconds subscriber can be idle before the session is automatically terminated.

Table 135: show subscribers Output Fields (*continued*)

Field Name	Field Description
IPv4 Input Filter Name	Name assigned to the IPv4 input filter (client or service session).
IPv4 Output Filter Name	Name assigned to the IPv4 output filter (client or service session).
IPv6 Input Filter Name	Name assigned to the IPv6 input filter (client or service session).
IPv6 Output Filter Name	Name assigned to the IPv6 output filter (client or service session).
IFL Input Filter Name	Name assigned to the logical interface input filter (client or service session).
IFL Output Filter Name	Name assigned to the logical interface output filter (client or service session).
Subscribers by State	<p>Number of subscribers summarized by state. The summary information includes the following:</p> <ul style="list-style-type: none"> <li>Init—Number of subscriber currently in the initialization state.</li> <li>Configured—Number of configured subscribers.</li> <li>Active—Number of active subscribers.</li> <li>Terminating—Number of subscribers currently terminating.</li> <li>Terminated—Number of terminated subscribers.</li> </ul> <p>Summary information includes subscriber counts per state and the total number of subscribers.</p>
Subscribers by Client Type	Number of subscribers summarized by client type. Client types can include DHCP, VLAN, PPP, PPPOE, and L2TP. Summary information includes subscriber counts per client type and the total number of subscribers.
Subscribers by LS:RI	Number of subscribers summarized by logical system:routing instance (LS:RI) combination. Summary information includes subscriber counts per LS:RI and the total number of subscribers.

## Sample Output

```

show subscribers user@host> show subscribers
Interface      IP Address/VLAN ID  User Name      LS:RI
ge-1/3/0.1073741824  100                WHOLESALER-CLIENT default:default
demux0.1073741824    100.0.0.10         RETAILER1-CLIENT default:default
demux0.1073741825    101.0.0.3          RETAILER1-CLIENT test1:retailer1
demux0.1073741826    102.0.0.3          RETAILER2-CLIENT test1:retailer2

show subscribers user@host> show subscribers detail
detail (IPv4)   Type: DHCP
                IP Address: 100.20.9.7
                IP Netmask: 255.255.0.0
                Logical System: default
                Routing Instance: default
                Interface: demux0.1073744127
                Interface type: Dynamic
                Dynamic Profile Name: dhcp-demux-prof
                MAC Address: 00:10:95:00:00:98
                State: Active
                Radius Accounting ID: jnpr :2304
                Session Timeout (seconds): 3600

```

```

Idle Timeout (seconds): 600
Login Time: 2009-08-25 14:43:52 PDT
Service Sessions: 2

show subscribers detail (IPv6) user@host> show subscribers detail
Type: DHCP
IPv6 Address: 1080:0:0:0:8:800:200C:417A
IPv6 Prefix: fec0:1:1:1::/128
Logical System: default1
Routing Instance: default
Interface: demux0.1073744127
Interface type: Dynamic
Dynamic Profile Name: dhcp-demux-prof
MAC Address: 00:10:95:00:00:98
State: Active
Radius Accounting ID: jnpr :2304
Login Time: 2009-08-25 14:43:52 PDT
Service Sessions: 2

show subscribers detail (Tunneled Subscriber) user@host> show subscribers detail
Type: PPPoE
User Name: user1@example.com
Logical System: default
Routing Instance: default
Interface: pp0.1
State: Active, Tunneled
Radius Accounting ID: 512

show subscribers logical-system user@host> show subscribers logical-system test1 terse
Interface          IP Address/VLAN ID  User Name          LS:RI
demux0.1073741825  101.0.0.3           RETAILER1-CLIENT  test1:retailer1
demux0.1073741826  102.0.0.3           RETAILER2-CLIENT  test1:retailer2

show subscribers count user@host> show subscribers count
Total Subscribers: 188, Active Subscribers: 188

show subscribers routing-instance inst1 count user@host> show subscribers routing-instance inst1 count
Total Subscribers: 188, Active Subscribers: 183

show subscribers vlan-id user@host> show subscribers vlan-id 100
Interface          IP Address          User Name
ge-1/0/0.1073741824
ge-1/2/0.1073741825

show subscribers vlan-id detail user@host> show subscribers vlan-id 100 detail
Type: VLAN
Interface: ge-1/0/0.1073741824
Interface type: Dynamic
Dynamic Profile Name: vlan-prof-tpid
State: Active
VLAN Id: 100
Login Time: 2009-03-11 06:48:54 PDT

Type: VLAN
Interface: ge-1/2/0.1073741825
Interface type: Dynamic
Dynamic Profile Name: vlan-prof-tpid
State: Active

```

```
VLAN Id: 100
Login Time: 2009-03-11 06:48:54 PDT

show subscribers stacked-vlan-id detail user@host> show subscribers stacked-vlan-id 101 detail
Type: VLAN
Interface: ge-1/2/0.1073741824
Interface type: Dynamic
Dynamic Profile Name: svlan-prof
State: Active
Stacked VLAN Id: 0x8100.101
VLAN Id: 0x8100.100
Login Time: 2009-03-27 11:57:19 PDT

show subscribers stacked-vlan-id vlan-id detail (Combined user@host> show subscribers stacked-vlan-id 101 vlan-id 100 detail
Output) Type: VLAN
Interface: ge-1/2/0.1073741824
Interface type: Dynamic
Dynamic Profile Name: svlan-prof
State: Active
Stacked VLAN Id: 0x8100.101
VLAN Id: 0x8100.100
Login Time: 2009-03-27 11:57:19 PDT

show subscribers stacked-vlan-id vlan-id interface detail user@host> show subscribers stacked-vlan-id 101 vlan-id 100 interface ge-1/2/0.* detail
(Combined Output for a Specific Interface) Type: VLAN
Interface: ge-1/2/0.1073741824
Interface type: Dynamic
Dynamic Profile Name: svlan-prof
State: Active
Stacked VLAN Id: 0x8100.101
VLAN Id: 0x8100.100
Login Time: 2009-03-27 11:57:19 PDT

show subscribers client-type dhcp detail user@host> show subscribers client-type dhcp detail
client-type dhcp detail Type: DHCP
IP Address: 100.20.9.7
IP Netmask: 255.255.0.0
Logical System: default
Routing Instance: default
Interface: demux0.1073744127
Interface type: Dynamic
Dynamic Profile Name: dhcp-demux-prof
MAC Address: 00:10:95:00:00:98
State: Active
Radius Accounting ID: jnpr :2304
Login Time: 2009-08-25 14:43:52 PDT

Type: DHCP
IP Address: 100.20.10.7
IP Netmask: 255.255.0.0
Logical System: default
Routing Instance: default
Interface: demux0.1073744383
Interface type: Dynamic
Dynamic Profile Name: dhcp-demux-prof
MAC Address: 00:10:94:00:01:f3
State: Active
Radius Accounting ID: jnpr :2560
Login Time: 2009-08-25 14:43:56 PDT
```

```

show subscribers extensive user@host> show subscribers extensive
                             Type: DHCP
                             IPv6 Prefix: 2001::40:0:0:0/74
                             IPv6 Prefix Length: 64
                             Logical System: default
                             Routing Instance: default
                             Interface: demux0.1073741825
                             Interface type: Dynamic
                             Dynamic Profile Name: dhcp-demux-prof
                             State: Active
                             Radius Accounting ID: jnpr :2
                             Agent Circuit ID: abc
                             Remote Circuit ID: xyz
                             Login Time: 2010-03-31 14:27:19 PDT
                             Service Sessions: 1
                             IPv6 Input Filter Name: demux0-inet6-in
                             Session ID: 213
                             Service Session Name: service-profile
                             IPv6 Input Filter Name: dfwd1-demux.1073741825-in

```

```

show subscribers summary user@host> show subscribers summary

```

```

Subscribers by State
Init          3
Configured    2
Active       183
Terminating   2
Terminated    1

TOTAL        191

Subscribers by Client Type
DHCP         107
PPP          76
VLAN          8

TOTAL        191

```

```

show subscribers summary all user@host> show subscribers summary all

```

```

Subscribers by State
Init          3
Configured    2
Active       183
Terminating   2
Terminated    1

TOTAL        191

Subscribers by Client Type
DHCP         107
PPP          76
VLAN          8

TOTAL        191

Subscribers by LS:RI
default:default 1
default:ri1     28
default:ri2     16
ls1:default     22

```

```
ls1:riA      38
ls1:riB      44
logsysX:routinstY  42
```

```
TOTAL      191
```

**show subscribers terse**

```
user@host> show subscribers summary terse
```

Interface	IP Address/VLAN ID	User Name	LS:RI
ge-1/3/0.1073741824	100		default:default
demux0.1073741824	100.0.0.10	WHOLESALE-CLIENT	default:default
demux0.1073741825	101.0.0.3	RETAILER1-CLIENT	test1:retailer1
demux0.1073741826	102.0.0.3	RETAILER2-CLIENT	test1:retailer2

## 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>	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 System Basics Configuration Guide</i> .  In Junos OS release 11.1 and later, alarms for fans also show the slot number of the fans in the CLI output.
<b>Required Privilege Level</b>	admin
<b>List of Sample Output</b>	show system alarms on page 839 show system alarms (Fan Tray) on page 839 show system alarms (QFX Series) on page 839

## Sample Output

<b>show system alarms</b>	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
<b>show system alarms (Fan Tray)</b>	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
<b>show system alarms (QFX Series)</b>	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 audit

---

<b>Syntax</b>	show system audit <root-only>
<b>Syntax (EX Series)</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 <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>	<p>none—Display the state and checksum values for all file systems.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display file system MD5 hash and permissions information for all of the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display file system MD5 hash and permissions information for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display file system MD5 hash and permissions information for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 and the QFX Series only) (Optional) Display file system MD5 hash and permissions information on all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(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 (or line-card chassis) 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 T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <b><i>number</i></b> with a value from 0 through 3.</p>



**local**—(EX4200 and the QFX Series only) (Optional) Display file system MD5 hash and permissions information on the local Virtual Chassis member.

**member *member-id***—(EX4200 and the QFX Series only) (Optional) Display file system MD5 hash and permissions information on the specified member of the Virtual Chassis configuration. Replace *member-id* with a value from 0 through 9.

**root-only**—(Optional) Check only the root (/) file system.

**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 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 a TX Matrix Plus router) master Routing Engines connected to it. If you issue the 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** admin

**List of Sample Output** **show system audit root-only** on page 841  
**show system audit lcc (TX Matrix Router)** on page 842  
**show system audit lcc (TX Matrix Plus Router)** on page 844  
**show system audit root-only (QFX Series)** on page 845

## 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/ed
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/ed
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 user@switch> show system audit root-only
root-only (QFX Series)
#          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=93d722493ed38477338a1405d7dcbba0
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 autoinstallation status

<b>Syntax</b>	show system autoinstallation status
<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>	(J Series routers and EX Series switches only) Display autoinstallation status information.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show system autoinstallation status on page 847
<b>Output Fields</b>	Table 136 on page 847 describes the output fields for the <b>show system autoinstallation status</b> command. Output fields are listed in the approximate order in which they appear.

Table 136: show system autoinstallation status Output Fields

Field Name	Field Description
<b>Autoinstallation status</b>	<p>Display autoinstallation status information:</p> <ul style="list-style-type: none"> <li>• <b>Last committed file</b>—File last committed for autoinstallation configuration.</li> <li>• <b>Configuration server of last committed file</b>—IP address or URL of server configured to retrieve configuration information for the last committed configuration file.</li> <li>• <b>Interface</b>—Interface configured for autoinstallation. <ul style="list-style-type: none"> <li>• <b>Name</b>—Name of interface.</li> <li>• <b>State</b>—Interface state.</li> </ul> </li> <li>• <b>Address acquisition</b>—Display IP address acquired and protocol used for acquisition upon bootup. <ul style="list-style-type: none"> <li>• <b>Protocol</b>—Protocol used for acquisition: BOOTP/DHCP or RARP.</li> <li>• <b>Acquired address</b>—IP address acquired from the DHCPserver.</li> </ul> </li> </ul>

## Sample Output

```

show system autoinstallation status user@host> show system autoinstallation status
Autoinstallation status:
Master state: Active
Last committed file: None
Configuration server of last committed file: 0.0.0.0
Interface:
  Name: fe-0/0/1
  State: None
Address acquisition:
  Protocol: DHCP Client
  Acquired address: None
  Protocol: RARP Client
  Acquired address: None

```

## show system boot-messages

---

<b>Syntax</b>	show system boot-messages
<b>Syntax (EX Series Switch)</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 (QFX Series)</b>	show system boot-messages
<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>	none—Display all boot time messages.  all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display boot time messages for all of the chassis.  all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display boot time messages for all T640 routers (or line-card chassis) connected to a TX Matrix router. On a TX Matrix Plus router, display boot time messages for all T1600 routers (or line-card chassis) connected to a TX Matrix Plus router.  all-members—(EX4200 switches only) (Optional) Display boot time messages on all members of the Virtual Chassis configuration.  lcc <i>number</i> —(TX Matrix 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 T1600 router connected to a TX Matrix Plus router. Replace <b><i>number</i></b> with a value from <b>0</b> through <b>3</b> .  local—(EX4200 switches only) (Optional) Display boot time messages on the local Virtual Chassis member.  member <i>member-id</i> —(EX4200 switches only) (Optional) Display boot time messages on the specified member of the Virtual Chassis configuration. Replace <b><i>member-id</i></b> with a value from 0 through 9.



**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 (or switch-fabric chassis). Replace *number* with 0.

**Additional Information** By default, when you issue the **show system boot-messages** 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) master Routing Engines 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) backup Routing Engines or T1600 (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 boot-messages (TX Matrix Router) on page 849**  
**show system boot-messages lcc (TX Matrix Router) on page 850**  
**show system boot-messages (TX Matrix Plus Router) on page 851**  
**show system boot-messages (QFX Series) on page 852**

## Sample Output

```

show system boot-messages (TX Matrix Router) user@host> show system boot-messages
Copyright (c) 1992-1998 FreeBSD Inc.
Copyright (c) 1996-2000 Juniper Networks, Inc.
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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Copyright (c) 1992-2001 The FreeBSD Project.
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The Regents of the University of California. All rights reserved.
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,WE,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 pci0
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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Copyright (c) 1979, 1980, 1983, 1986, 1988, 1989, 1991, 1992, 1993, 1994
The Regents of the University of California. All rights reserved.
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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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
...

```

```

user@switch> show system boot-messages
boot-messages (QFX Series)
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@svl-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@svl-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
me4: Ethernet address 00:1d:b5:f7:68:40
Enter qfx control ethernet probe addr:0xc5eeeb40
gmac5: <XLR GMAC GE Ethernet> on pic_lbus0
me5: Ethernet address 00:1d:b5:f7:68:41
Enter qfx control ethernet probe addr:0xc5eeea80
gmac6: <XLR GMAC GE Ethernet> on pic_lbus0
me6: 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 (QFX Series)</b>	show system buffers
<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>	none—Show all buffer statistics.  all-members—(EX4200 switches only) (Optional) Show buffer statistics for on all members of the Virtual Chassis configuration.  all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, show buffer statistics for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, show buffer statistics for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.  all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Show buffer statistics for all of the chassis.  lcc <i>number</i> —(TX Matrix 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 T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <b><i>number</i></b> with a value from <b>0</b> through <b>3</b> .  local—(EX4200 switches only) (Optional) Show buffer statistics for the local Virtual Chassis member.

`member member-id`—(EX4200 switches only) (Optional) Show buffer statistics for the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value from 0 through 9.

`sfc`—(TX Matrix Plus routers only) (Optional) Show buffer statistics for the TX Matrix Plus router (or switch-fabric chassis). Replace ***number*** with 0.

**Additional Information** By default, when you issue the **show system buffers** 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) master Routing Engines 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 the TX Matrix router) backup Routing Engines or T1600 (in a routing matrix based on the TX Matrix Plus router) backup Routing Engines that are connected to it.

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

**List of Sample Output** **show system buffers** on page 856  
**show system buffers scc** (TX Matrix Router) on page 857  
**show system buffers sfc** (TX Matrix Plus Router) on page 857  
**show system buffers all-chassis** (TX Matrix Plus Router) on page 857  
**show system buffers** (QFX Series) on page 858

**Output Fields** Table 137 on page 856 describes the output fields for the **show system buffers** command. Output fields are listed in the approximate order in which they appear.

Table 137: 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 mbuf 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
                        853 mbufs in use:
                        2 mbufs allocated to packet headers
                        37 mbufs allocated to protocol control blocks
                        28 mbufs allocated to socket names and addresses
                        2 mbufs allocated to socket send data
                        400 mbufs allocated to pfe refill data
                        384 mbufs allocated to fxp data
                        784/944 mbuf clusters in use
                        1994 Kbytes allocated to network (83% in use)
                        0 requests for memory denied

```



```

0 requests for memory delayed
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 sfbufs in use (current/peak/max)
0 requests for sfbufs denied
0 requests for sfbufs 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 sfbufs in use (current/peak/max)
0 requests for sfbufs denied
0 requests for sfbufs 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**  
(QFX Series)

```

user@switch> show system buffers
6/1794/1800 mbufs in use (current/cache/total)
5/917/922/30000 mbuf clusters in use (current/cache/total/max)
0/640 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)
11K/2282K/2294K 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)
0/17/6656 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

## 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 pending commit operation (if any) and the commit history.
<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>clear system commit on page 700</li> </ul>
<b>List of Sample Output</b>	show system commit on page 861 show system commit (At a Particular Time) on page 861 show system commit (At the Next Reboot) on page 861 show system commit (Rollback Pending) on page 861 show system commit (QFX Series) on page 861
<b>Output Fields</b>	Table 138 on page 860 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 138: show system commit Output Fields

Field Name	Field Description
<b>Commit history</b>	Displays the last 50 commit operations listed, most recent to first. The identifier <b>rescue</b> designates a configuration created for recovery using the <b>request system configuration rescue save</b> command.
<b>Timestamp</b>	Date and time of the commit operation.
<b>Username</b>	User who executed the commit operation.
<b>Commit method</b>	Method used to execute the commit operation: <ul style="list-style-type: none"> <li><b>cli</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>—A method other than those identified was used to perform the commit operation.</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 user@host> show system commit
(At a Particular Time) commit requested by root via cli at Tue May 7 15:59:00 2002

show system commit user@host> show system commit
(At the Next Reboot) commit requested by root via cli at reboot

show system commit user@host> show system commit
(Rollback Pending) 0 2005-01-05 15:00:37 PST by root via cli commit confirmed, rollback in 3mins

show system commit user@switch> show system commit
(QFX Series) 0 2011-11-25 19:17:49 PST by root via cli
```

## show system configuration archival

---

<b>Syntax</b>	show system configuration archival
<b>Release Information</b>	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>	Display directory and number of files queued for archival transfer.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	show system configuration archival on page 862

### 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.
<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 862</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">show system configuration rescue on page 863</a>

### Sample Output

```

user@host> 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 connections

<b>Syntax</b>	<pre>show system connections &lt;extensive&gt; &lt;all-chassis   all-lcc   lcc <i>number</i>   scc&gt; &lt;inet   inet6&gt; &lt;show-routing-instances&gt;</pre>
<b>Syntax (EX Series)</b>	<pre>show system connections &lt;extensive&gt; &lt;all-members&gt; &lt;inet   inet6&gt; &lt;local&gt; &lt;member <i>member-id</i>&gt; &lt;show-routing-instances&gt;</pre>
<b>Syntax (TX Matrix Router)</b>	<pre>show system connections &lt;extensive&gt; &lt;all-chassis   all-lcc   lcc <i>number</i>   scc&gt; &lt;inet   inet6&gt; &lt;show-routing-instances&gt;</pre>
<b>Syntax (TX Matrix Plus Router)</b>	<pre>show system connections &lt;extensive&gt; &lt;all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i>&gt; &lt;inet   inet6&gt; &lt;show-routing-instances&gt;</pre>
<b>Syntax (QFX Series)</b>	<pre>show system connections &lt;extensive&gt; &lt;inet&gt; &lt;show-routing-instances&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><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>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.</p>
<b>Options</b>	<p>none—Display information about all active IP sockets on the Routing Engine.</p> <p>extensive—(Optional) Display exhaustive system process information, which, for TCP connections, includes the TCP control block. This option is useful for debugging TCP connections.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system connection activity for all the routers in the chassis.</p>

**all-lcc**—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system connection activity for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system connection activity for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router

**all-members**—(EX4200 switches only) (Optional) Display system connection activity for all members of the Virtual Chassis configuration.

**inet | inet6**—(Optional) Display IPv4 connections or IPv6 connections, respectively.

**lcc *number***—(TX Matrix 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 T1600 router that is connected to the TX Matrix Plus router. Replace ***number*** with a value from 0 through 3.

**local**—(EX4200 switches only) (Optional) Display system connection activity for the local Virtual Chassis member.

**member *member-id***—(EX4200 switches only) (Optional) Display system connection activity 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 connection activity for the TX Matrix router (or switch-card chassis).

**sfc**—(TX Matrix Plus routers only) (Optional) Display system connection activity for the TX Matrix Plus router (or switch-fabric chassis).

**show-routing-instances**—(Optional) Display routing instances.

**Additional Information** By default, when you issue the **show system connections** 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) master Routing Engines 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 the TX Matrix Plus router) backup Routing Engines that are connected to it.

**Required Privilege Level** view

**List of Sample Output**

- show system connections** on page 867
- show system connections extensive** on page 868
- show system connections lcc (TX Matrix Router)** on page 868
- show system connections show-routing-instances** on page 869
- show system connections (TX Matrix Plus Router)** on page 870
- show system connections sfc (TX Matrix Plus Router)** on page 873
- show system connections show-routing-instances (TX Matrix Plus Router)** on page 875

**show system connections (QFX Series) on page 880**

**Output Fields** Table 139 on page 867 describes the output fields for the **show system connections** command. Output fields are listed in the approximate order in which they appear.

**Table 139: 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.
<b>Routing Instance</b> (Displayed only when the <b>show-routing-instance</b> option is used.)	Routing instances associated with active IP sockets on the Routing Engine.
<b>(state)</b>	For TCP, the protocol state of the socket.

**Sample Output**

```

user@host> show system connections
Active Internet connections (including servers)
Proto Recv-Q Send-Q Local Address          Foreign Address         (state)
tcp      0      2 192.168.4.16.513       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)
tcp      0      2 192.168.4.16.513      208.197.169.254.894    ESTABLISHED
      iss: 3972677059      sndup: 3972693435      sndcc: 10
      snduna: 3972693435      sndnxt: 3972693437      sndwnd: 17376
      sndmax: 3972693437      sndcwnd: 65535      sndssthresh: 1073725440
      irs: 484187869      rcvup: 484188060      rcvcc: 98357
      rcvnxt: 484188070      rcvadv: 484205446      rcvwnd: 17376
      rtt: 1      srtt: 7      rttv: 5
      rxtcur: 120      rxtshift: 0      rtseq: 1103707591
      rttmin: 2      duration: 5011      mss: 1448
      flags: REQ_SCALE RCVD_SCALE REQ_TSTMP RCVD_TSTMP RCVD_CC [0x41e0]
tcp      0      0 192.168.4.16.513      208.197.169.195.945    ESTABLISHED
      iss: 1057609890      sndup: 1057790796      sndcc: 2
      snduna: 1057790810      sndnxt: 1057790810      sndwnd: 17376
      sndmax: 1057790810      sndcwnd: 39096      sndssthresh: 1073725440
      irs: 3551947312      rcvup: 3551947422      rcvcc: 0
      rcvnxt: 3551947422      rcvadv: 3551964798      rcvwnd: 17376
      rtt: 0      srtt: 17      rttv: 11
      rxtcur: 300      rxtshift: 0      rtseq: 0
      rttmin: 2      duration: 125814      mss: 1448
      flags: REQ_SCALE RCVD_SCALE REQ_TSTMP RCVD_TSTMP [0x1e0]
udp0      0192.168.4.16.1634208.197.169.249.2049
udp0      0192.168.4.16.1627208.197.169.254.2049
udp0      0192.168.4.16.1371208.197.169.195.2049
udp 0      0*. * *. *
udp0      0*.9999*. *
udp 0      0*.161*. *
udp0      0192.168.4.16.1039192.168.4.16.1023
udp0      0192.168.4.16.1038192.168.4.16.1023
udp0      0192.168.4.16.1037192.168.4.16.1023
udp0      0192.168.4.16.1036192.168.4.16.1023
udp0      0*.1022*. *
udp 0      0*.1023 *. *
udp0      0 *.111*. *
udp0      0*. **.*

```

# **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
Active Internet connections (including servers) (including routing-instances)
show-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             *.*              default
                        LISTEN

```

**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
                        ESTABLISHED
tcp4      0      0 *.32012
                        LISTEN
tcp4      0      0 *.33007
                        LISTEN
tcp4      0      0 *.666
                        LISTEN
tcp4      0      0 162.0.0.4.6161
                        ESTABLISHED
tcp4      0      0 *.33005
                        LISTEN
tcp4      0      0 162.0.0.4.9000
                        ESTABLISHED
tcp4      0      0 162.0.0.4.51611
                        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 LISTEN      *.
udp4      0      0 10.255.178.11.123 LISTEN      *.
udp4      0      0 *.123     LISTEN      *.
udp46     0      0 *.514     LISTEN      *.
udp4      0      0 *.514     LISTEN      *.
udp46     0      0 *.62027   LISTEN      *.
udp4      0      0 *.59363   LISTEN      *.
udp4      0      0 *.31342   LISTEN      *.
udp46     0      0 *.161     LISTEN      *.
udp4      0      0 *.161     LISTEN      *.
udp4      0      0 *.31340   LISTEN      *.
udp4      0      0 *.31340   LISTEN      *.
udp46     0      0 *.49152   LISTEN      *.
udp46     0      0 *.4784    LISTEN      *.
udp46     0      0 *.3784    LISTEN      *.
udp4      0      0 *.49152   LISTEN      *.
udp4      0      0 *.4784    LISTEN      *.
udp4      0      0 *.3784    LISTEN      *.
udp4      0      0 *.6333    LISTEN      *.
ip4       0      0 *.        LISTEN      *.
ip4       0      0 *.        LISTEN      *.

```

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        ESTABLISHED  *.
172.24.26.227.50399
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      *.

```

```

                                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          (state)
tcp4      0      0 *.6156                  *.*                      LISTEN
      __juniper_private1__
tcp4      0      0 *.9000                  *.*                      LISTEN
      __juniper_private1__
tcp4      0      0 *.666                   *.*                      LISTEN
      __juniper_private1__
tcp4      0      2 192.168.178.11.23      172.17.28.19.3565      default ESTABLISHED
tcp4      0      0 192.168.178.11.23      172.17.28.204.62719    default ESTABLISHED
tcp4      0      0 192.168.178.11.23      192.168.69.199.51255   default ESTABLISHED
tcp4      0      0 192.168.178.11.23      172.24.26.227.42860    default ESTABLISHED
tcp4      0      0 162.0.0.4.32012        162.0.0.5.58935       ESTABLISHED
      __juniper_private1__
tcp4      0      0 *.32012                 *.*                      LISTEN
      __juniper_private1__
tcp4      0      0 *.33007                 *.*                      LISTEN
      __juniper_private2__
tcp4      0      0 162.0.0.4.6161         162.0.0.5.62026       ESTABLISHED
      __juniper_private1__
tcp4      0      0 *.33005                 *.*                      LISTEN
      __juniper_private2__
tcp4      0      0 162.0.0.4.9000         162.0.0.4.51611       FIN_WAIT_2
      __juniper_private1__
tcp4      0      0 162.0.0.4.51611        162.0.0.4.9000        CLOSE_WAIT
      __juniper_private1__
tcp4      0      0 *.6151                  *.*                      LISTEN
      __juniper_private1__
tcp4      0      0 *.6154                  *.*                      LISTEN
      __juniper_private1__
tcp4      0      0 *.6153                  *.*                      LISTEN
      __juniper_private1__
tcp4      0      0 *.31343                 *.*                      LISTEN
      __juniper_private1__
tcp4      0      0 *.31341                 *.*                      LISTEN
      __juniper_private1__
tcp4      0      0 *.6152                  *.*                      LISTEN
      __juniper_private1__
tcp4      0      0 *.32003                 *.*                      LISTEN
      __juniper_private2__
tcp4      0      0 *.33009                 *.*                      LISTEN
      __juniper_private2__
tcp4      0      0 *.3221                  *.*                      LISTEN
      default
tcp4      0      0 *.23                    *.*                      LISTEN
      default
tcp4      0      0 *.22                    *.*                      LISTEN
      default
tcp4      0      0 *.514                   *.*

```

```

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 *.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     default    *.*
udp4      0      0 *.49152    default    *.*
udp4      0      0 *.4784     default    *.*
udp4      0      0 *.3784     default    *.*
udp4      0      0 *.6333     __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	
tcp4	0	0	*.6234	__juniper_private1__	LISTEN	*.*
tcp4	0	0	*.9000	__juniper_private1__	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	*.*
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	Routing Instance	(state)	Foreign Address
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	default	LISTEN	*.*
tcp4	0	0	*.513	__juniper_private1__	LISTEN	*.*
tcp4	0	0	*.33009	__juniper_private1__	LISTEN	*.*
udp46	0	0	*.514	__juniper_private2__	LISTEN	*.*
udp4	0	0	*.514	default		*.*
udp46	0	0	*.59924	default		*.*
udp4	0	0	*.59412	default		*.*
udp4	0	0	*.31342	default		*.*
udp46	0	0	*.161	__juniper_private1__		*.*
udp4	0	0	*.161	default		*.*
udp4	0	0	*.6333	default		*.*
				__juniper_private1__		

lcc2-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			*.*
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      *.*
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_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      *.*
udp46     0      0 *.514           default      *.*
udp4      0      0 *.514           default      *.*
udp46     0      0 *.62103        default      *.*
udp4      0      0 *.59924        default      *.*
udp4      0      0 *.31342        *.*

```

```

udp46      0      0 *.161      __juniper_private1__
            default
udp4        0      0 *.161      *.
            default
udp4        0      0 *.6333     *.
            __juniper_private1__

```

```

show system connections (QFX Series)
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
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>	show system core-dumps <brief   detail> <core-filename> <core-file-info>
<b>Syntax (EX Series Switches)</b>	show system core-dumps <all-members> <brief   detail> <core-filename> <core-file-info> <local> <member <i>member-id</i> >
<b>Syntax (TX Matrix Router)</b>	show system core-dumps <all-chassis   all-lcc   lcc <i>number</i>   scc> <brief   detail> <core-filename> <core-file-info>
<b>Syntax (TX Matrix Plus Router)</b>	show system core-dumps <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> > <brief   detail> <core-filename> <core-file-info>
<b>Syntax (QFX Series)</b>	show system core-dumps <core-filename> <core-file-info>
<b>Release Information</b>	Command introduced before Junos OS Release 8.5. 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>	<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.</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>none—Display a list of all existing core-dump files.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system core files on all the T640 routers (in a routing matrix based on the TX Matrix router) or T1600 routers (in a routing matrix based on the TX Matrix Plus routing matrix) in the chassis.</p>

**<all-lcc | lcc *number*>**—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display core dump files for all T640 routers (or line-card chassis) or a specific T640 router connected to the TX Matrix router. On a TX Matrix Plus router, display logging information about all T1600 routers (or line-card chassis) or a specific T1600 router connected to the TX Matrix Plus router. Replace *number* with a value from 0 through 3.

**all-members**—(EX4200 switches only) (Optional) Display system core files on all members of the Virtual Chassis configuration.

**brief**—(Optional) View details of binary.

**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.

**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.

**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 885**  
**show system core-dumps on page 885**  
**show system core-dumps (TX Matrix Plus Router) on page 885**  
**show system core-dumps (QFX Series Switches) on page 887**

**Output Fields** Table 140 on page 884 describes the output fields for the **show system core-dumps** command. Output fields are listed in the approximate order in which they appear.

**Table 140: 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.

Table 140: show system core-dumps Output Fields (*continued*)

Field Name	Field Description
<i>File size</i>	File size in bytes.
<i>Modified</i>	Last file modification date and time.
<i>Path/filename</i>	File path where the file resides and the filename.

## Sample Output

**show system** This example shows the command output if core files exist.

**core-dumps**

```
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** This example shows the command output if core files do not exist.

**core-dumps**

```
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 user@switch> show system core-dumps
core-dumps (QFX
Series Switches)
-----
/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 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 (QFX Series)</b>	show system directory-usage <depth <i>number</i> > <path>
<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>none—Display all directory usage information.</p> <p>all-chassis—(TX Matrix 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) or T1600 routers (in a routing matrix based on a TX Matrix Plus router) in the chassis.</p> <p>all-lcc—(TX Matrix 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 T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Display directory information for all members of the Virtual Chassis configuration.</p> <p>depth <i>number</i>—(Optional) Depth of the directory to traverse. This option is useful when you want to limit the output shown for a large file system.</p>

*lcc number*—(TX Matrix 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 T1600 router that is connected to the TX Matrix Plus router. Replace *number* with a value from 0 through 3.

*local*—(EX4200 switches only) (Optional) Display directory information for the local Virtual Chassis member.

*member member-id*—(EX4200 switches only) (Optional) Display directory information for the specified member of the Virtual Chassis configuration. Replace *member-id* with a value from 0 through 9.

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

**Required Privilege Level** view

**List of Sample Output** **show system directory-usage scc (TX Matrix Router) on page 891**  
**show system directory-usage sfc (TX Matrix Plus Router) on page 891**  
**show system directory-usage (QFX Series) on page 891**

**Output Fields** Table 141 on page 890 describes the output fields for the **show system directory-usage** command. Output fields are listed in the approximate order in which they appear.

**Table 141: 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 user@host> show system directory-usage /var/tmp scc
directory-usage scc
(TX Matrix Router)
1.0K /var/tmp
2.0K /var/tmp/vi.recover
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 user@switch> show system directory-usage /var/tmp sfc 0
directory-usage sfc sfc0-re0:
(TX Matrix Plus
Router)
-----
46K /var/tmp
/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 user@switch> show system directory-usage
directory-usage (QFX 10.0K /root
Series)

```

## show system firmware

<b>Syntax</b>	show system firmware <compatibility>
<b>Release Information</b>	Command introduced in Junos OS Release 7.4. Command introduced in Junos OS Release 9.4 for EX Series switches.
<b>Description</b>	(J Series routers and EX8200 switches only) Display firmware information.
<b>Options</b>	compatibility—(Optional) Display firmware compatibility information.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show system firmware on page 892</b> <b>show system firmware compatibility on page 892</b>
<b>Output Fields</b>	Table 142 on page 892 lists the output fields for the show system firmware command. Output fields are listed in the approximate order in which they appear.

**Table 142: show system firmware Output Fields**

Field Name	Field Description
<b>Part</b>	Physical part on the router or switch affected by the firmware.
<b>Type</b>	Type of firmware on the router or switch.
<b>Tag</b>	Location of the firmware on the interface.
<b>Current version</b>	Firmware version on the affected router or switch parts.
<b>Available version</b>	New versions of firmware for upgrading or downgrading.
<b>Status</b>	Firmware condition on the router or switch.
<b>Action</b>	Whether you can upgrade or downgrade, or if no action is available ( <b>none</b> ).

## Sample Output

show system firmware	user@host> show system firmware					
	Part	Type	Tag	Current version	Available version	Status
	FPC 0	ROM Monitor	0	6.4.10		OK
	Routing Engine 0	RE BIOS	0	0		OK
show system firmware compatibility	user@host> show system firmware compatibility					
	Part	Type	Tag	Current version	Available version	Action

FPC 0	ROM Monitor 0	0	6.4.10	None
Routing Engine 0	RE BIOS	0	0	None

## show system license

<b>Syntax</b>	show system license <installed   keys   usage>
<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 licenses and information about how they are used.
<b>Options</b>	<p>none—Display all license information.</p> <p>installed—(Optional) Display installed licenses only.</p> <p>keys—(Optional) Display a list of license keys. Use this information to verify that each expected license key is present.</p> <p>usage—(Optional) Display the state of licensed features.</p>
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<p>show system license on page 895</p> <p>show system license installed on page 895</p> <p>show system license keys on page 896</p> <p>show system license usage on page 896</p>
<b>Output Fields</b>	Table 143 on page 894 lists the output fields for the <b>show system license</b> command. Output fields are listed in the approximate order in which they appear.

**Table 143: show system license Output Fields**

Field Name	Field Description
<b>Feature name</b>	Name assigned to the configured feature. You use this information to verify that all the features for which you installed licenses are present.
<b>Licenses used</b>	<p>Number of licenses used by a router or switch. You use this information to verify that the number of licenses used matches the number configured. If a licensed feature is configured, the feature is considered used.</p> <p><b>NOTE:</b> In Junos OS Release 10.1 and later, the <b>Licenses used</b> column displays the actual usage count based on the number of active sessions or connections as reported by the corresponding feature daemons. This is applicable for scalable license-based features such as Subscriber Access (<b>scale-subscriber</b>), L2TP (<b>scale-l2tp</b>), Mobile IP (<b>scale-mobile-ip</b>), and so on.</p>

Table 143: show system license Output Fields (*continued*)

Field Name	Field Description
Licenses installed	<p>Information about the installed license key:</p> <ul style="list-style-type: none"> <li>• <b>License identifier</b>—Identifier associated with a license key.</li> <li>• <b>State</b>—State of the license key:<b>valid</b> or <b>invalid</b>. An <b>invalid</b> state indicates that the key was entered incorrectly or is not valid for the specific device.</li> <li>• <b>License version</b>—Version of a license. The version indicates how the license is validated, the type of signature, and the signer of the license key.</li> <li>• <b>Valid for device</b>—Device that can use a license key.</li> <li>• <b>Group defined</b>—Group membership of a device.</li> <li>• <b>Features</b>—Feature associated with a license, such as data link switching (DLSw).</li> </ul>
Licenses needed	Number of licenses required for features being used but not yet properly licensed.
Expiry	Amount of time left within the grace period before a license is required for a feature being used.

## Sample Output

```

show system license  user@host> show system license

License usage:

```

Feature name	Licenses used	Licenses installed	Licenses needed	Expiry
subscriber-accounting	2	2	0	permanent
subscriber-authentication	1	2	0	permanent
subscriber-address-assignment	2	2	0	permanent
subscriber-vlan	2	2	0	permanent
subscriber-ip	0	2	0	permanent
scale-subscriber	2	3	0	permanent
scale-l2tp	4	5	0	permanent
scale-mobile-ip	1	2	0	permanent

```

Licenses installed:
License identifier: XXXXXXXXXX
License version: 2
Features:
subscriber-accounting - Per Subscriber Radius Accounting
permanent
subscriber-authentication - Per Subscriber Radius Authentication
permanent
subscriber-address-assignment - Radius/SRC Address Pool Assignment
permanent
subscriber-vlan - Dynamic Auto-sensed Vlan
permanent
subscriber-ip - Dynamic and Static IP
permanent

show system license installed  user@host> show system license installed
License identifier: XXXXXXXXXX
License version: 2
Features:
subscriber-accounting - Per Subscriber Radius Accounting
permanent
subscriber-authentication - Per Subscriber Radius Authentication

```

```

    permanent
subscriber-address-assignment - Radius/SRC Address Pool Assignment
    permanent
subscriber-vlan - Dynamic Auto-sensed Vlan
    permanent
subscriber-ip - Dynamic and Static IP
    permanent

```

```

show system license keys user@host> show system license keys
XXXXXXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX
XXXXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX
XXXXXXXX XXXXXX XXX

```

```

show system license usage user@host> show system license usage
License usage:

```

Feature name	Licenses used	Licenses installed	Licenses needed	Expiry
subscriber-accounting	2	2	0	permanent
subscriber-authentication	1	2	0	permanent
subscriber-address-assignment	2	2	0	permanent
subscriber-vlan	2	2	0	permanent
subscriber-ip	0	2	0	permanent
scale-subscriber	2	3	0	permanent
scale-l2tp	4	5	0	permanent
scale-mobile-ip	1	2	0	permanent

t



## show system name-resolution

<b>Syntax</b>	show system name-resolution
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	Display hostname-to-IP-address mappings.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>Output Fields</b>	Table 144 on page 897 lists the output fields for the <b>show system name-resolution</b> command. Output fields are listed in the approximate order in which they appear.

Table 144: show system name-resolution Output Fields

Field Name	Field Description
Last update	Date and time when the hostname-to-IP address mapping were last resolved.
Refresh interval	Interval for refreshing the cache with the updated hostname-to-IP address mappings.
Addresses	Resolved IP addresses based on the hostname-to-IP address mappings.
Error	Error message displayed if there is a DNS hostname lookup failure.
Last change	Timestamp for the last change in the hostname-to-IP address mappings.

## show system name-resolution

```

user@host> show system name-resolution

Hostname to IP-address mappings:
-----
Last update: Mon Sep 29 18:42:21 2008
Refresh interval: 600 secs
Host: ntp1
  Addresses:
    3.3.3.11
  Last change: Mon Sep 29 18:42:20 2008
Host: radauth1
  Error: Host name lookup failure
Last change: Mon Sep 29 18:42:20 2008
Host: radacct1
  Error: Host name lookup failure
Host: snmp1
  Addresses:
    4.4.4.1
    4.4.4.2
  Last change: Mon Sep 29 18:45:20 2008
Host: sys1
  Addresses:

```

192.168.68.69  
Last change: Mon Sep 29 18:42:21 2008

## 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 Switch)</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 (TX Matrix Router)</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>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;providers&gt; &lt;resource-limits&gt; &lt;wide&gt;</pre>
<b>Release Information</b>	<p>Command introduced before Junos OS 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 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>none—Display standard information about system processes.</p> <p>all-chassis—(TX Matrix 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 routers (in a routing matrix based on the TX Matrix Plus router) in the chassis.</p>

**all-lcc**—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display standard system process information for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display standard system process information for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.

**all-members**—(EX4200 switches only) (Optional) Display standard system process information for all members of the Virtual Chassis configuration.

**brief | detail | extensive | summary**—(Optional) Display the specified level of detail.

**health** (*pid process-identifier* | *process-name process-name*)—(Optional) Display process health information.

**lcc number**—(TX Matrix 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 T1600 router that is connected to the TX Matrix Plus router. Replace **number** with a value from 0 through 3.

**local**—(EX4200 switches only) (Optional) Display standard system process information for the local Virtual Chassis member.

**member member-id**—(EX4200 switches only) (Optional) Display standard system process information for the specified member of the Virtual Chassis configuration. Replace **member-id** with a value from 0 through 9.

**providers**—(Optional) Display provider processes.

**resource-limits** (**brief | detail**) *process-name*—(Optional) Display process resource limits.

**scc**—(TX Matrix routers only) (Optional) Display standard system process information for the TX Matrix router (or switch-card chassis).

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

**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 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**

view

**List of Sample Output** [show system processes on page 903](#)

**show system processes brief** on page 903  
**show system processes detail** on page 903  
**show system processes extensive** on page 904  
**show system processes lcc wide (TX Matrix Routing Matrix)** on page 905  
**show system processes summary** on page 905  
**show system processes (TX Matrix Plus Router)** on page 906  
**show system processes sfc (TX Matrix Plus Router)** on page 913  
**show system processes lcc wide (TX Matrix Plus Routing Matrix)** on page 915  
**show system processes (QFX Series)** on page 917

**Output Fields** Table 145 on page 901 describes the output fields for the **show system processes** command. Output fields are listed in the approximate order in which they appear.

**Table 145: show system processes Output Fields**

Field Name	Field Description	Level of Output
<b>last PID</b>	Last process identifier assigned to the process.	<b>brief extensive summary</b>
<b>load averages</b>	Three load averages followed by the current time.	<b>brief extensive summary</b>
<b>processes</b>	Number of existing processes and the number of processes in each state ( <b>sleeping, running, starting, zombies, and stopped</b> ).	<b>brief extensive summary</b>
<b>Mem</b>	Information about physical and virtual memory allocation.	<b>brief extensive summary</b>
<b>Swap</b>	Information about physical and virtual memory allocation.	<b>brief extensive summary</b>
<b>PID</b>	Process identifier.	<b>detail extensive summary</b>
<b>TT</b>	Control terminal name.	<b>none detail</b>

Table 145: 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 145: 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

### 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/tnetd -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 (vmdaemon
 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 user@host> show system processes extensive
processes extensive last pid: 544; load averages: 0.00, 0.00, 0.00 18:30:33
37 processes: 1 running, 36 sleeping

```

Mem: 25M Active, 3968K 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
544	root	30	0	604K	768K	RUN	0:00	0.00%	0.00%	top
3	root	28	0	0K	12K	psleep	0:00	0.00%	0.00%	vmdaemon
4	root	28	0	0K	12K	update	0:03	0.00%	0.00%	update
528	aviva	18	0	660K	948K	pause	0:00	0.00%	0.00%	tcsh
204	root	18	0	300K	544K	pause	0:00	0.00%	0.00%	csh
131	root	18	0	332K	532K	pause	0:00	0.00%	0.00%	cron
186	root	18	0	196K	68K	pause	0:00	0.00%	0.00%	watchdog
27	root	10	0	512M	16288K	mfsidl	0:00	0.00%	0.00%	mount_mfs
1	root	10	0	620K	344K	wait	0:00	0.00%	0.00%	init
304	root	3	0	884K	900K	ttyin	0:00	0.00%	0.00%	bash
200	root	3	0	180K	540K	ttyin	0:00	0.00%	0.00%	getty
203	root	3	0	180K	540K	ttyin	0:00	0.00%	0.00%	getty
202	root	3	0	180K	540K	ttyin	0:00	0.00%	0.00%	getty
201	root	3	0	180K	540K	ttyin	0:00	0.00%	0.00%	getty
194	root	2	0	2248K	1640K	select	0:11	0.00%	0.00%	rpdp
205	root	2	0	964K	800K	select	0:12	0.00%	0.00%	tnp.chassisd
189	root	2	-12	352K	740K	select	0:03	0.00%	0.00%	xntpd
114	root	2	0	296K	612K	select	0:00	0.00%	0.00%	amd
188	root	2	0	780K	600K	select	0:00	0.00%	0.00%	dcd
527	root	2	0	176K	580K	select	0:00	0.00%	0.00%	rlogind
195	root	2	0	212K	552K	select	0:00	0.00%	0.00%	inetd
187	root	2	0	192K	532K	select	0:00	0.00%	0.00%	tnetd
83	root	2	0	188K	520K	select	0:00	0.00%	0.00%	syslogd
538	root	2	0	1324K	516K	select	0:00	0.00%	0.00%	mgd
99	daemon	2	0	176K	492K	select	0:00	0.00%	0.00%	portmap
163	root	2	0	572K	420K	select	0:00	0.00%	0.00%	nsrexecd



```

192 root      2   0   560K   400K select   0:10  0.00%  0.00% snmpd
191 root      2   0  1284K   376K select   0:00  0.00%  0.00% mgd
537 aviva     2   0   636K   364K select   0:00  0.00%  0.00% cli
193 root      2   0   312K   204K select   0:07  0.00%  0.00% mib2d
  5 root      2   0      0K    12K pfesel   0:00  0.00%  0.00% if_pfe
  2 root     -18   0      0K    12K psleep   0:00  0.00%  0.00% pagedaemon
  0 root     -18   0      0K      0K sched    0:00  0.00%  0.00% swapper

```

**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.sntpd -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/apspd -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/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 0:00.25 /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 [vnlru]
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 [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 0:03.40 [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.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 0:00.18 /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 [vnlru]
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.snmpd -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/bfdd -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/apspd -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/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 0:00.08 /usr/sbin/lfmd -N
45741 ?? S 0:00.01 /usr/sbin/mpisoamd -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 user@host> show system processes lcc 2 wide
processes lcc wide (TX lcc2-re0:

```

**Matrix Plus  
Routing Matrix)**

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	[vnlru]
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 -jpw
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/tnetd -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>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>all-chassis—(TX Matrix 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 routers in the chassis that are connected the TX Matrix Plus router.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system queue statistics for all LCC chassis attached to the TX Matrix or TX Matrix Plus routers.</p> <p>lcc <i>number</i>—(TX Matrix 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 T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) (Optional) Display queue statistics for the TX Matrix router.</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) (Optional) Display system queue statistics for the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p>
<b>Additional Information</b>	By default, when you issue the <b>show system queues</b> 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 router) backup Routing Engines that are connected to it.
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<p>show system queues on page 922</p> <p>show system queues scc (TX Matrix Router) on page 922</p> <p>show system queues sfc (TX Matrix Router) on page 923</p>

**Output Fields** Table 146 on page 922 lists the output fields for the **show system queues** command. Output fields are listed in the approximate order in which they appear.

**Table 146: 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** user@host> show system queues scc  
**scc (TX Matrix Router)**

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	125000	0	416	0
so-1/1/0	0	125000	0	416	0
so-21/0/0	0	125000	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	125000	0	416	0
so-0/0/0	0	125000	0	416	0

so-0/1/0	0	125000	0	416	0
so-0/2/0	0	125000	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	125000	0	416	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
fr1miq	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** user@host> show system queues sfc 0  
**sfc (TX Matrix Router)** 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 Switch)</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 (QFX Series)</b>	show system 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. <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>none—Display pending reboots or halts on the active Routing Engine.</p> <p>all-chassis—(TX Matrix 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 routers in the chassis that are connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Display halt or reboot request information for all members of the Virtual Chassis configuration.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system halt or reboot request information for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display halt or reboot request information for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>both-routing-engines—(Systems with multiple Routing Engines) (Optional) Display halt or reboot request information on both Routing Engines.</p> <p>lcc <i>number</i>—(TX Matrix 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</p>

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 only) (Optional) Display halt or reboot request information for the local Virtual Chassis member.

member *member-id*—(EX4200 switches only) (Optional) Display halt or reboot request information for the specified member of the Virtual Chassis configuration. Replace *member-id* with a value from 0 through 9.

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 (or switch-fabric chassis).

**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

**List of Sample Output** **show system reboot on page 928**  
**show system reboot all-lcc (TX Matrix Router) on page 928**  
**show system reboot sfc (TX Matrix Plus Router) on page 928**  
**show system reboot (QFX Series) on page 929**

## 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    user@switch> show system reboot
(QFX Series)         No shutdown/reboot scheduled.
```

## show system rollback

<b>Syntax</b>	<code>show system rollback <i>number</i></code> <code>&lt;compare <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 the contents of a previously committed configuration, or the differences between two previously committed configurations.
<b>Options</b>	<i>number</i> —Number of a configuration to view. The output displays the configuration. The range of values is 0 through 49.  <code>compare <i>number</i></code> —(Optional) Number of another previously committed (rollback) configuration to compare to rollback <i>number</i> . The output displays the differences between the two configurations. The range of values is 0 through 49.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show system rollback compare on page 930

### 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 services dhcp binding

<b>Syntax</b>	show system services dhcp binding <detail> <address>
<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>	(J Series routers only) Display Dynamic Host Configuration Protocol (DHCP) server client binding information.
<b>Options</b>	none—Display brief information about all active client bindings.  detail—(Optional) Display detailed information about all active client bindings.  address—(Optional) Display detailed client binding information for the specified IP address only.
<b>Required Privilege Level</b>	view and system
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>clear system services dhcp binding on page 704</li> </ul>
<b>List of Sample Output</b>	show system services dhcp binding on page 933 show system services dhcp binding address on page 933 show system services dhcp binding address detail on page 933
<b>Output Fields</b>	Table 147 on page 932 describes the output fields for the <b>show system services dhcp binding</b> command. Output fields are listed in the approximate order in which they appear.

**Table 147: show system services dhcp binding Output Fields**

Field Name	Field Description	Level of Output
<b>Allocated address</b>	List of IP addresses the DHCP server has assigned to clients.	All levels
<b>MAC address</b>	Corresponding media access control (MAC) hardware address of the client.	All levels
<b>Client identifier</b>	( <b>address</b> option only) Client's unique identifier (represented by an ASCII string or hexadecimal digits). This identifier is used by the DHCP server to index its database of address bindings.	All levels
<b>Binding Type</b>	Type of binding assigned to the client. DHCP servers can assign a dynamic binding from a pool of IP addresses or a static binding to one or more specific IP addresses.	All levels
<b>Lease Expires at</b>	Time the lease expires or <b>never</b> for leases that do not expire.	All levels
<b>Lease Obtained at</b>	( <b>address</b> option only) Time the client obtained the lease from the DHCP server.	<b>detail</b>

Table 147: show system services dhcp binding Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>State</b>	Status of the binding. Bindings can be active or expired.	<b>detail</b>
<b>Pool</b>	Address pool that contains the IP address assigned to the client.	<b>detail</b>
<b>Request received on</b>	Interface on which the DHCP message exchange occurs. The IP address pool is configured based on the interface's IP address. If a relay agent is used, its IP address is also displayed.	<b>detail</b>
<b>DHCP options</b>	User-defined options created for the DHCP server. If no options have been defined, this field is blank.	<b>detail</b>

## Sample Output

```

show system services dhcp binding  user@host> show system services dhcp binding
                                     Allocated address  MAC address      Binding Type  Lease expires at
                                     192.168.1.2         00:a0:12:00:12:ab static        never
                                     192.168.1.3         00:a0:12:00:13:02 dynamic       2004-05-03 13:01:42 PDT

show system services dhcp binding address user@host> show system services dhcp binding 192.168.1.3
DHCP binding information:
Allocated address: 192.168.1.3
Mac address: 00:a0:12:00:12:ab
Client identifier
61 63 65 64 2d 30 30 3a 61 30 3a 31 32 3a 30 30aced-00:a0:12:00
3a 31 33 3a 30 32:13:02

Lease information:
  Binding Type dynamic
  Obtained at 2004-05-02 13:01:42 PDT
  Expires at 2004-05-03 13:01:42 PDT

show system services dhcp binding address detail user@host> show system services dhcp binding 192.168.1.3 detail
DHCP binding information:
Allocated address      192.168.1.3
MAC address 00:a0:12:00:12:ab
Pool                  192.168.1.0/24
Request received on fe-0/0/0, relayed by 192.168.4.254

Lease information:
  Type      DHCP
  Obtained at 2004-05-02 13:01:42 PDT
  Expires at 2004-05-03 13:01:42 PDT
State active

DHCP options:
  Name: name-server, Value: { 6.6.6.6, 6.6.6.7 }
  Name: domain-name, Value: mydomain.tld
  Code: 19, Type: flag, Value: off

```

Code: 40, Type: string, Value: domain.tld  
Code: 32, Type: ip-address, Value: 3.3.3.33

## show system services dhcp conflict

<b>Syntax</b>	show system services dhcp conflict
<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>	(J Series routers only and EX Series switches) Display Dynamic Host Configuration Protocol (DHCP) client-detected conflicts for IP addresses. When a conflict is detected, the DHCP server removes the address from the address pool.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view and system
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>clear system services dhcp conflict on page 705</li> </ul>
<b>List of Sample Output</b>	show system services dhcp conflict on page 935
<b>Output Fields</b>	Table 148 on page 935 describes the output fields for the <b>show system services dhcp conflict</b> command. Output fields are listed in the approximate order in which they appear.

**Table 148: show system services dhcp conflict Output Fields**

Field Name	Field Description
<b>Detection time</b>	Date and time the client detected the conflict.
<b>Detection method</b>	How the conflict was detected.
<b>Address</b>	IP address where the conflict occurs. The addresses in the conflicts list remain excluded from the pool until you use a <b>clear system services dhcp conflict</b> command to manually clear the list.

## Sample Output

```

user@host> show system services dhcp conflict
Detection time      Detection method  Address
2004-08-03 19:04:00 PDT  ARP              3.3.3.5
2004-08-04 04:23:12 PDT  Ping             4.4.4.8
2004-08-05 21:06:44 PDT  Client           3.3.3.10

```

## show system services dhcp global

<b>Syntax</b>	show system services dhcp global
<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>	(J Series routers and EX Series switches only) Display Dynamic Host Configuration Protocol (DHCP) global configuration options. Global options apply to all scopes and clients served by the DHCP server. Global options are overridden if specified otherwise in scope or client options. Scope options apply to specific subnets or ranges of addresses. Client options apply to specific clients.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view and system
<b>List of Sample Output</b>	show system services dhcp global on page 937
<b>Output Fields</b>	Table 149 on page 936 describes the output fields for the <b>show system services dhcp global</b> command. Output fields are listed in the approximate order in which they appear.

**Table 149: show system services dhcp global Output Fields**

Field Name	Field Description
<b>BOOTP lease length</b>	Length of lease time assigned to BOOTP clients.
<b>Default lease time</b>	Lease time assigned to clients that do not request a specific lease time.
<b>Minimum lease time</b>	Minimum time a client retains an IP address lease on the server.
<b>Maximum lease time</b>	Maximum time a client can retain an IP address lease on the server.
<b>DHCP options</b>	User-defined options created for the DHCP server. If no options have been defined, this field is blank.



## Sample Output

```
show system services  user@host> show system services dhcp global
dhcp global
Global settings:
  BOOTP lease length      infinite

DHCP lease times:
  Default lease time      1 hour
  Minimum lease time      2 hours
  Maximum lease time      infinite

DHCP options:
  Name: name-server, Value: { 6.6.6.6, 6.6.6.7 }
  Name: domain-name, Value: mydomain.tld
  Code: 19, Type: flag, Value: off
  Code: 40, Type: string, Value: domain.tld
  Code: 32, Type: ip-address, Value: 3.3.3.33
```

## show system services dhcp pool

<b>Syntax</b>	show system services dhcp pool <detail> <subnet-address>
<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>	(J Series routers and EX Series switches only) Display Dynamic Host Configuration Protocol (DHCP) server IP address pools.
<b>Options</b>	none—Display brief information about all IP address pools.  detail—(Optional) Display detailed information.  subnet-address—(Optional) Display information for the specified subnet address.
<b>Required Privilege Level</b>	view and system
<b>List of Sample Output</b>	show system services dhcp pool on page 939 show system services dhcp pool subnet-address on page 939 show system services dhcp pool subnet-address detail on page 939
<b>Output Fields</b>	Table 150 on page 938 describes the output fields for the <b>show system services dhcp pool</b> command. Output fields are listed in the approximate order in which they appear.

**Table 150: show system services dhcp pool Output Fields**

Field Name	Field Description	Level of Output
Pool name	Subnet on which the IP address pool is defined.	None specified
Low address	Lowest address in the IP address pool.	None specified
High address	Highest address in the IP address pool.	None specified
Excluded addresses	Addresses excluded from the address pool.	None specified
Subnet	( <i>subnet-address</i> option only) Subnet to which the specified address pool belongs.	None specified
Address range	( <i>subnet-address</i> option only) Range of IP addresses in the address pool.	None specified
Addresses assigned	Number of IP addresses in the pool that are assigned to DHCP clients and the total number of IP addresses in the pool.	detail
Active	Number of assigned IP addresses in the pool that are active.	detail
Excluded	Number of assigned IP addresses in the pool that are excluded.	detail
Default lease time	Lease time assigned to clients that do not request a specific lease time.	detail

Table 150: show system services dhcp pool Output Fields (*continued*)

Field Name	Field Description	Level of Output
Minimum lease time	Minimum time a client can retain an IP address lease on the server.	detail
Maximum lease time	Maximum time a client can retain an IP address lease on the server.	detail
DHCP options	User-defined options created for the DHCP server. If no options have been defined, this field is blank.	detail

### Sample Output

```

show system services dhcp pool      user@host> show system services dhcp pool
                                     Pool name      Low address   High address   Excluded addresses
                                     3.3.3.0/24    3.3.3.2       3.3.3.254     3.3.3.1

show system services dhcp pool      user@host> show system services dhcp pool 3.3.3.0/24
subnet-address                      Pool information:
                                     Subnet                3.3.3.0/24
                                     Address range         3.3.3.2 - 3.3.3.254
                                     Addresses assigned    2/253

show system services dhcp pool      user@host> show system services dhcp pool 3.3.3.0/24 detail
subnet-address detail              Pool information:
                                     Subnet                3.3.3.0/24
                                     Address range         3.3.3.2 - 3.3.3.254
                                     Addresses assigned    2/253
                                     Active: 1, Excluded: 1

                                     DHCP lease times:
                                     Default lease time    1 hour
                                     Minimum lease time    2 hours
                                     Maximum lease time    infinite

                                     DHCP options:
                                     Name: name-server, Value: { 6.6.6.6, 6.6.6.7 }
                                     Name: domain-name, Value: mydomain.tld
                                     Name: router, Value: { 3.3.3.1 }
                                     Name: server-identifier, Value: 3.3.3.1
                                     Code: 19, Type: flag, Value: off
                                     Code: 40, Type: string, Value: domain.tld
                                     Code: 32, Type: ip-address, Value: 3.3.3.333.3.3.254 3.3.3.1

```

## show system services dhcp statistics

<b>Syntax</b>	show system services dhcp statistics
<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>	(J Series routers and EX Series switches only) Display Dynamic Host Configuration Protocol (DHCP) server statistics.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view and system
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>clear system services dhcp statistics on page 706</li> </ul>
<b>List of Sample Output</b>	show system services dhcp statistics on page 941
<b>Output Fields</b>	Table 151 on page 940 describes the output fields for the <b>show system services dhcp statistics</b> command. Output fields are listed in the approximate order in which they appear.

**Table 151: show system services dhcp statistics Output Fields**

Field Name	Field Description
<b>Default lease time</b>	Lease time assigned to clients that do not request a specific lease time.
<b>Minimum lease time</b>	Minimum time a client can retain an IP address lease on the server.
<b>Maximum lease time</b>	Maximum time a client can retain an IP address lease on the server.
<b>Packets dropped</b>	Total number of packets dropped and number of packets dropped because of: <ul style="list-style-type: none"> <li>Invalid hardware address</li> <li>Invalid opcode</li> <li>Invalid server address</li> <li>No available address</li> <li>No interface match</li> <li>No routing instance match</li> <li>No valid local addresses</li> <li>Packet too short</li> <li>Read error</li> <li>Send error</li> </ul>

Table 151: show system services dhcp statistics Output Fields (*continued*)

Field Name	Field Description
<b>Messages received</b>	<p>Number of the following message types sent from DHCP clients and received by the DHCP server:</p> <ul style="list-style-type: none"> <li>• BOOTREQUEST</li> <li>• DHCPDECLINE</li> <li>• DHCPDISCOVER</li> <li>• DHCPINFORM</li> <li>• DHCPRELEASE</li> <li>• DHCPREQUEST</li> </ul>
<b>Messages sent</b>	<p>Number of the following message types sent from the DHCP server to DHCP clients:</p> <ul style="list-style-type: none"> <li>• BOOTREPLY</li> <li>• DHCPACK</li> <li>• DHCPOFFER</li> <li>• DHCPNAK</li> </ul>

## Sample Output

```

show system services dhcp statistics  user@host> show system services dhcp statistics

DHCP lease times:
  Default lease time      1 hour
  Minimum lease time      2 hours
  Maximum lease time      infinite

Packets dropped:
  Total                   0
  Bad hardware address    0
  Bad opcode               0
  Invalid server address  0
  No available addresses  0
  No interface match      0
  No routing instance match 0
  No valid local address  0
  Packet too short        0
  Read error              0
  Send error              0

Messages received:
  BOOTREQUEST            0
  DHCPDECLINE            0
  DHCPDISCOVER           0
  DHCPINFORM             0
  DHCPRELEASE            0
  DHCPREQUEST            0

Messages sent:
  BOOTREPLY              0
  DHCPACK                0
  DHCPOFFER              0
  DHCPNAK                0

```

## show system services service-deployment

<b>Syntax</b>	show system services service-deployment
<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 information about a Session and Resource Control (SRC) client.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view system
<b>List of Sample Output</b>	<b>show system services service-deployment on page 942</b>
<b>Output Fields</b>	Table 152 on page 942 lists the output fields for the <b>show system services service-deployment</b> command. Output fields are listed in the approximate order in which they appear.

**Table 152: show system services service-deployment Output Fields**

Field Name	Field Description
PDT Keepalive settings	Configured PDT Keepalive interval, in seconds.
Keepalives sent	Number of Keepalives sent.
Notifications sent	Number of notifications sent.
Last update from peer	Time at which the last update from peer was received.

### Sample Output

<b>show system services service-deployment</b>	<pre>user@host&gt; show system services service-deployment Connected to 192.4.4.4 port 10288 since 2004-05-03 11:04:34 PDT Keepalive settings: Interval 15 seconds Keepalives sent: 750 Notifications sent: 0 Last update from peer: 00:00:06 ago</pre>
------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

## show system snapshot

<b>Syntax</b>	show system snapshot
<b>Syntax (EX Series Switch)</b>	show system snapshot <all-members> <local> <member <i>member-id</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 7.6. Command introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Display information about the backup software that is located in the <code>/altroot</code> and <code>/altconfig</code> file systems. To back up software, use the <b>request system snapshot</b> command.
<b>Options</b>	<p>none—Display information about the backup software.</p> <p>all-members—(EX4200 switches only) (Optional) Display information about the backup software for all members of the Virtual Chassis configuration.</p> <p>local—(EX4200 switches only) (Optional) Display information about the backup software for the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Display information about the backup software for the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value from 0 through 9.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>request system snapshot on page 753</li> </ul>
<b>List of Sample Output</b>	show system snapshot on page 943
<b>Output Fields</b>	Table 153 on page 943 lists the output fields for the <b>show system snapshot</b> command. Output fields are listed in the approximate order in which they appear.

**Table 153: show system snapshot Output Fields**

Field Name	Field Description
Creation date	Date and time of the last snapshot on hard disk.
JUNOS version on snapshot	Junos OS release number of individual software packages.

## Sample Output

```

show system snapshot 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 software

<b>Syntax</b>	show system software <detail>
<b>Syntax (EX Series Switch)</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>
<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 the Junos OS extensions loaded on your router or switch.
<b>Options</b>	<p>none—Display standard information about all loaded Junos OS extensions.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system software information for all the T640 routers (TX Matrix Router) or all the T1600 routers (TX Matrix Plus Router) in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system software information for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system software information for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router</p> <p>all-members—(EX4200 switches only) (Optional) Display the system software running on all members of the Virtual Chassis configuration.</p> <p>backup—(J Series routers only) (Optional) Display the status of old system software packages only.</p> <p>detail—(Optional) Display detailed information about available Junos OS extensions.</p>

*lcc number*—(TX Matrix 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 T1600 router that is connected to the TX Matrix Plus router. Replace *number* with a value from 0 through 3.

*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.

*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 (or switch-fabric chassis).

**Required Privilege Level** maintenance

**List of Sample Output** [show system software on page 946](#)  
[show system software \(TX Matrix Plus Router\) on page 947](#)

**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-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]

...

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-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]

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 statistics

<b>Syntax</b>	show system statistics
<b>Syntax (EX Series Switch)</b>	show system statistics <all-members> <local> <member <i>member-id</i> >
<b>Syntax (TX Matrix Router)</b>	show system statistics <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show system statistics <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (QFX Series)</b>	show system statistics
<b>Release Information</b>	Command introduced before JUNOS 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 system-wide protocol-related statistics.
<b>Options</b>	none—Display system statistics for all the following protocols: <ul style="list-style-type: none"> <li>• <b>arp</b>—Address Resolution Protocol</li> <li>• <b>bridge</b>—IEEE 802.1 Bridging</li> <li>• <b>clns</b>—Connectionless Network Service</li> <li>• <b>esis</b>—End System-to-Intermediate System</li> <li>• <b>ethoamcfm</b>—Ethernet OAM protocol for connectivity fault management</li> <li>• <b>ethoamlfm</b>—Ethernet OAM protocol for link fault management</li> <li>• <b>icmp</b>—Internet Control Message Protocol</li> <li>• <b>icmp6</b>—Internet Control Message Protocol version 6</li> <li>• <b>igmp</b>—Internet Group Management Protocol</li> <li>• <b>ip</b>—Internet Protocol version 4</li> <li>• <b>ip6</b>—Internet Protocol version 6</li> <li>• <b>mpls</b>—Multiprotocol Label Switching</li> <li>• <b>rdp</b>—Reliable Datagram Protocol</li> <li>• <b>tcp</b>—Transmission Control Protocol</li> <li>• <b>tnp</b>—Trivial Network Protocol</li> <li>• <b>ttp</b>—TNP Tunneling Protocol</li> </ul>

- **tudp**—Trivial User Datagram Protocol
- **udp**—User Datagram Protocol
- **vpls**—Virtual Private LAN Service

**all-chassis**—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for a protocol for all the routers in the chassis.

**all-lcc**—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for a protocol for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for a protocol for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router

**all-members**—(EX4200 switches only) (Optional) Display system statistics for a protocol for all members of the Virtual Chassis configuration.

**lcc *number***—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for a protocol for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for a protocol 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 only) (Optional) Display system statistics for a protocol for the local Virtual Chassis member.

**member *member-id***—(EX4200 switches only) (Optional) Display system statistics for a protocol 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 a protocol for the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Display system statistics for a protocol for the TX Matrix Plus router (or switch-fabric chassis). Replace ***number*** with **0**.

**Additional Information** By default, when you issue the **show system statistics** 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**

view

**List of Sample Output**

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**show system statistics (EX Series Switch) on page 960**



show system statistics (TX Matrix Router) on page 969

show system statistics (QFX Series) on page 975

## Sample Output

```
show system statistics user@host> show system statistics
ip:
    3682087 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
    3664774 packets for this host
    17316 packets for unknown/unsupported protocol
    0 packets forwarded
    0 packets not forwardable
    0 redirects sent
    6528 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
    1123 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
    1123 router alert options
    0 multicast packets dropped (no iflist)
    0 packets dropped (src and int don't match)
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: 75
    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: 75
    router advertisement: 130
```

```
75 message responses generated
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
udp:
3658884 datagrams received
0 with incomplete header
0 with bad data length field
0 with bad checksum
3657342 dropped due to no socket
3657342 broadcast/multicast datagrams dropped due to no socket
0 dropped due to full socket buffers
0 not for hashed pcb
4291311496 delivered
1551 datagrams output
ipsec:
0 inbound packets processed successfully
0 inbound packets violated process security policy
0 inbound packets with no SA available
0 invalid inbound packets
0 inbound packets failed due to insufficient memory
0 inbound packets failed getting SPI
0 inbound packets failed on AH replay check
0 inbound packets failed on ESP replay check
0 inbound AH packets considered authentic
0 inbound AH packets failed on authentication
0 inbound ESP packets considered authentic
0 inbound ESP packets failed on authentication
0 outbound packets processed successfully
0 outbound packets violated process security policy
0 outbound packets with no SA available
0 invalid outbound packets
0 outbound packets failed due to insufficient memory
0 outbound packets with no route
igmp:
17186 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
arp:
44181302 datagrams received
2 ARP requests received
2028 ARP replies received
3156 resolution requests received
0 unrestricted proxy requests
0 received proxy requests
0 proxy requests not proxied
0 with bogus interface
787 with incorrect length
712 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
7611 with multicast target address
0 with my own hardware address
14241699 for an address not on the interface
0 with a broadcast source address
0 with source address duplicate to mine
29929250 which were not for me
0 packets discarded waiting for resolution
6 packets sent after waiting for resolution
17812 ARP requests sent
2 ARP replies sent
0 requests for memory denied
0 requests dropped on entry
0 requests dropped during retry

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
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

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
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
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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
ipsec6:
0 inbound packets processed successfully
0 inbound packets violated process security policy
0 inbound packets with no SA available
0 invalid inbound packets
0 inbound packets failed due to insufficient memory
0 inbound packets failed getting SPI
0 inbound packets failed on AH replay check
0 inbound packets failed on ESP replay check
0 inbound AH packets considered authentic
0 inbound AH packets failed on authentication
0 inbound ESP packets considered authentic
0 inbound ESP packets failed on authentication
0 outbound packets processed successfully
0 outbound packets violated process security policy
0 outbound packets with no SA available
0 invalid outbound packets
0 outbound packets failed due to insufficient memory
0 outbound packets with no route
c1nl:
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

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```
0 ER pdu generation failure
esis:
0 total pkts received
0 total packets consumed by protocol
0 pdus received with bad checksum
0 pdus received with bad version number
0 pdus received with bad type field
0 short pdus received
0 bogus sdl size
0 bad header length
0 unknown or unsupported protocol
0 no free memory in socket buffer
0 send packets discarded
0 sbappend failure
0 mcopy failure
0 ISO family not configured
tnp:
146776365 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
49681642 rdp packets received
337175 udp packets received
96757548 tunnel packets received
0 input packets discarded with no protocol
98397591 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
49681642 rdp packets sent
337175 udp packets sent
48378774 tunnel packets sent
0 packets sent with unknown protocol
rdp:
49681642 input packets
0 discards for bad checksum
0 discards bad sequence number
0 refused connections
2031964 acks received
0 dropped due to full socket buffers
49692 retransmits
49681642 output packets
24815968 acks sent
28 connects
0 closes
22783990 keepalives received
22783990 keepalives sent
tudp:
337175 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
337175 delivered
337175 datagrams output
ttp:
398749 packets sent
0 packets sent while unconnected
0 packets sent while interface down
0 packets sent couldn't get buffer
0 packets sent couldn't find neighbor
44696687 L2 packets received
0 unknown L3 packets received
3682087 IPv4 L3 packets received
0 MPLS L3 packets received
0 MPLS->IPv4 L3 packets received
0 IPv4->MPLS L3 packets received
0 IPv6 L3 packets received
0 ARP L3 packets received
0 CLNP L3 packets received
0 TNP L3 packets received
0 NULL L3 packets received
0 cyclotron cycle L3 packets received
0 cyclotron send L3 packets received
0 packets received while unconnected
0 packets received from unknown ifl
0 input packets couldn't get buffer
0 input packets with bad type
0 input packets with discard type
0 input packets for which rt lookup is bypassed
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
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

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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**    user@host> **show system statistics**  
     **(EX Series Switch)**    Tcp:

```

571779 packets sent
    21517 data packets (1797102 bytes)
    2 data packets retransmitted (20 bytes)
    0 resends initiated by MTU discovery
    3708 ack only packets (531 packets delayed)
    0 URG only packets
    1 window probe packets
    1 window update packets
    1093063 control packets
1132541 packets received
    20961 acks(for 1796102 bytes)
    5861 duplicate acks
    0 acks for unsent data
    19556 packets received in-sequence(232079 bytes)
    3018 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
    39 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
546519 connection requests
78 connection accepts
0 bad connection attempts
0 listen queue overflows
100 connections established (including accepts)
546596 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
546497 embryonic connections dropped
20453 segments updated rtt(of 566914 attempts)
2 retransmit timeouts
    0 connections dropped by retransmit timeout
0 persist timeouts
    0 connections dropped by persist timeout
3028 keepalive timeouts
    3027 keepalive probes sent
    1 connections dropped by keepalive
7515 correct ACK header predictions
12258 correct data packet header predictions
78 syncache entries added
    0 retransmitted
    0 dupsyn
    4 dropped

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    78 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
546544 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
udp:
    147 datagrams received
    0 with incomplete header
    0 with bad data length field
    0 with bad checksum
    9 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
    138 delivered
    0 datagrams output
ip:
    73704 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
    1133057 packets for this host
    0 packets for unknown/unsupported protocol
    40146 packets forwarded
    0 packets not forwardable
    40146 redirects sent
    1121700 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
icmp:
0 drops due to rate limit
9 calls to icmp_error
0 errors not generated because old message was icmp
Output histogram:
    295 echo reply
    9 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:
    295 echo
295 message responses generated
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
raw_if:
0 RAW packets transmitted
0 PPPOE packets transmitted
0 ISDN packets transmitted
0 DIALER packets transmitted
0 PPP packets transmitted to pppd
0 PPP packets transmitted to jppd
0 IGMPv2 packets transmitted
13 output drops due to tx error
0 MPU packets transmitted
0 PPPOE packets received
0 ISDN packets received
0 DIALER packets received

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0 PPP packets received from pppd
0 MPU packets received
0 PPP packets received from jppd
0 IGMPv2 packets received
0 Input drops due to bogus protocol
0 input drops due to no mbufs available
0 input drops due to no space in socket
0 input drops due to no socket

arp:
186413 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
186065 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

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 many 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

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

pfkey:
0 Requests sent from userland
0 Bytes sent from userland
histogram by message type:
    0 reserved
    0 dump
0 Messages with invalid length field
0 Messages with invalid version field
0 Messages with invalid message type field
0 Messages too short
0 Messages with memory allocation failure
0 Messages with duplicate extension
0 Messages with invalid extension type
0 Messages with invalid sa type
0 Messages with invalid address extension
0 Requests sent to userland
0 Bytes sent to userland
histogram by message type:
    0 reserved
    0 dump
0 Messages toward single socket

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0 Messages toward all sockets
0 Messages toward registered sockets
0 Messages with memory allocation failure
c1nl:
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
esis:
0 Total pkts received
0 Total packets consumed by protocol
0 Pdus received with bad checksum
0 Pdus received with bad version number
0 Pdus received with bad type field
0 Short pdus received
0 Pdus with bogus sdl size
0 Pdus with bad header length
0 Pdus with unknown or unsupported protocol
0 No free memory in socket buffer
0 Send packets discarded
0 Sbappend failure
0 Mcopy failure
0 ISO family not configured
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
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
tudp:
67 Datagrams received
0 Datagrams with incomplete header
0 Datagrams with bad data length field
0 Datagrams with bad checksum
0 Datagrams dropped due to no socket
0 Broadcast/multicast datagrams dropped due to no socket
0 Datagrams dropped due to full socket buffers
67 Delivered
68 Datagrams output
ttp:
0 Packets sent
0 Packets sent while unconnected
0 Packets sent while interface down
0 Packets sent couldn't get buffer
0 Packets sent couldn't find neighbor
0 L2 packets received
0 Unknown L3 packets received
0 IPv4 L3 packets received
0 MPLS L3 packets received
0 MPLS->IPv4 L3 packets received
0 IPv4->MPLS L3 packets received
0 IPv6 L3 packets received
0 ARP L3 packets received
0 CLNP L3 packets received
0 TNP L3 packets received
0 NULL L3 packets received
0 Cyclotron cycle L3 packets received
```

```

0 Cyclotron send L3 packets received
0 Packets received while unconnected
0 Packets received from unknown ifl
0 Input packets couldn't get buffer
0 Input packets with bad type
0 Input packets with discard type
0 Input packets for which rt lookup is bypassed
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
vpls:
0 Total packets received
0 Packets with size smaller than minimum
0 Packets 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 Packets dropped due to no l3 route table
0 Packets dropped due to no local ifl
0 Packets punted
0 Packets dropped due to no socket
bridge:
Input:
0 packets received
0 packets forwarded
0 packets failed to forward
0 packets dropped

```

```
0 packets with vmember lookup failures
0 packets with vlan lookup failures
0 packets with stp state lookup failures
0 packets dropped due to stp blocked/listening
0 packets dropped due to stp learning
0 packets with src MAC learning failures
0 packets with input control processing failures
Forward:
0 packets sent successfully
0 packets with send failures
0 packets forwarded to l3 interface
0 packets with l3 send failures
0 packets discarded
0 packets with l2ifl store failures
0 packets with ifl mismatch failures
0 packets with packet duplication failures
0 packets with tag lookup failures
0 packets with no route for DMAC
0 packets with no route table
0 packets with no nexthop
0 packets with dead nexthop
0 packets with eof reached error
Learning:
0 MACs learned
0 packets sent to l3 interface
0 packets with l3 send failures
0 packets hit holdq while learning
0 MAC moves
0 packets discarded
0 packets with no route for SMAC
0 packets with no nexthop
0 packets with dead nexthop
0 packets dropped due to no resolve route
0 packets with l3 ifd lookup failures
0 packets with l3 ifl lookup failures
0 packets with l3 invalid rnh
0 packets with no route for SMAC in clone learning
0 packets with no nexthop in clone learning
0 packets with dead nexthop in clone learning
0 packets dropped due to no resolve nh in clone learning
Output:
0 packets forwarded
0 packets failed to forward
0 packets with vmember lookup failures
0 packets with vlan lookup failures
0 packets with input control processing failures
Send:
0 packets sent successfully
0 packets with send failures
0 packets dropped due to interface down
0 packets with dev output failures
0 blocked ifl discards
0 packets with tag lookup failures
0 packets with stp state lookup failures
0 packets with tag insertion failures
0 packets with tag removal failures
Flood:
0 packets flooded
0 flood failures
IGMP:
0 packets sent successfully
```



```

0 packets with send failures
0 packets forwarded
0 packets failed to forward
0 packets with mpull failures
0 packets with vmember lookup failures
0 packets with vlan lookup failures
0 packets with ifl lookup failures
0 packets with tag lookup failures
Misc:
0 packets with size smaller than minimum
0 packets with double tags
0 packets with no ifl
0 packets with no family
0 packets with no route table

```

**show system statistics**  
(TX Matrix Router)

```

user@host> show system statistics
sfc0-re0:

```

-----  
Tcp:

```

361694 packets sent
    326507 data packets (103237236 bytes)
    2343 data packets retransmitted (2673324 bytes)
    0 resends initiated by MTU discovery
    33857 ack only packets (31613 packets delayed)
    0 URG only packets
    14 window probe packets
    387 window update packets
    1108 control packets
345879 packets received
    298207 acks(for 103141728 bytes)
    438 duplicate acks
    0 acks for unsent data
    204578 packets received in-sequence(13820995 bytes)
    6 completely duplicate packets(18 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
    899 window update packets
    166 packets received after close
    0 discarded for bad checksums
    0 discarded for bad header offset fields
    0 discarded because packet too short
406 connection requests
233 connection accepts
0 bad connection attempts
0 listen queue overflows
616 connections established (including accepts)
911 connections closed (including 41 drops)
    346 connections updated cached RTT on close
    346 connections updated cached RTT variance on close
    200 connections updated cached ssthresh on close
23 embryonic connections dropped
298155 segments updated rtt(of 287216 attempts)
1163 retransmit timeouts
    27 connections dropped by retransmit timeout
0 persist timeouts
    0 connections dropped by persist timeout
5 keepalive timeouts
    5 keepalive probes sent

```

```
0 connections dropped by keepalive
69922 correct ACK header predictions
34993 correct data packet header predictions
233 syncache entries added
    0 retransmitted
    0 dupsyn
    0 dropped
    233 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
23 SACK recovery episodes
68 segment retransmits in SACK recovery episodes
71542 byte retransmits in SACK recovery episodes
158 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
259 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:

```
346 packets sent
    222 data packets (22894 bytes)
    0 data packets retransmitted (0 bytes)
    0 resends initiated by MTU discovery
    80 ack only packets (12 packets delayed)
    0 URG only packets
    0 window probe packets
    5 window update packets
    42 control packets
358 packets received
    268 acks(for 22939 bytes)
    9 duplicate acks
    0 acks for unsent data
    203 packets received in-sequence(33820 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
    6 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
13 connection requests
18 connection accepts
0 bad connection attempts
0 listen queue overflows
31 connections established (including accepts)
35 connections closed (including 2 drops)
    3 connections updated cached RTT on close
    3 connections updated cached RTT variance on close
    0 connections updated cached ssthresh on close
0 embryonic connections dropped
268 segments updated rtt(of 247 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
0 correct ACK header predictions
42 correct data packet header predictions
18 syncache entries added
    0 retransmitted
    0 dupsyn
    0 dropped
    18 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
5 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:

```

348 packets sent
    223 data packets (22895 bytes)
    0 data packets retransmitted (0 bytes)
    0 resends initiated by MTU discovery
    81 ack only packets (13 packets delayed)
    0 URG only packets

```

```
    0 window probe packets
    5 window update packets
    42 control packets
360 packets received
    269 acks(for 22940 bytes)
    9 duplicate acks
    0 acks for unsent data
    203 packets received in-sequence(33820 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
    6 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
13 connection requests
18 connection accepts
0 bad connection attempts
0 listen queue overflows
31 connections established (including accepts)
36 connections closed (including 2 drops)
    3 connections updated cached RTT on close
    3 connections updated cached RTT variance on close
    0 connections updated cached ssthresh on close
0 embryonic connections dropped
269 segments updated rtt(of 248 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
0 correct ACK header predictions
43 correct data packet header predictions
18 syncache entries added
    0 retransmitted
    0 dupsyn
    0 dropped
    18 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
5 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

```

lcc2-re0:

Tcp:

```

405 packets sent
    271 data packets (23926 bytes)
    0 data packets retransmitted (0 bytes)
    0 resends initiated by MTU discovery
    86 ack only packets (13 packets delayed)
    0 URG only packets
    0 window probe packets
    5 window update packets
    46 control packets
418 packets received
    321 acks(for 23975 bytes)
    9 duplicate acks
    0 acks for unsent data
    234 packets received in-sequence(34403 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
    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
15 connection requests
19 connection accepts
0 bad connection attempts
0 listen queue overflows
34 connections established (including accepts)
39 connections closed (including 2 drops)
    4 connections updated cached RTT on close
    4 connections updated cached RTT variance on close
    0 connections updated cached ssthresh on close
0 embryonic connections dropped
321 segments updated rtt(of 299 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
0 correct ACK header predictions
48 correct data packet header predictions
19 syncache entries added
    0 retransmitted
    0 dupsyn
    0 dropped

```

```

    19 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
5 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

```

lcc3-re0:

Tcp:

```

346 packets sent
    221 data packets (22895 bytes)
    0 data packets retransmitted (0 bytes)
    0 resends initiated by MTU discovery
    81 ack only packets (13 packets delayed)
    0 URG only packets
    0 window probe packets
    5 window update packets
    42 control packets
360 packets received
    267 acks(for 22940 bytes)
    9 duplicate acks
    0 acks for unsent data
    203 packets received in-sequence(33820 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
    6 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
13 connection requests
18 connection accepts
0 bad connection attempts
0 listen queue overflows
31 connections established (including accepts)
35 connections closed (including 2 drops)

```

```

    3 connections updated cached RTT on close
    3 connections updated cached RTT variance on close
    0 connections updated cached ssthresh on close
0 embryonic connections dropped
267 segments updated rtt(of 246 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
0 correct ACK header predictions
43 correct data packet header predictions
18 syncache entries added
    0 retransmitted
    0 dupsyn
    0 dropped
    18 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
5 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**  
(QFX Series)

```

user@switch> show system statistics
Tcp:
571779 packets sent
21517 data packets (1797102 bytes)
2 data packets retransmitted (20 bytes)
0 resends initiated by MTU discovery
3708 ack only packets (531 packets delayed)
0 URG only packets
1 window probe packets
1 window update packets
1093063 control packets
1132541 packets received
20961 acks(for 1796102 bytes)
5861 duplicate acks
0 acks for unsent data
19556 packets received in-sequence(232079 bytes)

```

3018 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  
39 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  
546519 connection requests  
78 connection accepts  
0 bad connection attempts  
0 listen queue overflows  
100 connections established (including accepts)  
546596 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  
546497 embryonic connections dropped  
20453 segments updated rtt(of 566914 attempts)  
2 retransmit timeouts  
0 connections dropped by retransmit timeout  
0 persist timeouts  
0 connections dropped by persist timeout  
3028 keepalive timeouts  
3027 keepalive probes sent  
1 connections dropped by keepalive  
7515 correct ACK header predictions  
12258 correct data packet header predictions  
78 syncache entries added  
0 retransmitted  
0 dupsyn  
4 dropped  
78 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  
546544 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



```
udp:
147 datagrams received
0 with incomplete header
0 with bad data length field
0 with bad checksum
9 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
138 delivered
0 datagrams output
ip:
73704 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
1133057 packets for this host
0 packets for unknown/unsupported protocol
40146 packets forwarded
0 packets not forwardable
40146 redirects sent
1121700 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
icmp:
0 drops due to rate limit
9 calls to icmp_error
0 errors not generated because old message was icmp
Output histogram:
```

```
295 echo reply
9 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:
295 echo
295 message responses generated
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
raw_if:
0 RAW packets transmitted
0 PPPOE packets transmitted
0 ISDN packets transmitted
0 DIALER packets transmitted
0 PPP packets transmitted to pppd
0 PPP packets transmitted to jppd
0 IGMPv2 packets transmitted
13 output drops due to tx error
0 MPU packets transmitted
0 PPPOE packets received
0 ISDN packets received
0 DIALER packets received
0 PPP packets received from pppd
0 MPU packets received
0 PPP packets received from jppd
0 IGMPv2 packets received
0 Input drops due to bogus protocol
0 input drops due to no mbufs available
0 input drops due to no space in socket
0 input drops due to no socket
arp:
186413 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
186065 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
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
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
pfkey:
0 Requests sent from userland
0 Bytes sent from userland
histogram by message type:
0 reserved
0 dump
0 Messages with invalid length field
0 Messages with invalid version field
0 Messages with invalid message type field
0 Messages too short
0 Messages with memory allocation failure
0 Messages with duplicate extension
0 Messages with invalid extension type
0 Messages with invalid sa type
0 Messages with invalid address extension
0 Requests sent to userland
0 Bytes sent to userland
histogram by message type:
0 reserved
0 dump
0 Messages toward single socket
0 Messages toward all sockets
0 Messages toward registered sockets
0 Messages with memory allocation failure
c1n1:
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
esis:
0 Total pkts received
0 Total packets consumed by protocol
0 Pdus received with bad checksum
0 Pdus received with bad version number
0 Pdus received with bad type field
0 Short pdus received
0 Pdus with bogus sdl size
0 Pdus with bad header length
0 Pdus with unknown or unsupported protocol
0 No free memory in socket buffer
0 Send packets discarded
0 Sbappend failure
0 Mcopy failure
0 ISO family not configured
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
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
tudp:
67 Datagrams received
0 Datagrams with incomplete header
0 Datagrams with bad data length field
0 Datagrams with bad checksum
0 Datagrams dropped due to no socket
0 Broadcast/multicast datagrams dropped due to no socket
0 Datagrams dropped due to full socket buffers
67 Delivered
68 Datagrams output
ttp:
0 Packets sent
0 Packets sent while unconnected
0 Packets sent while interface down
0 Packets sent couldn't get buffer
0 Packets sent couldn't find neighbor
0 L2 packets received
0 Unknown L3 packets received
0 IPv4 L3 packets received
0 MPLS L3 packets received
0 MPLS->IPv4 L3 packets received
0 IPv4->MPLS L3 packets received
0 IPv6 L3 packets received
0 ARP L3 packets received
0 CLNP L3 packets received
0 TNP L3 packets received
0 NULL L3 packets received
0 Cyclotron cycle L3 packets received
0 Cyclotron send L3 packets received
0 Packets received while unconnected
0 Packets received from unknown ifl
0 Input packets couldn't get buffer
0 Input packets with bad type
0 Input packets with discard type
0 Input packets for which rt lookup is bypassed
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
vpls:
0 Total packets received
0 Packets with size smaller than minimum
0 Packets 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
582 Copyright © 2010, Juniper Networks, Inc.
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 Packets dropped due to no l3 route table
0 Packets dropped due to no local ifl
0 Packets punted
0 Packets dropped due to no socket
bridge:
Input:
0 packets received
0 packets forwarded
0 packets failed to forward
0 packets dropped
0 packets with vmember lookup failures
0 packets with vlan lookup failures
0 packets with stp state lookup failures
0 packets dropped due to stp blocked/listening
0 packets dropped due to stp learning
0 packets with src MAC learning failures
0 packets with input control processing failures
Forward:
0 packets sent successfully
0 packets with send failures
0 packets forwarded to l3 interface
0 packets with l3 send failures
0 packets discarded
0 packets with l2ifl store failures
0 packets with ifl mismatch failures
0 packets with packet duplication failures
0 packets with tag lookup failures
0 packets with no route for DMAC
0 packets with no route table
0 packets with no nexthop
0 packets with dead nexthop
0 packets with eof reached error
Learning:
0 MACs learned
0 packets sent to l3 interface

```

```
0 packets with l3 send failures
0 packets hit holdq while learning
0 MAC moves
0 packets discarded
0 packets with no route for SMAC
0 packets with no nexthop
0 packets with dead nexthop
0 packets dropped due to no resolve route
0 packets with l3 ifd lookup failures
0 packets with l3 ifl lookup failures
0 packets with l3 invalid rnh
0 packets with no route for SMAC in clone learning
0 packets with no nexthop in clone learning
0 packets with dead nexthop in clone learning
0 packets dropped due to no resolve nh in clone learning
Output:
0 packets forwarded
0 packets failed to forward
0 packets with vmember lookup failures
0 packets with vlan lookup failures
0 packets with input control processing failures
Send:
0 packets sent successfully
0 packets with send failures
0 packets dropped due to interface down
0 packets with dev output failures
0 blocked ifl discards
0 packets with tag lookup failures
0 packets with stp state lookup failures
0 packets with tag insertion failures
0 packets with tag removal failures
Flood:
0 packets flooded
0 flood failures
IGMP:
0 packets sent successfully
0 packets with send failures
0 packets forwarded
0 packets failed to forward
0 packets with mpull failures
0 packets with vmember lookup failures
0 packets with vlan lookup failures
0 packets with ifl lookup failures
0 packets with tag lookup failures
Misc:
0 packets with size smaller than minimum
0 packets with double tags
0 packets with no ifl
0 packets with no family
0 packets with no route table
```



## show system statistics arp

<b>Syntax</b>	show system statistics arp
<b>Syntax (EX Series Switch)</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>none—Display system-wide ARP statistics.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display ARP statistics for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system-wide ARP statistics for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system-wide ARP statistics for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router</p> <p>all-members—(EX4200 switches only) (Optional) Display ARP statistics for all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix 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 T1600 router that is connected to the TX Matrix Plus router. Replace <b><i>number</i></b> with a value from <b>0</b> through <b>3</b>.</p> <p>local—(EX4200 switches only) (Optional) Display ARP statistics for the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Display ARP statistics for the specified member of the Virtual Chassis configuration. Replace <b><i>member-id</i></b> with a value from 0 through 9.</p> <p>scc—(TX Matrix routers only) (Optional) Display ARP statistics for the TX Matrix router (or switch-card chassis).</p>

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

**Additional Information** By default, when you issue the **show system statistics arp** 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** view

**List of Sample Output** **show system statistics arp** on page 986  
**show system statistics arp (EX Series Switch)** on page 986  
**show system statistics arp (TX Matrix Plus Router)** on page 987

## Sample Output

```
show system statistics arp  user@host> show system statistics arp
arp:
    44134607 datagrams received
    2 ARP requests received
    2026 ARP replies received
    3152 resolution requests received
    0 unrestricted proxy requests
    0 received proxy requests
    0 proxy requests not proxied
    0 with bogus interface
    787 with incorrect length
    712 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
    7603 with multicast target address
    0 with my own hardware address
    14218490 for an address not on the interface
    0 with a broadcast source address
    0 with source address duplicate to mine
    29905774 which were not for me
    0 packets discarded waiting for resolution
    6 packets sent after waiting for resolution
    17790 ARP requests sent
    2 ARP replies sent
    0 requests for memory denied
    0 requests dropped on entry
    0 requests dropped during retry
```

```
show system statistics arp (EX Series Switch)  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
```

lcc0-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>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for CLNS for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for CLNS for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for CLNS for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>lcc <i>number</i>—(TX Matrix 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 T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) (Optional) Display system statistics for CLNS for the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) (Optional) Display system statistics for CLNS for the TX Matrix Plus router (or switch-fabric chassis). 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 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.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p>show system statistics clns on page 992</p> <p>show system statistics clns (EX Series Switch) on page 992</p>

**show system statistics clns (TX Matrix Plus Router) on page 993****Sample Output**

```

show system statistics clns user@host> show system statistics clns
clns:
    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 Switch) user@host> show system statistics clns
clns:
    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      user@host> show system statistics clns
clns (TX Matrix Plus      sfc0-re0:
Router)

```

```

-----
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

```

```

1cc0-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

lcc1-re1:

-----

clnl:

- 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

lcc2-re1:

-----

clnl:

- 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 esis

<b>Syntax</b>	show system statistics esis
<b>Syntax (EX Series Switch)</b>	show system statistics esis <all-members> <local> <member <i>member-id</i> >
<b>Syntax (TX Matrix Router)</b>	show system statistics esis <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show system statistics esis <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 End System-to-Intermediate System (ES-IS) statistics.
<b>Options</b>	<p>none—Display system statistics for ES-IS.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for ES-IS for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for ES-IS for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for ES-IS for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Display ES-IS statistics for all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for ES-IS for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for ES-IS for a specific T1600 router that is connected to the TX Matrix Plus router. Replace <b><i>number</i></b> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Display ES-IS statistics for the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Display ES-IS statistics for the specified member of the Virtual Chassis configuration. Replace <b><i>member-id</i></b> with a value from 0 through 9.</p> <p>scc—(TX Matrix routers only) (Optional) Display system statistics for ES-IS for the TX Matrix router (or switch-card chassis).</p>

*sfc number*—(TX Matrix Plus routers only) (Optional) Display system statistics for ES-IS for the TX Matrix Plus router (or switch-fabric chassis). Replace *number* with 0.

**Additional Information** By default, when you issue the **show system statistics esis** 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** view

**List of Sample Output** **show system statistics esis** on page 997  
**show system statistics esis (EX Series Switch)** on page 997  
**show system statistics esis (TX Matrix Plus Router)** on page 998

## Sample Output

```
show system statistics esis  user@host> show system statistics esis
esis:
    0 total pkts received
    0 total packets consumed by protocol
    0 pdus received with bad checksum
    0 pdus received with bad version number
    0 pdus received with bad type field
    0 short pdus received
    0 bogus sdl size
    0 bad header length
    0 unknown or unsupported protocol
    0 no free memory in socket buffer
    0 send packets discarded
    0 sbappend failure
    0 mcopy failure
    0 ISO family not configured
```

```
show system statistics esis (EX Series Switch)  user@host> show system statistics esis
esis:
    0 Total pkts received
    0 Total packets consumed by protocol
    0 Pdus received with bad checksum
    0 Pdus received with bad version number
    0 Pdus received with bad type field
    0 Short pdus received
    0 Pdus withbogus sdl size
    0 Pdus with bad header length
    0 Pdus with unknown or unsupport protocol
    0 No free memory in socket buffer
    0 Send packets discarded
    0 Sbappend failure
    0 Mcopy failure
    0 ISO family not configured
```

**show system statistics**  
**esis (TX Matrix Plus**  
**Router)**

user@host> **show system statistics esis**  
sfc0-re0:

-----  
esis:  
0 total pkts received  
0 total packets consumed by protocol  
0 pdus received with bad checksum  
0 pdus received with bad version number  
0 pdus received with bad type field  
0 short pdus received  
0 bogus sdl size  
0 bad header length  
0 unknown or unsupport protocol  
0 no free memory in socket buffer  
0 send packets discarded  
0 sbappend failure  
0 mcopy failure  
0 ISO family not configured

1cc0-re0:

-----  
esis:  
0 total pkts received  
0 total packets consumed by protocol  
0 pdus received with bad checksum  
0 pdus received with bad version number  
0 pdus received with bad type field  
0 short pdus received  
0 bogus sdl size  
0 bad header length  
0 unknown or unsupport protocol  
0 no free memory in socket buffer  
0 send packets discarded  
0 sbappend failure  
0 mcopy failure  
0 ISO family not configured

1cc1-re0:

-----  
esis:  
0 total pkts received  
0 total packets consumed by protocol  
0 pdus received with bad checksum  
0 pdus received with bad version number  
0 pdus received with bad type field  
0 short pdus received  
0 bogus sdl size  
0 bad header length  
0 unknown or unsupport protocol  
0 no free memory in socket buffer  
0 send packets discarded  
0 sbappend failure  
0 mcopy failure  
0 ISO family not configured

1cc2-re0:

-----  
esis:  
0 total pkts received  
0 total packets consumed by protocol  
0 pdus received with bad checksum

```
0 pdus received with bad version number
0 pdus received with bad type field
0 short pdus received
0 bogus sdl size
0 bad header length
0 unknown or unsupported protocol
0 no free memory in socket buffer
0 send packets discarded
0 sbappend failure
0 mcopy failure
0 ISO family not configured
```

lcc3-re0:

-----  
esis:

```
0 total pkts received
0 total packets consumed by protocol
0 pdus received with bad checksum
0 pdus received with bad version number
0 pdus received with bad type field
0 short pdus received
0 bogus sdl size
0 bad header length
0 unknown or unsupported protocol
0 no free memory in socket buffer
0 send packets discarded
0 sbappend failure
0 mcopy failure
0 ISO family not configured
```

## show system statistics icmp

<b>Syntax</b>	show system statistics icmp
<b>Syntax (EX Series Switch)</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>none—Display system statistics for ICMP.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for ICMP for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix 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 T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Display ICMP statistics for all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix 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 T1600 router that is connected to the TX Matrix Plus router. Replace <b><i>number</i></b> with a value from <b>0</b> through <b>3</b>.</p> <p>local—(EX4200 switches only) (Optional) Display ICMP statistics for the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Display ICMP statistics for the specified member of the Virtual Chassis configuration. Replace <b><i>member-id</i></b> with a value from 0 through 9.</p> <p>scc—(TX Matrix routers only) (Optional) Display system statistics for ICMP for the TX Matrix router (or switch-card chassis).</p>



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

**Additional Information** By default, when you issue the **show system statistics icmp** 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** view

**List of Sample Output** **show system statistics icmp on page 1001**  
**show system statistics icmp (EX Series Switch) on page 1001**  
**show system statistics icmp (TX Matrix Plus Router) on page 1002**

## Sample Output

```
show system statistics icmp user@host> show system statistics icmp
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: 75
    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 dest in at on address
    0 timestamp drops with broadcast or multicast destination address
    Input histogram:
        echo: 75
        router advertisement: 130
    75 message responses generated
```

```
show system statistics icmp (EX Series Switch) 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 Switch)</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>none—Display system statistics for ICMPv6.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for ICMPv6 for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for ICMPv6 for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for ICMPv6 for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Display ICMPv6 statistics for all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix 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 T1600 router that is connected to the TX Matrix Plus router. Replace <b><i>number</i></b> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Display ICMPv6 statistics for the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Display ICMPv6 statistics for the specified member of the Virtual Chassis configuration. Replace <b><i>member-id</i></b> with a value from 0 through 9.</p> <p>scc—(TX Matrix routers only) (Optional) Display system statistics for ICMPv6 for the TX Matrix router (or switch-card chassis).</p>

*sfc number*—(TX Matrix Plus routers only) (Optional) Display system statistics for ICMPv6 for the TX Matrix Plus router (or switch-fabric chassis). Replace *number* with 0.

**Additional Information** By default, when you issue the **show system statistics icmp6** 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 statistics icmp6 on page 1005**  
**show system statistics icmp6 (EX Series Switch) on page 1005**  
**show system statistics icmp6 (TX Matrix Plus Router) on page 1006**

## Sample Output

```
show system statistics icmp6 user@host> show system statistics icmp6
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
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
```

```
show system statistics icmp6 (EX Series Switch) 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 user@host> show system statistics icmp6
icmp6 (TX Matrix Plus sfc0-re0:
Router) -----
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 Switch)</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.
<b>Description</b>	Display system-wide Internet Group Management Protocol (IGMP) statistics.
<b>Options</b>	<p>none—Display system statistics for IGMP.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for IGMP for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix 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 T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Display IGMP statistics for all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix 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 T1600 router that is connected to the TX Matrix Plus router. Replace <b><i>number</i></b> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Display IGMP statistics for the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Display IGMP statistics for the specified member of the Virtual Chassis configuration. Replace <b><i>member-id</i></b> with a value from 0 through 9.</p> <p>scc—(TX Matrix routers only) (Optional) Display system statistics for IGMP for the TX Matrix router (or switch-card chassis).</p>

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

**Additional Information** By default, when you issue the **show system statistics igmp** 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 statistics igmp on page 1010**  
**show system statistics igmp (EX Series Switch) on page 1010**  
**show system statistics igmp (TX Matrix Plus Router) on page 1010**

## 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 Switch)  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 Switch)</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>none—Display system statistics for IPv4.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for IPv4 for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for IPv4 for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for IPv4 for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Display IPv4 statistics for all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix 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 T1600 router that is connected to the TX Matrix Plus router. Replace <b><i>number</i></b> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Display IPv4 statistics for the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Display IPv4 statistics for the specified member of the Virtual Chassis configuration. Replace <b><i>member-id</i></b> with a value from 0 through 9.</p> <p>scc—(TX Matrix routers only) (Optional) Display system statistics for IPv4 for the TX Matrix router (or switch-card chassis).</p>

*sfc number*—(TX Matrix Plus routers only) (Optional) Display system statistics for IPv4 for the TX Matrix Plus router (or switch-fabric chassis). Replace *number* with *0*.

**Additional Information** By default, when you issue the **show system statistics ip** 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 statistics ip** on page 1013  
**show system statistics ip (EX Series Switch)** on page 1014  
**show system statistics ip (TX Matrix Plus Router)** on page 1015

## 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 Switch) 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 recv buffer

## show system statistics ip6

<b>Syntax</b>	show system statistics ip6
<b>Syntax (EX Series Switch)</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>none—Display system statistics for IPv6.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for IPv6 for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for IPv6 for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for IPv6 for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Display IPv6 statistics for all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix 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 T1600 router that is connected to the TX Matrix Plus router. Replace <b><i>number</i></b> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Display IPv6 statistics for the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Display IPv6 statistics for the specified member of the Virtual Chassis configuration. Replace <b><i>member-id</i></b> with a value from 0 through 9.</p> <p>scc—(TX Matrix routers only) (Optional) Display system statistics for IPv6 for the TX Matrix router (or switch-card chassis).</p>

*sfc number*—(TX Matrix Plus routers only) (Optional) Display system statistics for IPv6 for the TX Matrix Plus router (or switch-fabric chassis). Replace *number* with 0.

**Additional Information** By default, when you issue the **show system statistics ip6** 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 statistics ip6 on page 1021**  
**show system statistics ip6 (EX Series Switch) on page 1022**  
**show system statistics ip6 (TX Matrix Router) on page 1022**

## 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 many 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**    user@host> **show system statistics ip6**  
**ip6 (EX Series Switch)**    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 many 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**    user@host> **show system statistics ip6**  
**ip6 (TX Matrix Router)**    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 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

```

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 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

```

## show system statistics mpls

<b>Syntax</b>	show system statistics mpls
<b>Syntax (EX Series Switch)</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>none—Display system statistics for MPLS.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for MPLS for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix 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 T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Display MPLS statistics for all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix 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 T1600 router that is connected to the TX Matrix Plus router. Replace <b><i>number</i></b> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Display MPLS statistics for the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Display MPLS statistics for the specified member of the Virtual Chassis configuration. Replace <b><i>member-id</i></b> with a value from 0 through 9.</p> <p>scc—(TX Matrix routers only) (Optional) Display system statistics for MPLS for the TX Matrix router (or switch-card chassis).</p>

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

**Additional Information** By default, when you issue the **show system statistics mpls** 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 statistics mpls on page 1028**  
**show system statistics mpls (EX Series Switch) on page 1028**  
**show system statistics mpls (TX Matrix Plus Router) on page 1028**

## 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 Switch)  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 Switch)</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>none—Display system statistics for RDP.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for RDP for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix 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 T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Display RDP statistics for all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix 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 T1600 router that is connected to the TX Matrix Plus router. Replace <b><i>number</i></b> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Display RDP statistics for the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Display RDP statistics for the specified member of the Virtual Chassis configuration. Replace <b><i>member-id</i></b> with a value from 0 through 9.</p> <p>scc—(TX Matrix routers only) (Optional) Display system statistics for RDP for the TX Matrix router (or switch-card chassis).</p>

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

**Additional Information** By default, when you issue the **show system statistics rdp** 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 statistics rdp** on page 1032  
**show system statistics rdp (EX Series Switch)** on page 1032  
**show system statistics rdp (TX Matrix Plus Router)** on page 1032

## 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 Switch) 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 Switch)</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>none—Display system statistics for TCP.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for TCP for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for TCP for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for TCP for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Display TCP statistics for all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix 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 T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Display TCP statistics for the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Display TCP statistics for the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value from 0 through 9.</p> <p>scc—(TX Matrix routers only) (Optional) Display system statistics for TCP for the TX Matrix router (or switch-card chassis).</p>

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

**Additional Information** By default, when you issue the **show system statistics tcp** 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 statistics tcp** on page 1036  
**show system statistics tcp (EX Series Switch)** on page 1037  
**show system statistics tcp lcc (TX Matrix Router)** on page 1038  
**show system statistics tcp (TX Matrix Plus Router)** on page 1039

## Sample Output

```

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 user@host> show system statistics tcp
tcp (EX Series Switch) 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**      user@host> **show system statistics tcp lcc 2**

**tcp lcc (TX Matrix**      lcc2-re0:

**Router)**

-----  
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 user@host> show system statistics tcp

tcp (TX Matrix Plus sfc0-re0:

Router)

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

```

```
lcc0-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 Switch)</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 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 Trivial Network Protocol (TNP) statistics.
<b>Options</b>	<p>none—Display system statistics for TNP.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for TNP for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for TNP for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for TNP for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Display TNP statistics for all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix 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 T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Display TNP statistics for the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Display TNP statistics for the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value from 0 through 9.</p> <p>scc—(TX Matrix routers only) (Optional) Display system statistics for TNP for the TX Matrix router (or switch-card chassis).</p>

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

**Additional Information** By default, when you issue the **show system statistics tnp** 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 statistics tnp** on page 1044  
**show system statistics tnp (EX Series Switch)** on page 1044  
**show system statistics tnp (TX Matrix Plus Router)** on page 1045

## 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 Switch) 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 Switch)</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>none—Display system statistics for TUDP.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for TUDP for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for TUDP for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for TUDP for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Display TUDP statistics for all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix 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 T1600 router that is connected to the TX Matrix Plus router. Replace <b><i>number</i></b> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Display TUDP statistics for the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Display TUDP statistics for the specified member of the Virtual Chassis configuration. Replace <b><i>member-id</i></b> with a value from 0 through 9.</p> <p>scc—(TX Matrix routers only) (Optional) Display system statistics for TUDP for the TX Matrix router (or switch-card chassis).</p>

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

**Additional Information** By default, when you issue the **show system statistics tudp** 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 statistics tudp on page 1050**  
**show system statistics tudp (TX Matrix Plus Router) on page 1050**

## 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
```

```
1cc0-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 Switch)</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>	none—Display system statistics for UDP.  all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for UDP for all the routers in the chassis.  all-lcc—(TX Matrix 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 T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.  all-members—(EX4200 switches only) (Optional) Display UDP statistics for all members of the Virtual Chassis configuration.  lcc <i>number</i> —(TX Matrix 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 T1600 router that is connected to the TX Matrix Plus router. Replace <b><i>number</i></b> with a value from 0 through 3.  local—(EX4200 switches only) (Optional) Display UDP statistics for the local Virtual Chassis member.  member <i>member-id</i> —(EX4200 switches only) (Optional) Display TUDP statistics for the specified member of the Virtual Chassis configuration. Replace <b><i>member-id</i></b> 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 Plus routers only) (Optional) Display system statistics for UDP for the TX Matrix Plus router (or switch-fabric chassis). Replace *number* with 0.

**Additional Information** By default, when you issue the **show system statistics udp** 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 statistics udp on page 1053**  
**show system statistics udp (TX Matrix Plus Router) on page 1053**

## 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>none—Display system statistics for VPLS.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for VPLS for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for VPLS for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for VPLS for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>lcc <i>number</i>—(TX Matrix 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 T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) (Optional) Display system statistics for VPLS for the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) (Optional) Display system statistics for VPLS for the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p>
<b>Additional Information</b>	By default, when you issue the <b>show system statistics vpls</b> 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.
<b>Required Privilege Level</b>	view

- List of Sample Output    **show system statistics vpls** on page 1056  
                               **show system statistics vpls (TX Matrix Plus Router)** on page 1056

## 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:
                                                        -----
                                                        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

```

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

```

## show system storage

---

<b>Syntax</b>	show system storage <detail>
<b>Syntax (EX Series Switch)</b>	show system storage <detail> <all-members> <local> <member <i>member-id</i> >
<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)</b>	show system storage <detail> <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (QFX Series)</b>	show system storage <detail>
<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>	none—Display standard information about the amount of free disk space in the router's or switch's file systems.  detail—(Optional) Display detailed output.  all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system storage statistics for all the routers in the chassis.  all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system storage statistics for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system storage statistics for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.  all-members—(EX4200 switches only) (Optional) Display system storage statistics for all members of the Virtual Chassis configuration.  lcc <i>number</i> —(TX Matrix 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 T1600 router that is connected to the TX Matrix Plus router. Replace <b><i>number</i></b> with a value from 0 through 3.

**local**—(EX4200 switches only) (Optional) Display system storage statistics for the local Virtual Chassis member.

**member *member-id***—(EX4200 switches only) (Optional) Display system storage 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 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 (or switch-fabric chassis). Replace ***number*** with 0.

**Additional Information** By default, when you issue the **show system storage** 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 storage on page 1061**  
**show system storage (TX Matrix Plus Router) on page 1062**  
**show system storage (QFX Series) on page 1064**

**Output Fields** Table 154 on page 1061 describes the output fields for the **show system storage** command. Output fields are listed in the approximate order in which they appear.

**Table 154: show system storage Output Fields**

Field Name	Field Description
<b>Filesystem</b>	Name of the file system.
<b>Size</b>	Size of the file system.
<b>Used</b>	Amount of space used in the file system.
<b>Avail</b>	Amount of space available in the file system.
<b>Capacity</b>	Percentage of the file system's space that is being used.
<b>Mounted on</b>	Directory in which the file system 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**  
(QFX Series)

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>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 routers (or line-card chassis) in the routing matrix.

- Options**
- all-chassis—(TX Matrix 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 routers configured in the routing matrix.
  - all-lcc—(TX Matrix 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 T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.

**lcc *number***—(TX Matrix and TX Matrix Plus router only) (Optional) On a TX Matrix router, display graceful Routing Engine switchover information for a specific T640 router (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display graceful Routing Engine switchover information for a specific T1600 router (or line-card chassis) connected to the TX Matrix Plus router. Replace ***number*** with **0**.

**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 router only) (Optional) Display graceful Routing Engine switchover information for the TX Matrix Plus router (or switch-fabric chassis).

**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 backup Routing Engines that are connected to it.

**Required Privilege Level** view

**List of Sample Output** **show system switchover (Backup Routing Engine) on page 1067**  
**show system switchover all-lcc (Routing Matrix) on page 1067**

**Output Fields** Table 155 on page 1066 describes the output fields for the **show system switchover** command. Output fields are listed in the approximate order in which they appear.

**Table 155: 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>

Table 155: show system switchover Output Fields (*continued*)

Field Name	Field Description
<b>Kernel database</b>	<p>State of the kernel database:</p> <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 <code>/var/log/ksyncd</code> for possible causes, or notify Juniper Networks customer support.</li> </ul>
<b>Peer state</b>	<p>Routing Engine peer state:</p> <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      user@host> show system switchover
switchover (Backup) Graceful switchover: On
Routing Engine) Configuration database: Ready
                  Kernel database: Ready
                  Peer state: Steady State

```

```

show system      user@host> show system switchover all-lcc
switchover all-lcc
(Routing Matrix) 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 Switch)</b>	show system uptime <all-members> <local> <member <i>member-id</i> >
<b>Syntax (QFX Series)</b>	show system uptime
<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>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>	none—Show time since the system rebooted and processes started.  all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Show time since the system rebooted and processes started on all the routers in the chassis.  all-lcc—(TX Matrix 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 T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.  all-members—(EX4200 switches only) (Optional) Show time since the system rebooted and processes started on all members of the Virtual Chassis configuration.  lcc <i>number</i> —(TX Matrix 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 T1600 router that is connected to the TX Matrix Plus router. Replace <b><i>number</i></b> with a value from <b>0</b> through <b>3</b> .  local—(EX4200 switches only) (Optional) Show time since the system rebooted and processes started on the local Virtual Chassis member.

**member** *member-id*—(EX4200 switches only) (Optional) Show time since the system rebooted and processes started on the specified member of the Virtual Chassis configuration. Replace *member-id* with a value from 0 through 9.

**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 (or switch-fabric chassis). Replace *number* with 0.

**Additional Information** By default, when you issue the **show system uptime** 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

**Related Documentation**

- Monitoring System Process Information
- Monitoring System Properties
- 10-Gigabit Ethernet LAN/WAN PIC with XFP (T640 Router)

**List of Sample Output**

**show system uptime on page 1070**  
**show system uptime all-lcc (TX Matrix Router) on page 1070**  
**show system uptime all-lcc (TX Matrix Plus Router) on page 1070**  
**show system uptime (QFX Series) on page 1071**

**Output Fields** Table 156 on page 1069 describes the output fields for the **show system uptime** command. Output fields are listed in the approximate order in which they appear.

**Table 156: show system uptime Output Fields**

Field Name	Field Description
<b>Current time</b>	Current system time in UTC.
<b>System booted</b>	Date and time when the Routing Engine on the router or switch was last booted and how long it has been running.
<b>Protocols started</b>	Date and time when the routing protocols were last started and how long they have been running.
<b>Last configured</b>	Date and time when a configuration was last committed. Also shows name of user who issued the last <b>commit</b> command.
<b>time and up</b>	Current time, in the local time zone, and how long the router or switch has been operational.

Table 156: show system uptime Output Fields (*continued*)

Field Name	Field Description
<b>users</b>	Number of users logged in to the router or router.
<b>load averages</b>	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  user@host> show system uptime all-lcc
all-lcc (TX Matrix  1cc0-re0:
Router) -----
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
1cc2-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  user@host> show system uptime all-lcc
all-lcc (TX Matrix  sfc0-re0:
Router) -----
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

1cc0-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

1cc1-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

1cc2-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 (QFX Series)</b>	show system users <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. <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>	List information about the users who are currently logged in to the router or switch.



**NOTE:** The **show system users** command does not list information about the automated users that are currently logged in to the router or switch from a remote client application using Junos XML APIs, such as NETCONF. It only shows details of administrative users that are logged in to a router or switch using the CLI, J-Web, or an SSH client.

<b>Options</b>	<p>none—List information about the users who are currently logged in to the router or switch.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Show users currently logged in to all the routers in the chassis.</p> <p>all-lcc—(TX Matrix 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 T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>lcc number—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, show users currently logged in to a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, show users currently logged in to a specific T1600 router that is connected to the TX Matrix Plus router. Replace <b>number</b> with a value from 0 through 3.</p> <p>no-resolve—(Optional) Do not attempt to resolve IP addresses to hostnames.</p>
----------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------



**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 (or switch-fabric chassis). Replace ***number*** with **0**.

**Additional Information** By default, when you issue the **show system users** 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 users on page 1074**  
**show system users lcc no-resolve (TX Matrix and TX Matrix Plus Router) on page 1074**  
**show system users (TX Matrix Plus Router) on page 1074**  
**show system users (QFX Series) on page 1075**  
**show system users no-resolve (QFX Series) on page 1075**

**Output Fields** Table 157 on page 1073 describes the output fields for the **show system users** command. Output fields are listed in the approximate order in which they appear.

**Table 157: 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  user@host> show system users lcc 2 no-resolve
no-resolve (TX Matrix
and TX Matrix Plus
Router)               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  user@host> show system users
Matrix Plus Router)  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>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>	none—Display kernel dynamic memory usage information.  all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display kernel dynamic memory usage information for all chassis.  all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display kernel dynamic memory usage information for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display kernel dynamic memory usage information for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.  all-members—(EX4200 switches only) (Optional) Display kernel dynamic memory usage information for all members of the Virtual Chassis configuration.  lcc <i>number</i> —(TX Matrix 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 T1600 router that is connected to the TX Matrix Plus router. Replace <b><i>number</i></b> with a value from 0 through 3.  local—(EX4200 switches only) (Optional) Display kernel dynamic memory usage information for the local Virtual Chassis member.  member <i>member-id</i> —(EX4200 switches only) (Optional) Display kernel dynamic memory usage information for the specified member of the Virtual Chassis configuration. Replace <b><i>member-id</i></b> with a value from 0 through 9.

**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 (or switch-fabric chassis). Replace *number* with 0.

**Additional Information** By default, when you issue the **show system virtual-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.



**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

**List of Sample Output** **show system virtual-memory** on page 1079  
**show system virtual-memory scc** (TX Matrix Router) on page 1083  
**show system virtual-memory sfc** (TX Matrix Plus Router) on page 1084  
**show system virtual-memory | display xml** on page 1087  
**show system virtual-memory (QFX Series)** on page 1109

**Output Fields** Table 158 on page 1078 lists the output fields for the **show system virtual-memory** command. Output fields are listed in the approximate order in which they appear.

Table 158: 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 158: 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, NQNFS 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	Size(s)
isadev	13	1K	1K127753K	13	0	0	64
atkbddev	2	1K	1K127753K	2	0	0	32
uc_devlist	24	3K	3K127753K	24	0	0	16,2K
nexusdev	3	1K	1K127753K	3	0	0	16
memdesc	1	4K	4K127753K	1	0	0	4K
mbuf	1	152K	152K127753K	1	0	0	256K
iflogical	6	2K	2K127753K	6	0	0	256
iftable	17	9K	9K127753K	18	0	0	16,64,256,1K,4K
ZONE	15	2K	2K127753K	15	0	0	128
VM pgdata	1	64K	64K127753K	1	0	0	64K
UFS mount	12	26K	26K127753K	12	0	0	512,2K,4K
UFS ihash	1	128K	128K127753K	1	0	0	128K
MFS node	6	2K	3K127753K	35	0	0	64,256
FFS node	906	227K	227K127753K	1352	0	0	256
dirrem	0	0K	4K127753K	500	0	0	32
mkdir	0	0K	1K127753K	38	0	0	32
diradd	0	0K	6K127753K	521	0	0	32
freefile	0	0K	4K127753K	374	0	0	32
freeblks	0	0K	8K127753K	219	0	0	128
freefrag	0	0K	1K127753K	193	0	0	32
allocindir	0	0K	25K127753K	1518	0	0	64
indirdep	0	0K	17K127753K	76	0	0	32,16K
allocdirect	0	0K	10K127753K	760	0	0	64
bmsafemap	0	0K	1K127753K	72	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

**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  Type  Kern  Limit  Size(s)
isadev  12     1K      1K166400K  12     0         0     0     64
atkbddev  2     1K      1K166400K  2      0         0     0     32
uc_devlist  24    3K      3K166400K  24     0         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
16,32,64,128,256,512,1024,2048,4096,8192,16384,32768,65536,131072
      ip6ndp      0      0K      -           4      64
      in6ifmulti  1      1K      -           1      64
      in6grentry  1      1K      -           1      64
      iflogical   20      5K      -          29     2048
      iffamily    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
        sysctlloid 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
        lr        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	OK	-	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	OK	-	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	OK	-	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	OK	-	1771718	16,32,64,128,8192,16384,65536,131072
iov	0	OK	-	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	OK	-	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					
synccache	1	8K	-	1	
16,32,64,128,256,512,2048,16384,32768,131072					
tlv_stat	0	OK	-	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>
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    <memstat-name>iflogical</memstat-name>
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    <memstat-name>metrics</memstat-name>

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<memstat-name>rtable</memstat-name>
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```

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<memstat-name>bus-sc</memstat-name>
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```

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<memstat-name>Unitno</memstat-name>
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<memstat-name>cluster_save buffer</memstat-name>
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<memstat-name>pfs_vncache</memstat-name>

```

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<high-use>--</high-use>
```



```

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    <zone-size>256</zone-size>
    <count-limit>0</count-limit>
    <used>0</used>
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  </vmstat-memstat-zone>
  <vmstat-sumstat>
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    <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>
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    <swap-pageouts>0</swap-pageouts>
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    <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>
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  <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>
  <bytes-per-page>4096</bytes-per-page>
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  <peak-swap-pages-used>0</peak-swap-pages-used>

```

```

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<cache-deletions>0</cache-deletions>
<cache-falsehits>0</cache-falsehits>
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  <intr-cnt>1243455</intr-cnt>
  <intr-rate>999</intr-rate>
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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>
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  <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 system virtual-memory (QFX Series)
user@switch> 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>
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<memuse>4</memuse>
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<memstat-req>5998</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>devbuf</memstat-name>
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<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>

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<high-use>--</high-use>
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<memstat-size>16,32,64,128,256,512,2048,4096,8192,16384,32768,65536,131072</memstat-size>

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<memuse>1</memuse>
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```

```

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<memuse>14</memuse>
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```

```
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<memstat-size>16,32,64,128,256,1024,2048,4096,16384,32768</memstat-size>
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<memstat-name>itable32</memstat-name>
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```



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<memuse>1</memuse>
<high-use>--</high-use>
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<memstat-size>16</memstat-size>
<memstat-name>idl</memstat-name>
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<memuse>0</memuse>
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<memstat-name>module</memstat-name>
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<inuse>102</inuse>
<memuse>23</memuse>
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<memstat-size>2048</memstat-size>
<memstat-name>pgrp</memstat-name>
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<memuse>1</memuse>
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<memstat-size>64</memstat-size>

```

```
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<memuse>1</memuse>
<high-use>--</high-use>
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<memstat-size>16384</memstat-size>
<memstat-name>subproc</memstat-name>
<inuse>244</inuse>
<memuse>496</memuse>
<high-use>--</high-use>
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<memstat-size>2048,131072</memstat-size>
<memstat-name>cred</memstat-name>
<inuse>30</inuse>
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<high-use>--</high-use>
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<memstat-size>256</memstat-size>
<memstat-name>plimit</memstat-name>
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<memuse>4</memuse>
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<memstat-size>2048</memstat-size>
<memstat-name>uidinfo</memstat-name>
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<memuse>1</memuse>
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<inuse>1117</inuse>
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<memstat-req>743</memstat-req>
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<memstat-name>umtx</memstat-name>
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<memstat-size>64</memstat-size>
<memstat-name>SWAP</memstat-name>
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```

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<memstat-name>bus-sc</memstat-name>
<inuse>23</inuse>
<memuse>33</memuse>
<high-use>--</high-use>
<memstat-req>335</memstat-req>

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<memstat-req>10</memstat-req>
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<memuse>2</memuse>
<high-use>--</high-use>
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<memstat-size>32,128</memstat-size>
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<memuse>1</memuse>
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<memstat-name>sbuf</memstat-name>
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<memuse>0</memuse>
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<memstat-req>522</memstat-req>
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<memstat-size>64</memstat-size>
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<memuse>1</memuse>
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```

```
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<memstat-name>Unitno</memstat-name>
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<memstat-req>44</memstat-req>
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<memstat-name>iocltops</memstat-name>
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<memuse>0</memuse>
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<memstat-name>iov</memstat-name>
<inuse>0</inuse>
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<memstat-size>32768</memstat-size>
<memstat-name>ttys</memstat-name>
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<memstat-name>mbuf_tag</memstat-name>
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<memstat-name>soname</memstat-name>
<inuse>115</inuse>
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<memuse>12</memuse>
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<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>

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<free>165</free>
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<zone-name>mbuf_jumbo_pagesize:</zone-name>
<zone-size>4096</zone-size>
<count-limit>0</count-limit>
<used>0</used>
<free>0</free>
<zone-req>0</zone-req>
<zone-name>mbuf_jumbo_9k:</zone-name>
<zone-size>9216</zone-size>
<count-limit>0</count-limit>
<used>0</used>
<free>0</free>
<zone-req>0</zone-req>
<zone-name>mbuf_jumbo_16k:</zone-name>
<zone-size>16384</zone-size>
<count-limit>0</count-limit>
<used>0</used>
<free>0</free>
<zone-req>0</zone-req>
<zone-name>ACL UMA zone:</zone-name>
<zone-size>388</zone-size>
<count-limit>0</count-limit>
<used>0</used>
<free>0</free>
<zone-req>0</zone-req>
<zone-name>g_bio:</zone-name>
<zone-size>132</zone-size>
<count-limit>0</count-limit>
<used>0</used>
<free>174</free>
<zone-req>69750</zone-req>
<zone-name>ata_request:</zone-name>
<zone-size>200</zone-size>
<count-limit>0</count-limit>
<used>0</used>
<free>57</free>
<zone-req>5030</zone-req>
<zone-name>ata_composite:</zone-name>
<zone-size>192</zone-size>
<count-limit>0</count-limit>
<used>0</used>
<free>0</free>
<zone-req>0</zone-req>
<zone-name>GENCFG:</zone-name>
<zone-size>72</zone-size>
<count-limit>1000004</count-limit>
<used>57</used>
<free>102</free>
<zone-req>57</zone-req>
<zone-name>VNODE:</zone-name>
<zone-size>292</zone-size>
<count-limit>0</count-limit>
<used>2718</used>
<free>25</free>
<zone-req>2922</zone-req>
```

```
<zone-name>VNODEPOLL:</zone-name>
<zone-size>72</zone-size>
<count-limit>0</count-limit>
<used>0</used>
<free>0</free>
<zone-req>0</zone-req>
<zone-name>S VFS Cache:</zone-name>
<zone-size>68</zone-size>
<count-limit>0</count-limit>
<used>2500</used>
<free>76</free>
<zone-req>3824</zone-req>
<zone-name>L VFS Cache:</zone-name>
<zone-size>291</zone-size>
<count-limit>0</count-limit>
<used>51</used>
<free>14</free>
<zone-req>63</zone-req>
<zone-name>NAMEI:</zone-name>
<zone-size>1024</zone-size>
<count-limit>0</count-limit>
<used>0</used>
<free>8</free>
<zone-req>53330</zone-req>
<zone-name>NFSMOUNT:</zone-name>
<zone-size>480</zone-size>
<count-limit>0</count-limit>
<used>0</used>
<free>0</free>
<zone-req>0</zone-req>
<zone-name>NFSNODE:</zone-name>
<zone-size>460</zone-size>
<count-limit>0</count-limit>
<used>0</used>
<free>0</free>
<zone-req>0</zone-req>
<zone-name>PIPE:</zone-name>
<zone-size>404</zone-size>
<count-limit>0</count-limit>
<used>27</used>
<free>9</free>
<zone-req>717</zone-req>
<zone-name>KNOTE:</zone-name>
<zone-size>72</zone-size>
<count-limit>0</count-limit>
<used>42</used>
<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>
<zone-req>105</zone-req>
<zone-name>tcpb:</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>
<zone-req>0</zone-req>
<zone-name>sackhole:</zone-name>
<zone-size>20</zone-size>
<count-limit>0</count-limit>
<used>0</used>
<free>0</free>
<zone-req>0</zone-req>
<zone-name>ripb:</zone-name>
<zone-size>232</zone-size>
<count-limit>25194</count-limit>
<used>5</used>
<free>29</free>
<zone-req>5</zone-req>
<zone-name>SWAPMETA:</zone-name>
<zone-size>276</zone-size>
<count-limit>94948</count-limit>
<used>0</used>
<free>0</free>
<zone-req>0</zone-req>
<zone-name>FFS inode:</zone-name>
<zone-size>132</zone-size>

```

```

    <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>
    <zone-size>256</zone-size>
    <count-limit>0</count-limit>
    <used>0</used>
    <free>0</free>
    <zone-req>0</zone-req>
</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>
    <bytes-per-page>4096</bytes-per-page>
    <swap-pages-used>0</swap-pages-used>
    <peak-swap-pages-used>0</peak-swap-pages-used>
    <total-name-lookups>214496</total-name-lookups>

```

```

    <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 task

**Syntax** show task  
 <logical-system (all | *logical-system-name*)>  
 <summary>  
 <task-name>

**Release Information** Command introduced before Junos OS Release 7.4.

**Description** Display routing protocol tasks on the Routing Engine.

**Options** none—Display all routing protocol tasks on the Routing Engine on all logical systems.

logical-system (all | *logical-system-name*)—(Optional) Perform this operation on all logical systems or on a particular logical system.

summary—(Optional) Display summary information about running tasks.

task-name—(Optional) Display summary information about running tasks whose name matches this substring.

**Required Privilege Level** view

**Related Documentation**

- [show task io on page 1134](#)
- [show task memory on page 1136](#)

**List of Sample Output** [show task on page 1133](#)

**Output Fields** Table 159 on page 1132 describes the output fields for the **show task** command. Output fields are listed in the approximate order in which they appear.

**Table 159: show task Output Fields**

Field Name	Field Description
Pri	Current priority of the process. A lower number indicates a higher priority.
Task Name	Name of the task.
Pro	IP protocol number associated with the process.
Port	TCP or UDP port number associated with the task.
So	Socket number of the task.

Table 159: show task Output Fields (*continued*)

Field Name	Field Description
<b>Flags</b>	Flags for the task: <ul style="list-style-type: none"> <li>• <b>Accept</b>—Task is waiting for incoming connections.</li> <li>• <b>Connect</b>—Task is waiting for a connection to be completed.</li> <li>• <b>Delete</b>—Task has been deleted and is being cleaned up.</li> <li>• <b>LowPrio</b>—Task will be dispatched to read its socket after other higher-priority tasks.</li> </ul>

## Sample Output

```

show task user@host> show task
Pri Task Name                               Pro  Port So Flags
10 IF
15 LABEL
15 ISO
15 INET                                     7
20 Aggregate
20 RT
30 ICMP                                   1    9
39 ISIS I/O                               12
40 IS-IS                                  10
40 BGP RT Background                       <LowPrio>
40 BGP.0.0.0.0+179                        179 15 <Accept LowPrio>
50 BGP_69.192.168.201.234+179             179 17 <LowPrio>
50 BGP_70.192.168.201.233+179             179 16 <LowPrio>
50 BGP_Group_69_153                       <LowPrio>
50 BGP_Group_70_153                       <LowPrio>
50 ASPaths
60 KRT                                   255    1
60 Redirect
70 MGMT.local                             14 <LowPrio>
70 MGMT_Listen./var/run/rpd_mgmt           13 <Accept LowPrio>
70 SNMP Subagent./var/run/sub_rpd.sock     8 <LowPrio>

```

## show task io

<b>Syntax</b>	show task io <logical-system (all   <i>logical-system-name</i> )>
<b>Syntax (EX Series Switch)</b>	show task io
<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 I/O statistics for routing protocol tasks on the Routing Engine.
<b>Options</b>	none—Display I/O statistics for routing protocol tasks on the Routing Engine.  logical-system (all   <i>logical-system-name</i> )—(Optional) Perform this operation on all logical systems or on a particular logical system.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show task io on page 1134
<b>Output Fields</b>	Table 160 on page 1134 describes the output fields for the <b>show task io</b> command. Output fields are listed in the approximate order in which they appear.

**Table 160: show task io Output Fields**

Field Name	Field Description
Task Name	Name of the task.
Reads	Number of input ready notifications.
Writes	Number of output ready notifications.
Rcvd	Number of requests to the kernel for input.
Sent	Number of requests to the kernel for output.
Dropped	Number of sent requests that failed.

## Sample Output

```

user@host> show task io
Task Name           Reads  Writes  Rcvd   Sent  Dropped
LMP Client          1      1       0     0      0
IF                   0      0       0     0      0
INET6                0      0       0     0      0
INET                 0      0       0     0      0
ISO                  0      0       0     0      0
Memory               0      0       0     0      0
RPD Unix Domain Server./var/ru  0      0       0     0      0

```

RPD Unix Domain Server./var/ru	1	0	0	0	0
RPD Unix Domain Server./var/ru	2	0	0	0	0
RPD Server.0.0.0.0+666	0	0	0	0	0
Aggregate	0	0	0	0	0
RT	0	0	0	0	0
ICMP	0	0	0	0	0
Router-Advertisement	0	0	0	0	0
ICMPv6	0	0	0	0	0
IS-IS I/O./var/run/ppmd_contro	1307	1	0	0	0
l2vpn global task	0	0	0	0	0
IS-IS	0	0	0	0	0
BFD I/O./var/run/bfdd_control	1307	1	0	0	0
TED	0	0	0	0	0
ASPaths	0	0	0	0	0
Resolve tree 1	0	0	0	0	0
KStat	0	0	0	0	0
KRT Request	0	0	63	0	0
KRT Ifstate	106	0	295	0	0
KRT	0	0	0	0	0
Redirect	0	0	0	0	0
...					

## show task memory

<b>Syntax</b>	show task memory <brief   detail   history   summary> <logical-system (all   <i>logical-system-name</i> )>
<b>Syntax (EX Series Switch)</b>	show task memory <brief   detail   history   summary>
<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 memory utilization for routing protocol tasks on the Routing Engine.
<b>Options</b>	<p>none—Display standard information about memory utilization for routing protocol tasks on the Routing Engine on all logical systems.</p> <p>brief   detail   history   summary—(Optional) Display the specified level of output. Use the <b>history</b> option to display a history of memory utilization information.</p> <p>logical-system (all   <i>logical-system-name</i>)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p>show task memory on page 1137</p> <p>show task memory detail on page 1138</p>
<b>Output Fields</b>	Table 161 on page 1136 describes the output fields for the <b>show task memory</b> command. Output fields are listed in the approximate order in which they appear.

**Table 161: show task memory Output Fields**

Field Name	Field Description	Level of Output
<b>Memory Currently In Use</b>	Memory currently in use.	All levels
<b>Memory Maximum Ever Used</b>	Maximum memory ever used.	none specified, <b>brief</b> , <b>history</b>
<b>Memory Available</b>	Memory currently available.	none specified, <b>brief</b>
<b>Size (kB)</b>	Memory capacity in 1000-byte kilobytes.	none specified, <b>brief</b> , <b>history</b> , <b>summary</b>
<b>%Available</b>	Percentage of memory currently available.	none specified, <b>brief</b>
<b>When</b>	Timestamp.	none specified, <b>brief</b> , <b>history</b>



Table 161: show task memory Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Overall Memory Report</b>	Memory utilization by memory size: <ul style="list-style-type: none"> <li>• <b>Size</b>—Block size, in bytes.</li> <li>• <b>TPT</b>—indicates transient memory, and <b>P</b> indicates full page.</li> <li>• <b>Allocs</b>—Number of blocks allocated for named objects.</li> <li>• <b>Mallocs</b>—Number of blocks allocated for anonymous objects.</li> <li>• <b>Alloc Bytes</b>—Number of blocks allocated times block size.</li> <li>• <b>MaxAllocs</b>—Maximum value of <b>Allocs</b>.</li> <li>• <b>MaxBytes</b>—Maximum value of <b>Alloc Bytes</b>.</li> <li>• <b>FreeBytes</b>—Total number of bytes unused on memory pages for this block size.</li> </ul>	<b>detail</b>
<b>Allocator Memory Report</b>	Memory utilization by named objects: <ul style="list-style-type: none"> <li>• <b>Size</b>—Size of the named object in bytes.</li> <li>• <b>Alloc Size</b>—Actual memory used by that object in bytes.</li> <li>• <b>DTP</b>—indicates debug, <b>D T</b> indicates transient, and <b>P</b> indicates full page.</li> <li>• <b>Alloc Blocks</b>—Number of named objects allocated.</li> <li>• <b>AllocBytes</b>—Number of blocks allocated times block size.</li> <li>• <b>MaxAlloc Blocks</b>—Maximum value of <b>Alloc Blocks</b>.</li> <li>• <b>Max Alloc Bytes</b>—Maximum value of <b>AllocBytes</b>.</li> </ul>	<b>detail</b>
<b>Malloc Usage Report</b>	Memory utilization for miscellaneous use: <ul style="list-style-type: none"> <li>• <b>Allocs</b>—Number of allocations.</li> <li>• <b>Bytes</b>—Total bytes consumed.</li> <li>• <b>MaxAllocs</b>—Maximum value of <b>Allocs</b>.</li> <li>• <b>MaxBytes</b>—Maximum value of <b>Bytes</b>.</li> <li>• <b>FuncCalls</b>—Cumulative number of <b>Allocs</b>.</li> </ul>	<b>detail</b>
<b>Dynamically allocated memory</b>	Memory allocated dynamically by the system.	<b>detail</b>
<b>Program data+BSS memory</b>	Program and base station subsystem (BSS) memory.	<b>detail</b>
<b>Page data overhead</b>	Internal memory overhead.	<b>detail</b>
<b>Page directory size</b>	Internal memory overhead.	<b>detail</b>
<b>Total bytes in use</b>	Total memory, in bytes, that is currently in use and percentage of available memory (in parentheses).	<b>detail</b>

## Sample Output

```

show task memory  user@host> show task memory
Memory           Size (kB) %Available When
Currently In Use: 29417      3%    now

```

```

Maximum Ever Used:      33882          4% 00/02/11 22:07:03
Available:              756281        100% now

```

```

show task memory user@host> show task memory detail
detail

```

```

----- Overall Memory Report -----
Size TP      Allocs  Mallocs  AllocBytes  MaxAllocs  MaxBytes  FreeBytes
  8          -      111       888        112        896       3208
 12          92      149      2892        247       2964      1204
 12 T        -        -        -          5         60         -
 16          7       11       288         23        368       3808
 20         100      33      2660        164       3280      1436
 20 T        -        -        -         40        800         -
 24         162      15      4248        177       4248      3944
 24 T        -        -        -          4         96         -
 28         371      -      10388       372      10416      1900
 32          6       23       928         30        960       3168
...
-----
                                606182                                715302                                118810

```

```

----- Allocator Memory Report -----
Name                Size Alloc DTP      Alloc      Alloc MaxAlloc  MaxAlloc
                   Size      Size      Blocks    Bytes    Blocks    Bytes
patroot              8    12      84      1008      87      1044
sockaddr_un.i802     8    12        2       24        2       24
cos_nhm_nh           8    12        1       12        1       12
sockaddr_un.tag      8    12        3       36        4       48
gw_entry_list        8    12        1       12        1       12
bgp_riblist_01       8    12        1       12        2       24
ospf_intf_ev         8    12        -        -        6       72
krt_remnant_rt       8    12 T        -        -        5       60
...
-----
                                164108                                221552

```

```

----- Malloc Usage Report -----
Name                Allocs   Bytes  MaxAllocs  MaxBytes  FuncCalls
MGMT.local           1         8         1         8         1
BGP.0.0.0.0+179      -         -         1         8         2
BGP RT Background    4      74748        4      74748        4
SNMP Subagent./var/run/ -        52         1      9172        56
OSPFv2 I/O./var/run/ppm 1     66536        2     66552     4551
OSPF                 6     67655        7     67703        68
KRT                  -         -         1     3784        18
ASPaths              3         80         3         80         3
-- sockaddr --       183      2100      184      2108     1645
BFD I/O./var/run/bfdd_c 1     65535        2     65551     4555
RT                   48        872        48        872        48
Scheduler            42        628        43        628        88
--Anonymous--        56       1100        58       1140       112
--System--           82     58364       114     60044     4654
...
-----
                                337678                                352398

```

```

Dynamically allocated memory: 765952      Maximum: 765952
Program data+BSS memory:      1568768     Maximum: 1568768
Page data overhead:           53248       Maximum: 53248
Page directory size:          4096        Maximum: 4096

```

-----  
Total bytes in use: 2392064 (0% of available memory)

## show task replication

<b>Syntax</b>	<b>show task replication</b>
<b>Release Information</b>	Command introduced in Junos OS Release 8.5. Command introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Displays graceful Routing Engine switchover (GRES) and nonstop active routing (NSR) status. When you issue this command on the master Routing Engine, the status of nonstop active routing synchronization is also displayed.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show task replication (Issued on the Master Routing Engine) on page 1140</b> <b>show task replication (Issued on the Backup Routing Engine) on page 1141</b>
<b>Output Fields</b>	Table 162 on page 1140 lists the output fields for the <b>show task replication</b> command. Output fields are listed in the approximate order in which they appear.

**Table 162: show task replication Output Fields**

Field Name	Field Description
<b>Stateful replication</b>	Displays whether or not graceful Routing Engine switchover is configured. The status can be <b>Enabled</b> or <b>Disabled</b> .
<b>RE mode</b>	Displays the Routing Engine on which the command is issued: <b>Master</b> , <b>Backup</b> , or <b>Not applicable</b> (when the router has only one Routing Engine).
<b>Protocol</b>	Protocol that are supported by nonstop active routing.
<b>Synchronization Status</b>	Nonstop active routing synchronization status for the supported protocols. States are <b>NotStarted</b> , <b>InProgress</b> , and <b>Complete</b> .

## Sample Output

```

show task replication (Issued on the Master Routing Engine)
user@host> show task replication
Stateful Replication: Enabled
RE mode: Master

Protocol      Synchronization Status
OSPF          NotStarted
BGP           Complete
IS-IS        NotStarted
LDP           Complete

```

<b>show task replication</b>	<b>user@host&gt; show task replication</b>
<b>(Issued on the Backup</b>	Stateful Replication: Enabled
<b>Routing Engine)</b>	RE mode: Master

## show version

---

	<b>Syntax</b>	show version <brief   detail>
	<b>Syntax (EX Series Switch)</b>	show version <all-members> <brief   detail> <local> <member <i>member-id</i> >
	<b>Syntax (TX Matrix Router)</b>	show version <brief   detail> <all-chassis   all-lcc   lcc <i>number</i>   scc>
	<b>Syntax (TX Matrix Plus Router)</b>	show version <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> > <brief   detail>
	<b>Syntax (QFX Series)</b>	show version <brief   detail>
	<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 hostname and version information about the software running on the router or switch.
	<b>Options</b>	<p>none—Display standard information about the hostname and version of the software running on the router or switch.</p> <p>brief   detail—(Optional) Display the specified level of output.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display the hostname and version information about the software running on all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display the hostname and version information about the software running on all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Display standard information about the hostname and version of the software running on all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display the hostname and version information about the software running on a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display the hostname and version information about the software running on a specific T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p>

**local**—(EX4200 switches only) (Optional) Display standard information about the hostname and version of the software running on the local Virtual Chassis member.

**member *member-id***—(EX4200 switches only) (Optional) Display standard information about the hostname and version of the software running on 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 the hostname and version information about the software running on the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Display the hostname and version information about the software running on the TX Matrix Plus router (or switch-fabric chassis). Replace ***number*** with 0.

**Additional Information** By default, when you issue the **show version** 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 version on page 1144**  
**show version (TX Matrix Plus Router) on page 1144**  
**show version (QFX Series) on page 1149**

## Sample Output

```

show version user@host> show version
Hostname: router1
Model: m20
JUNOS Base OS boot [7.2-20050312.0]
JUNOS Base OS Software Suite [7.2-20050312.0]
JUNOS Kernel Software Suite [7.2R1.7]
JUNOS Packet Forwarding Engine Support (M20/M40) [7.2R1.7]
JUNOS Routing Software Suite [7.2R1.7]
JUNOS Online Documentation [7.2R1.7]
JUNOS Crypto Software Suite [7.2R1.7]

{master}

user@host> show version psd 1
psd1-re0:
-----
Hostname: china
Model: t640
JUNOS Base OS boot [9.1I20080311_1959_adthakur]
JUNOS Base OS Software Suite [9.1-20080321.0]
JUNOS Kernel Software Suite [9.1-20080321.0]
JUNOS Crypto Software Suite [9.1-20080321.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.1-20080321.0]
JUNOS Packet Forwarding Engine Support (T-series) [9.1-20080321.0]
JUNOS Online Documentation [9.1-20080321.0]
JUNOS Routing Software Suite [9.1-20080321.0]
labpkg [7.0]

show version (TX user@host> show version
Matrix Plus Router) sfc0-re0:
-----
      Type InUse MemUse HighUse Requests Size(s)
file desc 164 35K - 4034 16,1024,2048,16384
  sigio 1 1K - 50 32
  kenv 28 5K - 31 16,32,64,131072
  kqueue 5 3K - 119 1024,4096,32768
proc-args 66 3K - 2951 16,32,64,128,256,512,1024,2048
  zombie 0 0K - 3513 128
  ithread 100 7K - 100 16,64,256
CAM queue 3 1K - 3 16
  KTRACE 100 10K - 100 128
  entropy 1024 64K - 1024 64
  USB 127 10K - 127 16,32,64,128,256,1024,2048
  linker 485 6216K - 1166 16,32,64,4096,32768,131072
  USBdev 10 1K - 34 16,128,2048,16384
  lockf 50 4K - 64872 64
  devbuf 21086 15337K - 21661
16,32,64,128,256,512,1024,2048,4096,16384,32768,65536,131072
  temp 1249 149K - 9479
16,32,64,128,256,512,2048,4096,16384,32768,65536,131072
  ip6ndp 0 0K - 4 64
  in6ifmulti 1 1K - 1 64
  in6grentry 1 1K - 1 64
  iftable 13 3K - 14 16,64,4096
  iflogical 17 4K - 24 64,2048
  iffamilly 45 6K - 63 32,1024,2048
  rtnextthop 206 36K - 380
16,32,64,256,512,1024,2048,4096,8192,16384

```



metrics	5	1K	-	25	256
inifmulti	6	1K	-	12	64
ingrentry	12	1K	-	24	64
rnode	126	3K	-	240	16, 32
rcache	4	8K	-	4	65536
tagbh	10	2K	-	20	256
ifdevice	11	8K	-	11	16, 32768
ifstat	2817	2765K	-	2825	16, 32, 1024, 16384, 32768, 65536
ipfw	32	22K	-	43	
16, 32, 64, 128, 256, 512, 16384, 32768, 65536, 131072					
ifmaddr	399	11K	-	435	16, 32
rtable	208	19K	-	340	16, 32, 64, 128, 1024, 16384
sysctl	0	0K	-	1188265	16, 32, 64, 4096, 16384, 32768
ifaddr	45	3K	-	57	32, 64, 128
mkey	354	6K	-	4690	16, 128
pfe_ipc	0	0K	-	11456	
16, 32, 64, 128, 256, 512, 1024, 2048, 4096, 8192, 16384, 32768, 65536, 131072					
ifstate	5961	435K	-	6846	
16, 32, 64, 128, 256, 512, 1024, 2048, 4096, 16384, 32768					
itable16	249	39K	-	294	256, 4096
itable32	148	5K	-	148	32
itable64	2	1K	-	2	64
lr	1	1K	-	1	16384
pic	29	3K	-	29	64, 16384
pfestat	0	0K	-	2820	32, 128, 65536
gencfg	1499	200K	-	6086	
16, 32, 64, 128, 512, 4096, 16384, 32768, 65536					
jsr	2	1K	-	10	16
idl	1	4K	-	121	
32, 64, 128, 256, 512, 1024, 2048, 4096, 16384, 32768, 65536, 131072					
rtsmsg	0	0K	-	16	131072
DEVFS2	108	2K	-	108	16
DEVFS3	204	23K	-	205	256
module	247	16K	-	247	64, 128
mtx_pool	1	8K	-	1	
DEVFS1	108	27K	-	108	4096
pgrp	20	2K	-	275	64
session	14	2K	-	173	512
proc	2	1K	-	2	16384
subproc	302	601K	-	3815	4096, 131072
cred	45	5K	-	33092	256
plimit	22	5K	-	1363	2048
uidinfo	3	1K	-	6	32, 512
sysctlold	2548	78K	-	2548	16, 32, 64
sysctltmp	0	0K	-	1449	16, 32, 64, 1024
umtx	162	11K	-	162	64
SWAP	2	277K	-	2	64
bus	781	126K	-	3263	16, 32, 64, 128, 32768
bus-sc	67	62K	-	1623	
16, 32, 64, 512, 1024, 4096, 16384, 65536, 131072					
DEVFS	14	1K	-	15	16, 64
devstat	8	17K	-	8	16, 131072
eventhandler	42	2K	-	42	32, 128
kobj	93	186K	-	111	65536
rman	106	7K	-	490	16, 32, 64
sbuf	0	0K	-	1112	16, 32, 32768, 131072
NULLFS hash	1	1K	-	1	64
taskqueue	5	1K	-	5	64
turnstiles	163	11K	-	163	64
Unitno	6	1K	-	10	16, 64
ioctlops	0	0K	-	477380	16, 32, 64, 128, 16384, 65536, 131072

iov	0	OK	-	49032	16, 64, 128, 256, 512, 1024, 2048, 131072
msg	4	25K	-	4	32768, 131072
sem	4	7K	-	4	16384, 32768, 131072
shm	3	14K	-	8	32768
ttys	412	60K	-	863	512, 32768
ptys	4	1K	-	4	128
mbextcnt	0	OK	-	42	16
soname	104	11K	-	104726	16, 32, 64, 256
pcb	256	32K	-	1097	
16, 32, 64, 128, 1024, 2048, 4096, 16384, 32768, 65536					
BIO buffer	44	88K	-	723	65536
vfscache	1	512K	-	1	
cluster_save buffer	0	OK	-	-	30 32, 64
VFS hash	1	256K	-	1	
vnodes	1	1K	-	1	512
mount	274	23K	-	489	16, 32, 64, 128, 256, 4096, 32768
vnodemarker	0	OK	-	1699	16384
pfs_nodes	25	3K	-	25	128
pfs_vncache	227	8K	-	429	32
GEOM	173	15K	-	1068	
16, 32, 64, 128, 256, 512, 2048, 16384, 32768, 131072					
STP	1	1K	-	1	64
CAM dev queue	1	1K	-	1	64
syncache	1	8K	-	1	
tlv_stat	0	OK	-	238	
NFS daemon	1	8K	-	1	
pagedep	1	64K	-	124	64
inodedep	1	256K	-	605	256
newblk	1	1K	-	611	64, 4096
bmsafemap	0	OK	-	47	64
allocdirect	0	OK	-	605	128
indirdep	0	OK	-	6	32
allocindir	0	OK	-	5	64
freefrag	0	OK	-	91	32
freeblks	0	OK	-	93	2048
freefile	0	OK	-	161	32
diradd	0	OK	-	603	64
mkdir	0	OK	-	166	32
dirrem	0	OK	-	312	32
newdirblk	0	OK	-	1	32
savedino	0	OK	-	294	512
UFS mount	15	36K	-	15	4096, 65536, 131072
UMAHash	1	16K	-	7	4096, 16384, 32768, 65536, 131072
MD disk	9	18K	-	9	65536
ata_generic	2	2K	-	21	16, 16384, 32768
ISOFS mount	7	1K	-	13	512
VM pgdata	2	65K	-	2	64
ISOFS node	1405	132K	-	1419	128
CAM SIM	1	1K	-	1	64
atkbddev	2	1K	-	2	32
Gzip trees	0	OK	-	470292	32, 64, 128, 1024, 8192, 32768, 65536, 131072
CAM XPT	6	1K	-	9	16, 64, 16384
isadev	23	2K	-	23	64
CAM periph	1	1K	-	1	128
I/O APIC	1	1K	-	1	32768
ad_driver	2	1K	-	2	256
legacydrv	3	1K	-	3	16
memdesc	1	4K	-	1	131072
MP Table	1	1K	-	1	128
nexusdev	2	1K	-	2	16

	ata_dma	6	1K	-	6	256	
	cdev	26	3K	-	26	256	
	kbdmux	5	9K	-	5	128,4096,65536,131072	
ITEM	SIZE	LIMIT	USED	FREE	REQUESTS		
UMA Kegs:	136,	0,	69,	3,	69		
UMA Zones:	120,	0,	69,	21,	69		
UMA Slabs:	64,	0,	1681,	30,	17268		
UMA RCntSlabs:	104,	0,	2419,	23,	2419		
UMA Hash:	128,	0,	4,	26,	5		
16 Bucket:	76,	0,	32,	18,	32		
32 Bucket:	140,	0,	35,	21,	35		
64 Bucket:	268,	0,	32,	10,	32		
128 Bucket:	524,	0,	105,	0,	105		
VM OBJECT:	128,	0,	3767,	193,	69113		
MAP:	160,	0,	7,	41,	7		
KMAP ENTRY:	68,	44352,	26,	142,	40036		
MAP ENTRY:	68,	0,	2718,	474,	195484		
PV ENTRY:	24,	1259180,	107193,	12722,	5133143		
DP fakepg:	72,	0,	0,	0,	0		
mt_zone:	64,	0,	231,	64,	231		
16:	16,	0,	4447,	222,	1707104		
32:	32,	0,	5559,	204,	427638		
64:	64,	0,	23128,	59,	191981		
96:	96,	0,	3628,	92,	36576		
112:	112,	0,	782,	93,	51883		
128:	128,	0,	727,	143,	2028		
160:	160,	0,	1041,	39,	9623		
208:	208,	0,	302,	40,	5625		
256:	256,	0,	627,	18,	4296		
272:	272,	0,	48,	22,	3160		
512:	512,	0,	666,	14,	5529		
1024:	1024,	0,	420,	12,	15128		
2048:	2048,	0,	1909,	17,	13067		
4096:	4096,	0,	228,	19,	7877		
Files:	72,	0,	586,	103,	124488		
PROC:	544,	0,	139,	22,	3652		
THREAD:	416,	0,	161,	1,	162		
KSEGRP:	88,	0,	161,	39,	162		
UPCALL:	44,	0,	0,	0,	0		
SLEEPQUEUE:	32,	0,	163,	176,	163		
VMSPACE:	268,	0,	66,	18,	3569		
mbuf_packet:	256,	180000,	256,	128,	27221		
mbuf:	256,	180000,	4110,	501,	2286155		
mbuf_cluster:	2048,	30000,	4487,	351,	697551		
mbuf_jumbo_pagesize:	4096,		0,	0,	0,	0	
mbuf_jumbo_9k:	9216,	0,	0,	0,	0		
mbuf_jumbo_16k:	16384,	0,	0,	0,	0		
ACL UMA zone:	388,	0,	0,	0,	0		
g_bio:	132,	0,	0,	290,	97288		
ata_request:	200,	0,	0,	76,	5910		
ata_composite:	192,	0,	0,	0,	0		
VNODE:	292,	0,	4128,	32,	4583		
VNODEPOLL:	72,	0,	0,	0,	0		
S VFS Cache:	68,	0,	3890,	86,	9271		
L VFS Cache:	291,	0,	17,	22,	24		
NAMEI:	1024,	0,	0,	36,	341732		
NFSMOUNT:	480,	0,	0,	0,	0		
NFSNODE:	460,	0,	0,	0,	0		
PIPE:	404,	0,	29,	7,	1825		
KNOTE:	72,	0,	35,	71,	15004		

socket:	412,	30006,	352,	26,	4683
ipq:	52,	288,	0,	0,	0
udpcb:	224,	30005,	24,	27,	232
inpcb:	224,	30005,	35,	33,	140
tcpcb:	520,	30002,	35,	7,	140
tcptw:	56,	6030,	0,	134,	66
syncache:	128,	15360,	0,	60,	41
tcpreass:	20,	2028,	0,	0,	0
sackhole:	20,	0,	0,	0,	0
ripcb:	224,	30005,	5,	29,	7
unpcb:	140,	30016,	150,	46,	3791
SWAPMETA:	276,	121576,	0,	0,	0
FFS inode:	132,	0,	2385,	51,	2622
FFS1 dinode:	128,	0,	2385,	45,	2622
FFS2 dinode:	256,	0,	0,	0,	0

```

19933113 cpu context switches
5244831 device interrupts
154821 software interrupts
459702 traps
8357837 system calls
    76 kernel threads created
3442 fork() calls
134 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
504 vnode pager pageins
538 vnode pager pages paged in
380 vnode pager pageouts
3646 vnode pager pages paged out
    0 page daemon wakeups
    0 pages examined by the page daemon
56570 pages reactivated
127752 copy-on-write faults
    39 copy-on-write optimized faults
200992 zero fill pages zeroed
196746 zero fill pages prezeroed
    27 intransit blocking page faults
443499 total VM faults taken
    0 pages affected by kernel thread creation
441644 pages affected by fork()
52141 pages affected by vfork()
    0 pages affected by rfork()
420183 pages freed
    0 pages freed by daemon
206284 pages freed by exiting processes
52228 pages active
56648 pages inactive
52413 pages in VM cache
17956 pages wired down
654199 pages free
    4096 bytes per page
    0 swap pages used
    0 peak swap pages used
1295493 total name lookups
    cache hits (93% pos + 5% neg) system 0% per-directory
    deletions 0%, falsehits 0%, toolong 0%
interrupt                                total      rate


```

```
irq4: sio0                      5131      1
irq16: uhci0 uhci*             164201    40
irq17: uhci1 uhci*             386684    95
cpu0: timer                     8131301   2017
Total                           8687317   2155
vm.kmem_map_free: 618377216
```

```
show version (QFX Series) user@switch> show version
Hostname: switch
Model: qfx_s3500
JUNOS Base OS boot [11.1I20100806_2314_ssiano]
JUNOS Base OS Software Suite [11.1I20100806_2314_ssiano]
JUNOS Kernel Software Suite [11.1I20100806_2314_ssiano]
JUNOS Crypto Software Suite [11.1I20100806_2314_ssiano]
JUNOS Online Documentation [11.1I20100806_2314_ssiano]
JUNOS Enterprise Software Suite [11.1I20100806_2314_ssiano]
JUNOS Packet Forwarding Engine Support (QFX Edge) [11.1I20100806_2314_ssiano]
JUNOS Routing Software Suite [11.1I20100806_2314_ssiano]
```

## start shell

---

<b>Syntax</b>	<code>start shell (csh   sh)</code> <code>&lt;user username&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>	Exit from the CLI environment and create a UNIX-level shell. To return to the CLI, type <b>exit</b> from the shell.
	<div> <b>NOTE:</b><ul style="list-style-type: none"><li>To issue this command, the user must have the required login access privileges configured by including the <b>permissions</b> statement at the <b>[edit system login class class-name]</b> hierarchy level.</li><li>UNIX wheel group membership or permissions are no longer required to issue this command.</li></ul></div>
<b>Options</b>	<code>csh</code> —Create a UNIX C shell.  <code>sh</code> —Create a UNIX Bourne shell.  <code>user username</code> —(Optional) Start the shell as another user.
<b>Additional Information</b>	When you are in the shell, the shell prompt has the following format:  <code>username@hostname%</code> An example of the prompt is:  <code>root@host%</code>
<b>Required Privilege Level</b>	shell and maintenance
<b>List of Sample Output</b>	<b>start shell csh on page 1150</b>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```
start shell csh  user@host> start shell csh
                  %
                  exit
                  %
                  username@hostname% start shell sh
```

```
%  
exit  
user@host>
```

## test configuration

---

<b>Syntax</b>	<code>test configuration <i>filename</i></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>	Verify that the syntax of a configuration file is correct. If the configuration contains any errors, a message is displayed to indicate the line number and column number in which the error was found.
<b>Options</b>	<i>filename</i> —Name of the configuration file.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>test configuration on page 1152</b>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

```
test configuration  user@host> test configuration terminal
                    [Type ^D to end input]
                    system {
                    host-name bluesky;
                    paris-23;
                    login;
                    }
                    terminal:3:(8) syntax error: paris
                    [edit system]
                    'paris-23;'
                    syntax error
                    terminal:4:(11) statement must contain additional statements: ;
                    [edit system login]
                    'login ;'
                    statement must contain additional statements
                    configuration syntax failed
```



## PART 3

# Class of Service

- [Class-of-Service Operational Mode Commands on page 1155](#)



# Class-of-Service Operational Mode Commands

Table 163 on page 1155 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot class of service (CoS). Commands are listed in alphabetical order.

**Table 163: Class-of-Service (CoS) Operational Mode Commands**

Task	Command
Display the entire CoS configuration, including system-chosen defaults.	<b>show class-of-service</b>
(J Series routers only) Display trigger points and associated rates for CoS adaptive shapers.	<b>show class-of-service adaptive-shaper</b>
For each CoS classifier, display the mapping of code point value to forwarding class and loss priority.	<b>show class-of-service classifier</b>
Display the mapping of CoS code point aliases to corresponding bit patterns.	<b>show class-of-service code-point-aliases</b>
Display data points for each CoS random early detection (RED) drop profile.	<b>show class-of-service drop-profile</b>
(M320 routers and T Series routers only) Display the mapping of CoS schedulers to switch fabric traffic priorities and a summary of scheduler parameters for each priority.	<b>show class-of-service fabric scheduler-map</b>
(M320 routers and T Series routers only) Display CoS switch fabric queue statistics.	<b>show class-of-service fabric statistics</b>
Display the mapping of forwarding class names to queue numbers.	<b>show class-of-service forwarding-class</b>
Display entire CoS configuration as it exists in the forwarding table.	<b>show class-of-service forwarding-table</b>

**Table 163: Class-of-Service (CoS) Operational Mode Commands** (*continued*)

Task	Command
Display the mapping of code point value to queue number and loss priority for each classifier as it exists in the forwarding table.	<b>show class-of-service forwarding-table classifier</b>
For each logical interface, display either the table index of the classifier for a given code point type or the queue number (if it is a fixed classification) in the forwarding table.	<b>show class-of-service forwarding-table classifier mapping</b>
Display the data points of all random early detection (RED) drop profiles as they exist in the forwarding table.	<b>show class-of-service forwarding-table drop-profile</b>
(M320 routers and T Series routers only) Display the scheduler map information as it exists in the forwarding table for switch fabric.	<b>show class-of-service forwarding-table fabric scheduler-map</b>
(J Series routers only) Display the mapping of code point value to loss priority as it exists in the forwarding table.	<b>show class-of-service forwarding-table loss-priority-map</b>
(J Series routers only) For each logical interface, display the loss priority table index.	<b>show class-of-service forwarding-table loss-priority-map mapping</b>
Display mapping of queue number and loss priority to code point value for each rewrite rule as it exists in the forwarding table.	<b>show class-of-service forwarding-table rewrite-rule</b>
For each logical interface, display the table identifier of the rewrite rule map for each code point type.	<b>show class-of-service forwarding-table rewrite-rule mapping</b>
For each physical interface, display the scheduler map information as it exists in the forwarding table.	<b>show class-of-service forwarding-table scheduler-map</b>
For Adaptive Services (AS) PIC link services IQ interfaces (lsq) only, display fragmentation properties for specific forwarding classes.	<b>show class-of-service fragmentation-map</b>
Display the logical and physical interface associations for the classifier, rewrite rules, and scheduler map objects.	<b>show class-of-service interface</b>
Display the configured shaping rate and the quality of service (QoS) adjusted shaping rate for each logical interface set configured for hierarchical class of service (CoS).	<b>show class-of-service interface-set</b>

**Table 163: Class-of-Service (CoS) Operational Mode Commands** (*continued*)

Task	Command
(J Series routers only) Display mapping of code point value to loss priority.	<b>show class-of-service loss-priority-map</b>
Display the mapping of forwarding classes and loss priority to code point values.	<b>show class-of-service rewrite-rule</b>
(M Series and T Series routers only) Display mapping of CoS objects to routing instances.	<b>show class-of-service routing-instance</b>
Display mapping of schedulers to forwarding classes and a summary of scheduler parameters for each entry.	<b>show class-of-service scheduler-map</b>
For Gigabit Ethernet IQ and Channelized IQ PICs only, display traffic shaping and scheduling profiles.	<b>show class-of-service traffic-control-profile</b>
For IQE PICs only, display translation table information.	<b>show class-of-service translation-table</b>
(J Series routers only) Display virtual channel information.	<b>show class-of-service virtual-channel</b>
(J Series routers only) Display virtual channel group information.	<b>show class-of-service virtual-channel-group</b>



**NOTE:** For information about how to configure CoS, see the *Junos OS Class of Service Configuration Guide*. For information about the related **show interfaces queue** command, see the *Junos OS Interfaces Command Reference*.

## show class-of-service

<b>Syntax</b>	show class-of-service
<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 the entire class-of-service (CoS) configuration, including system-chosen defaults. Executing this command is equivalent to executing all <b>show class-of-service</b> commands in succession.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show class-of-service on page 1158</b>
<b>Output Fields</b>	See the output field descriptions for the commands.

### Sample Output

```

user@host> show class-of-service
Forwarding class                               Queue
  best-effort                                   0
  expedited-forwarding                         1
  assured-forwarding                           2
  network-control                              3
Code point type: dscp
  Alias      Bit pattern
  af11       001010
  af12       001100
  af13       001110
...
Code point type: dscp-ipv6
  Alias      Bit pattern
  af11       001010
  af12       001100
  af13       001110
...
Code point type: exp
  Alias      Bit pattern
  af11       100
  af12       101
  be         000
...
Code point type: ieee-802.1
  Alias      Bit pattern
  af11       100
  af12       101
  be         000
...
Classifier: dscp-default, Code point type: dscp, Index: 6
  Code point      Forwarding class      Loss priority
  000000          best-effort            low
  000001          best-effort            low

```

```

000010          best-effort          low
....
Classifier: dscp-ipv6-default, Code point type: dscp-ipv6, Index: 7
Code point      Forwarding class      Loss priority
000000          best-effort          low
000001          best-effort          low
000010          best-effort          low
...
Loss-priority-map: frame-relay-de-default, Code point type: frame-relay-de, Index:
12
Code point      Loss priority
0              low
1              high

Rewrite rule: dscp-default, Code point type: dscp, Index: 23
Forwarding class      Loss priority      Code point
best-effort          low                000000
best-effort          high                000000
expedited-forwarding low                101110
...
Rewrite rule: dscp-ipv6-default, Code point type: dscp-ipv6, Index: 24
Forwarding class      Loss priority      Code point
best-effort          low                000000
best-effort          high                000000
...
....
Drop profile: <default-drop-profile>, Type: discrete, Index: 1
Fill level    Drop probability
100           100

Scheduler map: <default>, Index: 2

Scheduler: <default-be>, Forwarding class: best-effort, Index: 16
Transmit rate: 95 percent, Rate Limit: none, Buffer size: 95 percent, Priority:
low
Drop profiles:
Loss priority  Protocol    Index    Name
Low           any         1        <default-drop-profile>
Medium low    any         1        <default-drop-profile>
Medium high   any         1        <default-drop-profile>
High          any         1        <default-drop-profile>
...
Physical interface: fe-0/0/0, Index: 137
Queues supported: 8, Queues in use: 4
Scheduler map: <default>, Index: 2

Logical interface: fe-0/0/0.0, Index: 69
Object      Name              Type              Index
Adaptive-shaper fr-shaper          35320
Classifier   ipprec-compatibility ip                  11

Physical interface: fe-0/0/1, Index: 138
Queues supported: 8, Queues in use: 4
Scheduler map: <default>, Index: 2
...

```

## show class-of-service adaptive-shaper

<b>Syntax</b>	show class-of-service adaptive-shaper <adaptive-shaper-name>
<b>Release Information</b>	Introduced before Junos OS Release 7.4.
<b>Description</b>	(J Series routers only) Display trigger points and associated rates for class-of-service (CoS) adaptive shapers.
<b>Options</b>	none—Display all adaptive shaper information.  adaptive-shaper-name—(Optional) Display information for the named adaptive shaper.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show class-of-service adaptive-shaper on page 1160
<b>Output Fields</b>	Table 164 on page 1160 describes the output fields for the <b>show class-of-service adaptive-shaper</b> command. Output fields are listed in the approximate order in which they appear.

**Table 164: show class-of-service adaptive-shaper Output Fields**

Field Name	Field Description
Adaptive shaper	Name of the adaptive shaper.
Index	Internal index of the adaptive shaper.
Trigger type	Adaptive shaper trigger type. The trigger type can be the backward explicit congestion notification (BECN) bit in Frame Relay packet headers.
Shaping rate	CoS adaptive shaping rate.

### Sample Output

```

show class-of-service adaptive-shaper
user@host> show class-of-service adaptive-shaper
Adaptive shaper: as, Index: 3155
Trigger type      Shaping rate
BECN              30 percent

```



## show class-of-service classifier

<b>Syntax</b>	show class-of-service classifier <name <i>name</i> > <type dscp   type dscp-ipv6   type exp   type ieee-802.1   type inet-precedence>
<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>	For each class-of-service (CoS) classifier, display the mapping of code point value to forwarding class and loss priority.
<b>Options</b>	<p>none—Display all classifiers.</p> <p>name <i>name</i>—(Optional) Display named classifier.</p> <p>type dscp—(Optional) Display all classifiers of the Differentiated Services code point (DSCP) type.</p> <p>type dscp-ipv6—(Optional) Display all classifiers of the DSCP for IPv6 type.</p> <p>type exp—(Optional) Display all classifiers of the MPLS experimental (EXP) type.</p> <p>type ieee-802.1—(Optional) Display all classifiers of the ieee-802.1 type.</p> <p>type inet-precedence—(Optional) Display all classifiers of the inet-precedence type.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p><b>show class-of-service classifier type ieee-802.1 on page 1162</b></p> <p><b>show class-of-service classifier type ieee-802.1 (QFX Series) on page 1162</b></p>
<b>Output Fields</b>	Table 165 on page 1161 describes the output fields for the <b>show class-of-service classifier</b> command. Output fields are listed in the approximate order in which they appear.

**Table 165: show class-of-service classifier Output Fields**

Field Name	Field Description
<b>Classifier</b>	Name of the classifier.
<b>Code point type</b>	Type of the classifier: <b>exp</b> (not on EX Series switch), <b>dscp</b> , <b>dscp-ipv6</b> (not on EX Series switch), <b>ieee-802.1</b> , or <b>inet-precedence</b> .
<b>Index</b>	Internal index of the classifier.
<b>Code point</b>	Code point value used for classification
<b>Forwarding class</b>	Classification of a packet affecting the forwarding, scheduling, and marking policies applied as the packet transits the router.

Table 165: show class-of-service classifier Output Fields (*continued*)

Field Name	Field Description
Loss priority	Loss priority value used for classification. For most platforms, the value is <b>high</b> or <b>low</b> . For some platforms, the value is <b>high</b> , <b>medium-high</b> , <b>medium-low</b> , or <b>low</b> .

### Sample Output

```

show class-of-service classifier type ieee-802.1
classifier type
ieee-802.1
user@host> show class-of-service classifier type ieee-802.1
Classifier: ieee802.1-default, Code point type: ieee-802.1, Index: 3
Code Point      Forwarding Class      Loss priority
000             best-effort           low
001             best-effort           high
010             expedited-forwarding  low
011             expedited-forwarding  high
100             assured-forwarding    low
101             assured-forwarding    medium-high
110             network-control       low
111             network-control       high

Classifier: users-ieee802.1, Code point type: ieee-802.1
Code point      Forwarding class      Loss priority
100             expedited-forwarding  low

show class-of-service classifier type ieee-802.1
classifier type
ieee-802.1 (QFX Series)
user@switch> show class-of-service classifier type ieee-802.1
Classifier: ieee8021p-default, Code point type: ieee-802.1, Index: 11
Code point      Forwarding class      Loss priority
000             best-effort           low
001             best-effort           low
010             best-effort           low
011             best-effort           low
100             best-effort           low
101             best-effort           low
110             network-control       low
111             network-control       low

Classifier: ieee-mcast, Code point type: ieee-802.1, Index: 46
Code point      Forwarding class      Loss priority
000             mcast-be              low
001             mcast-be              low
010             mcast-be              low
011             mcast-be              low
100             mcast-be              low
101             mcast-be              low
110             mcast-nc              low
111             mcast-nc              low

```

## show class-of-service code-point-aliases

<b>Syntax</b>	<code>show class-of-service code-point-aliases</code> <code>&lt;dscp   dscp-ipv6   exp   ieee-802.1   inet-precedence&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 the mapping of class-of-service (CoS) code point aliases to corresponding bit patterns.
<b>Options</b>	<p><code>none</code>—Display code point aliases of all code point types.</p> <p><code>dscp</code>—(Optional) Display Differentiated Services code point (DSCP) aliases.</p> <p><code>dscp-ipv6</code>—(Optional) Display IPv6 DSCP aliases.</p> <p><code>exp</code>—(Optional) Display MPLS EXP code point aliases.</p> <p><code>ieee-802.1</code>—(Optional) Display IEEE-802.1 code point aliases.</p> <p><code>inet-precedence</code>—(Optional) Display IPv4 precedence code point aliases.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<a href="#">show class-of-service code-point-aliases exp on page 1164</a>
<b>Output Fields</b>	Table 166 on page 1163 describes the output fields for the <b>show class-of-service code-point-aliases</b> command. Output fields are listed in the approximate order in which they appear.

**Table 166: show class-of-service code-point-aliases Output Fields**

Field Name	Field Description
<b>Code point type</b>	Type of the code points displayed: <b>dscp</b> , <b>dscp-ipv6</b> (not on EX Series switch or the QFX Series), <b>exp</b> (not on EX Series switch or the QFX Series), <b>ieee-802.1</b> , or <b>inet-precedence</b> (not on the QFX Series).
<b>Alias</b>	Alias for a bit pattern.
<b>Bit pattern</b>	Bit pattern for which the alias is displayed.

## Sample Output

```
show class-of-service user@host> show class-of-service code-point-aliases exp
code-point-aliases exp Code point type: exp
  Alias      Bit pattern
  af11      100
  af12      101
  be        000
  be1       001
  cs6       110
  cs7       111
  ef        010
  ef1       011
  nc1       110
  nc2       111
```

## show class-of-service drop-profile

<b>Syntax</b>	show class-of-service drop-profile <profile-name <i>profile-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. Command introduced in Junos OS Release 11.1 for the QFX Series.
<b>Description</b>	Display data points for each class-of-service (CoS) random early detection (RED) drop profile.
<b>Options</b>	none—Display all drop profiles.  profile-name <i>profile-name</i> —(Optional) Display the specified profile only.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show class-of-service drop-profile on page 1166</b>
<b>Output Fields</b>	Table 167 on page 1165 describes the output fields for the <b>show class-of-service drop-profile</b> command. Output fields are listed in the approximate order in which they appear.

**Table 167: show class-of-service drop-profile Output Fields**

Field Name	Field Description
<b>Drop profile</b>	Name of a drop profile.
<b>Type</b>	Type of this drop profile: <b>discrete</b> or <b>interpolated</b> .
<b>Index</b>	Internal index of this drop profile.
<b>Fill Level</b>	Percentage fullness of a queue.
<b>Drop probability</b>	Drop probability at this fill level.

## Sample Output

```
show class-of-service user@host> show class-of-service drop-profile
drop-profile Drop profile: <default-drop-profile>, Type: discrete, Index: 1
  Fill level Drop probability
    100      100
Drop profile: user-drop-profile, Type: interpolated, Index: 2989
  Fill level Drop probability
    0        0
    1        1
    2        2
    4        4
    5        5
    6        6
    8        8
   10       10
   12       15
   14       20
   15       23
... 64 entries total
   90       96
   92       96
   94       97
   95       98
   96       98
   98       99
   99       99
  100      100
```

## show class-of-service fabric scheduler-map

<b>Syntax</b>	show class-of-service fabric scheduler-map
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M320 routers and T Series routers only) Display the mapping of class-of-service (CoS) schedulers to switch fabric traffic priorities and a summary of scheduler parameters for each priority.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show class-of-service fabric scheduler-map on page 1167
<b>Output Fields</b>	Table 168 on page 1167 describes the output fields for the <b>show class-of-service fabric scheduler-map</b> command. Output fields are listed in the approximate order in which they appear.

**Table 168: show class-of-service fabric scheduler-map Output Fields**

Field Name	Field Description
<b>Fabric priority</b>	Indicates the fabric traffic priority. Currently, two priorities are supported: <b>low</b> and <b>high</b> .
<b>Scheduler</b>	Name of the scheduler.
<b>Index</b>	Index of the indicated object. Objects that have indexes in this output include schedulers and drop profiles.
<b>Drop profiles</b>	Display the assignment of drop profile by name and index to a given loss priority and protocol pair: <ul style="list-style-type: none"> <li>• <b>Loss priority</b>—Packet loss priority for drop profile assignment.</li> <li>• <b>Protocol</b>—Transport protocol for drop profile assignment.</li> <li>• <b>Name</b>—Name of the drop profile.</li> </ul>

## Sample Output

```

user@host> show class-of-service fabric scheduler-map
show class-of-service fabric scheduler-map
Fabric priority: low
Scheduler: fab-ef-scheduler, Index: 60211
Drop profiles:
  Loss priority  Protocol  Index  Name
  Low           non-TCP  44321  fab-ef-profile
  Low           TCP      44321  fab-ef-profile
  High          non-TCP  44321  fab-ef-profile
  High          TCP      44321  fab-ef-profile

Fabric priority: high
Scheduler: fab-ef-scheduler, Index: 60211
Drop profiles:

```

Loss priority	Protocol	Index	Name
Low	non-TCP	44321	fab-ef-profile
Low	TCP	44321	fab-ef-profile
High	non-TCP	44321	fab-ef-profile
High	TCP	44321	fab-ef-profile



## show class-of-service fabric statistics

<b>Syntax</b>	show class-of-service fabric statistics <destination <i>fpc-number</i> > <source <i>fpc-number</i> > <summary>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M320 routers and T Series routers only) Display class-of-service (CoS) switch fabric queue statistics.
<b>Options</b>	<p>none—Same as summary.</p> <p>destination <i>fpc-number</i>—(Optional) Display details for the specified destination Flexible PIC Concentrator (FPC). The FPC number is a value from 0 through 7.</p> <p>source <i>fpc-number</i>—(Optional) Display details for the specified source FPC. The FPC number is a value from 0 through 7.</p> <p>summary—(Optional) Display all switch fabric statistics.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show class-of-service fabric statistics on page 1170
<b>Output Fields</b>	Table 169 on page 1169 describes the output fields for the <b>show class-of-service fabric statistics</b> command. Output fields are listed in the approximate order in which they appear.

**Table 169: show class-of-service fabric statistics Output Fields**

Field Name	Field Description
<b>Destination FPC Index</b>	Index number associated with the destination FPC
<b>Source PFC Index</b>	Index number associated with the source FPC.
<b>Total statistics</b>	<p>Fabric queue statistic totals:</p> <ul style="list-style-type: none"> <li>• <b>Packets</b>—Total packet count for high-priority and low-priority queues.</li> <li>• <b>Bytes</b>—Total byte count for high-priority and low-priority queues.</li> <li>• <b>pps</b>—Total packets-per-second count for high-priority and low-priority queues.</li> <li>• <b>bps</b>—Total bytes-per-second count for high-priority and low-priority queues.</li> </ul>
<b>Tx statistics</b>	<p>Fabric queue statistics for transmitted traffic:</p> <ul style="list-style-type: none"> <li>• <b>Packets</b>—Transmitted packet count for high-priority and low-priority queues.</li> <li>• <b>Bytes</b>—Transmitted byte count for high-priority and low-priority queues.</li> <li>• <b>pps</b>—Transmitted packets-per-second count for high-priority and low-priority queues.</li> <li>• <b>bps</b>—Transmitted bytes-per-second count for high-priority and low-priority queues.</li> </ul>

Table 169: show class-of-service fabric statistics Output Fields (*continued*)

Field Name	Field Description
<b>Drop statistics</b>	<p>Fabric queue statistics for dropped traffic:</p> <ul style="list-style-type: none"> <li>• <b>Packets</b>—Dropped packet count for high-priority and low-priority queues.</li> <li>• <b>Bytes</b>—Dropped byte count for high-priority and low-priority queues.</li> <li>• <b>pps</b>—Dropped packets-per-second count for high-priority and low-priority queues.</li> <li>• <b>bps</b>—Dropped bytes-per-second count for high-priority and low-priority queues.</li> </ul>

## Sample Output

```

show class-of-service fabric statistics user@host> show class-of-service fabric statistics
fabric statistics Destination FPC Index: 0, Source FPC Index: 0
Total statistics: High priority Low priority
Packets: 0 0
Bytes : 0 0
Pps : 0 0
Bps : 0 0
Tx statistics: High priority Low priority
Packets: 0 0
Bytes : 0 0
Pps : 0 0
Bps : 0 0
Drop statistics: High priority Low priority
Packets: 0 0
Bytes : 0 0
Pps : 0 0
Bps : 0 0

Destination FPC Index: 0, Source FPC Index: 1
Total statistics: High priority Low priority
Packets: 0 0
Bytes : 0 0
Pps : 0 0
Bps : 0 0
Tx statistics: High priority Low priority
Packets: 0 0
Bytes : 0 0
Pps : 0 0
Bps : 0 0
Drop statistics: High priority Low priority
Packets: 0 0
Bytes : 0 0
...

```

## show class-of-service forwarding-class

<b>Syntax</b>	show class-of-service forwarding-class <forwarding-class-map-name>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Display the mapping of forwarding class maps and names to queue numbers.
<b>Options</b>	forwarding-class-map-name—(Optional) Display the forwarding class configuration for a specific forwarding class map name. If this option is omitted, information for all forwarding class maps will be displayed.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show class-of-service forwarding-class on page 1171 show class-of-service forwarding-class forwarding-class-map-name on page 1172
<b>Output Fields</b>	Table 170 on page 1171 describes the output fields for the <b>show class-of-service forwarding-class</b> command. Output fields are listed in the approximate order in which they appear.

**Table 170: show class-of-service forwarding-class Output Fields**

Field Name	Field Description
<b>Forwarding class map</b>	Classification of a packet affecting the forwarding, scheduling, and marking policies applied as the packet transits the router.
<b>ID</b>	Forwarding class identifier.
<b>Queue</b>	Queue corresponding to the forwarding class name.
<b>Restricted Queue</b>	(T Series platforms only) Forwarding class restricted queue number. The queue number assigned if the PIC is restricted to four queues.
<b>Fabric Priority</b>	(M320 and T Series platforms only) Forwarding class queue priority.

## Sample Output

```

user@host> show class-of-service forwarding-class
show class-of-service forwarding-class
Forwarding class map FCMAP1  ID      Queue  Restricted queue  Fabric
                               Priority
fc0                          0      0      0                low
fc2                          1      1      1                low
fc4                          2      2      2                low
fc6                          3      3      3                low
fc1                          4      0      0                low
fc3                          5      1      1                low
fc5                          6      2      2                low
fc7                          7      3      3                low
fc8                          8      4      0                low
fc9                          9      4      0                low

```

fc10	10	5	1	low
fc11	11	5	1	low
fc12	12	6	2	low
fc13	13	6	2	low
fc14	14	7	3	low
fc15	15	7	3	low

## Sample Output

```
show class-of-service forwarding-class FCMAP1
show class-of-service forwarding-class FCMAP1
Forwarding class map FCMAP1 ID Queue Restricted queue Fabric
forwarding-class-map-name Priority
fc0 0 0 0 low
fc2 1 1 1 low
fc4 2 2 2 low
fc6 3 3 3 low
fc1 4 0 0 low
fc3 5 1 1 low
fc5 6 2 2 low
fc7 7 3 3 low
fc8 8 4 0 low
fc9 9 4 0 low
fc10 10 5 1 low
fc11 11 5 1 low
fc12 12 6 2 low
fc13 13 6 2 low
fc14 14 7 3 low
fc15 15 7 3 low
```

## show class-of-service forwarding-table

<b>Syntax</b>	show class-of-service forwarding-table
<b>Syntax (TX Matrix and TX Matrix Plus Router)</b>	show class-of-service forwarding-table <lcc <i>number</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 11.1 for the QFX Series.
<b>Description</b>	Display the entire class-of-service (CoS) configuration as it exists in the forwarding table. Executing this command is equivalent to executing all <b>show class-of-service forwarding-table</b> commands in succession.
<b>Options</b>	<i>lcc number</i> —(TX Matrix and TX Matrix Plus router only) (Optional) On a TX Matrix router, display the forwarding table configuration for a specific T640 router (or line-card chassis) configured in a routing matrix. On a TX Matrix Plus router, display the forwarding table configuration for a specific T1600 router (or line-card chassis) configured in the routing matrix. Replace <i>number</i> with a value from 0 through 3.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show class-of-service forwarding-table on page 1173 show class-of-service forwarding-table lcc (TX Matrix Plus Router) on page 1174
<b>Output Fields</b>	See the output field descriptions for <b>show class-of-service forwarding-table</b> commands: <ul style="list-style-type: none"> <li>• show class-of-service forwarding-table classifier</li> <li>• show class-of-service forwarding-table classifier mapping</li> <li>• show class-of-service forwarding-table drop-profile</li> <li>• show class-of-service forwarding-table fabric scheduler-map</li> <li>• show class-of-service forwarding-table loss-priority-map</li> <li>• show class-of-service forwarding-table loss-priority-map mapping</li> <li>• show class-of-service forwarding-table rewrite-rule</li> <li>• show class-of-service forwarding-table rewrite-rule mapping</li> <li>• show class-of-service forwarding-table scheduler-map</li> </ul>

## Sample Output

```

show class-of-service forwarding-table user@host> show class-of-service forwarding-table
Classifier table index: 9, # entries: 8, Table type: EXP
Entry #   Code point   Forwarding-class #   PLP
0         000           0                   0
1         001           0                   1
2         010           1                   0
3         011           1                   1
4         100           2                   0

```

5	101	2	1
6	110	3	0
7	111	3	1

Interface	Index	Table Index/ Q num	Table type
sp-0/0/0.1001	66	11	IPv4 precedence
sp-0/0/0.2001	67	11	IPv4 precedence
sp-0/0/0.16383	68	11	IPv4 precedence
fe-0/0/0.0	69	11	IPv4 precedence

Interface: sp-0/0/0 (Index: 129, Map index: 2, Map type: FINAL,  
Num of queues: 2):

Entry 0 (Scheduler index: 16, Forwarding-class #: 0):

Tx rate: 0 Kb (95%), Buffer size: 95 percent

Priority low

PLP high: 1, PLP low: 1, PLP medium-high: 1, PLP medium-low: 1

Entry 1 (Scheduler index: 18, Forwarding-class #: 3):

Tx rate: 0 Kb (5%), Buffer size: 5 percent

Priority low

PLP high: 1, PLP low: 1, PLP medium-high: 1, PLP medium-low: 1

Interface: fe-0/0/0 (Index: 137, Map index: 2, Map type: FINAL,  
Num of queues: 2):

Entry 0 (Scheduler index: 16, Forwarding-class #: 0):

Tx rate: 0 Kb (95%), Buffer size: 95 percent

Priority low

PLP high: 1, PLP low: 1, PLP medium-high: 1, PLP medium-low: 1

Entry 1 (Scheduler index: 18, Forwarding-class #: 3):

Tx rate: 0 Kb (5%), Buffer size: 5 percent

Priority low

PLP high: 1, PLP low: 1, PLP medium-high: 1, PLP medium-low: 1

Interface: fe-0/0/1 (Index: 138, Map index: 2, Map type: FINAL,  
Num of queues: 2):

Entry 0 (Scheduler index: 16, Forwarding-class #: 0):

Tx rate: 0 Kb (95%), Buffer size: 95 percent

Priority low

PLP high: 1, PLP low: 1, PLP medium-high: 1, PLP medium-low: 1

Entry 1 (Scheduler index: 18, Forwarding-class #: 3):

Tx rate: 0 Kb (5%), Buffer size: 5 percent

Priority low

PLP high: 1, PLP low: 1, PLP medium-high: 1, PLP medium-low: 1

...

RED drop profile index: 1, # entries: 1

Drop

Entry	Fullness(%)	Drop Probability(%)
0	100	100

**show class-of-service**  
**forwarding-table lcc**  
**(TX Matrix Plus**  
**Router)**

user@host> **show class-of-service forwarding-table lcc 0**  
lcc0-re0:

```
-----
Classifier table index: 9, # entries: 64, Table type: IPv6 DSCP
Entry #   Code point   Forwarding-class #   PLP
0         000000         0         0
1         000001         0         0
2         000010         0         0
3         000011         0         0
4         000100         0         0
```

5	000101	0	0
6	000110	0	0
7	000111	0	0
8	001000	0	0
9	001001	0	0
10	001010	0	0
11	001011	0	0
12	001100	0	0
13	001101	0	0
14	001110	0	0
15	001111	0	0
16	010000	0	0
17	010001	0	0
18	010010	0	0
19	010011	0	0
20	010100	0	0
21	010101	0	0
22	010110	0	0
23	010111	0	0
24	011000	0	0
25	011001	0	0
26	011010	0	0
27	011011	0	0
28	011100	0	0
29	011101	0	0
30	011110	0	0
31	011111	0	0
32	100000	0	0
33	100001	0	0
34	100010	0	0
35	100011	0	0
36	100100	0	0
37	100101	0	0
38	100110	0	0
39	100111	0	0
40	101000	0	0
41	101001	0	0
42	101010	0	0
43	101011	0	0
44	101100	0	0
45	101101	0	0
46	101110	0	0
...			

## show class-of-service forwarding-table classifier

<b>Syntax</b>	show class-of-service forwarding-table classifier
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 11.1 for the QFX Series.
<b>Description</b>	Display the mapping of code point value to queue number and loss priority for each classifier as it exists in the forwarding table.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show class-of-service forwarding-table classifier on page 1176
<b>Output Fields</b>	Table 171 on page 1176 describes the output fields for the <b>show class-of-service forwarding-table classifier</b> command. Output fields are listed in the approximate order in which they appear.

**Table 171: show class-of-service forwarding-table classifier Output Fields**

Field Name	Field Description
<b>Classifier table index</b>	Index of the classifier table.
<b>Entries</b>	Total number of entries.
<b>Table type</b>	Type of code points in the table: <b>DSCP</b> , <b>EXP</b> (not on the QFX Series), <b>IEEE 802.1</b> , <b>IPv4 precedence</b> (not on the QFX Series), or <b>IPv6 DSCP</b> (not on the QFX Series).
<b>Entry #</b>	Entry number.
<b>Code point</b>	Code point value used for classification.
<b>Forwarding-class #</b>	Forwarding class to which the code point is assigned.
<b>PLP</b>	Packet loss priority value set by classification. For most platforms, the value can be <b>0</b> or <b>1</b> . For some platforms, the value is <b>0</b> , <b>1</b> , <b>2</b> , or <b>3</b> . The value <b>0</b> represents low PLP. The value <b>1</b> represents <b>high</b> PLP. The value <b>2</b> represents medium-low PLP. The value <b>3</b> represents medium-high PLP.

### Sample Output

```

show class-of-service forwarding-table classifier
user@host> show class-of-service forwarding-table classifier
Classifier table index: 62436, # entries: 64, Table type: DSCP
Entry #   Code point   Forwarding-class #   PLP
  0         000000         0                   0

```



1	000001	0	0
2	000010	0	0
3	000011	0	0
4	000100	0	0
5	000101	0	0
6	000110	0	0
7	000111	0	0
8	001000	0	0
9	001001	0	0
10	001010	1	1
11	001011	0	0
...			
60	111100	0	0
61	111101	0	0
62	111110	0	0
63	111111	0	0

## show class-of-service forwarding-table classifier mapping

<b>Syntax</b>	show class-of-service forwarding-table classifier mapping
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 11.1 for the QFX Series.
<b>Description</b>	For each logical interface, display either the table index of the classifier for a given code point type or the queue number (if it is a fixed classification) in the forwarding table.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show class-of-service forwarding-table classifier mapping on page 1178
<b>Output Fields</b>	Table 172 on page 1178 describes the output fields for the <b>show class-of-service forwarding-table classifier mapping</b> command. Output fields are listed in the approximate order in which they appear.

**Table 172: show class-of-service forwarding-table classifier mapping Output Fields**

Field Name	Field Description
Table index/ Q num	If the type is <b>Fixed</b> , the number of the queue to which the interface is mapped. For all other types, this value is the classifier index number.
Interface	Name of the logical interface.
Index	Logical interface index.
Table type	Type of code points in the table: <b>DSCP</b> , <b>EXP</b> (not on the QFX Series), <b>IEEE 802.1</b> , <b>IPv4 precedence</b> (not on the QFX Series), or <b>IPv6 DSCP</b> (not on the QFX Series).

### Sample Output

```

user@host> show class-of-service forwarding-table classifier mapping
show class-of-service forwarding-table classifier mapping
          Table index/
Interface  Index  Q num  Table type
so-5/0/0.0   10   62436   DSCP
so-0/1/0.0   11   62436   DSCP
so-0/2/0.0   12     1   Fixed
so-0/2/1.0   13   62436   DSCP
so-0/2/1.0   13   62437  IEEE 802.1
so-0/2/2.0   14   62436   DSCP
so-0/2/2.0   14   62438  IPv4 precedence

```

## show class-of-service forwarding-table drop-profile

<b>Syntax</b>	show class-of-service forwarding-table drop-profile
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 11.1 for the QFX Series.
<b>Description</b>	Display the data points of all random early detection (RED) drop profiles as they exist in the forwarding table.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show class-of-service forwarding-table drop-profile on page 1179
<b>Output Fields</b>	Table 173 on page 1179 describes the output fields for the <b>show class-of-service forwarding-table drop-profile</b> command. Output fields are listed in the approximate order in which they appear.

**Table 173: show class-of-service forwarding-table drop-profile Output Fields**

Field Name	Field Description
RED drop profile index	Index of this drop profile.
# entries	Number of entries in a particular RED drop profile index.
Entry	Drop profile entry number.
Fullness(%)	Percentage fullness of a queue.
Drop probability(%)	Drop probability at this fill level.

### Sample Output

```

show class-of-service forwarding-table drop-profile
user@host> show class-of-service forwarding-table drop-profile
RED drop profile index: 4, # entries: 1
      Drop
Entry  Fullness(%)  Probability(%)
  0           100           100

RED drop profile index: 8742, # entries: 3
      Drop
Entry  Fullness(%)  Probability(%)
  0           10           10
  1           20           20
  2           30           30

RED drop profile index: 24627, # entries: 64
      Drop

```

Entry	Fullness(%)	Probability(%)
0	0	0
1	1	1
2	2	2
3	4	4
...		
61	98	99
62	99	99
63	100	100

RED drop profile index: 25393, # entries: 64

Drop		
Entry	Fullness(%)	Probability(%)
0	0	0
1	1	1
2	2	2
3	4	4
...		
61	98	98
62	99	99
63	100	100

## show class-of-service forwarding-table fabric scheduler-map

<b>Syntax</b>	show class-of-service forwarding-table fabric scheduler-map
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M320 routers and T Series routers only) Display the scheduler map information as it exists in the forwarding table for switch fabric.
<b>Options</b>	This command has no options.
<b>Additional Information</b>	For information about how PLP priority is assigned to packets, see the <i>Junos OS Class of Service Configuration Guide</i> .
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show class-of-service forwarding-table fabric scheduler-map on page 1181
<b>Output Fields</b>	Table 174 on page 1181 describes the output fields for the <b>show class-of-service forwarding-table fabric scheduler-map</b> command. Output fields are listed in the approximate order in which they appear.

**Table 174: show class-of-service forwarding-table fabric scheduler-map Output Fields**

Field Name	Field Description
<b>Fabric priority</b>	Fabric traffic priority: <b>low</b> and <b>high</b> .
<b>Scheduler index</b>	Index of the scheduler applied to a fabric traffic priority.
<b>PLP high</b>	Drop profile index for high-packet-loss-priority (PLP) packets.
<b>PLP low</b>	Drop profile index for low-PLP packets.
<b>TCP PLP high</b>	Drop profile index for low-PLP and Transmission Control Protocol (TCP) packets.
<b>TCP PLP low</b>	Drop profile index for high-PLP and TCP packets.

### Sample Output

```

show class-of-service forwarding-table fabric scheduler-map
user@host> show class-of-service forwarding-table fabric scheduler-map
Fabric priority: low
  Scheduler index: 60211
    PLP high: 44321, PLP low: 44321, TCP PLP high: 44321, TCP PLP low: 44321

Fabric priority: high
  Scheduler index: 60211
    PLP high: 44321, PLP low: 44321, TCP PLP high: 44321, TCP PLP low: 44321

```



## show class-of-service forwarding-table loss-priority-map

<b>Syntax</b>	show class-of-service forwarding-table loss-priority-map
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(J Series routers only) Display the mapping of code point value to loss priority as it exists in the forwarding table.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show class-of-service forwarding-table loss-priority-map on page 1183
<b>Output Fields</b>	Table 175 on page 1183 describes the output fields for the <b>show class-of-service forwarding-table loss-priority-map</b> command. Output fields are listed in the approximate order in which they appear.

**Table 175: show class-of-service forwarding-table loss-priority-map Output Fields**

Field Name	Field Description
Loss priority map table index	Loss priority map table index.
Entries	Number of table entries.
Table type	Table type: <b>Frame-Relay DE</b> .
Entry #	Table entry number.
Code point	Code point value.
PLP	Packet loss priority value. For most platforms, the value is 0 or 1. For some platforms, the value is 0, 1, 2, or 3. The value 0 represents low PLP. The value 1 represents high PLP. The value 2 represents medium-low PLP. The value 3 represents medium-high PLP.

### Sample Output

```

show class-of-service forwarding-table loss-priority-map
user@host> show class-of-service forwarding-table loss-priority-map
loss-priority-map table index: 2212, # entries: 2, Table type: Frame-Relay DE
Entry #   Code point   PLP
  0         0         2
  1         1         3

loss-priority-map table index: 11038, # entries: 2, Table type: Frame-Relay DE
Entry #   Code point   PLP

```

0	0	3
1	1	1



## show class-of-service forwarding-table loss-priority-map mapping

<b>Syntax</b>	show class-of-service forwarding-table loss-priority-map mapping
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(J Series Services Routers only) For each logical interface, display the loss priority table index.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show class-of-service forwarding-table loss-priority-map mapping on page 1185
<b>Output Fields</b>	Table 176 on page 1185 describes the output fields for the <b>show class-of-service forwarding-table loss-priority-map mapping</b> command. Output fields are listed in the approximate order in which they appear.

**Table 176: show class-of-service forwarding-table loss-priority-map mapping Output Fields**

Field Name	Field Description
<b>Interface</b>	Name of the logical interface.
<b>Index</b>	Logical interface index.
<b>Table index</b>	Loss priority table index.
<b>Table type</b>	Table type: <b>Frame-Relay DE</b> .

### Sample Output

```

show class-of-service forwarding-table loss-priority-map mapping
user@host> show class-of-service forwarding-table loss-priority-map mapping
Interface      Index  Table index  Table type
fe-0/0/0.0     67     11038       Frame-Relay DE
tl1-0/0/2.0    69     2212        Frame-Relay DE

```

## show class-of-service forwarding-table rewrite-rule

<b>Syntax</b>	show class-of-service forwarding-table rewrite-rule
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 11.1 for the QFX Series.
<b>Description</b>	Display mapping of queue number and loss priority to code point value for each rewrite rule as it exists in the forwarding table.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show class-of-service forwarding-table rewrite-rule on page 1186
<b>Output Fields</b>	Table 177 on page 1186 describes the output fields for the <b>show class-of-service forwarding-table rewrite-rule</b> command. Output fields are listed in the approximate order in which they appear.

**Table 177: show class-of-service forwarding-table rewrite-rule Output Fields**

Field Name	Field Description
<b>Rewrite table index</b>	Index for this rewrite rule.
<b># entries</b>	Number of entries in this rewrite rule.
<b>Table type</b>	Type of table: <b>DSCP</b> , <b>EXP</b> (not on the QFX Series), <b>EXP-PUSH-3</b> (not on the QFX Series), <b>EXP-SWAP-PUSH-2</b> , (J Series routers only), <b>IEEE 802.1,IPv4 precedence</b> (not on the QFX Series), <b>IPv6 DSCP</b> (not on the QFX Series), or <b>Fixed</b> .
<b>Q#</b>	Queue number to which this entry is assigned.
<b>Low bits</b>	Code point value for low-priority loss profile.
<b>State</b>	State of this code point: <b>enabled</b> , <b>rewritten</b> , or <b>disabled</b> .
<b>High bits</b>	Code point value for high-priority loss profile.

### Sample Output

```

show class-of-service forwarding-table rewrite-rule
user@host> show class-of-service forwarding-table rewrite-rule
Rewrite table index: 3753, # entries: 4, Table type: DSCP
Q#      Low bits  State      High bits  State
0       000111   Enabled    001010     Enabled
2       000000   Disabled   001100     Enabled

```

1	101110	Enabled	110111	Enabled
3	110000	Enabled	111000	Enabled

## show class-of-service forwarding-table rewrite-rule mapping

<b>Syntax</b>	show class-of-service forwarding-table rewrite-rule mapping
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 11.1 for the QFX Series.
<b>Description</b>	For each logical interface, display the table identifier of the rewrite rule map for each code point type.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show class-of-service forwarding-table rewrite-rule mapping on page 1188
<b>Output Fields</b>	Table 178 on page 1188 describes the output fields for the <b>show class-of-service forwarding-table rewrite-rule mapping</b> command. Output fields are listed in the approximate order in which they appear.

**Table 178: show class-of-service forwarding-table rewrite-rule mapping Output Fields**

Field Name	Field Description
<b>Interface</b>	Name of the logical interface.
<b>Index</b>	Logical interface index.
<b>Table index</b>	Rewrite table index.
<b>Type</b>	Type of classifier: <b>DSCP</b> , <b>EXP</b> (not on the QFX Series), <b>EXP-PUSH-3</b> (not on the QFX Series), <b>EXP-SWAP-PUSH-2</b> (not on the QFX Series), <b>Frame-Relay DE</b> (J Series routers only), <b>IEEE 802.1</b> , <b>IPv4 precedence</b> (not on the QFX Series), <b>IPv6 DSCP</b> (not on the QFX Series), or <b>Fixed</b> .

### Sample Output

```

show class-of-service forwarding-table rewrite-rule mapping
user@host> show class-of-service forwarding-table rewrite-rule mapping
Interface      Index  Table index  Type
so-5/0/0.0     10     3753        DSCP
so-0/1/0.0     11     3753        DSCP
so-0/2/0.0     12     3753        DSCP
so-0/2/1.0     13     3753        DSCP
so-0/2/2.0     14     3753        DSCP
so-0/2/3.0     15     3753        DSCP

```

## show class-of-service forwarding-table scheduler-map

<b>Syntax</b>	show class-of-service forwarding-table scheduler-map
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 11.1 for the QFX Series.
<b>Description</b>	For each physical interface, display the scheduler map information as it exists in the forwarding table.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show class-of-service forwarding-table scheduler-map on page 1190
<b>Output Fields</b>	Table 179 on page 1189 describes the output fields for the <b>show class-of-service forwarding-table scheduler-map</b> command. Output fields are listed in the approximate order in which they appear.

**Table 179: show class-of-service forwarding-table scheduler-map Output Fields**

Field Name	Field Description
<b>Interface</b>	Name of the physical interface.
<b>Index</b>	Physical interface index.
<b>Map index</b>	Scheduler map index.
<b>Num of queues</b>	Number of queues defined in this scheduler map.
<b>Entry</b>	Number of this entry in the scheduler map.
<b>Scheduler index</b>	Scheduler policy index.
<b>Forwarding-class #</b>	Forwarding class number to which this entry is applied.
<b>Tx rate</b>	Configured transmit rate of the scheduler (in bps). The rate is a percentage of the total interface bandwidth, or the keyword <b>remainder</b> , which indicates that the scheduler receives the remaining bandwidth of the interface.
<b>Max buffer delay</b>	Amount of transmit delay (in milliseconds) or buffer size of the queue. This amount is a percentage of the total interface buffer allocation or the keyword <b>remainder</b> , which indicates that the buffer is sized according to what remains after other scheduler buffer allocations.
<b>High priority is set</b>	If this line appears in the output, the queue priority is high. Otherwise, it is low.
<b>PLP high</b>	Drop profile index for a high packet loss priority profile.

Table 179: show class-of-service forwarding-table scheduler-map Output Fields (*continued*)

Field Name	Field Description
PLP low	Drop profile index for a low packet loss priority profile.
PLP medium-high	Drop profile index for a medium-high packet loss priority profile.
PLP medium-low	Drop profile index for a medium-low packet loss priority profile.
TCP PLP high	Drop profile index for a high TCP packet loss priority profile.
TCP PLP low	Drop profile index for a low TCP packet loss priority profile.
Policy is exact	If this line appears in the output, exact rate limiting is enabled. Otherwise, no rate limiting is enabled.

### Sample Output

```

show class-of-service forwarding-table scheduler-map
user@host> show class-of-service forwarding-table scheduler-map
Interface: so-5/0/0 (Index: 9, Map index: 17638, Num of queues: 2):
  Entry 0 (Scheduler index: 6090, Forwarding-class #: 0):
    Tx rate: 0 Kb (30%), Max buffer delay: 39 bytes (0%)
    Priority low
    PLP high: 25393, PLP low: 24627, TCP PLP high: 25393, TCP PLP low: 8742
    Policy is exact
  Entry 1 (Scheduler index: 38372, Forwarding-class #: 1):
    Traffic chunk: Max = 0 bytes, Min = 0 bytes
    Tx rate: 0 Kb (40%), Max buffer delay: 68 bytes (0%)
    Priority high
    PLP high: 25393, PLP low: 24627, TCP PLP high: 25393, TCP PLP low: 8742

Interface: at-6/1/0 (Index: 10, Map index: 17638, Num of queues: 2):
  Entry 0 (Scheduler index: 6090, Forwarding-class #: 0):
    Traffic chunk: Max = 0 bytes, Min = 0 bytes
    Tx rate: 0 Kb (30%), Max buffer delay: 39 bytes (0%)
    Priority high
    PLP high: 25393, PLP low: 24627, TCP PLP high: 25393, TCP PLP low: 8742
  Entry 1 (Scheduler index: 38372, Forwarding-class #: 1):
    Traffic chunk: Max = 0 bytes, Min = 0 bytes
    Tx rate: 0 Kb (40%), Max buffer delay: 68 bytes (0%)
    Priority low
    PLP high: 25393, PLP low: 24627, TCP PLP high: 25393, TCP PLP low: 8742

```

## show class-of-service fragmentation-map

<b>Syntax</b>	show class-of-service fragmentation-map
<b>Release Information</b>	Command introduced in Junos OS Release 7.5.
<b>Description</b>	For Adaptive Services (AS) PIC link services IQ interfaces ( <b>lsq</b> ) only, display fragmentation properties for specific forwarding classes.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show class-of-service fragmentation-map on page 1191
<b>Output Fields</b>	Table 180 on page 1191 describes the output fields for the <b>show class-of-service fragmentation-map</b> command. Output fields are listed in the approximate order in which they appear.

**Table 180: show class-of-service fragmentation-map Output Fields**

Field Name	Field Description
<b>Fragmentation map</b>	Name of the class of service (CoS) fragmentation map.
<b>Index</b>	Index number of the CoS fragmentation map.
<b>Forwarding class</b>	Name of the associated forwarding class.
<b>Fragmentation threshold</b>	Maximum size of each multilink fragment.
<b>No Fragmentation</b>	Packets of this class are not fragmented.
<b>Multilink Class</b>	For multilink multiclass PPP only, the multilink class number corresponding to the forwarding class.

## Sample Output

```

show class-of-service fragmentation-map
user@host> show class-of-service fragmentation-map
  Fragmentation map: fragmap2, Index: 19801
    Forwarding class: fcDefault
    No Fragmentation

  Forwarding class: fcCopper
    Fragmentation threshold: 64, Multilink Class: 1

  Forwarding class: fcSilver
    Fragmentation threshold: 100, Multilink Class: 0

  Forwarding class: fcCritical
    Fragmentation threshold: 64, Multilink Class: 0

```

Fragmentation map: fragmap, Index: 23147  
Forwarding class: fcDefault  
No Fragmentation

Forwarding class: fcSilver  
Fragmentation threshold: 100

Forwarding class: fcCritical  
Fragmentation threshold: 100



## show class-of-service interface

<b>Syntax</b>	<code>show class-of-service interface</code> <code>&lt;interface-name&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. Forwarding class map information added in Junos OS Release 9.4. Command introduced in Junos OS Release 11.1 for the QFX Series.
<b>Description</b>	Display the logical and physical interface associations for the classifier, rewrite rules, and scheduler map objects.
<b>Options</b>	<code>none</code> —Display class-of-service (CoS) associations for all physical and logical interfaces.  <code>interface-name</code> —(Optional) Display CoS associations for the specified interface.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<code>show class-of-service interface (Physical)</code> on page 1194 <code>show class-of-service interface (Logical)</code> on page 1194 <code>show class-of-service interface (Gigabit Ethernet)</code> on page 1195
<b>Output Fields</b>	Table 181 on page 1193 describes the output fields for the <code>show class-of-service interface</code> command. Output fields are listed in the approximate order in which they appear.

Table 181: show class-of-service interface Output Fields

Field Name	Field Description
Physical interface	Name of a physical interface.
Index	Index of this interface or the internal index of this object.
Dedicated Queues	Status of dedicated queues configured on an interface. Supported on Trio MPC/MIC interfaces on MX Series routers only.
Queues supported	Number of queues you can configure on the interface.
Queues in use	Number of queues currently configured.
Total non-default queues created	Number of queues created in addition to the default queues. Supported on Trio MPC/MIC interfaces on MX Series routers.
Shaping rate	Maximum transmission rate on the physical interface. You can configure the shaping rate on the physical interface, or on the logical interface, but not both. Therefore, the <b>Shaping rate</b> field is displayed for the physical interface or the logical interface, but not both.
Scheduler map	Name of the output scheduler map associated with this interface.
Input shaping rate	For Gigabit Ethernet IQ2 PICs, maximum transmission rate on the input interface.

Table 181: show class-of-service interface Output Fields (*continued*)

Field Name	Field Description
<b>Input scheduler map</b>	For Gigabit Ethernet IQ2 PICs, name of the input scheduler map associated with this interface.
<b>Chassis scheduler map</b>	Name of the scheduler map associated with the packet forwarding component queues.
<b>Rewrite</b>	Name and type of the rewrite rules associated with this interface.
<b>Classifier</b>	Name and type of classifiers associated with this interface.
<b>Forwarding-class-map</b>	Name of the forwarding map associated with this interface.
<b>Congestion-notification</b>	Congestion notification state, <b>enabled</b> or <b>disabled</b> (QFX Series only).
<b>Logical interface</b>	Name of a logical interface.
<b>Shaping rate</b>	Maximum transmission rate on the logical interface. You can configure the shaping rate on the physical interface, or on the logical interface, but not both. Therefore, the <b>Shaping rate</b> field is displayed for the physical interface or the logical interface, but not both.
<b>Object</b>	Category of an object: <b>Classifier</b> , <b>Fragmentation-map</b> (for LSQ interfaces only), <b>Scheduler-map</b> , <b>Rewrite</b> , or <b>Translation Table</b> (for IQE PICs only).
<b>Name</b>	Name of an object.
<b>Type</b>	Type of an object: <b>dscp</b> , <b>dscp-ipv6</b> , <b>exp</b> , <b>ieee-802.1</b> , <b>ip</b> , or <b>inet-precedence</b> .

## Sample Output

```

show class-of-service interface (Physical) user@host> show class-of-service interface so-0/2/3
Physical interface: so-0/2/3, Index: 135
Queues supported: 8, Queues in use: 4
Total non-default queues created: 4
  Scheduler map: <default>, Index: 2032638653

  Logical interface: fe-0/0/1.0, Index: 68, Dedicated Queues: no
  Shaping rate: 32000
  Object          Name          Type
Index
  Scheduler-map   <default>
27
  Rewrite         exp-default   exp
21
  Classifier      exp-default   exp
5
  Classifier      ipprec-compatibility ip
8
  Forwarding-class-map exp-default   exp
5

show class-of-service interface (Logical) user@host> show class-of-service interface so-0/2/3.0
Logical interface: so-0/2/3.0, Index: 68, Dedicated Queues: no
Shaping rate: 32000

```

Object Index	Name	Type
Scheduler-map	<default>	
27		
Rewrite	exp-default	exp
21		
Classifier	exp-default	exp
5		
Classifier	ipprec-compatibility	ip
8		
Forwarding-class-map	exp-default	exp
5		

```

show class-of-service user@host> show class-of-service interface ge-6/2/0
interface Physical interface: ge-6/2/0, Index: 175
(Gigabit Ethernet) Queues supported: 4, Queues in use: 4
Scheduler map: <default>, Index: 2
Input scheduler map: <default>, Index: 3
Chassis scheduler map: <default-chassis>, Index: 4

```

## show class-of-service interface-set

<b>Syntax</b>	<b>show class-of-service interface-set</b> <i>&lt;interface-set-name&gt;</i>
<b>Release Information</b>	Command introduced in Junos OS Release 9.4.
<b>Description</b>	Display the configured shaping rate and the adjusted shaping rate for each logical interface set configured for hierarchical class of service (CoS).
<b>Options</b>	none—Display CoS associations for all logical interface sets.  <i>interface-set-name</i> —(Optional) Display CoS associations for the specified interface set.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show class-of-service interface-set on page 1197</b>
<b>Output Fields</b>	Table 182 on page 1196 describes the output fields for the <b>show class-of-service interface-set</b> command. Output fields are listed in the approximate order in which they appear.

**Table 182: show class-of-service interface-set Output Fields**

Field Name	Field Description
<b>Interface-set</b>	Name of a logical interface set composed of one or more logical interfaces for which hierarchical scheduling is enabled.
<b>Index</b>	Index of this interface set or the internal index of this object.
<b>Physical interface</b>	Name of a physical interface.
<b>Queues supported</b>	Number of queues you can configure on the interface.
<b>Queues in use</b>	Number of queues currently configured.
<b>Output traffic control profile</b>	Name of the output traffic-control profile attached to the logical interface set.
<b>Adjusting application</b>	<p>Name of the application that communicates shaping-rate adjustment information to the Junos class-of-service process (<b>cosd</b>) on the broadband services router (BSR). The BSR uses the information from this application to perform shaping-rate adjustments on the scheduler node that manages the interface set. The adjusting application can be one of the following:</p> <p>ancp LS-0—Junos Access Node Control Profile process (<b>ancpd</b>) that performs shaping-rate adjustments on schedule nodes that are logical interface sets configured to represent subscriber local loops. When the synchronization speed of the DSL line changes, <b>ancpd</b> communicates the local loop speed to <b>cosd</b> over the default logical system, <b>LS-0</b>, and then the BSR throttles the shaping rate on the scheduler node to the loop speed.</p>

Table 182: show class-of-service interface-set Output Fields (*continued*)

Field Name	Field Description
<b>Adjustment type</b>	Type of shaping-rate adjustment performed by the BSR on the scheduler node. The type of adjustment can be one of the following:  absolute—The configured shaping rate is adjusted by an absolute value as opposed to by a percentage of the configured rate.
<b>Configured shaping rate</b>	The maximum transmission rate on the physical interface as configured by the output traffic-control profile attached to the scheduler node.
<b>Adjustment value</b>	Value of the shaping-rate adjustment information sent by the adjusting application to <b>cosd</b> .

### Sample Output

```

show class-of-service user@host> show class-of-service interface-set example-ifset-ge-4/0/0-7
interface-set      Interface-set: example-ifset-ge-4/0/0-7, Index: 8
                   Physical interface: ge-4/0/0, Index: 270
                   Queues supported: 8, Queues in use: 8
                   Output traffic control profile: example-tcp-basic-rate, Index: 11395
                   Adjusting application: ancp LS-0
                   Adjustment type: absolute
                   Configured shaping rate: 50000000
                   Adjustment value: 888000

```

## show class-of-service loss-priority-map

<b>Syntax</b>	show class-of-service loss-priority-map <name <i>name</i> > <type frame-relay-de>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(J Series Services Router only) Display mapping of code point value to loss priority.
<b>Options</b>	<p>none—Display all loss priority maps.</p> <p>name <i>name</i>—(Optional) Display the specified loss priority map.</p> <p>type frame-relay-de—(Optional) Display Frame Relay discard eligible code point.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show class-of-service loss-priority-map on page 1198
<b>Output Fields</b>	Table 183 on page 1198 describes the output fields for the <b>show class-of-service loss-priority-map</b> command. Output fields are listed in the approximate order in which they appear.

**Table 183: show class-of-service loss-priority-map Output Fields**

Field Name	Field Description
Loss-priority-map	Name of the loss priority map.
Code point type	Type: frame-relay-de.
Index	Internal index.
Code point	Code point value.
Loss priority	Loss priority of low, medium-low, medium-high, or high.

## Sample Output

```

user@host> show class-of-service loss-priority-map
Loss-priority-map: frame-relay-de-default, Code point type: frame-relay-de, Index:
9
  Code point      Loss priority
  0               low
  1               high

Loss-priority-map: bar, Code point type: frame-relay-de, Index: 2212
  Code point      Loss priority
  0               medium-low
  1               medium-high

```

```
Loss-priority-map: abc, Code point type: frame-relay-de, Index: 11038
  Code point      Loss priority
  0               medium-high
  1               high
```

## show class-of-service rewrite-rule

<b>Syntax</b>	show class-of-service rewrite-rule <name <i>name</i> > <type <i>type</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 11.1 for the QFX Series.
<b>Description</b>	Display the mapping of forwarding classes and loss priority to code point values.
<b>Options</b>	<p>none—Display all rewrite rules.</p> <p>name <i>name</i>—(Optional) Display the specified rewrite rule.</p> <p>type <i>type</i>—(Optional) Display the rewrite rule of the specified type. The rewrite rule type can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>dscp</b>—For IPv4 traffic.</li> <li>• <b>dscp-ipv6</b>—For IPv6 traffic.</li> <li>• <b>exp</b>—For MPLS traffic.</li> <li>• <b>frame-relay-de</b>—(J Series routers only) For Frame Relay traffic.</li> <li>• <b>ieee-802.1</b>—For Layer 2 traffic.</li> <li>• <b>inet-precedence</b>—For IPv4 traffic.</li> </ul>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p>show class-of-service rewrite-rule type dscp on page 1201</p> <p>show class-of-service rewrite-rule type dscp (QFX Series) on page 1201</p>
<b>Output Fields</b>	Table 184 on page 1200 describes the output fields for the <b>show class-of-service rewrite-rule</b> command. Output fields are listed in the approximate order in which they appear.

**Table 184: show class-of-service rewrite-rule Output Fields**

Field Name	Field Description
<b>Rewrite rule</b>	Name of the rewrite rule.
<b>Code point type</b>	Type of rewrite rule: <b>dscp</b> , <b>dscp-ipv6</b> , <b>exp</b> , <b>frame-relay-de</b> , or <b>inet-precedence</b> .
<b>Forwarding class</b>	Classification of a packet affecting the forwarding, scheduling, and marking policies applied as the packet transits the router or switch.
<b>Index</b>	Internal index for this particular rewrite rule.
<b>Loss priority</b>	Loss priority for rewriting.



Table 184: show class-of-service rewrite-rule Output Fields (*continued*)

Field Name	Field Description
Code point	Code point value to rewrite.

### Sample Output

```

show class-of-service rewrite-rule type dscp user@host> show class-of-service rewrite-rule type dscp
Rewrite rule: dscp-default, Code point type: dscp
  Forwarding class      Loss priority      Code point
  gold                  high               000000
  silver                low                110000
  silver                high               111000
  bronze                low                001010
  bronze                high               001100
  lead                  high               101110

Rewrite rule: abc-dscp-rewrite, Code point type: dscp, Index: 3245
  Forwarding class      Loss priority      Code point
  gold                  low                000111
  gold                  high               001010
  silver                low                110000
  silver                high               111000
  bronze                high               001100
  lead                  low                101110
  lead                  high               110111

```

### Sample Output

```

show class-of-service rewrite-rule type dscp user@host> show class-of-service rewrite-rule type dscp
rewrite-rule type dscp (QFX Series) Rewrite rule: dscp-default, Code point type: dscp, Index: 31
  Forwarding class      Loss priority      Code point
  best-effort            low                000000
  best-effort            high               000000
  fcoe                   low                101110
  fcoe                   high               101110
  no-loss                low                001010
  no-loss                high               001100
  newclass               low                110000
  newclass               high               111000

```

## show class-of-service routing-instance

<b>Syntax</b>	show class-of-service routing-instance <routing-instance-name>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M Series and T Series routers only) Display mapping of class of service (CoS) objects to routing instances.
<b>Options</b>	<i>routing-instance-name</i> —(Optional) Name of a routing instance.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show class-of-service routing-instance on page 1202
<b>Output Fields</b>	Table 185 on page 1202 describes the output fields for the <b>show class-of-service routing-instance</b> command. Output fields are listed in the approximate order in which they appear.

**Table 185: show class-of-service routing-instance Output Fields**

Field Name	Field Description
<b>Index</b>	Internal index.
<b>Name</b>	Name of an object.
<b>Object</b>	Category of an object: <b>Classifier</b> .
<b>Routing instance</b>	Name of a routing instance.
<b>Type</b>	Type: <b>exp</b> .

## Sample Output

```

show class-of-service routing-instance user@host> show class-of-service routing-instance
Routing Instance : vpn1
  Object      Name      Type      Index
  Classifier  exp-default exp        8

Routing Instance : vpn2
  Object      Name      Type      Index
  Classifier  test2    exp       57507

```

## show class-of-service scheduler-map

<b>Syntax</b>	show class-of-service scheduler-map <name>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 11.1 for the QFX Series.
<b>Description</b>	Display the mapping of schedulers to forwarding classes and a summary of scheduler parameters for each entry.
<b>Options</b>	none—Display all scheduler maps.  name—(Optional) Display a summary of scheduler parameters for each forwarding class to which the named scheduler is assigned.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show class-of-service scheduler-map on page 1204
<b>Output Fields</b>	Table 186 on page 1203 describes the output fields for the <b>show class-of-service scheduler-map</b> command. Output fields are listed in the approximate order in which they appear.

Table 186: show class-of-service scheduler-map Output Fields

Field Name	Field Description
<b>Scheduler map</b>	Name of the scheduler map.
<b>Index</b>	Index of the indicated object. Objects having indexes in this output include scheduler maps, schedulers, and drop profiles.
<b>Scheduler</b>	Name of the scheduler.
<b>Forwarding class</b>	Classification of a packet affecting the forwarding, scheduling, and marking policies applied as the packet transits the router.
<b>Transmit rate</b>	Configured transmit rate of the scheduler (in bps). The rate is a percentage of the total interface bandwidth, or the keyword <b>remainder</b> , which indicates that the scheduler receives the remaining bandwidth of the interface.
<b>Rate Limit</b>	Rate limiting configuration of the queue. Possible values are <b>none</b> , meaning no rate limiting, and <b>exact</b> , meaning the queue only transmits at the configured rate.
<b>Maximum buffer delay</b>	Amount of transmit delay (in milliseconds) or the buffer size of the queue. The buffer size is shown as a percentage of the total interface buffer allocation, or by the keyword <b>remainder</b> to indicate that the buffer is sized according to what remains after other scheduler buffer allocations.
<b>Priority</b>	Scheduling priority: <b>low</b> or <b>high</b> .

Table 186: show class-of-service scheduler-map Output Fields (*continued*)

Field Name	Field Description
<b>Drop profiles</b>	Table displaying the assignment of drop profile by name and index to a given loss priority and protocol pair.
<b>Loss priority</b>	Packet loss priority for drop profile assignment.
<b>Protocol</b>	Transport protocol for drop profile assignment.
<b>Name</b>	Name of the drop profile.

### Sample Output

```

show class-of-service scheduler-map user@host> show class-of-service scheduler-map
Scheduler map: dd-scheduler-map, Index: 84

Scheduler: aa-scheduler, Index: 8721, Forwarding class: aa-forwarding-class
Transmit rate: 30 percent, Rate Limit: none, Maximum buffer delay: 39 ms,
Priority: high
Drop profiles:
  Loss priority  Protocol  Index  Name
  Low           non-TCP   8724   aa-drop-profile
  Low           TCP      9874   bb-drop-profile
  High          non-TCP   8833   cc-drop-profile
  High          TCP      8484   dd-drop-profile

Scheduler: bb-scheduler, Forwarding class: aa-forwarding-class
Transmit rate: 40 percent, Rate limit: none, Maximum buffer delay: 68 ms,
Priority: high
Drop profiles:
  Loss priority  Protocol  Index  Name
  Low           non-TCP   8724   aa-drop-profile
  Low           TCP      9874   bb-drop-profile
  High          non-TCP   8833   cc-drop-profile
  High          TCP      8484   dd-drop-profile

```

## show class-of-service traffic-control-profile

<b>Syntax</b>	show class-of-service traffic-control-profile <profile-name>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 11.1 for the QFX Series.
<b>Description</b>	For Gigabit Ethernet IQ, Channelized IQ PICs, EQ DPCs, and Trio MPC/MIC interfaces only, display traffic shaping and scheduling profiles.
<b>Options</b>	none—Display all profiles.  profile-name—(Optional) Display information about a single profile.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show class-of-service traffic-control-profile on page 1206
<b>Output Fields</b>	Table 187 on page 1205 describes the output fields for the <b>show class-of-service traffic-control-profile</b> command. Output fields are listed in the approximate order in which they appear.

**Table 187: show class-of-service traffic-control-profile Output Fields**

Field Name	Field Description
Traffic control profile	Name of the traffic-control profile.
Index	Index number of the traffic-control profile.
Shaping rate	Configured shaping rate, in bps.
Shaping rate priority high	Configured shaping rate for high-priority traffic, in bps
Shaping rate priority medium	Configured shaping rate for medium-priority traffic, in bps
Shaping rate priority low	Configured shaping rate for low-priority traffic, in bps
Shaping rate excess high	Configured shaping rate for high-priority excess traffic, in bps
Shaping rate excess low	Configured shaping rate for low-priority excess traffic, in bps
Scheduler map	Name of the associated scheduler map.
Delay Buffer rate	Configured delay-buffer rate, in bps.
Excess rate	Configured excess rate, in percent or proportion.

**Table 187: show class-of-service traffic-control-profile Output Fields (*continued*)**

Field Name	Field Description
<b>Guaranteed rate</b>	Configured guaranteed rate, in bps.
<b>Overhead accounting mode</b>	Configured shaping mode, either <b>frame-mode</b> or <b>cell-mode</b> .
<b>Overhead bytes</b>	Configured byte adjustment value.

### Sample Output

```
show class-of-service traffic-control-profile user@host> show class-of-service traffic-control-profile
Traffic control profile: Profile1, Index: 57625
  Scheduler map: m1
  Delay Buffer rate: 500000
  Guaranteed rate: 1000000

Traffic control profile: Profile2, Index: 57624
  Scheduler map: m2
  Delay Buffer rate: 600000
  Guaranteed rate: 2000000

Traffic control profile: Profile3, Index: 57627
  Scheduler map: m3
  Delay Buffer rate: 800000
  Guaranteed rate: 3000000

Traffic control profile: Profile4, Index: 57626
  Scheduler map: m4
  Delay Buffer rate: 750000
  Guaranteed rate: 4000000
```

## show class-of-service translation-table

<b>Syntax</b>	<pre>show class-of-service translation-table &lt;name <i>translation-table-name</i>&gt;   &lt;type (to-dscp-from-dscp   to-dscp-ipv6-from-dscp-ipv6   to-exp-from-exp   to-inet-precedence-from-inet-precedence)&gt;</pre>
<b>Release Information</b>	Command introduced in Junos OS Release 9.3 for IQE PICs.
<b>Description</b>	Display the mapping of class-of-service (CoS) translation table code points to corresponding bit patterns.
<b>Options</b>	<p>none—Display translation table code points for all translation tables.</p> <p>name—(Optional) Display information for the named translation table.</p> <p>type—(Optional) Display information for a certain translation table type:</p> <ul style="list-style-type: none"> <li>to-dscp-from-dscp—Display DSCP translation table information.</li> <li>to-dscp-ipv6-from-dscp-ipv6—Display DSCP IPv6 translation table information.</li> <li>to-exp-from-exp—Display MPLS EXP translation table information.</li> <li>to-inet-precedence-from-intet-precedence—Display Internet precedence translation table information.</li> </ul>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p><b>show class-of-service translation-table on page 1208</b></p> <p><b>show class-of-service translation-table name exp-trans-table on page 1209</b></p> <p><b>show class-of-service translation-table type to-dscp-ipv6-from-dscp-ipv6 on page 1209</b></p>
<b>Output Fields</b>	Table 188 on page 1207 describes the output fields for the <b>show class-of-service translation-table</b> command. Output fields are listed in the approximate order in which they appear.

**Table 188: show class-of-service translation-table Output Fields**

Field Name	Field Description
<b>Translation Table</b>	Name of the translation table.
<b>Translation table type</b>	Name of the translation table.
<b>Index</b>	Internal index number of the translation table.
<b>From Code Point</b>	Value of code point received.
<b>To Code Point</b>	Value of translated code point.

## Sample Output

```

show class-of-service user@host> show class-of-service translation-table
translation-table
Translation Table: inet-trans-table, Translation table type: inet-to-inet, Index:
61075
  From Code point    To Code Point
  000                101
  001                111
  010                101
  011                111
  100                101
  101                101
  110                001
  111                000

Translation Table: dscp-trans-table, Translation table type: dscp-to-dscp, Index:
6761
  From Code point    To Code Point
  000000            000111
  000001            000111
  000010            000111
  000011            000111
  000100            000111
  000101            000111
  000110            000111
  000111            111000
  001000            000111
  001001            000111
  001010            000111
  001011            000111
  001100            000111
  001101            000111
  001110            000111
  001111            000111
  010000            000111
  010001            000111
  010010            000111
  010011            000111
  010100            000111
  010101            000111
  010110            000111
  010111            000111
  011000            000111
  011001            000111
  011010            000111
  011011            000111
  011100            000111
  011101            000111
  011110            000111
  011111            000111
  100000            000111
  100001            000111
  100010            000111
  100011            000111
  100100            000111
  100101            000111
  100110            000111
  100111            111000
  101000            000111
  101001            000111
  101010            000111

```



101011	000111
101100	000111
101101	000111
101110	000111
101111	000111
110000	000111
110001	000111
110010	000111
110011	000111
110100	000111
110101	000111
110110	000111
110111	000111
111000	000111
111001	000111
111010	000111
111011	000111
111100	000111
111101	000111
111110	000001
111111	000000

**show class-of-service**  
**translation-table name**  
**exp-trans-table**

```
user@host> show class-of-service translation-table name exp-trans-table
Translation Table: exp-trans-table, Translation table type: exp-to-exp, Index:
9048
  From Code point    To Code Point
  000                101
  001                111
  010                101
  011                111
  100                101
  101                101
  110                001
  111                000
```

**show class-of-service**  
**translation-table type**  
**to-dscp-ipv6-from-dscp-ipv6**

```
user@host> show class-of-service translation-table type to-dscp-ipv6-from-dscp-ipv6
Translation Table: dscp-ipv6-trans-table, Translation table type:
dscp-ipv6-to-dscp-ipv6, Index: 64704
  From Code point    To Code Point
  000000            000111
  000001            000111
  000010            000111
  000011            000111
  000100            000111
  000101            000111
  000110            000111
  000111            111000
  001000            000111
  001001            000111
  001010            000111
  001011            000111
  001100            000111
  001101            000111
  001110            000111
  001111            000111
  010000            000111
  010001            000111
  010010            000111
  010011            000111
  010100            000111
```

010101	000111
010110	000111
010111	000111
011000	000111
011001	000111
011010	000111
011011	000111
011100	000111
011101	000111
011110	000111
011111	000111
100000	000111
100001	000111
100010	000111
100011	000111
100100	000111
100101	000111
100110	000111
100111	111000
101000	000111
101001	000111
101010	000111
101011	000111
101100	000111
101101	000111
101110	000111
101111	000111
110000	000111
110001	000111
110010	000111
110011	000111
110100	000111
110101	000111
110110	000111
110111	000111
111000	000111
111001	000111
111010	000111
111011	000111
111100	000111
111101	000111
111110	000001
111111	000000

show class-of-service virtual-channel

- Syntax

show class-of-service virtual channel  
    <virtual-channel-name>
- Release Information

Command introduced before Junos OS Release 7.4.
- Description

(J Series Services Router only) Display virtual channel information.
- Options

none—Display all virtual channels.  
  
virtual-channel-name—(Optional) Display the specified virtual channel only.
- Required Privilege Level

view
- List of Sample Output

show class-of-service virtual-channel on page 1211
- Output Fields

Table 189 on page 1211 describes the output fields for the **show class-of-service virtual-channel** command. Output fields are listed in the approximate order in which they appear.

Table 189: show class-of-service virtual-channel Output Fields

Field Name	Field Description
Virtual channel	Name of a virtual channel.
Index	Internal index.

Sample Output

show class-of-service  
virtual-channel

user@host> show class-of-service virtual-channel  
Virtual channel: vc-1, Index: 1  
Virtual channel: vc-2, Index: 2

## show class-of-service virtual-channel-group

<b>Syntax</b>	show class-of-service virtual channel group <virtual-channel-group-name>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(J Series Services Router only) Display virtual channel group information.
<b>Options</b>	none—Display all virtual channel groups.  virtual-channel-group-name—(Optional) Display the specified virtual channel group only.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show class-of-service virtual-channel-group on page 1212
<b>Output Fields</b>	Table 190 on page 1212 describes the output fields for the <b>show class-of-service virtual-channel-group</b> command. Output fields are listed in the approximate order in which they appear.

Table 190: show class-of-service virtual-channel-group Output Fields

Field Name	Field Description
Virtual channel group	Name of a virtual channel group.
Index	Internal index.

### Sample Output

```
show class-of-service virtual-channel-group
user@host> show class-of-service virtual-channel-group
Virtual channel group: vc-gp, Index: 16321
  Virtual channel: vc-1
    Scheduler map: sc-map
    Shaping rate : 100 percent
```

## PART 4

# Services

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- Compressed Real-Time Transport Protocol Operational Mode Commands on page 1257
- CoS Services Operational Mode Commands on page 1265
- Data Link Switching Operational Mode Commands on page 1271
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- Dynamic Application Awareness Operational Mode Commands on page 1317
- Flow Collection and Monitoring Operational Mode Commands on page 1337
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# Border Signaling Gateway Operational Mode Commands

Table 191 on page 1215 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot border signaling gateway operations.

**Table 191: Border Signaling Gateway Operational Mode Commands**

Task	Command
Clear entries in the denied messages log.	<code>clear services border-signaling-gateway denied-messages</code>
Clear entries in the name resolution cache.	<code>clear services border-signaling-gateway name-resolution-cache</code>
Clear registration statistics.	<code>clear services border-signaling-gateway registrations statistics</code>
Clear subscriber registrations.	<code>clear services border-signaling-gateway registrations subscription</code>
Clear border signaling gateway statistical counters.	<code>clear services border-signaling-gateway statistics</code>
Show address bindings for registered subscribers.	<code>show services border-signaling-gateway address-of-record bindings</code>
Display border signaling gateway admission control information.	<code>show services border-signaling-gateway admission-control</code>
Display border signaling gateway processing statistics for a given contact.	<code>show services border-signaling-gateway by-contact</code>
Display border signaling gateway processing statistics for a given request Uniform Resource Identifier (URI).	<code>show services border-signaling-gateway by-request-uri</code>
Display border signaling gateway processing statistics for all calls grouped by server or for a selected server.	<code>show services border-signaling-gateway calls by-server</code>

**Table 191: Border Signaling Gateway Operational Mode Commands** (*continued*)

Task	Command
Display border signaling gateway processing statistics for all calls grouped by service point or for a selected service point.	<b>show services border-signaling-gateway calls by-service-point</b>
Display a histogram of call durations for the border signaling gateway group by server or for a selected server.	<b>show services border-signaling-gateway calls-duration by-server</b>
Display a histogram of call durations for the border signaling gateway group by service point or for a selected service point.	<b>show services border-signaling-gateway calls-duration by-service-point</b>
Display border signaling gateway processing statistics for failed calls grouped by server or for a selected server.	<b>show services border-signaling-gateway calls-failed by-server</b>
Display border signaling gateway processing statistics for failed calls grouped by service point or for a selected service point.	<b>show services border-signaling-gateway calls-failed by-service-point</b>
Display border signaling gateway denied messages information.	<b>show services border-signaling-gateway denied-messages</b>
Display entries in the border signaling gateway name resolution cache.	<b>show services border-signaling-gateway name-resolution-cache</b>
Display registrations information.	<b>show services border-signaling-gateway registrations</b>
Display routing blacklist information.	<b>show services border-signaling-gateway routing-blacklist</b>
Display border signaling gateway high availability, B2BUA, and SIP stack status.	<b>show services border-signaling-gateway status</b>



## clear services border-signaling-gateway denied-messsages

---

<b>Syntax</b>	<code>clear services border-signaling-gateway denied-messsages gateway <i>gateway</i> &lt;backup   master&gt;</code>
<b>Release Information</b>	Command introduced in Junos OS Release 9.4.
<b>Description</b>	This command clears border signaling gateway (BSG) denied messages information for the specified gateway and updates the last reset date and time.
<b>Options</b>	<code>gateway <i>gateway</i></code> —The BSG for which denied messages information is to be cleared.  <code>backup   master</code> —(Optional) Clear denied messages information for the backup BSG or for the master BSG. If you do not specify an option, the <b>master</b> option is the default.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<a href="#">clear services border-signaling-gateway gateway statistics on page 1217</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

<code>clear services border-signaling-gateway gateway statistics</code>	<code>user@host&gt; clear services border-signaling-gateway statistics Last Reset 2008 12 18 06:00</code>
---------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------

## clear services border-signaling-gateway name-resolution-cache

---

<b>Syntax</b>	<code>clear services border-signaling-gateway name-resolution-cache (all   by-fqdn <i>fqdn</i>) gateway <i>gateway-name</i> &lt;backup   master&gt;</code>
<b>Release Information</b>	Command introduced in Junos OS Release 10.0.
<b>Description</b>	Clear entries in the Domain Name System (DNS) name resolution cache.
<b>Options</b>	<p><code>all</code>—Clear all entries in the name resolution cache.</p> <p><code>by-fqdn <i>fqdn</i></code>—Clear cache entries for a specific fully qualified domain name (FQDN).</p> <p><code>gateway <i>gateway-name</i></code>—Clear cache entries associated with this border signalling gateway (BSG).</p> <p><code>backup</code>—(Optional) Clear cache entries for the backup BSG.</p> <p><code>master</code>—(Optional) Clear cache entries for the master BSG. If you do not specify the <code>master</code> or <code>backup</code> option, the <code>master</code> option is the default.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show services border-signaling-gateway name-resolution-cache on page 1249</a></li></ul>
<b>List of Sample Output</b>	<a href="#">clear services border-signaling-gateway name-resolution-cache on page 1218</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

```
clear services border-signaling-gateway name-resolution-cache
user@host> clear services border-signaling-gateway name-resolution-cache all gateway bsg-1
```

## clear services border-signaling-gateway registrations statistics

<b>Syntax</b>	<code>clear services border-signaling-gateway registrations statistics gateway <i>gateway-name</i> &lt;backup   master&gt;</code>
<b>Description</b>	Clear registration statistics for the BSG.
<b>Options</b>	<p><code>gateway <i>gateway-name</i></code>—Clear registration statistics associated with this border signalling gateway (BSG).</p> <p><code>backup</code>—(Optional) Clear registration statistics for the backup BSG.</p> <p><code>master</code>—(Optional) Clear registration statistics for the master BSG. If you do not specify the <code>master</code> or <code>backup</code> option, the <code>master</code> option is the default.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">clear services border-signaling-gateway registrations subscription on page 1220</a></li> <li>• <a href="#">show services border-signaling-gateway registrations on page 1251</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">clear services border-signaling-gateway registration statistics on page 1219</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

```
clear services      user@host> clear services border-signaling-gateway registration statistics gateway bsg-1
border-signaling-gateway
registration statistics
```

## clear services border-signaling-gateway registrations subscription

---

<b>Syntax</b>	<code>clear services border-signaling-gateway registrations statistics gateway <i>gateway-name</i></code> <code>all [<i>AOR</i></code> <code>graceful   forceful</code> <code>&lt;backup   master&gt;</code>
<b>Description</b>	Clear subscriber registration AOR mapping from the BSG and, optionally, send unregister messages to the Registrar.
<b>Options</b>	<p><code>all</code>—Clear AOR mapping for all subscriber AORs .</p> <p><code>AOR</code>—Clear AOR mapping for this subscriber AOR only.</p> <p><code>forceful</code>—Do not send unregister messages to the Registrar.</p> <p><code>graceful</code>—Send information to the registrar.</p> <p><code>gateway-name</code>—Clear information for this BSG.</p> <p><code>backup</code>—(Optional) Clear information for the backup BSG.</p> <p><code>master</code>—(Optional) Clear information for the master BSG. If you do not specify the <b>master</b> or <b>backup</b> option, the <b>master</b> option is the default.</p>
<b>Required Privilege Level</b>	view

## clear services border-signaling-gateway statistics

---

<b>Syntax</b>	<code>clear services border-signaling-gateway gateway <i>gateway</i> statistics</code> <code>&lt;backup   master&gt;</code>
<b>Release Information</b>	Command introduced in Junos OS Release 9.4.
<b>Description</b>	This command clears a border signaling gateway (BSG) statistics for the specified gateway.
<b>Options</b>	<p><i>gateway-name</i>—The BSG for which statistics are to be cleared.</p> <p>backup—(Optional) Clear statistics for the backup BSG.</p> <p>master—(Optional) Clear statistics for the master BSG. If you do not specify the <b>master</b> or <b>backup</b> option, the <b>master</b> option is the default.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	clear services border-signaling-gateway gateway statistics on page 1221
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

```
clear services      user@host> clear services border-signaling-gateway statistics
border-signaling-gateway
gateway statistics
```

## show services border-signaling-gateway address-of-record bindings

<b>Syntax</b>	<code>show services border-signaling-gateway address-of-record bindings gateway <i>gateway-name</i></code> <code>  all</code> <code>&lt;summary   detail&gt;</code> <code>&lt;backup   master&gt;</code>
<b>Release Information</b>	Command introduced in Junos OS Release 10.2.
<b>Description</b>	Display subscriber registration information based on the subscriber's address-of-record (AOR) information for the BSG.
<b>Options</b>	<p><code>all</code>—Show information for all subscribers.</p> <p>—Show information for this subscriber.</p> <p><code>summary</code>—Show summary information only for this AOR (subscriber).</p> <p><code>detail</code>—Show detailed information for a specified AOR.</p> <p><code>gateway-name</code>—Show information for this BSG.</p> <p><code>backup</code>—(Optional) Show information for the backup BSG.</p> <p><code>master</code>—(Optional) Show statistics for the master BSG. If you do not specify the <b>master</b> or <b>backup</b> option, the <b>master</b> option is the default.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<code>show services border-signaling-gateway address-of-record bindings</code> summary on page 1223 <code>show services border-signaling-gateway address-of-record bindings</code> detailed on page 1223 <code>show services border-signaling-gateway address-of-record bindings all</code> detailed on page 1223
<b>Output Fields</b>	Table 192 on page 1222 lists the output fields for the <b>show services border-signaling-gateway address-of-record bindings</b> command. Output fields are listed in the approximate order in which they appear.

Table 192: show services border-signaling-gateway address-of-record bindings Output Fields

Field Name	Field Description	Level of Output
<b>bindings</b>	Subscriber registrations.	
<b>URI</b>	The URI of a unique subscriber registration.	summary detail
<b>Registered from Realm</b>	The signaling realm from which the subscriber registered.	summary detail
<b>First registration time</b>	The first time a subscriber registered from this URI.	detail

Table 192: show services border-signaling-gateway address-of-record bindings Output Fields (*continued*)

Field Name	Field Description	Level of Output
Last registration time	The most recent time a subscriber registered from this URI.	detail
Expiration time	The duration, in seconds, of a period of time during which the subscriber does not re-register from this URI, after which the subscriber's registration expires.	detail
Registered from sp	The service point from which the subscriber registered.	summary detail
Translated URI	The translated (local or hidden) URI that the BSG uses.	detail
Has active call	The active call indicator.	detail

### Sample Output

```

show services user@host> show services border-signaling-gateway address-of-record bindings
border-signaling-gateway alice@atlanta.com gateway bsg1 summary
address-of-record: alice@atlanta.com
bindings:
  URI : alice@pc33.atlanta.com
  Registered from Realm : atlanta.com
  Registered from sp : ms-1/0/0

  URI : alice@wonderland.com
  Registered from Realm : wonderland.com
  Registered from sp : ms-1/0/0

```

```

show services user@host> show services border-signaling-gateway address-of-record bindings
border-signaling-gateway alice@atlanta.com gateway bsg1 summary detail
address-of-record: alice@atlanta.com
URI : alice@pc33.atlanta.com
Registered from Realm : atlanta.com
First registration time: 22/4/2009 17:24
Last registration time : 27/4/2009 7:35
Expiration time : 300s
Registered from sp : ms-1/0/0
Translated URI : alice-LU
Has active call : Yes

URI : alice@wonderland.com
Registered from Realm : wonderland.com
First registration time: 12/5/2009 00:24
Last registration time : 19/5/2009 8:35
Expiration time : 270s
Registered from sp : ms-1/0/0
Translated URI : alice-LU2
Has active call : No

```

```

show services user@host> show services border-signaling-gateway address-of-record bindings all gateway
border-signaling-gateway bsg1 summary detail
address-of-record: alice@atlanta.com
URI : alice@pc33.atlanta.com

```

**address-of-record  
bindings all detailed**

```
Registered from Realm : atlanta.com
First registration time: 22/4/2009 17:24
Last registration time : 27/4/2009 7:35
Expiration time       : 300s
Registered from sp    : ms-1/0/0
Translated URI        : alice-LU
Has active call       : Yes

URI                  : alice@wonderland.com
Registered from Realm : wonderland.com
First registration time: 12/5/2009 00:24
Last registration time : 19/5/2009 8:35
Expiration time       : 270s
Registered from sp    : ms-1/0/0
Translated URI        : alice-LU2
Has active call       : No
```

**address-of-record: bob@builder.com**

```
URI                  : bob@the.builder.com
Registered from Realm : builder.com
First registration time: 1/5/2009 00:24
Last registration time : 1/5/2009 8:35
Expiration time       : 30s
Registered from sp    : ms-1/0/0
Translated URI        : bob-LU
Has active call       : Yes
```



## show services border-signaling-gateway admission-control

<b>Syntax</b>	<b>show services border-signaling-gateway admission-control gateway <i>gateway-name</i></b> <b>&lt;backup   master&gt;</b>
<b>Release Information</b>	Command introduced in Junos OS Release 9.5.
<b>Description</b>	Display border signaling gateway (BSG) Call Admission Control (CAC) information.
<b>Options</b>	<p><i>gateway-name</i>—Display information about each CAC controller associated with this BSG.</p> <p><b>backup</b>—(Optional) Show statistics for the backup BSG.</p> <p><b>master</b>—(Optional) Show statistics for the primary BSG. If you do not specify the <b>master</b> or <b>backup</b> options, the <b>master</b> option is the default.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show services border-signaling-gateway admission-control on page 1226</b>
<b>Output Fields</b>	Table 193 on page 1225 lists the output fields for the <b>show services border-signaling-gateway admission-control</b> command. Output fields are listed in the approximate order in which they appear.

**Table 193: show services border-signaling-gateway admission-control Output Fields**

Field Name	Field Description
Admission controller	The admission controller for which statistics are displayed.
Dialogs	<p>Information on CAC for dialogs, including the following:</p> <ul style="list-style-type: none"> <li>• <b>Active</b>—Active dialogs shown as a percentage of CAC maximum concurrent dialogs, the number of active dialogs and the CAC maximum for concurrent dialogs.</li> <li>• <b>Events handled</b>—Number of events handled.</li> <li>• <b>Attempts rejected due to concurrent exception</b>—Number of attempts rejected because they exceeded the maximum concurrent dialogs limit.</li> <li>• <b>Attempts rejected due to rate exception</b>—Number of attempts rejected because they exceeded the maximum rate for admission of dialogs per second.</li> </ul>
Transactions	<p>Information on CAC for transactions, including the following:</p> <ul style="list-style-type: none"> <li>• <b>Active</b>—Active transactions shown as a percentage of CAC maximum concurrent transactions, the number of active transactions and the CAC maximum for concurrent transactions.</li> <li>• <b>Events handled</b>—Number of events handled.</li> <li>• <b>Attempts rejected due to concurrent exception</b>—Number of attempts rejected because they exceeded the maximum concurrent transactions limit.</li> <li>• <b>Attempts rejected due to rate exception</b>—Number of attempts rejected because they exceeded the maximum rate for admission of transactions per second.</li> </ul>

## Sample Output

```
show services user@host> show services border-signaling-gateway admission-control gateway bsg1
border-signaling-gateway Admission controller: Controller1
admission-control Dialogs
Active: 2% (20 out of 1000 allowed)
Attempts handled: 5500
Attempts rejected due to concurrent exception: 2
Attempts rejected due to rate exception: 4
Transactions
Active: 0% (10 out of 50000 allowed)
Attempts handled: 20000
Attempts rejected due to concurrent exception: 10
Attempts rejected due to rate exception: 1
```

## show services border-signaling-gateway by-contact

<b>Syntax</b>	<code>show services border-signaling-gateway by-contact &lt;contact&gt; (brief   detail   summary) gateway gateway-name &lt;backup   master&gt;</code>
<b>Release Information</b>	Command introduced in Junos OS Release 9.4.
<b>Description</b>	Display border signaling gateway (BSG) statistics for active calls for a specific BSG, filtered by contact. Display results for all calls by omitting the variable <i>contact</i> .
<b>Options</b>	<p><i>contact</i>—(Optional) Display information for this contact. When <i>contact</i> is omitted, information is displayed for all calls.</p> <p><i>brief</i>—Display abbreviated information for the specified contact.</p> <p><i>detail</i>—Display a detailed listing of BSG statistics for the specified contact.</p> <p><i>summary</i>—Display only the number of active calls for the contact.</p> <p><i>gateway-name</i>—Display information about statistics associated with this BSG.</p> <p><i>backup</i>—(Optional) Show statistics for the backup BSG.</p> <p><i>master</i>—(Optional) Show statistics for the master BSG. If you do not specify the <b>master</b> or <b>backup</b> option, the <b>master</b> option is the default.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p><code>show services border-signaling-gateway by-contact brief</code> on page 1228</p> <p><code>show services border-signaling-gateway by-contact detail</code> on page 1228</p>
<b>Output Fields</b>	Table 194 on page 1227 lists the output fields for the <b>show services border-signaling-gateway by-contact</b> command. Output fields are listed in the approximate order in which they appear.

Table 194: show services border-signaling-gateway by-contact Output Fields

Field Name	Field Description	Level of Output
Signaling Source IP	Source IP for signaling.	none brief
Signaling Destination IP	Destination IP for signaling.	none brief
Call ID	Call ID. Each active call is listed by call ID.	none brief
Local URI	Local Uniform Resource Identifier (URI) for the displayed call ID.	detail
Remote URI	Remote URI for the displayed call ID.	detail
Local Tag	Local tag for the displayed call ID.	detail

Table 194: show services border-signaling-gateway by-contact Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Remote Tag</b>	Remote tag for the displayed call ID.	detail
<b>Next Hop</b>	Next hop address for the displayed call ID.	detail
<b>Media IP</b>	The IP through which the Real-Time Transport Protocol (RTP) is passed.	detail
<b>Media Port</b>	The port through which the RTP is passed.	detail
<b>Media Status</b>	The status of the media (Enabled or Disabled).	detail
<b>Admission Control Profile</b>	Admission control profiles for this BSG.	detail
<b>Manipulation Rules</b>	Header manipulation rules applied on messages sent toward the user agent server (UAS), or the call recipient, of the transaction and dialog that was matched.  A rule is marked [Defunct] if it was changed after it was already applied to a call.	detail

### Sample Output

```

show services border-signaling-gateway by-contact brief gateway bsg1
user@host> show services border-signaling-gateway by-contact juniper.net brief gateway bsg1
Signaling Source IP      : 172.223.3.22
Signaling Destination IP : 10.2.3.55
Call-ID                  : 65689654
Signaling Source IP      : 172.223.3.22
Signaling Destination IP : 101.21.4.88
Call-ID                  : 321456

```

```

show services border-signaling-gateway by-contact detail
user@host> show services border-signaling-gateway by-contact juniper.net detail gateway bsg1
Signaling Source IP      : 60.100.102.1
Signaling Destination IP : 60.1.7.100
Call-ID                  : 1-3117@60.1.7.100
Local URI                : 60.100.102.1
Remote URI               : sip:60.1.7.100:5060
Local Tag                : bsg+1000001+1060000+3a2e567a
Remote Tag               : 1
Next Hop                 : 10.2.3.200
Admission Control Profile : ACProfile1
Manipulation Rules       : ManipulationTowardsPeer1, HM_rule_2 [Defunct]

Media IP                 : 60.1.7.100
Media Port               : 6000
Media Status             : Enabled

```

## show services border-signaling-gateway by-request-uri

<b>Syntax</b>	<code>show services border-signaling-gateway by-request-uri &lt;request-uri&gt; (brief   detail   summary) gateway gateway-name &lt;backup   master&gt;</code>
<b>Release Information</b>	Command introduced in Junos OS Release 9.4.
<b>Description</b>	Display border signaling gateway (BSG) statistics for active calls for a specific BSG, filtered by Uniform Resource Identifier (URI). Display results for all calls by omitting the variable <i>contact</i> .
<b>Options</b>	<p><i>request-uri</i>—(Optional) Display information for this request URI. When <i>contact</i> is omitted, information is displayed for all calls.</p> <p><i>brief</i>—Display abbreviated information for the request URI.</p> <p><i>detail</i>—Display a detailed listing of BSG statistics for the request URI.</p> <p><i>summary</i>—Display only the number of active calls for the request URI.</p> <p><i>gateway-name</i>—Display information about statistics associated with this VBGF.</p> <p><i>backup</i>—(Optional) Show statistics for the backup BSG.</p> <p><i>master</i>—(Optional) Show statistics for the master BSG. If you do not specify the <b>master</b> or <b>backup</b> option, the <b>master</b> option is the default.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p><code>show services border-signaling-gateway by-request-uri brief</code> on page 1230</p> <p><code>show services border-signaling-gateway by-request-uri sip:juniper.net detail</code> on page 1230</p>
<b>Output Fields</b>	Table 195 on page 1229 lists the output fields for the <code>show services border-signaling-gateway by-request-uri</code> command. Output fields are listed in the approximate order in which they appear.

Table 195: show services border-signaling-gateway by-request-URI Output Fields

Field Name	Field Description	Level of Output
Signaling Source IP	Source IP for signaling.	none brief
Signaling Destination IP	Destination IP for signaling.	none brief
Call ID	Call ID. Each active call is listed by call ID.	none brief
Local URI	Local URI for the displayed call ID.	detail
Remote URI	Remote URI for the displayed call ID.	detail

Table 195: show services border-signaling-gateway by-request-uri Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Local Tag</b>	Local tag for the displayed call ID.	detail
<b>Remote Tag</b>	Remote tag for the displayed call ID.	detail
<b>Next Hop</b>	Next hop address for the displayed call ID.	detail
<b>Media IP</b>	The IP through which the RTP is passed.	detail
<b>Media Port</b>	The port through which the RTP is passed.	detail
<b>Media Status</b>	The status of the media (Enabled or Disabled).	detail
<b>Admission Controller</b>	Admission controllers for this BSG.	detail
<b>Manipulation Rules</b>	Header manipulation rules applied on messages sent toward the user agent server (UAS), or the call recipient, of the transaction and dialog that was matched.  A rule is marked [Defunct] if it was changed after it was already applied to a call.	detail

## Sample Output

```

show services border-signaling-gateway by-request-uri brief gateway
user@host> show services border-signaling-gateway by-request-uri sip:juniper.net brief gateway
bsg1
  Signaling Source IP      : 172.223.3.22
  Signaling Destination IP : 10.2.3.55
  Call-ID                  : 65689654

  Signaling Source IP      : 172.223.3.22
  Signaling Destination IP : 101.21.4.88
  Call-ID                  : 321456

show services border-signaling-gateway by-request-uri sip:juniper.net detail
user@host> show services border-signaling-gateway by-request-uri sip:juniper.net detail gateway
bsg1
  Signaling Source IP      : 60.100.102.1
  Signaling Destination IP : 60.1.7.100
  Call-ID                  : 1-3117@60.1.7.100
  Local URI                : 60.100.102.1
  Remote URI               : sip:60.1.7.100:5060
  Local Tag                : bsg+1000001+1060000+3a2e567a
  Remote Tag               : 1
  Next Hop                 : 10.2.3.200
  Admission Control Profile : ACProfile1
  Manipulation Rules       : ManipulationTowardsPeer1, HM_rule_2 [Defunct]

  Media IP                 : 60.1.7.100
  Media Port               : 6000

```

Media Status : Enabled

## show services border-signaling-gateway calls by-server

<b>Syntax</b>	<b>show services border-signaling-gateway calls by-server</b> <server-name> gateway gateway-name <backup   master>
<b>Release Information</b>	Command introduced in Junos OS Release 10.2.
<b>Description</b>	Display border signaling gateway (BSG) call statistics grouped by server.
<b>Options</b>	<p><i>server-name</i>—(Optional) String of one or more characters used to select servers for which call statistics are displayed. Results are shown for all servers with names beginning with the specified string. When you omit this option, call statistics are displayed for all servers and grouped by server.</p> <p><i>gateway-name</i>—Name of the gateway for which call statistics are displayed.</p> <p><i>backup</i>—(Optional) Show statistics for the backup BSG.</p> <p><i>master</i>—(Optional) Show statistics for the master BSG. If you do not specify the <b>master</b> or <b>backup</b> option, the <b>master</b> option is the default.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show services border-signaling-gateway calls by-server on page 1232</b>
<b>Output Fields</b>	Table 196 on page 1232 lists the output fields for the <b>show services border-signaling-gateway statistics calls by-server</b> command. Output fields are listed in the approximate order in which they appear.

**Table 196: show services border-signaling-gateway calls by-server Output Fields**

Field Name	Field Description
<b>Statistics Start</b>	Date and time when accumulation of the current set of statistics began.
<b>Server</b>	Server for which statistics are displayed.
<b>Failed Calls</b>	Number of failed calls.
<b>Completed Calls</b>	Number of completed calls.
<b>Active Calls</b>	Number of active calls.

### Sample Output

```

show services border-signaling-gateway calls by-server
user@host> show services border-signaling-gateway calls by-server gateway bsg1
Statistics start      : 22/2/2010 13:24
Server               : zone-110

```



```
Failed calls      : 0
Active calls      : 0
Completed calls   : 0

Server            : zone-120
Failed calls      : 2
Active calls      : 0
Completed calls   : 0

Server            : zone-130
Failed calls      : 0
Active calls      : 0
Completed calls   : 0

Server            : zone-210
Failed calls      : 0
Active calls      : 0
Completed calls   : 0

Server            : zone-220
Failed calls      : 0
Active calls      : 0
Completed calls   : 0

Server            : zone-230
Failed calls      : 0
Active calls      : 0
Completed calls   : 0
```

## show services border-signaling-gateway calls by-service-point

<b>Syntax</b>	<b>show services border-signaling-gateway calls by-service-point</b> <service-point-name> gateway <i>gateway-name</i> <backup   master>
<b>Release Information</b>	Command introduced in Junos OS Release 10.2.
<b>Description</b>	Display border signaling gateway (BSG) call statistics by service point .
<b>Options</b>	<p><i>service-point-name</i>—(Optional) Name of the service point for which call statistics are displayed. When you omit this option, call statistics are displayed for all service points and grouped by service point.</p> <p><i>gateway-name</i>—Name of the gateway for which call statistics are displayed.</p> <p>backup—(Optional) Show statistics for the backup BSG.</p> <p>master—(Optional) Show statistics for the master BSG. If you do not specify the <b>master</b> or <b>backup</b> option, the <b>master</b> option is the default.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show services border-signaling-gateway calls by-service-point on page 1235</b>
<b>Output Fields</b>	Table 197 on page 1234 lists the output fields for the <b>show services border-signaling-gateway statistics calls by-service-point</b> command. Output fields are listed in the approximate order in which they appear.

**Table 197: show services border-signaling-gateway calls by-service-point Output Fields**

Field Name	Field Description
<b>Statistics Start</b>	Date and time when accumulation of the current set of statistics began.
<b>Service point</b>	Service point for which statistics are displayed.
<b>Direction</b>	Direction of calls on this service point. Possible values: <ul style="list-style-type: none"> <li>Egress—Calls are outbound from this service point.</li> <li>Ingress—Calls are inbound to this service point.</li> </ul>
<b>Failed Calls</b>	Number of failed calls.
<b>Completed Calls</b>	Number of completed calls.
<b>Active Calls</b>	Number of active calls.

## Sample Output

```
show services user@host> show services border-signaling-gateway calls by-service-point gateway bsg1
border-signaling-gateway Statistics start : 02-02-2010 11:38:00.
calls by-service-point

Service point : sip-5060-tcp
Direction : Egress
Failed calls : 0
Active calls : 0
Completed calls : 0

Service point : sip-5060-tcp
Direction : Ingress
Failed calls : 0
Active calls : 0
Completed calls : 0

Service point : sip-5060-udp
Direction : Egress
Failed calls : 2
Active calls : 0
Completed calls : 0

Service point : sip-5060-udp
Direction : Ingress
Failed calls : 2
Active calls : 0
Completed calls : 0
```

## show services border-signaling-gateway calls-duration by-server

<b>Syntax</b>	<b>show services border-signaling-gateway calls-duration by-server</b> <server-name> gateway gateway-name <backup   master>
<b>Release Information</b>	Command introduced in Junos OS Release 10.2.
<b>Description</b>	Display a histogram showing the number of calls, by duration, for a specific BSG since the last time statistics were cleared.
<b>Options</b>	<p><i>server-name</i>—(Optional) String of one or more characters used to select servers for which call duration statistics are displayed. Results are shown for all servers with names beginning with the specified string. When you omit this option, call duration statistics are displayed for all servers and grouped by server.</p> <p><i>gateway-name</i>—Display information about statistics associated with this BSG.</p> <p><i>backup</i>—(Optional) Show statistics for the backup BSG.</p> <p><i>master</i>—(Optional) Show statistics for the primary BSG. If you do not specify the <b>master</b> or <b>backup</b> options, the <b>master</b> option is the default.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show services border-signaling-gateway calls-duration by-server</b> on page 1236
<b>Output Fields</b>	Table 198 on page 1236 lists the output fields for the <b>show services border-signaling-gateway calls-duration by-server</b> command. Output fields are listed in the approximate order in which they appear.

**Table 198: show services border-signaling-gateway calls-duration by-server Output Fields**

Field Name	Field Description	Level of Output
Server	Server for calls shown in the histogram..	none brief
Duration[Min]	Duration category in which calls fall. The first category is "greater than or equal to zero" and "less than 1." The other duration categories are defined similarly.	none brief
Number of Calls	Number of calls in the duration category.	detailed

### Sample Output

```

show services border-signaling-gateway calls-duration by-server
user@host> show services border-signaling-gateway calls-duration by-server gateway bsg1
Server                               : zone-110
Duration[Min]      Number of calls
0 - 1              0
1 - 2              0
2 - 3              0

```

3 - 4	0
4 - 5	0
5 - 6	0
6 - 7	0
7 - 8	0
8 - 9	0
9 - 10	0
10 - 11	0
11 - 12	0
12 - 13	0
13 - 14	0
14 - 15	0
15 - 16	0
16 - 17	0
17 - 18	0
18 - 19	0
19 - 20	0
20 - 21	0
21 - 22	0
22 - 23	0
23 - 24	0
24 - 25	0
25 - 26	0
26 - 27	0
27 - 28	0
28 - 29	0
29 - INF	0

Server : zone-120

Duration[Min]	Number of calls
0 - 1	0
1 - 2	0
2 - 3	0
3 - 4	0
4 - 5	0
5 - 6	0
6 - 7	0
7 - 8	0
8 - 9	0
9 - 10	0
10 - 11	0
11 - 12	0
12 - 13	0
13 - 14	0
14 - 15	0
15 - 16	0
16 - 17	0
17 - 18	0
18 - 19	0
19 - 20	0
20 - 21	0
21 - 22	0
22 - 23	0
23 - 24	0
24 - 25	0
25 - 26	0
26 - 27	0
27 - 28	0
28 - 29	0
29 - INF	0

```
Server                               : zone-210

Duration[Min]      Number of calls
0 - 1              0
1 - 2              0
2 - 3              0
3 - 4              0
4 - 5              0
5 - 6              0
6 - 7              0
7 - 8              0
8 - 9              0
9 - 10             0
10 - 11            0
11 - 12            0
12 - 13            0
13 - 14            0
14 - 15            0
15 - 16            0
16 - 17            0
17 - 18            0
18 - 19            0
19 - 20            0
20 - 21            0
21 - 22            0
22 - 23            0
23 - 24            0
24 - 25            0
25 - 26            0
26 - 27            0
27 - 28            0
28 - 29            0
29 - INF           0
```

## show services border-signaling-gateway calls-duration by-service-point

<b>Syntax</b>	<b>show services border-signaling-gateway calls-duration by-service-point</b> <code>&lt;service-point-name&gt; gateway gateway-name</code> <code>&lt;backup   master&gt;</code>
<b>Release Information</b>	Command introduced in Junos OS Release 10.2.
<b>Description</b>	Display histograms for one or more service points showing the number of calls, by duration, for a specific BSG since the last time statistics were cleared.
<b>Options</b>	<p><i>service-point-name</i>—(Optional) Service point for which call duration statistics are displayed. When you omit this option, call duration statistics are displayed for all service points and grouped by service point.</p> <p><i>gateway-name</i>—Display information about statistics associated with this BSG.</p> <p><i>backup</i>—(Optional) Show statistics for the backup BSG.</p> <p><i>master</i>—(Optional) Show statistics for the primary BSG. If you do not specify the <b>master</b> or <b>backup</b> options, the <b>master</b> option is the default.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show services border-signaling-gateway calls-duration by-service-point on page 1240</b>
<b>Output Fields</b>	Table 199 on page 1239 lists the output fields for the <b>show services border-signaling-gateway calls-duration by-service-point</b> command. Output fields are listed in the approximate order in which they appear.

**Table 199: show services border-signaling-gateway calls-duration by-service-point Output Fields**

Field Name	Field Description	Level of Output
<b>Service Point</b>	Service point for calls shown in the histogram.	none brief
<b>Direction</b>	Direction of calls on this service point. Possible values: <ul style="list-style-type: none"> <li>Egress—Calls are outbound from this service point.</li> <li>Ingress—Calls are inbound to this service point.</li> </ul>	none brief
<b>Duration[Min]</b>	Duration category in which calls fall. The first category is “greater than or equal to zero” and “less than 1.” The other duration categories are defined similarly.	none brief
<b>Number of Calls</b>	Number of calls in the duration category.	detailed

## Sample Output

```

show services user@host> show services border-signaling-gateway calls-duration by-service-point gateway
border-signaling-gateway bsg1
calls-duration
by-service-point
Statistics start : 02-02-2010 11:38:00.

Service point : sip-5060-tcp
Direction : Egress

Duration[Min]      Number of calls
0 - 1              0
1 - 2              0
2 - 3              0
3 - 4              0
4 - 5              0
5 - 6              0
6 - 7              0
7 - 8              0
8 - 9              0
9 - 10             0
10 - 11            0
11 - 12            0
12 - 13            0
13 - 14            0
14 - 15            0
15 - 16            0
16 - 17            0
17 - 18            0
18 - 19            0
19 - 20            0
20 - 21            0
21 - 22            0
22 - 23            0
23 - 24            0
24 - 25            0
25 - 26            0
26 - 27            0
27 - 28            0
28 - 29            0
29 - INF           0

Service point : sip-5060-tcp
Direction : Ingress

Duration[Min]      Number of calls
0 - 1              0
1 - 2              0
2 - 3              0
3 - 4              0
4 - 5              0
5 - 6              0
6 - 7              0
7 - 8              0
8 - 9              0
9 - 10             0
10 - 11            0
11 - 12            0
12 - 13            0
13 - 14            0
14 - 15            0
15 - 16            0

```



16 - 17	0
17 - 18	0
18 - 19	0
19 - 20	0
20 - 21	0
21 - 22	0
22 - 23	0
23 - 24	0
24 - 25	0
25 - 26	0
26 - 27	0
27 - 28	0
28 - 29	0
29 - INF	0

## show services border-signaling-gateway calls-failed by-server

<b>Syntax</b>	<b>show services border-signaling-gateway calls-failed by-server</b> <server-name> gateway gateway-name <backup   master>
<b>Release Information</b>	Command introduced in Junos OS Release 10.2.
<b>Description</b>	Display BSG (border signaling gateway) failed call statistics by server.
<b>Options</b>	<p><i>server-name</i>—(Optional) String of one or more characters used to select servers for which failed call statistics are displayed. Results are shown for all servers with names beginning with the specified string. When you omit this option, failed call statistics are displayed for all servers and grouped by server.</p> <p><i>gateway-name</i>—The gateway for which statistics are displayed.</p> <p><i>backup</i>—(Optional) Show statistics for the backup BSG.</p> <p><i>master</i>—(Optional) Show statistics for the master BSG. If you do not specify the <b>master</b> or <b>backup</b> options, the <b>master</b> option is the default.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show services border-signaling-gateway calls-failed by-server</b> on page 1243
<b>Output Fields</b>	Table 200 on page 1242 lists the output fields for the <b>show services border-signaling-gateway calls-failed by-server</b> command. Output fields are listed in the approximate order in which they appear.

**Table 200: show services border-signaling-gateway calls-failed by-server Output Fields**

Field Name	Field Description
<b>Statistics Start</b>	Date and time when the accumulation of the current set of statistics began.
<b>Server</b>	Server name.
<b>Protocol error</b>	Number of calls that failed due to protocol errors.
<b>Inactive timeout</b>	Number of calls for which a dialog was closed due to an inactive call timeout violation.
<b>Configured behavior policy rejection</b>	Number of calls that failed due to configured rejection policy.
<b>4/5/6XX response</b>	Number of calls that failed because the call setup failed for reasons other than timeout.
<b>Internal error</b>	Number of calls that failed because the BSG sustained an internal error that terminated one of dialogs comprising a call during setup.
<b>Setup media failure</b>	Number of calls that failed due to a media failure during setup.

**Table 200: show services border-signaling-gateway calls-failed by-server Output Fields (*continued*)**

Field Name	Field Description
Established call media inactivity	Number of established calls for which a dialog was closed because the BGF identified media inactivity for the dialog.
CAC policy rejection	Number of calls for which an initial INVITE was rejected due to CAC (call admission control) enforcement.
Default behavior policy rejection	Number of calls for which an initial INVITE was rejected due to no policy match.
Transport conflict policy rejection	Number of calls for which the requested transport on the INVITE conflicts with the transport details of the selected egress service-point.
Setup timeout	Number of calls that failed for one of the following reasons: <ul style="list-style-type: none"> <li>An INVITE was sent by the BSG and no reply was received.</li> <li>An INVITE was sent by the BSG, a 1XX was received, and nothing else was received after that.</li> <li>An INVITE was received by the BSG and nothing else was sent on this open transaction.</li> </ul>
Transport error	Number of calls that failed due to a transport error.
Canceled calls	Number of canceled calls.

## Sample Output

```

show services border-signaling-gateway calls-failed by-server user@host> show services border-signaling-gateway calls-failed by-server gateway bsg1

Statistics start      : 02-02-2010  11:38:00.

Server               : zone-110
Protocol error       : 0
Inactive timeout     : 0
Configured behavior policy rejection : 0
4/5/6XX response     : 0
Internal error       : 0
Setup media failure  : 0
Established call media inactivity : 0
CAC policy rejection : 0
Default behavior policy rejection : 0
Transport conflict policy rejection : 0
Setup timeout        : 0
Transport error       : 0
Canceled calls       : 0

Server               : zone-120
Protocol error       : 0
Inactive timeout     : 0
Configured behavior policy rejection : 0
4/5/6XX response     : 0
Internal error       : 0
Setup media failure  : 0
Established call media inactivity : 0

```

CAC policy rejection	: 0
Default behavior policy rejection	: 0
Transport conflict policy rejection	: 0
Setup timeout	: 2
Transport error	: 0
Canceled calls	: 0

## show services border-signaling-gateway calls-failed-by-service-point

<b>Syntax</b>	<code>show services border-signaling-gateway calls-failed-by-service-point &lt;service-point-name&gt; gateway gateway-name &lt;backup   master&gt;</code>
<b>Release Information</b>	Command introduced in Junos OS Release 10.2.
<b>Description</b>	Display BSG (border signaling gateway) failed call statistics by service point.
<b>Options</b>	<p><i>service-point-name</i>—(Optional) Service point for which failed call statistics are displayed. When you omit this option, failed call statistics are displayed for all service points and grouped by service point.</p> <p><i>gateway-name</i>—The gateway for which statistics are displayed.</p> <p><i>backup</i>—(Optional) Show statistics for the backup BSG.</p> <p><i>master</i>—(Optional) Show statistics for the master BSG. If you do not specify the <b>master</b> or <b>backup</b> options, the <b>master</b> option is the default.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<a href="#">show services border-signaling-gateway calls-failed-by-service-point on page 1246</a>
<b>Output Fields</b>	Table 201 on page 1245 lists the output fields for the <b>show services border-signaling-gateway calls-failed-by-service-point</b> command. Output fields are listed in the approximate order in which they appear.

Table 201: show services border-signaling-gateway calls-failed-by-service-point Output Fields

Field Name	Field Description
<b>Statistics Start</b>	Date and time when the accumulation of the current set of statistics began.
<b>Service Point</b>	Service-point name.
<b>Direction</b>	Direction of calls on this service point. Possible values: <ul style="list-style-type: none"> <li>Egress—Calls are outbound from this service point.</li> <li>Ingress—Calls are inbound to this service point.</li> </ul>
<b>Protocol error</b>	Number of calls that failed due to protocol errors.
<b>Inactive timeout</b>	Number of calls for which a dialog was closed due to an inactive call timeout violation.
<b>Configured behavior policy rejection</b>	Number of calls that failed due to configured rejection policy.
<b>4/5/6XX response</b>	Number of calls that failed because the call setup failed for reasons other than timeout.

Table 201: show services border-signaling-gateway calls-failed-by-service-point Output Fields (*continued*)

Field Name	Field Description
<b>Internal error</b>	Number of calls that failed because the BSG sustained an internal error that terminated one of dialogs comprising a call during setup.
<b>Setup media failure</b>	Number of calls that failed due to a media failure during setup.
<b>Established call media inactivity</b>	Number of established calls for which a dialog was closed because the BGF identified media inactivity for the dialog.
<b>CAC policy rejection</b>	Number of calls for which an initial INVITE was rejected due to CAC (call admission control) enforcement.
<b>Default behavior policy rejection</b>	Number of calls for which an initial INVITE was rejected due to no policy match.
<b>Transport conflict policy rejection</b>	Number of calls for which the requested transport on the INVITE conflicts with the transport details of the selected egress service-point.
<b>Setup timeout</b>	Number of calls that failed for one of the following reasons: <ul style="list-style-type: none"> <li>• An INVITE was sent by the BSG and no reply was received.</li> <li>• An INVITE was sent by the BSG, a 1XX was received, and nothing else was received after that.</li> <li>• An INVITE was received by the BSG and nothing else was sent on this open transaction.</li> </ul>
<b>Transport error</b>	Number of calls that failed due to a transport error.
<b>Canceled calls</b>	Number of canceled calls.

## Sample Output

```

show services border-signaling-gateway calls-failed-by-service-point
user@host> show services border-signaling-gateway calls-failed-by-service-point gateway bsg1

Statistics start      : 02-02-2010  11:38:00.

Service point        : sip-5060-tcp
Direction            : Egress
Protocol error       : 0
Inactive timeout     : 0
Configured behavior policy rejection : 0
4/5/6XX response     : 0
Internal error       : 0
Setup media failure  : 0
Established call media inactivity : 0
CAC policy rejection : 0
Default behavior policy rejection : 0
Transport conflict policy rejection : 0
Setup timeout        : 0
Transport error      : 0
Canceled calls       : 0

Service point        : sip-5060-tcp

```

```
Direction : Ingress
Protocol error : 0
Inactive timeout : 0
Configured behavior policy rejection : 0
4/5/6XX response : 0
Internal error : 0
Setup media failure : 0
Established call media inactivity : 0
CAC policy rejection : 0
Default behavior policy rejection : 0
Transport conflict policy rejection : 0
Setup timeout : 0
Transport error : 0
Canceled calls : 0

Service point : sip-5060-udp
Direction : Egress
Protocol error : 0
Inactive timeout : 0
Configured behavior policy rejection : 0
4/5/6XX response : 0
Internal error : 0
Setup media failure : 0
Established call media inactivity : 0
CAC policy rejection : 0
Default behavior policy rejection : 0
Transport conflict policy rejection : 0
Setup timeout : 2
Transport error : 0
Canceled calls : 0

Service point : sip-5060-udp
Direction : Ingress
Protocol error : 0
Inactive timeout : 0
Configured behavior policy rejection : 0
4/5/6XX response : 0
Internal error : 0
Setup media failure : 0
Established call media inactivity : 0
CAC policy rejection : 0
Default behavior policy rejection : 0
Transport conflict policy rejection : 0
Setup timeout : 2
Transport error : 0
Canceled calls : 0
```

## show services border-signaling-gateway denied-messages

---

<b>Syntax</b>	<b>show services border-signaling-gateway denied-messages gateway <i>gateway-name</i></b> <b>&lt;backup   master&gt;</b>
<b>Release Information</b>	Command introduced in Junos OS Release 9.4.
<b>Description</b>	Display border signaling gateway (BSG) statistics for messages denied due to an overload condition.
<b>Options</b>	<i>gateway-name</i> —Display information about statistics associated with this BSG.  backup—(Optional) Show statistics for the backup BSG.  master—(Optional) Show statistics for the master BSG. If you do not specify the <b>master</b> or <b>backup</b> options, the <b>master</b> option is the default.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show services border-signaling-gateway denied-messages on page 1248</b>
<b>Output Fields</b>	The logged date and time of each denied message since the last reset of denied message log statistics is shown. A maximum of 10 dropped messages can be displayed.

### Sample Output

<b>show services border-signaling-gateway denied-messages</b>	<pre>user@host&gt; show services border-signaling-gateway denied-messages gateway bsg1 Last Reset 2008 12 18 06:00       Last Over Load Drops 1. 2009 10 31 17:43 2. 2009 07 21 09:00</pre>
-----------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------



## show services border-signaling-gateway name-resolution-cache

<b>Syntax</b>	<code>show services border-signaling-gateway name-resolution-cache (all   fqdn <i>fqdn</i>) gateway <i>gateway-name</i> &lt;backup   master&gt;</code>
<b>Release Information</b>	Command introduced in Junos OS Release 10.0.
<b>Description</b>	Display entries in the name resolution cache.
<b>Options</b>	<p><code>all</code>—Display all entries in the name resolution cache.</p> <p><code>fqdn <i>fqdn</i></code>—Display entries for a specific fully qualified domain name (FQDN).</p> <p><code>gateway <i>gateway-name</i></code>—Display information about the name resolution cache associated with this border signaling gateway (BSG).</p> <p><code>backup</code>—(Optional) Display information about the name resolution cache associated with the backup BSG.</p> <p><code>master</code>—(Optional) Display information about the name resolution cache associated with the master BSG. If you do not specify the <b>master</b> or <b>backup</b> option, the <b>master</b> option is the default.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>clear services border-signaling-gateway name-resolution-cache on page 1218</li> </ul>
<b>List of Sample Output</b>	show services border-signaling-gateway name-resolution-cache on page 1250
<b>Output Fields</b>	Table 202 on page 1249 lists the output fields for the <b>show services border-signaling-gateway name-resolution-cache</b> command. Output fields are listed in the approximate order in which they appear.

**Table 202: show services border-signaling-gateway name-resolution-cache Output Fields**

Field Name	Field Description
<b>Name</b>	Name of the SIP server. The value can be a server name or a service record name.
<b>Type</b>	Type of Domain Name System (DNS) record: <ul style="list-style-type: none"> <li>A—Address records</li> <li>NAPTR—Name authority pointer (NAPTR) records</li> <li>SRV—Service records</li> </ul>

Table 202: show services border-signaling-gateway name-resolution-cache Output Fields (*continued*)

Field Name	Field Description
<b>RData</b>	Contents of the DNS Record Data field.  For A type records, an IP address.  For NAPTR records, the FQDN.  For SRV type records, a host name.
<b>TTL Expiry</b>	Time to live. Indicates the time in seconds that the server will remain in the cache.
<b>Blacklist Expiry</b>	If the server is on the blacklist, the time in seconds that the server will remain on the blacklist.

### Sample Output

```

show services user@host> show services border-signaling-gateway name-resolution-cache by-fqdn
border-signaling-gateway example.com gateway bsg-1
name-resolution-cache

```

Name	Type	RData	TTL Expiry	Blacklist Expiry
sip._udp.example.com	SRV	server1.example.com.	86400	
		server2.example.com.	86400	
		server3.example.com.	86400	
server1.example.com	A	192.168.1.10	43200	
server2.example.com	A	192.168.2.20	86400	300
		192.168.2.21	86400	
server3.example.com	A	192.168.3.30	86400	280

## show services border-signaling-gateway registrations

<b>Syntax</b>	<code>show services border-signaling-gateway registrations gateway <i>gateway-name</i></code> <code>all   <i>realm</i></code> <code>&lt;summary   detail&gt;</code> <code>&lt;backup   master&gt;</code>
<b>Release Information</b>	Command introduced in Junos OS Release 10.2.
<b>Description</b>	Display registration statistics for the BSG.
<b>Options</b>	<p><i>realm</i>—Show information for this signaling realm.</p> <p><i>all</i>—Show information for all signaling realms.</p> <p><i>gateway-name</i>—Show information for this BSG.</p> <p><i>backup</i>—(Optional) Show information for the backup BSG.</p> <p><i>master</i>—(Optional) Show statistics for the master BSG. If you do not specify the <b>master</b> or <b>backup</b> option, the <b>master</b> option is the default.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p><code>show services border-signaling-gateway registrations realm</code> on page 1251</p> <p><code>show services border-signaling-gateway registrations realm all</code> on page 1252</p>
<b>Output Fields</b>	Table 203 on page 1251 lists the output fields for the <code>show services border-signaling-gateway registrations</code> command. Output fields are listed in the approximate order in which they appear.

Table 203: show services border-signaling-gateway registrations Output Fields

Field Name	Field Description	Level of Output
Statistics start	Date and time statistics accumulation began. This date is refreshed when statistics are cleared.	
Active Registrations	The number of active registrations.	summary detail
	Name of signaling realm (uncaptioned field).	

### Sample Output

```

show services border-signaling-gateway registrations realm
user@host> show services border-signaling-gateway registrations realm atlanta.com gateway
bsg1
Statistics Start           : 22/4/2009 13:24
Active Registrations      : 3344

```

```
show services user@host> show services border-signaling-gateway registration realm all gateway
border-signaling-gateway Statistics Start : 22/4/2009 13:24
registrations realm all atlanta.com
                        Active Registrations : 3344

                        biloxi.com
                        Active Registrations : 17000
```

## show services border-signaling-gateway routing-blacklist

<b>Syntax</b>	<b>show services border-signaling-gateway routing-blacklist gateway <i>gateway-name</i> &lt;backup   master&gt;</b>
<b>Release Information</b>	Command introduced in Junos OS Release 10.2.
<b>Description</b>	Display unavailable server information from the routing blacklist.
<b>Options</b>	<p><i>gateway-name</i>—Name of the gateway for which call statistics are displayed.</p> <p>backup—(Optional) Show statistics for the backup BSG.</p> <p>master—(Optional) Show statistics for the master BSG. If you do not specify the <b>master</b> or <b>backup</b> option, the <b>master</b> option is the default.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show services border-signaling-gateway routing-blacklist on page 1253</b>
<b>Output Fields</b>	Table 204 on page 1253 lists the output fields for the <b>show services border-signaling-gateway statistics routing-blacklist</b> command. Output fields are listed in the approximate order in which they appear.

**Table 204: show services border-signaling-gateway routing-blacklist Output Fields**

Field Name	Field Description
last availability	The last time the server responded to an availability check.
next check	The next time the server will be checked for availability.
next availability	For servers that are not checked for availability, the time that the server is scheduled to be removed from the blacklist.

## Sample Output

```

show services border-signaling-gateway routing-blacklist
user@host> show services border-signaling-gateway routing-blacklist bsg1
Statistics start      : 22/4/2008 13:24
Servers actively checked for availability:
Florida 1.2.3.4 last availability: 23/8/2009 12:24:21 next check: 23/8/2009
17:31:43
Georgia 5.6.7.8 last availability: 23/8/2009 9:53:09 next check: 23/8/2009
17:32:15

Servers not actively checked for availability:
sip.att.com 10.10.250.17 next availability: 23/8/2009 17:47:02
sip.jnpr.com 62.17.56.28 next availability: 24/8/2009 02:49:51

```

## show services border-signaling-gateway status

<b>Syntax</b>	<b>show services border-signaling-gateway status gateway <i>gateway-name</i></b> <b>&lt;backup   master&gt;</b>
<b>Release Information</b>	Command introduced in Junos OS Release 9.10.
<b>Description</b>	Displays status information for the master or backup BSG, B2BUA connection, and SIP stack connection.
<b>Options</b>	<p><i>gateway-name</i>—Name of the gateway for which status is displayed.</p> <p><b>backup</b>—(Optional) Show status information for the backup BSG.</p> <p><b>master</b>—(Optional) Show status information for the master BSG. If you do not specify the <b>master</b> or <b>backup</b> options, the <b>master</b> option is the default.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p><b>show services border-signaling-gateway status</b> on page 1255</p> <p><b>show services border-signaling-gateway status backup (primary as backup)</b> on page 1255</p>
<b>Output Fields</b>	Table 205 on page 1254 lists the output fields for the <b>show services border-signaling-gateway status</b> command. Output fields are listed in the approximate order in which they appear.

**Table 205: show services border-signaling-gateway status Output Fields**

Field Name	Field Description
<b>State</b>	<p>Redundancy state of the BSG being displayed. Possible values:</p> <ul style="list-style-type: none"> <li>Master—The BSG is functioning as the master in a partnered pair.</li> <li>Backup—The BSG is functioning as the backup in partnered.</li> <li>Standalone—No backup is configured. The BSG is running in standalone mode.</li> </ul> <p>The state displayed is <b>backup</b> only if you specified the <b>backup</b> option in the command.</p>
<b>Local</b>	<p>Information about the local BSG, initially configured as the Master in a partnered pair, including:</p> <ul style="list-style-type: none"> <li>Interface—The name of the service interface for the BSG.</li> <li>IP address—The IP address of the service interface for the BSG.</li> <li>RMS role—The configured role of this BSG. Possible values: <ul style="list-style-type: none"> <li>Primary—The BSG is configured as primary.</li> <li>Secondary—The BSG is configured as secondary.</li> </ul> </li> </ul>

Table 205: show services border-signaling-gateway status Output Fields (*continued*)

Field Name	Field Description
<b>Remote</b>	<p>Information about the remote BSG, initially configured as the Backup in a partnered pair, including:</p> <ul style="list-style-type: none"> <li>Interface—The name of the interface for the BSG.</li> <li>IP address—The IP address of the interface for the BSG.</li> <li>RMS role—The configured role of this BSG. Possible values: <ul style="list-style-type: none"> <li>Primary—The BSG is configured as primary.</li> <li>Primary—The BSG is configured as secondary.</li> </ul> </li> </ul>
<b>B2BUA Connection</b>	<p>Information about the B2BUA connection, including:</p> <ul style="list-style-type: none"> <li>Status—The connection status. Possible values: <ul style="list-style-type: none"> <li>Connected</li> <li>Disconnected</li> </ul> </li> <li>TCP—Internal routing interface address.</li> </ul>
<b>SIP Stack</b>	<p>Information about the SIP stack connection, including:</p> <ul style="list-style-type: none"> <li>Status—The connection status. Possible values: <ul style="list-style-type: none"> <li>Connected</li> <li>Disconnected</li> </ul> </li> <li>TCP—Internal routing interface address.</li> </ul>

## Sample Output

```

show services border-signaling-gateway status
user@host> show services border-signaling-gateway status gateway bsg1
Redundancy information:
  State: Master
  Local:
    Interface name: ms-0/3/0
    IP address: 20.0.0.19
    RMS role: Primary
  Remote:
    Interface name: ms-1/3/0
    IP address: 20.0.0.35
    RMS role: Secondary
  B2BUA connection:
    Status: Connected
    tcp 20.0.0.19:32024 => 20.0.0.35:50783
  SIP stack connection:
    Status: Connected
    tcp 20.0.0.19:58875 => 20.0.0.35:16386

```

## Sample Output

```

show services border-signaling-gateway status backup (primary as backup)
This example shows the primary RMS partner serving as the backup after a switchover.
user@host> show services border-signaling-gateway status gateway bsg1 backup
Redundancy information:
  State: Backup

```

```
Local:
  Interface name: ms-0/3/0
  IP address: 20.0.0.19
  RMS role: Primary
Remote:
  Interface name: ms-1/3/0
  IP address: 20.0.0.35
  RMS role: Secondary
B2BUA connection:
  Status: Connected
  tcp 20.0.0.19:32024 => 20.0.0.35:50783
SIP stack connection:
  Status: Connected
  tcp 20.0.0.19:58875 => 20.0.0.35:16386
```



# Compressed Real-Time Transport Protocol Operational Mode Commands

Table 206 on page 1257 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot Compressed Real-Time Transport Protocol (CRTP) services. Commands are listed in alphabetical order.

**Table 206: CRTP Operational Mode Commands**

Task	Command
Clear CRTP flows statistics.	<code>clear services crtp statistics</code>
Display CRTP output.	<code>show services crtp</code>
Display CRTP flows.	<code>show services crtp flows</code>



**NOTE:** CRTP is supported on the following interfaces:

- M Series and T Series routers—Link services intelligent queuing (IQ) (`lsq-fpc/pic/port`)
- J Series router—Link services (`ls-pim/0/port`)



**NOTE:** For information about how to configure CRTP services, see the *Junos OS Services Interfaces Configuration Guide*.

## clear services crtp statistics

---

<b>Syntax</b>	clear services crtp statistics <interface <i>interface-name</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Clear Compressed Real-Time Transport Protocol (CRTP) flow statistics.
<b>Options</b>	none—Clear CRTP flow statistics on all interfaces.  interface <i>interface-name</i> —(Optional) Clear CRTP flow statistics for the specified interface: <ul style="list-style-type: none"><li>• On M Series and T Series routers, a link services IQ (<i>lsq-fpc/pic/port</i>) or redundant link services IQ (<i>rlsq-fpc/pic/port</i>) interface</li><li>• On the J Series router, a link services (<i>ls-pim/0/port</i>) interface</li></ul>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	clear services crtp statistics on page 1258
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

clear services crtp statistics	user@host> clear services crtp statistics
--------------------------------	-------------------------------------------

## show services crtp

<b>Syntax</b>	show services crtp <extensive> <interface <i>interface-name</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Display Compressed Real-Time Transport Protocol (CRTP) extensive output.
<b>Options</b>	<p>none—Display CRTP extensive output for all interfaces.</p> <p>extensive—(Optional) Display extensive CRTP information.</p> <p>interface <i>interface-name</i>—(Optional) Display CRTP flow statistics for the specified interface:</p> <ul style="list-style-type: none"> <li>On M Series and T Series routers, a link services IQ (<b>lsq-fpc/pic/port</b>) or redundant link services IQ (<b>rlsq-fpc/pic/port</b>) interface</li> <li>On the J Series router, a link services (<b>ls-pim/0/port</b>) interface</li> </ul>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show services crtp extensive on page 1260
<b>Output Fields</b>	Table 207 on page 1259 lists the output fields for the <b>show services crtp</b> command. Output fields are listed in the approximate order in which they appear.

**Table 207: show services crtp Output Fields**

Field Name	Field Description
<b>Interface</b>	Name of the physical interface.
<b>Port minimum</b> <b>Port maximum</b>	Compression is applied to UDP packets with even ports in the specified range.
<b>Maximum UDP compressed sessions</b>	Maximum value of a context identifier in the space of context identifiers allocated for UDP.
<b>CRTP maximum period</b>	Maximum interval between full headers. Suggested value is 256.
<b>CRTP maximum time</b>	Maximum time interval between full headers. Suggested value is 5 seconds.
<b>Compression ratio</b>	Ratio of received packet size to compressed packet size, in percentage. For example, if the packet size is 100 bytes when it is received, and is 40 bytes after compression, the compression ratio is $100 \div 40 / 100 * 100 = 60\%$ .

Table 207: show services crtp Output Fields (*continued*)

Field Name	Field Description
<b>Decompression ratio</b>	Ratio of received packet size to decompressed packet size, in percentage. For example, if the packet size is 40 bytes when it is received, and is 100 bytes after compression, the decompression ratio is $100 \div 40 / 100 * 100 = 60\%$ .
<b>Discards</b>	Number of frames that the incoming packet match code discarded because they were not recognized.
<b>Sessions</b>	Total number of active CRTP sessions.
<b>IP bytes</b>	Number of IP bytes sent and received.
<b>Compressed bytes</b>	Number of compressed IP header bytes sent and received.
<b>CRTP packets</b>	Number of CRTP packets sent and received.
<b>CUDP/CNTCP packets</b>	Number of compressed UDP packets and compressed non-TCP packets sent and received.
<b>Full header packets</b>	Number of full header packets sent and received. Full header packets communicate the uncompressed IP header plus any following headers and data to establish the uncompressed header state in the decompressor for a particular context.
<b>Context state packet</b>	Number of context state packets sent and received. Context state packets are sent from the decompressor to the compressor to communicate a list of context IDs for which synchronization is lost or might be lost.
<b>IP packets</b>	Number of IP packets sent and received.
<b>Compressed packets</b>	Number of compressed packets sent and received.

## Sample Output

**show services crtp  
extensive**

```

user@host> show services crtp extensive
Interface: lsq-1/1/0.1
  Port minimum: 2000, Port maximum: 64009
  Maximum UDP compressed sessions: 256
  CRTP maximum period: 256, CRTP maximum time: 5
  Compression ratio: 0, Decompression ratio: 0, Discards: 0
  CRTP stats
    Receive      Transmit
  Sessions           1           1
  IP bytes           60          60
  Compressed bytes   61          60
  CRTP packets       0           0
  CUDP/CNTCP packets 0           0
  Full header packets 1           1
  Context state packets 0           0

```

IP packets	1	1
Compressed packets	1	1

## show services crtp flows

<b>Syntax</b>	show services crtp flows <interface <i>interface-name</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Display Compressed Real-Time Transport Protocol (CRTP) flows.
<b>Options</b>	<p>none—Display CRTP flows for all interfaces.</p> <p>interface <i>interface-name</i>—(Optional) Display CRTP flows for the specified interface:</p> <ul style="list-style-type: none"> <li>On M Series and T Series routers, a link services IQ (<b>lsq-fpc/pic/port</b>) or redundant link services IQ (<b>rlsq-fpc/pic/port</b>) interface</li> <li>On the J Series router, a link services (<b>ls-pim/0/port</b>) interface</li> </ul>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show services crtp flows on page 1262
<b>Output Fields</b>	Table 208 on page 1262 lists the output fields for the <b>show services crtp flows</b> command. Output fields are listed in the approximate order in which they appear.

**Table 208: show services crtp flows Output Fields**

Field Name	Field Description
<b>Interface</b>	Name of the physical interface.
<b>Flow</b>	Received or transmitted flow.
<b>Source</b>	IP source address.
<b>Destination</b>	IP destination address.
<b>SSRC ID</b>	Synchronization source (SSRC) identifier. One of the fields in the RTP header used to select the context. The SSRC identifier is a randomly chosen value unique within a particular CRTP session.
<b>Ctx ID</b>	Session context ID. Indicates the session context in which to interpret the packet. The decompressor can use the context ID to index its table of stored session contexts directly.

## Sample Output

```

show services crtp flows user@host> show services crtp flows
Interface: lsq-1/1/0.1
Flow          Source          Destination          SSRC ID  Ctx ID

```

Receive	60.1.1.3:28004	80.1.1.3:26000	123	0
Transmit	80.1.1.3:26000	60.1.1.3:28004	123	2





# CoS Services Operational Mode Commands

Table 209 on page 1265 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot class-of-service (CoS ) services on the Adaptive Services PIC. Commands are listed in alphabetical order.

Table 209: CoS Services Operational Mode Commands

Task	Command
Clear CoS statistics.	<code>clear services cos statistics</code>
Display CoS statistics.	<code>show services cos statistics</code>



**NOTE:** CoS services are supported on the adaptive services interface on the following routers:

- J Series—`sp-pim/0/slot`
- M Series and T Series—`sp-fpc/pic/port`

CoS services are also supported on the redundant adaptive services interface (`rspnumber`) on M Series and T Series routers.



**NOTE:** For information about how to configure CoS services, see the *Junos OS Services Interfaces Configuration Guide*.

## clear services cos statistics

---

<b>Syntax</b>	clear services cos statistics <interface <i>interface-name</i> > <service-set <i>service-set-name</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 8.1.
<b>Description</b>	Clear statistics for class-of-service (CoS) code point bit patterns and forwarding classes as configured in CoS services for the AS PIC.
<b>Options</b>	none—Clear all services CoS statistics.  interface <i>interface-name</i> —(Optional) Clear statistics for the specified interface only.  service-set <i>service-set-name</i> —(Optional) Clear statistics for the specified service set only.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	clear services cos statistics on page 1266
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

```
clear services cos  user@host> clear services cos statistics
statistics
```

## show services cos statistics

<b>Syntax</b>	<pre>show services cos statistics &lt;brief   detail   extensive&gt; &lt;diffserv   forwarding-class&gt; &lt;interface <i>interface-name</i>&gt; &lt;service-set <i>service-set-name</i>&gt; &lt;summary&gt;</pre>
<b>Release Information</b>	Command introduced in Junos OS Release 8.1.
<b>Description</b>	Display the mapping of class-of-service (CoS) code point aliases to corresponding bit patterns and the mapping of forwarding class names to queue numbers as configured in CoS services for the AS PIC.
<b>Options</b>	<p>none—Display all services CoS statistics.</p> <p>brief   detail   extensive—(Optional) Display the specified level of output.</p> <p>diffserv   forwarding-class—(Optional) Display only the selected information, either DiffServ codepoints or forwarding classes.</p> <p>interface <i>interface-name</i>—(Optional) Display statistics for the specified interface only.</p> <p>service-set <i>service-set-name</i>—(Optional) Display statistics for the specified service set only.</p> <p>summary—(Optional) Display summary of statistics on a per-interface basis.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p><a href="#">show services cos statistics on page 1268</a></p> <p><a href="#">show services cos statistics brief on page 1269</a></p> <p><a href="#">show services cos statistics detail on page 1269</a></p> <p><a href="#">show services cos statistics extensive on page 1269</a></p>
<b>Output Fields</b>	Table 210 on page 1267 describes the output fields for the <b>show services cos statistics</b> command. Output fields are listed in the approximate order in which they appear.

**Table 210: show services cos statistics Output Fields**

Field Name	Field Description	Level of Output
<b>Interface</b>	Name of interface.	All levels
<b>Service set</b>	Name of service set.	All levels
<b>DSCP</b>	DiffServ code point bit pattern.	All levels
<b>Packets in</b>	Number of packets received.	All levels

Table 210: show services cos statistics Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Packets out</b>	Number of packets transmitted.	All levels
<b>Forwarding class</b>	Forwarding class queue number.	All levels

### Sample Output

```

show services cos statistics user@host> show services cos statistics
Interface: sp-1/0/0, Service set: scos
DSCP          Packets in      Packets out
000000          0             0
000001          0             0
000010          0             0
000011          0             0
000100          0             0
000101          0             0
000110          0             0
000111          0             0
001000          0             0
001001          0             0
001010          0             0
001011          0             0
001100          0             0
001101          0             0
001110          0             0
001111          0             0
010000          0             0
010001          0             0
010010          0             0
010011          0             0
010100          0             0
010101          0             0
010110          0             0
010111          0             0
011000          0             0
011001          0             0
011010          0             0
011011          0             0
011100          0             0
011101          0             0
011110          0             0
011111          0             0
100000          0             0
100001          0             0
100010          0             0
100011          0             0
100100          0             0
100101          0             0
100110          0             0
100111          0             0
101000          0             0
101001          0             0
101010          0             0
101011          0             0
101100          0             0

```

101101	0	0
101110	0	0
101111	0	0
110000	0	0
110001	0	0
110010	0	0
110011	0	0
110100	0	0
110101	0	0
110110	0	0
110111	0	0
111000	0	0
111001	0	0
111010	0	0
111011	0	0
111100	0	0
111101	0	0
111110	0	0
111111	0	0
Forwarding class	Packets in	Packets out
0	0	0
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0
13	0	0
14	0	0
15	0	0

**show services cos statistics brief** The output for the **show services cos statistics brief** command is identical to that for the **show services cos statistics** command.

**show services cos statistics detail** The output for the **show services cos statistics detail** command is identical to that for the **show services cos statistics** command.

**show services cos statistics extensive** The output for the **show services cos statistics extensive** command is identical to that for the **show services cos statistics** command.



# Data Link Switching Operational Mode Commands

Table 211 on page 1271 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot data link switching (DLSw) on J Series routers. Commands are listed in alphabetical order.

**Table 211: DLSw Operational Mode Commands**

Task	Command
Clear DLSw reachability.	<b>clear dlsw reachability</b>
Display DLSw peer capability.	<b>show dlsw capabilities</b>
Display information about configured DLSw circuits.	<b>show dlsw circuits</b>
Display DLSw peer information.	<b>show dlsw peers</b>
Display information about the cached media access control (MAC) entries.	<b>show dlsw reachability</b>
Display logical link control type 2 (LLC2) redundancy information for DLSw.	<b>show llc2 redundancy</b>
Display LLC2 redundancy statistics.	<b>show llc2 redundancy interface statistics</b>
Display LLC2 redundancy MAC translation information.	<b>show llc2 redundancy mac-translation</b>
Display LLC2 redundancy tracking information.	<b>show llc2 redundancy track</b>



**NOTE:** DLSw is supported only on the J Series router.



**NOTE:** For information about how to configure DLSw, see the *Junos OS Services Interfaces Configuration Guide* or the *J Series Services Router Advanced WAN Access Configuration Guide*.

## clear dlsw reachability

---

<b>Syntax</b>	clear dlsw reachability
<b>Release Information</b>	Command introduced in Junos OS Release 8.0.
<b>Description</b>	Clear the data-link switching (DLSw) reachability cache.
<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="#">show dlsw reachability on page 1278</a></li></ul>
<b>List of Sample Output</b>	<a href="#">clear dlsw reachability on page 1272</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

clear dlsw reachability    user@host> clear dlsw reachability



## show dlsw capabilities

<b>Syntax</b>	show dlsw capabilities
<b>Release Information</b>	Command introduced in Junos OS Release 7.4.
<b>Description</b>	(J Series routers only) Display information about data link switching (DLSw) capabilities of a specific remote peer or all peers.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show dlsw capabilities on page 1273
<b>Output Fields</b>	Table 212 on page 1273 describes the output fields for the <b>show dlsw capabilities</b> command. Output fields are listed in the approximate order in which they appear.

**Table 212: show dlsw capabilities Output Fields**

Field Name	Field Description
Peer	IP address of the peer DLSw router.
Vendor ID	Numerical value assigned to Juniper Networks.
Version number	DLSw version.
Initial pacing window size	Receive window size for incoming transport connections with the DLSw peer.
Version string	Juniper Networks software version information.

## Sample Output

```

show dlsw capabilities user@host> show dlsw capabilities
Peer: 217.110.111.134
  Vendor ID           : 000585
  Version number      : 0200
  Initial pacing window size : 32
  Version string      :
    Juniper Networks, Inc. j2300 internet router
    Junos OS Release 7.4I0 [builder]
    Build date: 2005-07-15 07:13:17 UTC
    Copyright (c) 1996-2005 Juniper Networks, Inc.
```

## show dlsw circuits

<b>Syntax</b>	show dlsw circuits <brief   detail>
<b>Release Information</b>	Command introduced in Junos OS Release 7.4.
<b>Description</b>	(J Series router only) Display information about configured data link switching (DLSw) circuits.
<b>Options</b>	none—Display information about all DLSw circuits.  brief   detail—(Optional) Display the specified level of output.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show dlsw circuits on page 1275 show dlsw circuits detail on page 1275
<b>Output Fields</b>	Table 213 on page 1274 describes the output fields for the <b>show dlsw circuits</b> command. Output fields are listed in the approximate order in which they appear.

**Table 213: show dlsw circuits Output Fields**

Field Name	Field Description	Level of Output
Circuit id	Circuit ID	detail
Local address	MAC address of the local DLSw peer.	All levels
LSAP	Number of the local service access point.	All levels
Remote address	MAC address of the remote DLSw peer.	All levels
DSAP	Number of the destination service access point.	All levels
Peer or remote peer address	IP address of the remote DLSw peer.	All levels
Circuit state	State of the circuit.	detail
Uptime	How long the circuit has been established.	All levels
Max BTU size	Maximum packet size.	detail
Circuit priority	Traffic priority on the circuit.	detail

Table 213: show dlsw circuits Output Fields (*continued*)

Field Name	Field Description	Level of Output
Statistics	Statistics: <ul style="list-style-type: none"> <li>• <b>I-frames received</b>—Number of I-frames received.</li> <li>• <b>I-frames sent</b>—Number of I-frames sent.</li> <li>• <b>Bytes in I-frames received</b>—Number of bytes in I-frames received.</li> <li>• <b>Bytes in I-frames sent</b>—Number of bytes in I-frames sent.</li> <li>• <b>I-frames rejected</b>—Number of I-frames rejected.</li> <li>• <b>Bytes in I-frames rejected</b>—Number of bytes in I-frames rejected.</li> <li>• <b>I-frames retransmitted</b>—Number of I-frames retransmitted.</li> <li>• <b>Bytes in retransmitted I-frames</b>—Number of bytes in I-frames retransmitted.</li> <li>• <b>Reject frames received</b>—Number of reject frames received.</li> <li>• <b>Reject frames sent</b>—Number of reject frames sent.</li> <li>• <b>XID frames received</b>—Number of XID frames received.</li> <li>• <b>XID frames sent</b>—Number of XID frames sent.</li> </ul>	detail

## Sample Output

```

show dlsw circuits user@host> show dlsw circuits
Local address      LSAP  Remote address    DSAP  Peer      Uptime
22:22:00:00:00:06  04    44:44:00:00:00:06  04    10.255.18.2  00:06:42

show dlsw circuits user@host> show dlsw circuits detail
detail Circuit ID: 9ad20498aa04
Local address: 22:22:00:00:00:06, LSAP: 04
Remote address: 44:44:00:00:00:06, DSAP: 04
Remote peer address: 18.255.18.2
Circuit state: Connected
Uptime: 00:09:02
Max BTU size: 1466
Circuit priority: 3
Statistics:
  I-frames received : 0
  I-frames sent : 0
  Bytes in I-frames received : 0
  Bytes in I-frames sent : 0
  I-frames rejected : 0
  Bytes in I-frames rejected : 0
  I-frames retransmitted : 0
  Bytes in retransmitted I-frames : 0
  Reject frames received : 0
  Reject frames sent : 0
  XID frames received : 2
  XID frames sent : 2

```

## show dlsw peers

<b>Syntax</b>	show dlsw peers <brief   detail> <peer-ip <i>ip-address</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 7.4.
<b>Description</b>	(J Series router only) Display data link switching (DLSw) peer status.
<b>Options</b>	none—Display information about all DLSw peers.  brief   detail—(Optional) Display the specified level of output.  peer-ip <i>ip-address</i> —(Optional) Display information about only the specified DLSw peer.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show dlsw peers brief on page 1277 show dlsw peers detail on page 1277
<b>Output Fields</b>	Table 214 on page 1276 describes the output fields for the <b>show dlsw peers</b> command. Output fields are listed in the approximate order in which they appear.

**Table 214: show dlsw peers Output Fields**

Field Name	Field Description	Level of Output
Peer	IP address of the remote DLSw peer.	All levels
State	Status of the connection.	All levels
Circuits	Number of circuits on the DLSw network.	All levels
Uptime	How long the circuit has been established.	All levels
Local address	IP address of the local DLSw peer.	detail
Connected time	Length of time the connection is established.	detail
Receive initial pacing	Size of the initial pacing frame.	detail
No circuits timeout	Length of time before a circuit times out.	detail
Type-of-service value	CoS type-of-service (ToS) number.	detail
Peer cost	Preference for establishing a circuit with this peer.	detail
Load balancing	Whether load balancing is enabled and what algorithm is used.	detail

Table 214: show dlsw peers Output Fields (*continued*)

Field Name	Field Description	Level of Output
Circuit weight	Extent to which this peer should participate in establishing circuits.	detail
Statistics	Statistics: <ul style="list-style-type: none"> <li>• <b>Data packets received</b>—Number of packets received.</li> <li>• <b>Data packets sent</b>—Number of packets sent.</li> <li>• <b>Data bytes received</b>—Number of bytes received.</li> <li>• <b>Data bytes sent</b>—Number of bytes sent.</li> <li>• <b>Control packets received</b>—Number of control packets received.</li> <li>• <b>Control packets sent</b>—Number of control packets sent.</li> <li>• <b>CANUREACH_ex received</b>—Number of CANUREACH messages received.</li> <li>• <b>CANUREACH_ex sent</b>—Number of CANUREACH messages sent.</li> <li>• <b>ICANREACH_ex received</b>—Number of ICANREACH messages received.</li> <li>• <b>ICANREACH_ex sent</b>—Number of ICANREACH messages sent.</li> </ul>	detail

## Sample Output

```

show dlsw peers brief  user@host> show dlsw peers brief
Peer      State      Circuits   Uptime
17.255.17.2  Connected    0         00:00:00
18.255.18.2  Connected    1         00:12:03

show dlsw peers detail  user@host> show dlsw peers detail
Peer: 10.255.18.2
State: Connected, Circuits: 1, Local address: 10.255.4.50
Uptime: 00:15:05
Receive initial pacing: 20, No circuits timeout: 0
Type-of-service value: 0
Peer cost: 100, Load balancing: Circuit Weight
Circuit weight: 2
Statistics:
  Data packets received : 0
  Data packets sent : 0
  Data bytes received : 0
  Data bytes sent : 0
  Control packets received : 7
  Control packets sent : 8
  CANUREACH_ex received : 0
  CANUREACH_ex sent : 1
  ICANREACH_ex received : 1
  ICANREACH_ex sent : 0

```

## show dlsw reachability

<b>Syntax</b>	show dlsw reachability
<b>Release Information</b>	Command introduced in Junos OS Release 7.4.
<b>Description</b>	(J Series router only) Display media access control (MAC) and IP addresses of remote data link switching (DLSw) peers.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show dlsw reachability on page 1278
<b>Output Fields</b>	Table 215 on page 1278 describes the output fields for the <b>show dlsw reachability</b> command. Output fields are listed in the approximate order in which they appear.

**Table 215: show dlsw reachability Output Fields**

Field Name	Field Description
<b>MAC index</b>	Number assigned to the DLSw peer.
<b>MAC address</b>	MAC address of the DLSw peer.
<b>Location</b>	Peer location: <b>local</b> or <b>remote</b> .
<b>Peer/interface</b>	Peer interface name or IP address.

## Sample Output

```
show dlsw reachability user@host> show dlsw reachability
MAC index MAC address      Location      Peer/Interface
    0  44:44:00:00:00:06  remote      17.255.17.2
                                     18.255.18.2
    1  22:22:00:00:00:06  local       fe-0/0/1.0
```

## show llc2 redundancy

<b>Syntax</b>	show llc2 redundancy <brief   detail> <interface statistics   mac-translation   track (dlsw-remote-destination   dlsw-remote-peer   interfaces)>
<b>Release Information</b>	Command introduced in Junos OS Release 7.5.
<b>Description</b>	(J Series router only) Display logical link control type 2 (LLC2) redundancy information for data link switching (DLSw).
<b>Options</b>	none—Display basic LLC2 redundancy information. Same as <b>brief</b> .  brief   detail—(Optional) Display the specified level of output.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show llc2 redundancy on page 1280 show llc2 redundancy detail on page 1280
<b>Output Fields</b>	Table 216 on page 1279 describes the output fields for the <b>show llc2 redundancy</b> command. Output fields are listed in the approximate order in which they appear.

Table 216: show llc2 redundancy Output Fields

Field Name	Field Description	Level of Output
Interface	IP address of the remote DLSw peer.	All levels
Unit	Logical interface unit number.	brief
Group	Group number.	All levels
Int state or Interface state	Interface state: <b>up</b> or <b>down</b> .	All levels
Er state or state	Indicates master or backup router.	All levels
Index	Number assigned to the router.	<b>detail</b>
Priority	Order to take over as master.	<b>detail</b>
Advertisement interval	Length of time between sending hello packets.	<b>detail</b>
Preempt	Master took over because of a failure.	<b>detail</b>
Advertisement timer	Times the advertisement intervals.	<b>detail</b>
Master router uptime	Length of time the master router has been available.	<b>detail</b>

Table 216: show llc2 redundancy Output Fields (*continued*)

Field Name	Field Description	Level of Output
Tracking	Whether tracking options or enabled or disabled.	<b>detail</b>

### Sample Output

```
show llc2 redundancy  user@host> show llc2 redundancy
Interface  Unit  Group  Int state  ER state
fe-0/0/1.0  0    5      up         master

show llc2 redundancy  user@host> show llc2 redundancy detail
detail          Interface:fe-0/0/1.0 Index 69
                  Interface state: up, Group 5, State master,
                  Priority:255, Advertisement interval 5,
                  Preempt:yes, Advertisement timer 0.0,
                  Master router uptime:361476.770, Tracking: enabled
```



## show llc2 redundancy interface statistics

<b>Syntax</b>	show llc2 redundancy interface statistics
<b>Release Information</b>	Command introduced in Junos OS Release 7.5.
<b>Description</b>	(J Series router only) Display logical link control type 2 (LLC2) redundancy interface statistics for data link switching (DLSw).
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show llc2 redundancy interface statistics on page 1281</b>
<b>Output Fields</b>	Table 217 on page 1281 lists the output fields for the <b>show llc2 redundancy interface statistics</b> command. Output fields are listed in the approximate order in which they appear.

**Table 217: show llc2 redundancy interface statistics Output Fields**

Field Name	Field Description
<b>Interface</b>	Name of the configured physical interface.
<b>Index</b>	Number assigned to the interface.
<b>Group</b>	Number of the redundancy group.
<b>Interface ERED PDU statistics</b>	
<b>Advertisement sent</b>	Number of packets sent to advertise the router on the network.
<b>Advertisement received</b>	Number of packets received as advertisements on the network.
<b>Interface ERED PDU error statistics</b>	
<b>Invalid ERED TTL value received</b>	Number of invalid Ethernet redundancy time-to-live (TTL) values.

## Sample Output

```

show llc2 redundancy interface statistics user@host> show llc2 redundancy interface statistics
Interface : fe-0/0/1.0, Index : 69, Group : 5
Interface ERED PDU statistics
  Advertisement sent           : 2959
  Advertisement received       : 0
Interface ERED PDU error statistics
  Invalid ERED TTL value received : 0

```

## show llc2 redundancy mac-translation

<b>Syntax</b>	show llc2 redundancy mac-translation
<b>Release Information</b>	Command introduced in Junos OS Release 7.5.
<b>Description</b>	(J Series router only) Display logical link control type 2 (LLC2) redundancy media access control (MAC) translation information for data link switching (DLSw).
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show llc2 redundancy mac-translation on page 1282
<b>Output Fields</b>	Table 218 on page 1282 lists the output fields for the <b>show llc2 redundancy mac-translation</b> command. Output fields are listed in the approximate order in which they appear.

**Table 218: show llc2 redundancy mac-translation Output Fields**

Field Name	Field Description
<b>Local mac</b>	MAC address of the local DLSw peer router.
<b>Remote mac</b>	MAC address of the remote DLSw peer router.
<b>Interface</b>	Physical interface configured for Ethernet redundancy.
<b>Group</b>	Assigned redundancy group number.

## Sample Output

```

user@host> show llc2 redundancy mac-translation
show llc2 redundancy mac-translation
Local mac      Remote mac      Interface      group
44:44:44:44:44 44:44:44:44:10:25 fe-0/0/1.0     5
44:44:44:44:44:33 44:44:44:44:10:16 fe-0/0/1.0     5
44:44:44:44:44:48 44:44:44:44:10:39 fe-0/0/1.0     5
09:00:2b:00:00:04 09:00:2b:00:00:05 fe-0/0/1.0     5
00:00:5e:00:01:01 00:0d:88:45:ce:5c fe-0/0/1.0     5

```

## show llc2 redundancy track

<b>Syntax</b>	show llc2 redundancy <brief   detail> <interface statistics   mac-translation   track (dlsw-remote-destination   dlsw-remote-peer   interfaces)>
<b>Release Information</b>	Command introduced in Junos OS Release 7.5.
<b>Description</b>	(J Series router only) Display logical link control type 2 (LLC2) redundancy tracking information for data link switching (DLSw).
<b>Options</b>	<p>brief   detail—(Optional) Display the specified level of output.</p> <p>dlsw-remote-destination—(Optional) Display LLC2 remote destination tracking information.</p> <p>dlsw-remote-peer—(Optional) Display LLC2 remote peer tracking information.</p> <p>interfaces—(Optional) Display LLC2 interface tracking information.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p>show llc2 redundancy track dlsw-remote-destination on page 1284</p> <p>show llc2 redundancy track dlsw-remote-peer on page 1284</p> <p>show llc2 redundancy track interfaces on page 1284</p>
<b>Output Fields</b>	Table 219 on page 1283 lists the output fields for the <b>show llc2 redundancy track</b> command. Output fields are listed in the approximate order in which they appear.

**Table 219: show llc2 redundancy track Output Fields**

Field Name	Field Description
<b>Remote dest</b>	MAC address of the remote peer router.
<b>Peer dest</b>	IP address of the remote peer.
<b>Track if</b>	Physical interface configured for tracking.
<b>Connectivity</b>	Status of the connection.
<b>Cost</b>	Value assigned to place the router in a redundancy hierarchy.
<b>Interface</b>	Physical interfaces configured for DLSw redundancy.
<b>Group</b>	Assigned redundancy group number.
<b>Cfg</b>	Priority value configured on the router.
<b>Run</b>	Value after all priority values are applied.

Table 219: show llc2 redundancy track Output Fields (*continued*)

Field Name	Field Description
ER state	Status of the router: <b>master</b> or <b>backup</b> .

### Sample Output

```

show llc2 redundancy track dlsw-remote-destination
user@host> show llc2 redundancy track dlsw-remote-destination
Remote dest      Reachability Cost  Interface  Group  Cfg  Run  ER state
44:44:44:44:44:45 reachable    15   fe-0/0/1.0  5     255  255  master
dlsw-remote-destination
44:44:44:44:44:49 unknown      35   fe-0/0/1.0  5     255  255  master

show llc2 redundancy track dlsw-remote-peer
user@host> show llc2 redundancy track dlsw-remote-peer
Remote peer      Connectivity Cost  Interface  Group  Cfg  Run  ER state
dlsw-remote-peer
10.255.110.38    yes      10   fe-0/0/1.0  5     255  245  master
2.2.2.3          no       10   fe-0/0/1.0  5     255  245  master
10.255.110.39    yes      10   fe-0/0/1.0  5     255  245  master

show llc2 redundancy track interfaces
user@host> show llc2 redundancy track interfaces
Track if  State Cost  Interface  Group  Cfg  Run  ER state
e1-0/0/2.0 yes    10   fe-0/0/1.0  5     255  255  master

```

# Diameter Base Protocol Operational Mode Commands

Table 220 on page 1285 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot Diameter base protocol services.

**Table 220: Diameter Base Protocol Operational Mode Commands**

Task	Command
Clear Diameter function statistics.	<b>clear diameter function statistics</b>
Clear Diameter peers.	<b>clear diameter peer</b>
Display information about the Diameter node.	<b>show diameter</b>
Display information about Diameter functions.	<b>show diameter function</b>
Display Diameter function statistics.	<b>show diameter function statistics</b>
Display information about Diameter instances.	<b>show diameter instance</b>
Display information about Diameter network elements.	<b>show diameter network-element</b>
Display information about Diameter network element maps.	<b>show diameter network-element map</b>
Display information about Diameter peers.	<b>show diameter peer</b>
Display information about Diameter peer maps.	<b>show diameter peer map</b>
Display Diameter peer statistics.	<b>show diameter peer statistics</b>
Display information about Diameter routes.	<b>show diameter route</b>



**NOTE:** For information about how to configure Diameter Base Protocol services, see the *Junos OS Subscriber Access Configuration Guide*.

## clear diameter function statistics

---

<b>Syntax</b>	<b>clear diameter function</b> < <i>function-name</i> > <b>statistics</b>
<b>Release Information</b>	Command introduced in Junos OS Release 9.6. <i>function-name</i> option enhanced to support PTSP in Junos OS Release 10.2.
<b>Description</b>	Clear current statistics accumulated for a specified function (application) or for all functions associated with the Diameter instance.
<b>Options</b>	<i>function-name</i> —(Optional) Clear statistics for the specified function. Currently, JSRC and packet-triggered-subscribers are supported functions.
<b>Required Privilege Level</b>	clear
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show diameter on page 1288</a></li><li>• <a href="#">show diameter function on page 1290</a></li><li>• <a href="#">show diameter function statistics on page 1293</a></li></ul>
<b>List of Sample Output</b>	<a href="#">clear diameter function statistics on page 1286</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

<b>clear diameter function statistics</b>	user@host> clear diameter function jsrc statistics
-------------------------------------------	----------------------------------------------------

## clear diameter peer

---

<b>Syntax</b>	<code>clear diameter peer <i>peer-name</i></code> <code>&lt;connection   statistics&gt;</code>
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	Delete the specified Diameter peer and clear all statistics or only current statistics for the specified peer.
<b>Options</b>	<p><i>peer-name</i>—Delete the Diameter peer.</p> <p><i>connection</i>—(Optional) Clear all peer statistics and restart the peer state machine for the specified Diameter peer. This is the default action.</p> <p><i>statistics</i>—(Optional) Clear current statistics for the specified Diameter peer.</p>
<b>Required Privilege Level</b>	clear
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show diameter on page 1288</a></li><li>• <a href="#">show diameter peer on page 1304</a></li><li>• <a href="#">show diameter peer map on page 1308</a></li><li>• <a href="#">show diameter peer statistics on page 1311</a></li></ul>
<b>List of Sample Output</b>	<a href="#">clear diameter peer on page 1287</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

**clear diameter peer**    `user@host> clear diameter peer peer5 connection`

## show diameter

<b>Syntax</b>	<b>show diameter</b> <b>&lt;brief   detail   summary&gt;</b>
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	Display information about the Diameter node.
<b>Options</b>	<b>brief   detail   summary</b> —(Optional) Display the specified level of output. The <b>summary</b> output is displayed by default and includes Diameter node status. The <b>brief</b> output adds summary information about functions, instances, network elements, and peers. The <b>detail</b> output adds summary information about routes.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">clear diameter function statistics on page 1286</a></li> <li>• <a href="#">clear diameter peer on page 1287</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">show diameter on page 1289</a>
<b>Output Fields</b>	Table 221 on page 1288 lists the output fields for the <b>show diameter</b> command. Output fields are listed in the approximate order in which they appear.

**Table 221: show diameter Output Fields**

Field Name	Field Description	Level of Output
<b>Diameter process id</b>	ID number of the Diameter process.	All levels
<b>Functions</b>	Number of functions associated with Diameter.	All levels
<b>Connected functions</b>	Number of functions with active Diameter connections.	All levels
<b>Instances</b>	Number of configured Diameter instances.	All levels
<b>Network elements (NEs)</b>	Number of configured Diameter network elements.	All levels
<b>Connected NEs</b>	Number of Diameter network elements with active connections.	All levels
<b>Peers</b>	Number of Diameter peer nodes.	All levels
<b>Activated peers</b>	Number of Diameter peers with active connections.	All levels
<b>Open peers</b>	Number of peers in the open state, without active network element connections but available for a connection.	All levels



Table 221: show diameter Output Fields (*continued*)

Field Name	Field Description	Level of Output
Requests queued for network transmit	Number of requests waiting to be sent to the Diameter peers.	All levels
Answers queued for network transmit	Number of replies waiting to be sent to the Diameter peers.	All levels
Expected answers from network	Number of replies expected to be received from the Diameter peers.	All levels
Requests queued for function transmit	Number of requests waiting to be sent to the functions associated with Diameter.	All levels
Answers queued for function transmit	Number of replies waiting to be sent to the functions associated with Diameter.	All levels
Expected answers from functions	Number of replies expected to be received from the functions associated with Diameter.	All levels
Memory used by network transmit queues	Amount of memory consumed by network transmit queues.	All levels
Memory used by function transmit queues	Amount of memory consumed by function transmit queues.	All levels

## Sample Output

```
show diameter user@host> show diameter
```

```
Diameter node:
Diameter process id      :      2094
Functions                :      1
Connected functions      :      1
Instances                :      1
Network elements(NEs)    :      1
Connected NEs            :      1
Peers                    :      7
Activated peers          :      5
Open peers               :      2
Requests queued for network transmit :      0
Answers queued for network transmit  :      0
Expected answers from network        :      0
Requests queued for function transmit :      0
Answers queued for function transmit  :      0
Expected answers from functions      :      0
Memory used by network transmit queues :      0
Memory used by function transmit queues :      0
```

## show diameter function

<b>Syntax</b>	<b>show diameter function</b> <b>&lt;brief   detail   summary&gt;</b> <b>&lt;function-name&gt;</b>
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	Display information about all functions associated with Diameter instances or only the specified function.
<b>Options</b>	<p><b>brief   detail   summary</b>—(Optional) Display the specified level of output. The <b>summary</b> output is displayed by default and includes basic function information. The <b>brief</b> output displays the summary information in a different format. The <b>detail</b> output adds information to the <b>brief</b> output.</p> <p><b>function-name</b>—(Optional) Display information for only the specified function.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>clear diameter function statistics on page 1286</li> </ul>
<b>List of Sample Output</b>	<p>show diameter function on page 1292</p> <p>show diameter function brief on page 1292</p> <p>show diameter function detail on page 1292</p>
<b>Output Fields</b>	Table 222 on page 1290 lists the output fields for the <b>show diameter function</b> command. Output fields are listed in the approximate order in which they appear.

Table 222: show diameter function Output Fields

Field Name	Field Description	Level of Output
Function name	Name of the function for which information is displayed.	All levels
State	State of the Diameter connection with the function.	All levels
Upstream transaction utilization	Percent of upstream traffic used for this function.	All levels
Downstream transaction utilization	Percent of downstream traffic used for this function.	All levels
Network transmit buffer utilization	Percent of network transmission buffer used for this function.	All levels
Function transmit buffer utilization	Percent of function transmission buffer used for this function.	All levels

Table 222: show diameter function Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Routed destinations</b>	Number of destinations that have this function associated with their routes.	All levels
<b>Requests queued for network tx</b>	Number of requests waiting to be sent to the Diameter peers for this function.	<b>detail</b>
<b>Pending answers from network</b>	Number of replies expected from the Diameter peers for this function.	<b>detail</b>
<b>Answers queued for function tx</b>	Number of replies waiting to be sent to this function.	<b>detail</b>
<b>Total upstream transactions pending</b>	Total number of messages queued for this function.	<b>detail</b>
<b>Upstream transactions limit</b>	Total number of messages queued for this function.	<b>detail</b>
<b>Requests queued for function tx</b>	Number of requests waiting to be sent to this function.	<b>detail</b>
<b>Pending answers from function</b>	Number of replies expected to be received from this function.	<b>detail</b>
<b>Answers queued for network tx</b>	Number of replies waiting to be sent to this function.	<b>detail</b>
<b>Total downstream transactions pending</b>	Total number of messages queued for the Diameter peers.	<b>detail</b>
<b>Downstream transactions limit</b>	Maximum number of messages that can be queued for the Diameter peers.	<b>detail</b>
<b>Buffers used by network tx queue</b>	Number of buffers used by messages queued for the Diameter peers.	<b>detail</b>
<b>Limit on network tx queue buffers</b>	Maximum buffer capacity available for messages queued for the Diameter peers.	<b>detail</b>
<b>Buffers used by function tx queue</b>	Number of buffers used by messages queued for this function.	<b>detail</b>
<b>Limit on function tx queue buffers</b>	Maximum buffer capacity available for messages queued for this function.	<b>detail</b>

## Sample Output

```

show diameter function user@host> show diameter function
Diameter function list:

```

Function	State	Upstream Transaction Utilization %	Downstream Transaction Utilization %	Net Queue Buffer Utilization %	Func Queue Buffer Utilization %	Routed Dests
jsrc	Disconnec	0	0	0	0	0

```

show diameter function brief user@host> show diameter function brief
Diameter function:
  Function name           : jsrc
  State                   : Disconnected
  Upstream transaction utilization : 0 %
  Downstream transaction utilization : 0 %
  Network transmit buffer utilization : 0 %
  Function transmit buffer utilization : 0 %
  Routed destinations      : 0

```

```

show diameter function detail user@host> show diameter function detail
Diameter function:
  Function name           : jsrc
  State                   : Disconnected
  Upstream transaction utilization : 0 %
  Downstream transaction utilization : 0 %
  Network transmit buffer utilization : 0 %
  Function transmit buffer utilization : 0 %
  Routed destinations      : 0
  Requests queued for network tx : 0
  Pending answers from network : 0
  Answers queued for function tx : 0
  Total upstream transactions pending : 0
  Upstream transactions limit : 1024
  Requests queued for function tx : 0
  Pending answers from function : 0
  Answers queued for network tx : 0
  Total downstream transactions pending : 0
  Downstream transactions limit : 1024
  Buffers used by network tx queue : 0
  Limit on network tx queue buffers : 10485760
  Buffers used by function tx queue : 0
  Limit on function tx queue buffers : 10485760

```

## show diameter function statistics

<b>Syntax</b>	<b>show diameter function statistics</b> <b>&lt;brief   detail   summary&gt;</b> <b>&lt;function-name&gt;</b>
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	Display statistics about all functions associated with Diameter instances or only the specified function.
<b>Options</b>	<p><b>brief   detail   summary</b>—(Optional) Display the specified level of output. The <b>summary</b> output is displayed by default and includes basic function statistics. The <b>brief</b> output displays the summary information in a different format and adds numbers accumulated since the Diameter node was started. The <b>detail</b> output adds information to the <b>brief</b> output.</p> <p><b>function-name</b>—(Optional) Display information for only the specified function. When you specify a function, the <b>brief</b> output is displayed by default, even when you explicitly specify <b>summary</b>.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>clear diameter function statistics on page 1286</li> </ul>
<b>List of Sample Output</b>	<p>show diameter function statistics on page 1294</p> <p>show diameter function statistics brief on page 1295</p> <p>show diameter function statistics detail on page 1295</p>
<b>Output Fields</b>	Table 223 on page 1293 lists the output fields for the <b>show diameter function statistics</b> command. Output fields are listed in the approximate order in which they appear.

**Table 223: show diameter function statistics Output Fields**

Field Name	Field Description	Level of Output
<b>Function</b>	Name of the function for which information is displayed.	All levels
<b>Delivered Requests</b>	Number of requests delivered by Diameter to the application.	All levels
<b>Delivered Answers</b>	Number of answers delivered by Diameter to the application.	All levels
<b>Delivered Messages</b>	Total number of messages delivered by Diameter to the application.	All levels
<b>Forwarded Requests</b>	Number of requests sent by Diameter to the network.	All levels
<b>Forwarded Answers</b>	Number of answers sent by Diameter to the network.	All levels

Table 223: show diameter function statistics Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Forwarded Messages</b>	Number of messages sent by Diameter to the network.	All levels
<b>Function name</b>	Name of the function for which information is displayed.	All levels
<b>Over-limit network requests</b>	Number of requests sent to Diameter peers that exceeded the limit on the network transmit queue.	<b>detail</b>
<b>Over-limit network answers</b>	Number of answers sent to Diameter peers that exceeded the limit on the network transmit queue.	<b>detail</b>
<b>Over-limit network messages</b>	Total number of messages sent to Diameter peers that exceeded the limit on the network transmit queue.	<b>detail</b>
<b>Failed to deliver requests</b>	Number of requests sent by Diameter to its application that were not successfully delivered.	<b>detail</b>
<b>Failed to deliver answers</b>	Number of answers sent by Diameter to its application that were not successfully delivered.	<b>detail</b>
<b>Failed to deliver messages</b>	Total number of messages sent by Diameter to its application that were not successfully delivered.	<b>detail</b>
<b>Over-limit function requests</b>	Number of requests sent to Diameter peers that exceeded the limit on the function transmit queue.	<b>detail</b>
<b>Over-limit function answers</b>	Number of answers sent to Diameter peers that exceeded the limit on the function transmit queue.	<b>detail</b>
<b>Over-limit function messages</b>	Total number of messages sent to Diameter peers that exceeded the limit on the function transmit queue.	<b>detail</b>
<b>Failed to forward requests</b>	Number of requests that were not successfully sent by Diameter to the network.	<b>detail</b>
<b>Failed to forward answers</b>	Number of answers that were not successfully sent by Diameter to the network.	<b>detail</b>
<b>Failed to forward messages</b>	Total number of messages that were not successfully sent by Diameter to the network.	<b>detail</b>

## Sample Output

```

show diameter function statistics user@host> show diameter function statistics
Diameter function statistics:
      Delivered Delivered Delivered Forwarded Forwarded Forwarded
Function Requests  Answers   Messages Requests  Answers   Messages
jsrc           0           0           0           0           0           0

```

**show diameter** user@host> **show diameter function statistics brief**  
**function statistics brief**

```
Diameter function statistics:
  Function name           : jsrc

  Delivered requests      :      0      0
  Delivered answers       :      0      0
  Delivered messages      :      0      0
  Forwarded requests      :      0      0
  Forwarded answers       :      0      0
  Forwarded messages      :      0      0
```

**show diameter** user@host> **show diameter function statistics detail**  
**function statistics**  
**detail**

```
Diameter function statistics:
  Function name           : jsrc

  Delivered requests      :      0      0
  Delivered answers       :      0      0
  Delivered messages      :      0      0
  Forwarded requests      :      0      0
  Forwarded answers       :      0      0
  Forwarded messages      :      0      0
  Over-limit network requests :      0      0
  Over-limit network answers :      0      0
  Over-limit network messages :      0      0
  Failed to deliver requests :      0      0
  Failed to deliver answers  :      0      0
  Failed to deliver messages :      0      0
  Over-limit function requests :      0      0
  Over-limit function answers :      0      0
  Over-limit function messages :      0      0
  Failed to forward requests :      0      0
  Failed to forward answers  :      0      0
  Failed to forward messages :      0      0
```

## show diameter instance

<b>Syntax</b>	<b>show diameter instance</b> <b>&lt;brief   detail   summary&gt;</b> <b>&lt;instance-name&gt;</b>
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	Display information about all Diameter instances or only the specified instance.
<b>Options</b>	<p><b>brief   detail   summary</b>—(Optional) Display the specified level of output. The <b>summary</b> output is displayed by default and includes basic instance information. The <b>brief</b> output displays the summary information in a different format. The <b>detail</b> output is the same as the <b>brief</b> output.</p> <p><b>instance-name</b>—(Optional) Display information for only the specified Diameter instance.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p><b>show diameter instance on page 1297</b></p> <p><b>show diameter instance detail on page 1297</b></p>
<b>Output Fields</b>	Table 224 on page 1296 lists the output fields for the <b>show diameter instance</b> command. Output fields are listed in the approximate order in which they appear.

**Table 224: show diameter instance Output Fields**

Field Name	Field Description	Level of Output
<b>name</b>	Name of the Diameter instance.	<b>summary</b>
<b>Origin-realm</b>	Value of Origin-Realm AVP.	<b>summary</b>
<b>Origin-host</b>	Value of Origin-Host AVP.	<b>summary</b>
<b>NE-total</b>	Total number of network elements configured for this instance.	<b>summary</b>
<b>NE-connected</b>	Number of network elements with active Diameter connections.	<b>summary</b>
<b>Instance name</b>	Name of the Diameter instance.	<b>brief detail</b>
<b>Origin realm</b>	Value of Origin-Realm AVP.	<b>brief detail</b>
<b>Origin host</b>	Value of Origin-Host AVP.	<b>brief detail</b>
<b>NEs</b>	Total number of network elements configured for this instance.	<b>brief detail</b>
<b>Connected NEs</b>	Number of network elements with active Diameter connections.	<b>brief detail</b>



## Sample Output

```
show diameter instance user@host> show diameter instance
Diameter instances:
  Name      Origin-Realm  Origin-Host  NE-Total  NE-Connected
  master    rrrr          hhhh         1          1
```

```
show diameter instance detail user@host> show diameter instance detail
Diameter instance:
  Instance name : master

  Origin realm  : rrrr

  Origin host   : hhhh

  NEs           : 1
  Connected NEs : 1
```

## show diameter network-element

<b>Syntax</b>	<b>show diameter network-element</b> <b>&lt;brief   detail   summary&gt;</b> <b>&lt;element-name&gt;</b>
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	Display information about all Diameter network elements or only the specified network element.
<b>Options</b>	<p><b>brief   detail   summary</b>—(Optional) Display the specified level of output. The <b>summary</b> output is displayed by default and includes basic network element information. The <b>brief</b> output displays the summary information in a different format. The <b>detail</b> output adds information to the <b>brief</b> output.</p> <p><b>element-name</b>—(Optional) Display information for only the specified network element.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p><b>show diameter network-element on page 1299</b></p> <p><b>show diameter network-element detail on page 1299</b></p>
<b>Output Fields</b>	Table 225 on page 1298 lists the output fields for the <b>show diameter network-element</b> command. Output fields are listed in the approximate order in which they appear.

**Table 225: show diameter network-element Output Fields**

Field Name	Field Description	Level of Output
<b>Name</b>	Name of the Diameter network element.	<b>summary</b>
<b>Instance</b>	Name of the Diameter instance in which the network element is configured.	<b>summary</b>
<b>State</b>	State of the network element: <ul style="list-style-type: none"> <li>Connecting—None of the network element peers are in the open state and available for connection.</li> <li>Selecting—One network element peer is connected and the network element is waiting for another peer to reach the open state so that it can be connected.</li> <li>Partially-Connected—One network element peer is in the open state and connected.</li> <li>Post-selection-delay—Three or more peers are in the open state and the network element is waiting to deactivate the peers in excess of two.</li> <li>Fully-connected—Two network element peers are in the open state and connected.</li> </ul>	All levels
<b>Primary peer</b>	Primary peer for the network element, based on the configured peer priority.	All levels
<b>Secondary peer</b>	Secondary peer for the network element, based on the configured peer priority.	All levels

Table 225: show diameter network-element Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>NE name</b>	Name of the Diameter network element.	<b>brief detail</b>
<b>Instance name</b>	Name of the Diameter instance in which the network element is configured.	<b>brief detail</b>
<b>Peers</b>	Number of configured peers.	<b>brief detail</b>
<b>Activated peers</b>	Number of peers that have been activated.	<b>brief detail</b>
<b>Open peers</b>	Number of peers in the open state, without active network element connections but available for a connection.	<b>brief detail</b>
<b>Routes</b>	Number of routes configured for the network element.	<b>brief detail</b>
<b>Invalid routes</b>	Number of routes that are invalid because they lack one or more of the following: application and partition, Diameter instance, or destination realm.	<b>brief detail</b>
<b>Activation delay</b>	Period in milliseconds between peer activations by the network element.	<b>brief detail</b>
<b>First selection delay</b>	Period in milliseconds that the network element waited after connecting to the first peer to allow other peers to reach the open state.	<b>brief detail</b>
<b>Post selection delay</b>	Period in milliseconds that the network element waited after having two peers in the open state before deactivating all lower-priority peers.	<b>brief detail</b>

## Sample Output

```

show diameter network-element user@host> show diameter network-element
Diameter network-elements:
      Name      Instance      State      Primary      Secondary
      ne0       master      Fully-connected p0      p1

show diameter network-element user@host> show diameter network-element detail
Diameter network-element:
  NE name      : ne0

  Instance name      : master

  State      : Fully-connected
  Primary peer      : p0

  Secondary peer      : p1

  Peers      : 5
  Activated peers      : 4
  Open peers      : 2
  Routes      : 1
  Invalid routes      : 0

```

Activation delay : 10000 ms  
First selection delay : 0 ms  
Post selection delay : 30000 ms

## show diameter network-element map

<b>Syntax</b>	<b>show diameter network-element map</b> <b>&lt;brief   detail   summary&gt;</b> <b>&lt;element-name&gt;</b>
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	Display network-element-to-peer mapping information for all Diameter network elements or only the specified network element.
<b>Options</b>	<p><b>brief   detail   summary</b>—(Optional) Display the specified level of output. The <b>summary</b> output is displayed by default. The <b>brief</b> output and <b>detail</b> output display the summary information in a different format.</p> <p><b>element-name</b>—(Optional) Display information for only the specified network element.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p><b>show diameter network-element map on page 1302</b></p> <p><b>show diameter network-element map detail on page 1302</b></p>
<b>Output Fields</b>	Table 226 on page 1301 lists the output fields for the <b>show diameter network-element map</b> command. Output fields are listed in the approximate order in which they appear.

**Table 226: show diameter network-element map Output Fields**

Field Name	Field Description	Level of Output
<b>Name</b>	Name of the Diameter network element.	<b>summary</b>
<b>Instance</b>	Name of the Diameter instance in which the network element is configured.	<b>summary</b>
<b>Peer</b>	Name of the peer.	All levels
<b>Priority</b>	Priority configured for the peer. A lower number indicates a higher priority.	All levels
<b>State</b>	State of the peer: <ul style="list-style-type: none"> <li>Activated—Peer has been activated (selected) by the network element.</li> <li>Not-Activated—Peer has not been selected by the network element.</li> <li>Primary—Peer that is connected to the network element and has the higher priority of the two connected peers.</li> <li>Secondary—Peer that is connected to the network element and has the lower priority of the two connected peers.</li> </ul>	<b>summary</b>
<b>NE name</b>	Name of the Diameter network element.	<b>brief detail</b>
<b>Instance name</b>	Name of the Diameter instance in which the network element is configured.	<b>brief detail</b>

Table 226: show diameter network-element map Output Fields (*continued*)

Field Name	Field Description	Level of Output
Usage	State of the peer: <ul style="list-style-type: none"> <li>Activated—Peer has been activated (selected) by the network element.</li> <li>Not-Activated—Peer has not been selected by the network element.</li> <li>Primary—Peer that is connected to the network element and has the higher priority of the two connected peers.</li> <li>Secondary—Peer that is connected to the network element and has the lower priority of the two connected peers.</li> </ul>	brief detail

## Sample Output

```

show diameter network-element map user@host> show diameter network-element map

```

```

Diameter network-element peers:
  Name      Instance  Peer      Priority  State
  ne0       master    p288      30       Activated
  ne0       master    p0        20       Primary
  ne0       master    pA        15       Activated
  ne0       master    p1        10       Secondary
  ne0       master    pB        5       Not-Activated

```

```

show diameter network-element map detail user@host> show diameter network-element map detail

```

```

Diameter network-element peers:
  NE name      : ne0

  Instance name : master

  Peer          : p288

  Priority      :      30
  Usage        : Activated

  NE name      : ne0

  Instance name : master

  Peer          : p0

  Priority      :      20
  Usage        : Primary

  NE name      : ne0

  Instance name : master

  Peer          : pA

  Priority      :      15
  Usage        : Activated

  NE name      : ne0

```

```
Instance name      : master
Peer               : p1
Priority           :      10
Usage              : Secondary
NE name           : ne0
Instance name      : master
Peer               : pB
Priority           :      5
Usage              : Not-Activated
```

## show diameter peer

<b>Syntax</b>	<b>show diameter peer</b> <b>&lt;brief   detail   summary&gt;</b> <b>&lt;peer-name&gt;</b>
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	Display information about all peers associated with Diameter instances or only the specified peer.
<b>Options</b>	<b>brief   detail   summary</b> —(Optional) Display the specified level of output. The <b>summary</b> output is displayed by default and includes basic peer information. The <b>brief</b> output displays the summary information in a different format. The <b>detail</b> output adds information to the <b>brief</b> output.  <b>peer-name</b> —(Optional) Display information for only the specified peer.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>clear diameter peer on page 1287</li></ul>
<b>List of Sample Output</b>	<b>show diameter peer on page 1306</b> <b>show diameter peer detail on page 1306</b>
<b>Output Fields</b>	Table 227 on page 1304 lists the output fields for the <b>show diameter peer</b> command. Output fields are listed in the approximate order in which they appear.

Table 227: show diameter peer Output Fields

Field Name	Field Description	Level of Output
Peer	Name of the peer.	summary
Instance	Name of the Diameter instance in which the network element is configured.	All levels



Table 227: show diameter peer Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>State</b>	State of the peer: <ul style="list-style-type: none"> <li>• Bad-Config—Misconfiguration.</li> <li>• Bad-Remote—Remote side does not conform to one of the decisions or is sending malformed messages.</li> <li>• Closed—Normal disconnect due to a request from the remote site or due to excessive watchdog timeouts.</li> <li>• Destructing—Peer to be deleted on the next timer tick; until then, it performs no actions.</li> <li>• Disabled—Peer is administratively disabled.</li> <li>• Internal-error—Internal error has been detected and the peer is in the process of restarting.</li> <li>• No-Activation—Peer is not used by any Diameter network element.</li> <li>• Rejected—Connection was rejected by remote side of the connection.</li> <li>• Suspended—All other reasons to be suspended.</li> </ul>	All levels
<b>NE-Count</b>	Number of network elements associated with the peer.	<b>summary</b>
<b>Activated Count</b>	Activation status of the peer: <ul style="list-style-type: none"> <li>• 1—Peer is activated.</li> <li>• 0—Peer is not activated.</li> </ul>	All levels
<b>Primary Count</b>	Primary (1) versus secondary (0) status of the peer.	All levels
<b>Secondary Count</b>	Secondary (0) versus Primary (1) status of the peer.	All levels
<b>Peer name</b>	Name of the peer.	<b>brief detail</b>
<b>NEs</b>	Number of network elements associated with the peer.	<b>brief detail</b>
<b>Vrf</b>	Logical system:routing instance of the configuration.	<b>brief detail</b>
<b>Remote address</b>	Remote IP address of the peer.	<b>brief detail</b>
<b>Remote port</b>	Remote port on the peer on which the connection is made.	<b>brief detail</b>
<b>Remote end origin realm</b>	Name of the realm of the Diameter node that originates messages to the peer.	<b>brief detail</b>
<b>Remote end origin host</b>	Name of the host of the Diameter node that originates messages to the peer.	<b>brief detail</b>
<b>Local address</b>	Local IP address on the Diameter origin node.	<b>brief detail</b>
<b>Local port</b>	Local port on the Diameter origin node.	<b>brief detail</b>

Table 227: show diameter peer Output Fields (*continued*)

Field Name	Field Description	Level of Output
Time since last enable	Period since peer was enabled in <i>hh:mm:ss</i> format.	brief detail
In state time	Period that peer has been in present state in <i>hh:mm:ss</i> format.	brief detail
Remaining in state time	Period that peer will remain in present state in <i>hh:mm:ss</i> format.	brief detail
Missing wd events	Number of missed watchdog events.	brief detail
Tx queue length	Number of messages in the transmit queue.	brief detail
Answer waiting count	Number of answers on which the peer is waiting.	brief detail
Time since last rx	Number of milliseconds since the last message was received by the peer.	brief detail
Time until wd timeout	Time remaining until next watchdog event.	brief detail
Operation timeout	Watchdog timeout period.	brief detail
Suspended timeout base	Base timeout period in suspended states (suspended, rejected, bad-remonte, bad-config). This timeout doubles after each consecutive suspension, until the maximum value of 600 seconds is reached.	brief detail
Closed timeout	Timeout period in normal closed state, such as when an external peer requested a disconnect.	brief detail
Connection timeout	Timeout period for establishing a connection.	brief detail

## Sample Output

**show diameter peer**    user@host> show diameter peer

Diameter peer list:

Peer	Instance	State	NE-Count	Activated Count	Primary Count	Secondary Count
p0	master	I-Open	1	1	1	0
p1	master	I-Open	1	1	0	1
p288	master	Suspended	1	1	0	0
pA	master	Suspended	1	1	0	0
pB	master	No-Activation	1	0	0	0
pc	master	No-Activation	0	0	0	0
pd	master	No-Activation	0	0	0	0

**show diameter peer detail**    user@host> show diameter peer detail

Diameter peer:

```
Peer name           : p0
State               : I-Open
NEs                 : 1
Activated count     : 1
Primary count       : 1
Secondary count     : 0
Vrf                 : default:master
Remote address      : 10.10.5.28
Remote port         : 62917
Remote end origin realm : rrrrA
Remote end origin host : hhhhA
Local address       : 10.6.128.155
Local port          : 57095
Time since last enable : 08:56.200
In state time       : 08:56.200
Remaining in state time : no limit
Missed wd events    : 0
Tx queue length     : 0
Answer waiting count : 0
Time since last rx   : 2200 ms
Time until wd timeout : 3800 ms
Operation timeout    : 6000 ms
Suspended timeout base : 30000 ms
Closed timeout       : 30000 ms
Connection timeout   : 6000 ms
```

```
Peer name           : p1
State               : I-Open
NEs                 : 1
Activated count     : 1
Primary count       : 0
Secondary count     : 1
Vrf                 : default:master
Remote address      : 10.10.5.28
Remote port         : 58490
Remote end origin realm : rrrrA
Remote end origin host : hhhhB
Local address       : 10.6.128.155
Local port          : 49293
Time since last enable : 08:56.200
In state time       : 08:36.000
Remaining in state time : no limit
Missed wd events    : 0
Tx queue length     : 0
Answer waiting count : 0
Time since last rx   : 0 ms
Time until wd timeout : 6000 ms
Operation timeout    : 6000 ms
Suspended timeout base : 30000 ms
Closed timeout       : 30000 ms
Connection timeout   : 6000 ms
```

## show diameter peer map

<b>Syntax</b>	<b>show diameter peer map</b> <b>&lt;brief   detail   summary&gt;</b> <b>&lt;peer-name&gt;</b>
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	Display peer-to-network-element mapping information for all peers associated with Diameter instances or with the specified peer.
<b>Options</b>	<p><b>brief   detail   summary</b>—(Optional) Display the specified level of output. The <b>summary</b> output is displayed by default and includes basic peer information. The <b>brief</b> output displays the summary information in a different format. The <b>detail</b> output adds information to the <b>brief</b> output.</p> <p><b>peer-name</b>—(Optional) Display mapping information for only the specified peer.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>clear diameter peer on page 1287</li> </ul>
<b>List of Sample Output</b>	<p>show diameter peer map on page 1309</p> <p>show diameter peer map detail on page 1309</p>
<b>Output Fields</b>	Table 228 on page 1308 lists the output fields for the <b>show diameter peer map</b> command. Output fields are listed in the approximate order in which they appear.

Table 228: show diameter peer map Output Fields

Field Name	Field Description	Level of Output
<b>Peer</b>	Name of the peer.	All levels
<b>Instance</b>	Name of the Diameter instance in which the network element is configured.	All levels
<b>NE</b>	Name of the Diameter network element.	All levels
<b>Priority</b>	Priority configured for the peer. A lower number indicates a higher priority.	All levels
<b>State</b>	State of the peer: <ul style="list-style-type: none"> <li>Activated—Peer has been activated (selected) by the network element.</li> <li>Not-Activated—Peer has not been selected by the network element.</li> <li>Primary—Peer that is connected to the network element and has the higher priority of the two connected peers.</li> <li>Secondary—Peer that is connected to the network element and has the lower priority of the two connected peers.</li> </ul>	All levels
<b>Instance name</b>	Name of the Diameter instance in which the network element is configured.	<b>brief detail</b>

Table 228: show diameter peer map Output Fields (*continued*)

Field Name	Field Description	Level of Output
NE name	Name of the Diameter network element.	brief detail
Usage	Role of the peer for the network element, <b>Primary</b> or <b>Secondary</b> .	brief detail

### Sample Output

**show diameter peer map**      user@host> show diameter peer map

```
Diameter peer usage by network elements:
Peer      Instance  NE      Priority State
p0        master    ne0     20     Primary
p1        master    ne0     10     Secondary
p288      master    ne0     30     Activated
pA        master    ne0     15     Activated
pB        master    ne0     5      Not-Activated
```

**show diameter peer map detail**      user@host> show diameter peer map detail

```
Diameter network-element peers:
Peer      : p0

Instance name      : master

NE name           : ne0

Priority           :      20
Usage             : Primary

Peer             : p1

Instance name      : master

NE name           : ne0

Priority           :      10
Usage             : Secondary

Peer             : p288

Instance name      : master

NE name           : ne0

Priority           :      30
Usage             : Activated

Peer             : pA

Instance name      : master

NE name           : ne0

Priority           :      15
```

Usage	: Activated
Peer	: pB
Instance name	: master
NE name	: ne0
Priority	: 5
Usage	: Not-Activated

## show diameter peer statistics

<b>Syntax</b>	<b>show diameter peer statistics</b> <b>&lt;brief   detail   summary&gt;</b> <b>&lt;peer-name&gt;</b>
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	Display statistics about all peers associated with Diameter instances or only the specified peer.
<b>Options</b>	<p><b>brief   detail   summary</b>—(Optional) Display the specified level of output. The <b>summary</b> output is displayed by default and includes basic function statistics. The <b>brief</b> output displays the summary information in a different format and adds numbers accumulated since the peer was connected. The <b>detail</b> output adds information to the <b>brief</b> output.</p> <p><b>peer-name</b>—(Optional) Display information for only the specified peer. When you specify a peer, the <b>brief</b> output is displayed by default, even when you explicitly specify <b>summary</b>.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>clear diameter peer on page 1287</li> </ul>
<b>List of Sample Output</b>	<p>show diameter peer statistics on page 1312</p> <p>show diameter peer statistics detail on page 1312</p>
<b>Output Fields</b>	Table 229 on page 1311 lists the output fields for the <b>show diameter peer statistics</b> command. Output fields are listed in the approximate order in which they appear.

Table 229: show diameter peer statistics Output Fields

Field Name	Field Description	Level of Output
Peer	Name of the peer.	summary brief
Instance	Name of the Diameter instance in which the network element is configured.	summary brief
Rx	Total number of messages received.	summary brief
Rx-Peer	Number of messages received by the peer.	summary brief
Rx-node	Number of messages received by the Diameter node.	summary brief
Forw	Total number of forwarded messages.	summary brief
Tx-Peer	Number of messages transmitted by the peer.	summary brief

Table 229: show diameter peer statistics Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Tx</b>	Total number of transmitted messages.	<b>summary brief</b>
<b>Peer name</b>	Name of the peer.	<b>detail</b>
<b>Instance name</b>	Name of the Diameter instance in which the network element is configured.	<b>detail</b>

### Sample Output

**show diameter peer statistics**      user@host> show diameter peer statistics

```
Diameter peer statistics:
Peer      Instance  Rx      Rx-Peer  Rx-Node  Forw     Tx-Peer  Tx
-----
p0        master    113     113      0         0        113
113
p1        master    110     110      0         0        110
110
p288      master    0        0        0         0         0
0
pA        master    0        0        0         0         0
0
pB        master    0        0        0         0         0
0
pc        master    0        0        0         0         0
0
pd        master    0        0        0         0         0
0
```

**show diameter peer statistics detail**      user@host> show diameter peer statistics detail

```
Diameter peer statistics:
Peer name      : p0
Instance name  : master
Current        :
Since last enable

Rx errors      : 0          0
Rx messages    : 114        114
Rx handled by peer : 114        114
Rx dropped msgs : 0          0
Rx unmatched answers : 0          0
Rx answers     : 0          0
Rx requests    : 0          0
Rx total       : 0          0
Forw to connection : 0          0
Forw to peer     : 0          0
Forw to routed dest : 0          0
Total forwarding : 0          0
Forwarding failures : 0          0
Forwarding success : 0          0
Moved-in messages : 0          0
Moved-out messages : 0          0
Rerouted messages : 0          0
Dropped tx messages : 0          0
Tx by peer      : 114        114
```



```

Tx errors           :      0      0
Tx total           :     114    114
Connection attempts :      0      1
Connection fails    :      0      0
Connections        :      0      1
Passive terminations :      0      0
Active terminations :      0      0
Passive disconnects :      0      0
Active disconnects  :      0      0
Rx block requests   :      0      0
Rx block timeoutss  :      0      0
Connection management messages
      Rx current      Rx since      Tx current      Tx since
                    last enable
CER                :      0      0      1      1
CEA                :      1      1      0      0
DWR                :      0      0      113     113
DWA                :     113    113      0      0
DPR                :      0      0      0      0
DPA                :      0      0      0      0

Peer name          : p1
Instance name      : master
      Current      Since last enable
Rx errors          :      0      0
Rx messages        :     110    110
Rx handled by peer :     110    110
Rx dropped msgs    :      0      0
Rx unmatched answers :      0      0
Rx answers         :      0      0
Rx requests        :      0      0
Rx total           :      0      0
Forw to connection :      0      0
Forw to peer       :      0      0
Forw to routed dest :      0      0
Total forwarding   :      0      0
Forwarding failures :      0      0
Forwarding success :      0      0
Moved-in messages  :      0      0
Moved-out messages :      0      0
Rerouted messages  :      0      0
Dropped tx messages :      0      0
Tx by peer         :     110    110
Tx errors          :      0      0
Tx total           :     110    110
Connection attempts :      0      1
Connection fails    :      0      0
Connections        :      0      1
Passive terminations :      0      0
Active terminations :      0      0
Passive disconnects :      0      0
Active disconnects  :      0      0
Rx block requests   :      0      0
Rx block timeoutss  :      0      0
Connection management messages
      Rx current      Rx since      Tx current      Tx since
                    last enable
CER                :      0      0      1      1
CEA                :      1      1      0      0

```

DWR	:	0	0	109	109
DWA	:	109	109	0	0
DPR	:	0	0	0	0
DPA	:	0	0	0	0

## show diameter route

<b>Syntax</b>	<b>show diameter route</b> <b>&lt;brief   detail   summary&gt;</b> <b>&lt;route-name&gt;</b>
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	Display information about all routes associated with Diameter instances or only the specified route.
<b>Options</b>	<p><b>brief   detail   summary</b>—(Optional) Display the specified level of output. The <b>summary</b> output is displayed by default and includes basic function information. The <b>brief</b> output displays the summary information in a different format. The <b>detail</b> output adds information to the <b>brief</b> output.</p> <p><b>route-name</b>—(Optional) Display information for only the specified route.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p><b>show diameter route on page 1316</b></p> <p><b>show diameter route detail on page 1316</b></p>
<b>Output Fields</b>	Table 230 on page 1315 lists the output fields for the <b>show diameter route</b> command. Output fields are listed in the approximate order in which they appear.

**Table 230: show diameter route Output Fields**

Field Name	Field Description	Level of Output
<b>Route</b>	Name of the route.	<b>summary brief</b>
<b>NE</b>	Name of the network element associated with the route.	<b>summary brief</b>
<b>Instance</b>	Name of the Diameter instance in which the route is configured.	<b>summary brief</b>
<b>NE name</b>	Name of the network element associated with the route.	<b>brief detail</b>
<b>Instance name</b>	Name of the Diameter instance in which the route is configured.	<b>brief detail</b>
<b>Valid</b>	Determination whether the route is valid, <b>yes</b> or <b>no</b> .	All levels
<b>Up</b>	State of the route, <b>yes</b> (up) or <b>no</b> (down).	All levels
<b>Function</b>	Name of the function associated with the route.	<b>brief detail</b>
<b>Partition</b>	Partition associated with the function.	<b>brief detail</b>
<b>Dest-realm</b>	Destination realm configured for the route.	<b>brief detail</b>

Table 230: show diameter route Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Dest-host</b>	Destination hostname configured for the route.	<b>brief detail</b>
<b>Metric</b>	Metric associated with the destination and function to create the route.	<b>brief detail</b>
<b>Score</b>	Value that represents how a route is configured. The basic score is 0. Points are added according to the following scheme: <ul style="list-style-type: none"> <li>• Function is specified—Add 3.</li> <li>• Function partition is specified—Add 1.</li> <li>• Destination realm is specified—Add 1.</li> <li>• Destination host is specified—Add 1.</li> </ul>	<b>brief detail</b>

## Sample Output

**show diameter route**    user@host> show diameter route

```
Diameter routes:
Route      NE      Instance  Valid Up
rA         ne0     master    yes   yes
```

**show diameter route detail**    user@host> show diameter route detail

```
Diameter route:
Route name      : rA
NE name         : ne0
Instance name   : master
Valid           : yes
Up              : yes
Function        : jsrc
Partition       : jsrc-a
Dest-realm      : outer-realm
Dest-host       : outer-host
Metric          :      50
Score           :      6
```

# Dynamic Application Awareness Operational Mode Commands

Table 231 on page 1317 summarizes the command line interface (CLI) commands that you can use to monitor and troubleshoot services pertaining to Dynamic Application Awareness operations.

**Table 231: Dynamic Application Awareness Operational Mode Commands**

Task	Command
Clear entries from application system cache.	<b>clear services application-identification application-system-cache</b>
Clear application-aware access list (AACL) statistics.	<b>clear services application-aware-access-list statistics</b>
Clear application identification counters.	<b>clear services application-identification counter</b>
Clear IDP <b>ip-action</b> entries.	<b>clear services flows ip-action</b>
Clear local policy decision function (L-PDF) statistics.	<b>clear services local-policy-decision-function statistics</b>
Display application-aware-access-list (AACL) flows.	<b>show services application-aware-access-list flows</b>
Display application-aware-access-list (AACL) statistics.	<b>show services application-aware-access-list statistics</b>
Display the database of cached values stored by the application identification (APPID) system.	<b>show services application-identification application-system-cache</b>
Display application identification (APPID) counter statistics.	<b>show services application-identification counter</b>
Display local policy decision function (L-PDF) flows.	<b>show services local-policy-decision-function flows</b>
Display local policy decision function (L-PDF) statistics.	<b>show services local-policy-decision-function statistics</b>



.....

**NOTE:** For information about how to configure adaptive services, see the *Junos Services Interfaces Configuration Guide*.

.....

## **clear services application-identification application-system-cache**

---

<b>Syntax</b>	<code>clear services application-identification application-system-cache</code>
<b>Release Information</b>	Command introduced in Junos OS Release 9.5.
<b>Description</b>	Clear entries from application system cache.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	clear
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show services application-identification application-system-cache on page 1328</a></li></ul>

## clear services application-aware-access-list statistics

---

<b>Syntax</b>	clear services application-aware-access-list statistics
<b>Release Information</b>	Command introduced in Junos OS Release 9.5.
<b>Description</b>	Clear application aware access list (AACL) statistics.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	clear
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show services application-aware-access-list statistics on page 1326</a></li></ul>



## **clear services application-identification counter**

---

<b>Syntax</b>	<b>clear services application-identification counter</b>
<b>Release Information</b>	Command introduced in Junos OS Release 9.5.
<b>Description</b>	Clear application identification counters.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	clear
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show services application-identification counter on page 1330</a></li></ul>

## clear services flows ip-action

---

<b>Syntax</b>	clear services flows ip-action
<b>Release Information</b>	Command introduced in Junos OS Release 10.0.
<b>Description</b>	Clear <b>ip-action</b> entries generated by the router to log, drop, or block traffic based on previous matches. The IP action options and targets are configured at the <b>[edit security idp idp-policy <i>policy-name</i> rulebase-ips rule <i>rule-name</i> then]</b> hierarchy level.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	clear
<b>Output Fields</b>	When you issue this command, you are provided feedback on the status of your request.

### Sample Output

```
user@host> clear services flows ip-action
Interface  Service set
ms-4/0/0   idp-service
Flows removed
1
```

## **clear services local-policy-decision-function statistics**

---

<b>Syntax</b>	clear services local-policy-decision-function statistics
<b>Release Information</b>	Command introduced in Junos OS Release 9.5.
<b>Description</b>	Clear local policy decision function (L-PDF) statistics.
<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="#">show services local-policy-decision-function statistics on page 1334</a></li></ul>

## show services application-aware-access-list flows

<b>Syntax</b>	<b>show services application-aware-access-list flows</b> <interface <i>interface-name</i> > <subscriber <i>subscriber-name</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 10.1.
<b>Description</b>	Display application-aware-access-list (AACL) flows
<b>Options</b>	<p><b>interface <i>interface-name</i></b>—Displays AACL flows for the specified interface(s) only. The keyword, interface, must be appended to the command.</p> <p><b>subscriber <i>subscriber-name</i></b>—Displays AACL flows for the specified subscriber(s) only. The keyword, subscriber, must be appended to the command.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p><b>show services application-aware-access-list flows by interface</b> on page 1325</p> <p><b>show services application-aware-access-list flows by subscriber</b> on page 1325</p>
<b>Output Fields</b>	Table 232 on page 1324 lists the output fields for the <b>show services application-aware-access-list flows</b> command. Output fields are listed in the approximate order in which they appear.

**Table 232: show services application-aware-access-list flows Output Fields**

Field Name	Field Description	Level of Output
<b>5-tuple</b>	This field comprises five components of the given flow. The components are: <ul style="list-style-type: none"> <li>• Src IP</li> <li>• Dest IP</li> <li>• Src Port</li> <li>• Dest Port</li> <li>• Protocol</li> </ul>	All levels
<b>Application-ID</b>	The identification number associated with the application.	All levels
<b>Dir</b>	The direction in terms of input or output. <ul style="list-style-type: none"> <li>• Input (I)</li> <li>• Output (O)</li> </ul>	All levels
<b>Off</b>	The status of offload to Packet Forwarding Engine. The various options are: <ul style="list-style-type: none"> <li>• Not Offloaded (-)</li> <li>• Policer Offloaded, Flow Not Offloaded (P)</li> <li>• Policer Not Offloaded, Flow Offloaded (F)</li> <li>• Policer and Offloaded (P+F)</li> </ul>	All levels

Table 232: show services application-aware-access-list flows Output Fields (*continued*)

Field Name	Field Description	Level of Output
Actions	<p>The types of actions displayed are:</p> <ul style="list-style-type: none"> <li>• discard: (D)</li> <li>• accept : A</li> <li>• accept, count [T]: C-A or C-G or C-T</li> <li>• accept, fwd-class [C]: FC</li> <li>• accept, policer [P]: P</li> <li>• accept, count [T], fwd-class [C]: C-T+FC</li> <li>• accept, count [T], policer [P]: C-T+P</li> <li>• accept, fwd-class [C], policer [P]: FC+P</li> <li>• accept, count[T],fwd-class[C],policer[P]: C-T+FC+P</li> </ul>	All levels

### Sample Output

```

show services application-aware-access-list flows by interface
user@host>show services application-aware-access-list flows interface ge-1/3/1.1
Interface: ge-1/3/1.1

service-set: aac1-new
service-set interface: ms-2/0/0
Currently active flows: 2
High watermark flows: 2

5-tuple          Application-ID  Dir Off Action
100.3.1.101  ->  100.3.1.1  ,1   unknown[32767]  I  -  C-A
100.3.1.1    ->  100.3.1.101 ,1   unknown[32767]  I  -  C-A

show services application-aware-access-list flows by subscriber
user@host>show services application-aware-access-list flows subscriber user@juniper.net
Subscriber: user@juniper.net

Service-set: ssl
Service-set interface: ms-2/0/0
Currently active flows: 4
High watermark flows: 40

5-tuple          Application-ID  Dir Off Action
150.100.100.100:20109->160.200.200.200:80,17  junos:http [64]  I  -  C-T+FC+P
160.200.200.200:80->150.100.100.100:20109,17  junos:http [64]  O  -  C-T+FC+P
150.100.100.100:20108->160.100.100.100:80,17  junos:http [64]  I  P+F C-T+FC+P
160.100.100.100:80->150.100.100.100:20108,17  junos:http [64]  O  P+F C-T+FC+P

```

## show services application-aware-access-list statistics

<b>Syntax</b>	<b>show services application-aware-access-list statistics</b> <b>&lt;interface <i>interface-name</i>&gt;</b> <b>&lt;subscriber <i>subscriber-name</i>&gt;</b>
<b>Release Information</b>	Command introduced in Junos OS Release 9.5.
<b>Description</b>	Display application-aware-access-list (AACL) statistics.
<b>Options</b>	<b>interface <i>interface-name</i></b> —(Optional) Displays AACL statistics for the specified interface(s) only.  <b>subscriber <i>subscriber-name</i></b> —(Optional) Displays AACL statistics for the specified subscriber(s) only.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show services application-aware-access-list statistics by interface on page 1327</b> <b>show services application-aware-access-list statistics by subscriber on page 1327</b>
<b>Output Fields</b>	Table 233 on page 1326 lists the output fields for the <b>show services application-aware-access-list statistics</b> command. Output fields are listed in the approximate order in which they appear.

**Table 233: show services application-aware-access-list statistics Output Fields**

Field Name	Field Description	Level of Output
<b>Interface</b>	Interface name.	Subscriber option
<b>Subscriber</b>	Subscriber identifier.	Interface option
<b>Service-set-interface</b>	Service set interface name.	All levels
<b>Service set</b>	Service set name.	All levels
<b>Application group</b>	Application group identifier.	All levels
<b>Packets in</b>	Number of ingress packets.	All levels
<b>Bytes in</b>	Number of ingress bytes.	All levels
<b>Packets out</b>	Number of egress packets.	All levels
<b>Bytes out</b>	Number of egress bytes.	All levels

## Sample Output

```

show services application-aware-access-list statistics by interface
user@host> show services application-aware-access-list statistics interface ge-0/0/0.100
Subscriber: user@juniper.net
service-set: IDP
service-set interface: ms-2/0/0

```

Application group	Application	Packets in	Bytes in
Packets out	Bytes out		
6	junos:ftp [63] 346	5	334

```

show services application-aware-access-list statistics by subscriber
user@host> show services application-aware-access-list statistics subscriber user@juniper.net
Interface: ge-1/1/0.0
Service-set-interface: ms-1/3/0
Service set: aacl-svc-set

```

### Application-aware-access-list statistics

Application group	Packets in	Bytes in	Packets out	Bytes
P2P	16284	400	32025	200
FTP	8700	20000	5231000	100

## show services application-identification application-system-cache

**Syntax** `show application-identification application-system-cache  
<interface interface-name>`

**Release Information** Command introduced in Junos OS Release 9.5.  
**interface** option added in Junos OS Release 10.1.

**Description** Display the database of cached values stored by the application identification (APPID) system.



**NOTE:** The `show services application-identification application-system-cache` command gives the information only when the application identifier (AI) is matched with the signature.

**Options** `interface interface-name`—Displays the services interfaces to query.

**Required Privilege Level** view

**List of Sample Output** `show application-identification application-system-cache` on page 1328

**Output Fields** Table 234 on page 1328 lists the output fields for the **command-name** command. Output fields are listed in the approximate order in which they appear.

**Table 234: show application-identification application-system-cache Output Fields**

Field Name	Field Description	Level of Output
IP address	IP address.	All levels
Port	Port number.	All levels
Protocol	Protocol name.	All levels
Application	Application number.	All levels
CPU	CPU number	All levels

### Sample Output

```

show application-identification application-system-cache
user@host> show application-identification application-system-cache interface ms-1/0/0
pic: 2/0
IP address      Port      Protocol  Application  CPU

```



10.1.1.2	81	TCP	63	18
----------	----	-----	----	----

## show services application-identification counter

<b>Syntax</b>	<b>show services application-identification counter</b> <b>&lt;interface <i>interface-name</i>&gt;</b>
<b>Release Information</b>	Command introduced in Junos OS Release 9.5. <b>interface</b> option added in Junos OS Release 10.1.
<b>Description</b>	Display application identification (APPID) counter statistics.
<b>Options</b>	<b>interface <i>interface-name</i></b> —Displays the services interfaces to query.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show services application-identification counter on page 1331</b>
<b>Output Fields</b>	Table 235 on page 1330 lists the output fields for the <b>show services application-identification counter</b> command. Output fields are listed in the approximate order in which they appear.

**Table 235: show services application-identification counter Output Fields**

Field Name	Field Description
pic	PIC number.
Total sessions	Total number of sessions.
Total identified sessions	Total number of identified sessions.
Total unidentified sessions	Total number of unidentified sessions.
Total identified-by-address sessions	Number of sessions identified by address.
Total unidentified-by-address sessions	Number of sessions not identified by address.
Total identified-by-port sessions	Number of sessions identified by port.
Total unidentified-by-port sessions	Number of sessions not identified by port.
Total identified-by-icmp sessions	Number of sessions identified by ICMP.
Total unidentified-by-icmp sessions	Number of sessions not identified by ICMP.
Total identified-by-ip-protocol sessions	Number of sessions identified by IP protocol.
Total unidentified-by-ip-protocol sessions	Number of sessions not identified by IP protocol.
Total identified-by-signature sessions	Number of sessions identified by signature.
Total unidentified-by-signature sessions	Number of sessions not identified by signature.

Table 235: show services application-identification counter Output Fields (*continued*)

Field Name	Field Description
Total application system cache hits	Number of sessions found in the application system cache.
Total application system cache misses	Number of sessions not found in the application system cache.
Total identified-by-protocol sessions	Number of sessions identified by protocol.
Total unidentified-by-protocol sessions	Number of sessions not identified by protocol.

### Sample Output

```

show services      user@host> show services application-identification counter interface ms-1/0/0
application-identification
counter           Counter Statistics:
                  pic: 1/1
                  Total sessions: 11
                  Total identified sessions: 11
                  Total un-identified sessions: 0
Address Method
                  Total identified-by-address sessions: 0
                  Total unidentified-by-address sessions: 11
Port Method
                  Total identified-by-port sessions: 1
                  Total unidentified-by-port sessions: 0
                  Total identified-by-icmp sessions: 0
                  Total unidentified-by-icmp sessions: 0
                  Total identified-by-ip-protocol sessions: 0
                  Total unidentified-by-ip-protocol sessions: 0
Signature Method
                  Total identified-by-signature sessions: 11
                  Total unidentified-by-signature sessions: 0
                  Total application system cache hits: 10
                  Total application system cache misses: 1
Protocol Method
                  Total identified-by-protocol sessions: 0
                  Total unidentified-by-protocol sessions: 0

```

## show services local-policy-decision-function flows

<b>Syntax</b>	<b>show services local-policy-decision-function flows</b> (interface <i>interface-name</i>   subscriber <i>subscriber-name</i> )
<b>Release Information</b>	Command introduced in Junos OS Release 9.5.
<b>Description</b>	Display local policy decision function (L-PDF) flows.
<b>Options</b>	<p><b>interface <i>interface-name</i></b>—Display L-PDF flows for the specified interfaces only.</p> <p><b>subscribers <i>subscriber-name</i></b>—Display L-PDF flows for the specified subscribers only.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p><b>show services local-policy-decision-function flows by interface</b> on page 1333</p> <p><b>show services local-policy-decision-function flows by subscriber</b> on page 1333</p>
<b>Output Fields</b>	Table 236 on page 1332 lists the output fields for the <b>show services local-policy-decision-function flows</b> command. Output fields are listed in the approximate order in which they appear.

**Table 236: show services local-policy-decision-function flows Output Fields**

Field Name	Field Description
<b>Interface</b>	Interface name.
<b>service-set</b>	Service set name.
<b>service-set-interface</b>	Service set interface name.
<b>Currently active flows</b>	Number of currently active flows.
<b>High watermark flows</b>	Maximum number of flows.
<b>Protocol</b>	(With <b>interface</b> option) Protocol identifier.
<b>Source address</b>	(With <b>interface</b> option) Source address.
<b>Source port</b>	(With <b>interface</b> option) Source port.
<b>Destination address</b>	(With <b>interface</b> option) Destination address.
<b>Destination port</b>	(With <b>interface</b> option) Destination port.
<b>Application</b>	(With <b>interface</b> option) Application name.
<b>Application group</b>	(With <b>interface</b> option) Application group identifier.

## Sample Output

```

show services local-policy-
decision-function
flows by interface user@host> show services local-policy-decision-function flows subscriber user@juniper.net
Interface: ge-0/0/5.26

service-set: aac1_ms30
service-set interface: ms-3/0/0

Currently active flows: 0
High watermark flows: 0

show services local-policy-
decision-function
flows by subscriber user@host> show services local-policy-decision-function flows interface ge-1/1/0
Interface: ge-1/1/0.0

service-set: IDP
service-set interface: ms-2/0/0

Currently active flows: 2
High watermark flows: 2

Protocol   Source address   Source port   Destination address   Destination port
Application Application group

tcp        10.1.1.2         81            20.1.1.2             32813
junos:ftp [63]      unknown [1023]

tcp        20.1.1.2         32813         10.1.1.2             81
junos:ftp [63]      unknown [1023]

```

## show services local-policy-decision-function statistics

<b>Syntax</b>	<b>show services local-policy-decision-function statistics</b> ( <i>interface interface-name</i>   <i>subscriber subscriber-name</i> )
<b>Release Information</b>	Command introduced in Junos OS Release 9.5.
<b>Description</b>	Display local-policy-decision-function (L-PDF) statistics.
<b>Options</b>	<p><b>interface interface-name</b>—Display L-PDF statistics for the specified interface(s) only.</p> <p><b>subscribersubscriber-name</b>—Display L-PDF statistics for the specified subscriber(s) only.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p><b>show services local-policy-decision-function statistics by interface on page 1335</b></p> <p><b>show services local-policy-decision-function statistics by subscriber on page 1335</b></p>
<b>Output Fields</b>	Table 237 on page 1334 lists the output fields for the <b>show services local-policy-decision-function statistics</b> command. Output fields are listed in the approximate order in which they appear.

**Table 237: show services local-policy-decision-function statistics Output Fields**

Field Name	Field Description
<b>Interface</b>	Interface name.
<b>service-set</b>	Service set name.
<b>service-set-interface</b>	Service set interface name.
<b>Application group</b>	Application group identifier.
<b>Application</b>	Application name.
<b>Packets in</b>	Number of ingress packets.
<b>Bytes in</b>	Number of ingress bytes.
<b>Packets out</b>	Number of egress packets.
<b>Bytes out</b>	Number of egress bytes.

## Sample Output

```

show services user@host> show services local-policy-decision-function statistics interface ge-1/1/0
local-policy-decision-function Interface: ge-1/1/0.0
statistics by interface service-set: IDP
                        service-set interface: ms-2/0/0

Application group      Application      Packets in      Bytes in
      Packets out      Bytes out
                        junos:ftp [63]      5              334
                        6              346

show services user@host> show services local-policy-decision-function statistics subscriber user@juniper.net
local-policy-decision-function Service-set-interface: ms-1/3/0
statistics by subscriber Service set: aacl-svc-set
                        Application-aware-access-list statistics

Application group      Packets in      Bytes in      Packets out      Bytes
out
P2P                    16284          400          32025          200
FTP                    8700          20000        5231000        100

```





# Flow Collection and Monitoring

## Operational Mode Commands

Table 238 on page 1337 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot flow collection and monitoring services. In the table, the commands are grouped by functionality. In the remainder of this chapter, they are listed strictly in alphabetical order.

**Table 238: Flow Collection and Monitoring Operational Commands**

Task	Command
<b>Active Flow Monitoring</b>	
Display information about next-hop groups.	<b>show forwarding-options next-hop-group</b>
Display information about port-mirroring instances.	<b>show forwarding-options port-mirroring</b>
Display information about aggregated flows.	<b>show services accounting aggregation</b>
Display information about flow aggregation templates.	<b>show services accounting aggregation template</b>
Display error statistics.	<b>show services accounting errors</b>
Display the number of active flow statistics.	<b>show services accounting flow</b>
Display information about the flows being processed by the accounting service.	<b>show services accounting flow-detail</b>
Display memory and flow record statistics.	<b>show services accounting memory</b>
Display packet size distribution histogram.	<b>show services accounting packet-size-distribution</b>
Display available PICs for the service and redundancy model.	<b>show services accounting status</b>
Display the CPU usage of the PIC.	<b>show services accounting usage</b>

**Table 238: Flow Collection and Monitoring Operational Commands (*continued*)**

Task	Command
<b>Dynamic Flow Capture</b>	
Clear dynamic flow capture information.	<b>clear services dynamic-flow-capture</b>
Display information for a content destination.	<b>show services dynamic-flow-capture content-destination</b>
Display information for a control source.	<b>show services dynamic-flow-capture control-source</b>
Display dynamic flow capture statistics.	<b>show services dynamic-flow-capture statistics</b>
<b>Flow Collection</b>	
Clear the flow collector statistics for one interface or all interfaces.	<b>clear services flow-collector statistics</b>
Switch to the primary server.	<b>request services flow-collector change-destination primary interface</b>
Switch to the secondary server.	<b>request services flow-collector change-destination secondary interface</b>
Transfer a test file to the primary or secondary FTP server configured as a flow collector.	<b>request services flow-collector test-file-transfer</b>
Display information about the files present on the collector service.	<b>show services flow-collector file interface</b>
Display the number of packets received by one or more flow collection interfaces from one or all monitoring interfaces.	<b>show services flow-collector input interface</b>
Display overall statistics for the flow collector application.	<b>show services flow-collector interface</b>
<b>Passive Flow Monitoring</b>	
Clear passive monitoring statistics.	<b>clear passive-monitoring statistics</b>
Display error statistics.	<b>show passive-monitoring error</b>
Display the number of active flow statistics.	<b>show passive-monitoring flow</b>
Display memory and flow record statistics.	<b>show passive-monitoring memory</b>
Display available PICs for the service and redundancy model.	<b>show passive-monitoring status</b>

Table 238: Flow Collection and Monitoring Operational Commands (*continued*)

Task	Command
Display the CPU usage of the PIC.	<b>show passive-monitoring usage</b>



**NOTE:** Active flow monitoring is supported on the adaptive services interface (*sp-fpc/pic/port*) on J Series, M Series, and T Series routers, and on the flow monitoring (*mo-fpc/pic/port*) interface on the M Series and T Series routers.

Flow collection is supported on the flow collector interface (*cp-fpc/pic/ /port*) on M40e, M160, and M320 routers and on the T Series routers.

Passive flow monitoring is supported on the flow monitoring interface (*mo-fpc/pic/port*) on the M40e, M160, and M320 routers and on the T Series routers.



**NOTE:** For information about how to configure flow collection and monitoring services, see the *Junos OS Services Interfaces Configuration Guide*.

## clear services dynamic-flow-capture

---

<b>Syntax</b>	clear services dynamic-flow-capture capture-group <i>group-name</i> <criteria-identifier <i>identifier</i> > <destination-identifier <i>identifier</i> > <force> <static>
<b>Release Information</b>	Command introduced in Junos OS Release 7.4.
<b>Description</b>	(M320 routers and T Series routers only) Clear dynamic flow capture information for specified capture group.
<b>Options</b>	capture-group <i>group-name</i> —Capture-group identifier.  criteria-identifier <i>identifier</i> —(Optional) Criteria identifier.  destination-identifier <i>identifier</i> —(Optional) Content destination identifier.  force—(Optional) Force clearing of criteria.  static—(Optional) Clear static criteria.
<b>Required Privilege Level</b>	network
<b>List of Sample Output</b>	clear services dynamic-flow-capture on page 1340
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

clear services dynamic-flow-capture	user@host> clear services dynamic-flow-capture capture-group flow-a
----------------------------------------	---------------------------------------------------------------------

## clear passive-monitoring statistics

---

<b>Syntax</b>	clear passive-monitoring statistics (all   interface <i>interface-name</i> )
<b>Release Information</b>	Command introduced in Junos OS Release 7.6.
<b>Description</b>	(M40e, M160, and M320 routers and T Series routers only) Clear statistics for one passive monitoring interface or for all passive monitoring interfaces.
<b>Options</b>	all—Clear statistics for all configured passive monitoring interfaces.  interface <i>interface-name</i> —Clear statistics for the specified passive monitoring interface ( <i>mo-fpc/pic/port</i> ).
<b>Required Privilege Level</b>	network
<b>List of Sample Output</b>	clear passive-monitoring statistics on page 1341
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

```
clear      user@host> clear passive-monitoring statistics interface mo-5/0/0
passive-monitoring
statistics
```

## clear services flow-collector statistics

---

<b>Syntax</b>	clear services flow-collector statistics (all   interface <i>interface-name</i> )
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M40e, M160, and M320 routers and T Series routers only) Clear statistics for one flow collector interface or for all flow collector interfaces.
<b>Options</b>	all—Clear statistics for all configured flow collector interfaces.  interface <i>interface-name</i> —Clear statistics for the specified flow collector interface ( <i>cp-fpc/pic/port</i> ).
<b>Required Privilege Level</b>	network
<b>List of Sample Output</b>	<a href="#">clear services flow-collector statistics on page 1342</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

<b>clear services flow-collector statistics</b>	user@host> clear services flow-collector statistics interface cp-5/0/0 Flow collector interface: cp-5/0/0 Interface state: Collecting flows Statistics cleared successfully
---------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

## request services flow-collector change-destination primary interface

<b>Syntax</b>	request services flow-collector change-destination primary interface <i>cp-fpc/pic/port</i> <clear-files> <clear-logs> <immediately   gracefully>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M40e, M160, and M320 routers and T Series routers only) Switch to the primary File Transfer Protocol (FTP) server that is configured as a flow collector.
<b>Options</b>	<p>none—Switch to the primary FTP server.</p> <p><i>cp-fpc/pic/port</i>—Specify the flow collector interface name for the primary destination.</p> <p>clear-files—(Optional) Request clearing of existing data files in the FTP wait queue when the switch takes place.</p> <p>clear-logs—(Optional) Request clearing of existing logs when the switch takes place.</p> <p>immediately   gracefully—(Optional) Specify whether you want the switch to take place immediately, or to affect only newly created files.</p>
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<b>request services flow-collector change-destination primary interface on page 1343</b>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

request services flow-collector change-destination primary interface	<pre>user@host&gt; request services flow-collector change-destination primary interface cp-6/0/0 Flow collector interface: cp-6/0/0 Interface state: Collecting flows Destination change successful</pre>
-------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

## request services flow-collector change-destination secondary interface

---

<b>Syntax</b>	<code>request services flow-collector change-destination secondary interface <i>cp-fpc/pic/port</i> &lt;clear-files&gt; &lt;clear-logs&gt; &lt;immediately   gracefully&gt;</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M40e, M160, and M320 routers and T Series routers only) Switch to the secondary File Transfer Protocol (FTP) server that is configured as a flow collector.
<b>Options</b>	<p><code>none</code>—Switch to the secondary FTP server.</p> <p><code>cp-fpc/pic/port</code>—Specify the flow collector interface name (<i>cp-fpc/pic/port</i>) for the secondary destination.</p> <p><code>clear-files</code>—(Optional) Request clearing of existing data files in the FTP wait queue when the switch takes place.</p> <p><code>clear-logs</code>—(Optional) Request clearing of existing logs when the switch takes place.</p> <p><code>immediately   gracefully</code>—(Optional) Specify whether you want the switch to take place immediately, or to affect only newly created files.</p>
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<a href="#">request services flow-collector change-destination secondary interface on page 1344</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

<b>request services flow-collector change-destination secondary interface</b>	<pre>user@host&gt; request services flow-collector change-destination secondary interface cp-6/0/0 Flow collector interface: cp-6/0/0 Interface state: Collecting flows Destination change successful</pre>
-------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------



## request services flow-collector test-file-transfer

<b>Syntax</b>	<code>request services flow-collector test-file-transfer <i>filename</i> interface (all   <i>cp-fpc/pic/port</i>) (channel-zero   channel-one) (primary   secondary)</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M40e, M160, and M320 routers and T Series routers only) Transfer a test file to the primary or secondary File Transfer Protocol (FTP) server that is configured as a flow collector. This command verifies that the output side of the flow collector interface is operating properly.
<b>Options</b>	<p><i>filename</i>—Name of the test file to transfer.</p> <p>interface all   <i>cp-fpc/pic/port</i>—Transfer a test file of flows from all configured flow collector interfaces or from only the specified interface.</p> <p>channel-zero   channel-one—Transfer a file from export channel 0 (unit 0) or channel 1 (unit 1) of the PIC.</p> <p>primary   secondary—Transfer a file to the primary or secondary server configured as a flow collector.</p>
<b>Required Privilege Level</b>	network
<b>List of Sample Output</b>	<a href="#">request services flow-collector test-file-transfer on page 1345</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

```

request services  user@router> request services flow-collector test-file-transfer test_file interface cp-7/1/0
flow-collector    channel-one primary
test-file-transfer

Flow collector interface: cp-7/1/0
Interface state: Collecting flows
Response: Test file transfer successfully scheduled

```

## show forwarding-options next-hop-group

<b>Syntax</b>	<b>show forwarding-options next-hop-group</b> <b>&lt;terse   brief   detail&gt;</b> <b>&lt;group-name&gt;</b>
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	Display current state of next-hop groups.
<b>Options</b>	<b>terse   brief   detail</b> —(Optional) Display the specified level of output.  <b>group-name</b> —(Optional) Display a single next-hop group.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">show forwarding-options port-mirroring on page 1349</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">show forwarding-options next-hop-group terse on page 1347</a> <a href="#">show forwarding-options next-hop-group brief on page 1347</a> <a href="#">show forwarding-options next-hop-group detail on page 1347</a>
<b>Output Fields</b>	Table 239 on page 1346 lists the output fields for the <b>show forwarding-options next-hop-group</b> command. Output fields are listed in the approximate order in which they appear.

**Table 239: show forwarding-options next-hop-group Output Fields**

Field Name	Field Description	Level of Output
<b>Next-hop-group</b>	Name of next-hop group.	All levels
<b>Type</b>	Next-hop group type, such as <b>inet</b> or <b>layer-2</b> .	All levels
<b>State</b>	Next-hop group state, either <b>up</b> or <b>down</b> .	All levels
<b>Members Interfaces</b>	Names of interfaces to which next-hop group members belong.	<b>brief detail</b>
<b>Members Subgroup</b>	Names of subgroups to which next-hop group members belong.	<b>brief detail</b>
<b>Number of members configured</b>	Number of next-hop group members configured.	<b>detail</b>
<b>Number of members that are up</b>	Number of next-hop group members that are up.	<b>detail</b>

Table 239: show forwarding-options next-hop-group Output Fields (*continued*)

Field Name	Field Description	Level of Output
Number of subgroups configured	Number of subgroups configured.	detail
Number of subgroups that are up	Number of subgroups that are up.	detail

## Sample Output

```

show forwarding-options next-hop-group terse
user@host> show forwarding-options next-hop-group terse
Next-hop-group      Type      State
inet_nhg            inet      up
vpls_nhg            layer-2   up
vpls_nhg_2          layer-2   down

```

```

show forwarding-options next-hop-group brief
user@host> show forwarding-options next-hop-group brief
Next-hop-group: inet_nhg
Type: inet      State: up
Members Interfaces:
  ge-2/0/2.101 next-hop 101.2.0.2

Next-hop-group: vpls_nhg
Type: layer-2   State: up
Members Interfaces:
  ge-2/0/1.100
  ge-2/2/9.0
Members Subgroup: vpls_subg
Members Interfaces:
  ge-2/0/1.101
  ge-2/2/9.1

Next-hop-group: vpls_nhg_2
Type: layer-2   State: down

```

```

show forwarding-options next-hop-group detail
user@host> show forwarding-options next-hop-group detail
Next-hop-group: inet_nhg
Type: inet      State: up
Number of members configured      : 2
Number of members that are up    : 1
Number of subgroups configured    : 0
Number of subgroups that are up   : 0
Members Interfaces:              State
  ge-2/0/2.101 next-hop 101.2.0.2   up
  ge-2/2/8.2   next-hop 2.8.0.2     down

Next-hop-group: vpls_nhg
Type: layer-2   State: up
Number of members configured      : 2
Number of members that are up    : 2
Number of subgroups configured    : 1
Number of subgroups that are up   : 1
Members Interfaces:              State
  ge-2/0/1.100                    up

```

```
ge-2/2/9.0          up
Members Subgroup: vpls_subg      up
  Number of members configured    : 2
  Number of members that are up   : 2
Members Interfaces:
  ge-2/0/1.101          up
ge-2/2/9.1          up

Next-hop-group: vpls_nhg_2
Number of members configured      : 2
Number of members that are up    : 0
Number of subgroups configured   : 0
Number of subgroups that are up  : 0
Type: layer-2                    State: down
Members Interfaces:              State
  ge-2/2/1.100                down
  ge-2/3/9.0                   down
```

## show forwarding-options port-mirroring

<b>Syntax</b>	<b>show forwarding-options port-mirroring</b> <b>&lt;terse   detail&gt;</b> <b>&lt;instance-name&gt;</b>
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	Display current state of port-mirroring instances.
<b>Options</b>	<b>terse   detail</b> —(Optional) Display the specified level of output.  <b>instance-name</b> —(Optional) Display a single port-mirroring instance.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">show forwarding-options next-hop-group on page 1346</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">show forwarding-options port-mirroring terse on page 1350</a> <a href="#">show forwarding-options port-mirroring detail on page 1350</a>
<b>Output Fields</b>	Table 240 on page 1349 lists the output fields for the <b>show forwarding-options port-mirroring</b> command. Output fields are listed in the approximate order in which they appear.

**Table 240: show forwarding-options port-mirroring Output Fields**

Field Name	Field Description	Level of Output
<b>Instance Name</b>	Name of port-mirroring instance.	All levels
<b>Instance Id</b>	Instance identification number.	All levels
<b>State</b>	Instance state, either <b>up</b> or <b>down</b> .	All levels
<b>Input parameters</b>		
<b>Rate</b>	Rate (ratio of packets sampled).	<b>detail</b>
<b>Run-length</b>	Run length (number of consecutive packets sampled).	<b>detail</b>
<b>Maximum-packet-length</b>	Maximum packet length.	<b>detail</b>
<b>Output parameters</b>		
<b>Family</b>	Protocol family.	<b>detail</b>
<b>State</b>	Instance state, either <b>up</b> or <b>down</b> .	<b>detail</b>
<b>Destination</b>	Destination (next-hop group name).	<b>detail</b>

## Sample Output

```
show forwarding-options port-mirroring terse
forwarding-options
port-mirroring terse
user@host> show forwarding-options port-mirroring terse
Instance Name      Instance Id  State
&global_instance   1           up
inst1               2           up

show forwarding-options port-mirroring detail
forwarding-options
port-mirroring detail
user@host> show forwarding-options port-mirroring detail
Instance Name: &global_instance
Instance Id: 1      State: up
  Input parameters:
    Rate:           10
    Run-length:      4
    Maximum-packet-length: 0
  Output parameters:
    Family: inet     State: up Destination: inet_nhg
    Family: vpls/bridge State: up  Destination: vpls_nhg

Instance Name: inst1
Instance Id: 2      State: up
  Input parameters:
    Rate:           1
    Run-length:      0
    Maximum-packet-length: 200
  Output parameters:
    Family: inet     State: up  Destination: inet_nhg
    Family: vpls/bridge State: down Destination: vpls_nhg_2
```

## show passive-monitoring error

<b>Syntax</b>	<code>show passive-monitoring error (*   all   mo-fpc/pic/port)</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M40e, M160, and M320 routers and T Series routers only) Display passive monitoring error statistics.
<b>Options</b>	<code>*   all   mo-fpc/pic/port</code> —Display error statistics for monitoring interfaces. Use a wildcard character, specify all interfaces, or provide a specific interface name.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show passive-monitoring error all on page 1352</b>
<b>Output Fields</b>	Table 241 on page 1351 lists the output fields for the <b>show passive-monitoring error</b> command. Output fields are listed in the approximate order in which they appear.

**Table 241: show passive-monitoring error Output Fields**

Field Name	Field Description
Passive monitoring interface	Name of the passive monitoring interface.
Local interface index	Index counter of the local interface.
Interface state	State of the passive monitoring interface: <ul style="list-style-type: none"> <li>• <b>Monitoring</b>—Specified interface is actively monitoring.</li> <li>• <b>Disabled</b>—Specified interface has been disabled from the CLI.</li> <li>• <b>Not monitoring</b>—The interface is operational, but not monitoring. This condition occurs when an interface first comes online, or when the interface is operational, but no logical unit has been configured under the physical interface.</li> <li>• <b>Unknown</b>—Unknown state.</li> <li>• <b>Error</b>—An error occurred during the process of determining the state of the interface.</li> </ul>
<b>Error information</b>	
Packets dropped (no memory)	Number of packets dropped because of memory shortage.
Packets dropped (not IP)	Number of non-IP packets dropped.
Packets dropped (not IPv4)	Number of packets dropped because they failed the IPv4 version check.
Packets dropped (header too small)	Number of packets dropped because the packet length or IP header length was too small.

Table 241: show passive-monitoring error Output Fields (*continued*)

Field Name	Field Description
<b>Memory allocation failures</b>	Number of flow record memory allocation failures. A small number reflects failures to replenish the free list. A large number indicates the monitoring station is almost out of memory space.
<b>Memory free failures</b>	Number of flow record memory free failures.
<b>Memory free list failures</b>	Number of flow records received from free list that failed. Memory is nearly exhausted or too many new flows greater than 128 KB are being created per second.
<b>Memory warning</b>	Whether the flows have exceeded 1 million packets per second (Mpps) on a Monitoring Services PIC or 2 Mpps on a Monitoring Services II PIC. The response can be <b>Yes</b> or <b>No</b> .
<b>Memory overload</b>	Whether the memory has been overloaded. The response can be <b>Yes</b> or <b>No</b> .
<b>PPS overload</b>	Whether the PIC is receiving more packets per second than the configured threshold. The response can be <b>Yes</b> or <b>No</b> .
<b>BPS overload</b>	Whether the PIC is receiving more bits per second than the configured threshold. The response can be <b>Yes</b> or <b>No</b> .

## Sample Output

```

show user@host> show passive-monitoring error all
passive-monitoring Passive monitoring interface: mo-4/0/0, Local interface index: 44
error all          Interface state: Monitoring
                   Error information
                   Packets dropped (no memory): 0, Packets dropped (not IP): 0
                   Packets dropped (not IPv4): 0, Packets dropped (header too small): 0
                   Memory allocation failures: 0, Memory free failures: 0
                   Memory free list failures: 0
                   Memory warning: No, Memory overload: No, PPS overload: No, BPS overload: No

Passive monitoring interface: mo-4/1/0, Local interface index: 45
Interface state: Not monitoring
Error information
Packets dropped (no memory): 0, Packets dropped (not IP): 0
Packets dropped (not IPv4): 0, Packets dropped (header too small): 0
Memory allocation failures: 0, Memory free failures: 0
Memory free list failures: 0
Memory warning: No, Memory overload: No, PPS overload: No, BPS overload: No

```



## show passive-monitoring flow

<b>Syntax</b>	show passive-monitoring flow (*   all   mo- <i>fpc/pic/port</i> )
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M40e, M160, and M320 routers and T Series routers only) Display passive flow statistics.
<b>Options</b>	*   all   mo- <i>fpc/pic/port</i> —Display passive flow statistics for monitoring interfaces. Use a wildcard character, specify all interfaces, or provide a specific interface name.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show passive-monitoring flow all on page 1354
<b>Output Fields</b>	Table 242 on page 1353 lists the output fields for the <b>show passive-monitoring flow</b> command. Output fields are listed in the approximate order in which they appear.

**Table 242: show passive-monitoring flow Output Fields**

Field Name	Field Description
Passive monitoring interface	Name of the passive monitoring interface.
Local interface index	Index counter of the local interface.
Interface state	State of the passive monitoring interface: <ul style="list-style-type: none"> <li>• <b>Monitoring</b>—Specified interface is actively monitoring.</li> <li>• <b>Disabled</b>—Specified interface has been disabled from the CLI.</li> <li>• <b>Not monitoring</b>—The interface is operational, but not monitoring. This condition occurs when an interface first comes online, or when the interface is operational, but no logical unit has been configured under the physical interface.</li> <li>• <b>Unknown</b>—Unknown state.</li> <li>• <b>Error</b>—An error occurred during the process of determining the state of the interface.</li> </ul>
Flow information	
Flow packets	Number of packets received by an operational PIC.
Flow bytes	Number of bytes received by an operational PIC.
Flow packets 10-second rate	Number of packets per second handled by the PIC and displayed as a 10-second average.
Flow bytes 10-second rate	Number of bytes per second handled by the PIC and displayed as a 10-second average.
Active flows	Number of currently active flows tracked by the PIC.
Total flows	Total number of flows received by an operational PIC.

Table 242: show passive-monitoring flow Output Fields (*continued*)

Field Name	Field Description
<b>Flows exported</b>	Total number of flows exported by an operational PIC.
<b>Flows packets exported</b>	Total number of cflowd packets exported by an operational PIC.
<b>Flows inactive timed out</b>	Total number of flows that are exported because of inactivity.
<b>Flows active timed out</b>	Total number of long-lived flows that are exported because of an active timeout.

### Sample Output

```

show user@host> show passive-monitoring flow all
passive-monitoring Passive monitoring interface: mo-4/0/0, Local interface index: 44
flow all Interface state: Monitoring
          Flow information
          Flow packets: 6533434, Flow bytes: 653343400
          Flow packets 10-second rate: 0, Flow bytes 10-second rate: 0
          Active flows: 0, Total flows: 1599
          Flows exported: 1599, Flows packets exported: 55
          Flows inactive timed out: 1599, Flows active timed out: 0

          Passive monitoring interface: mo-4/1/0, Local interface index: 45
          Interface state: Monitoring
          Flow information
          Flow packets: 6537780, Flow bytes: 653778000
          Flow packets 10-second rate: 0, Flow bytes 10-second rate: 0
          Active flows: 0, Total flows: 1601
          Flows exported: 1601, Flows packets exported: 55
          Flows inactive timed out: 1601, Flows active timed out: 0

```

## show passive-monitoring memory

<b>Syntax</b>	<code>show passive-monitoring memory (*   all   mo-fpc/pic/port)</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M40e, M160, and M320 routers and T Series routers only) Display passive monitoring memory and flow record statistics
<b>Options</b>	<code>*   all   mo-fpc/pic/port</code> —Display memory and flow record statistics for monitoring interfaces. Use a wildcard character, specify all interfaces, or provide a specific interface name.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show passive-monitoring memory all</b> on page 1355
<b>Output Fields</b>	Table 243 on page 1355 lists the output fields for the <b>show passive-monitoring memory</b> command. Output fields are listed in the approximate order in which they appear.

**Table 243: show passive-monitoring memory Output Fields**

Field Name	Field Description
Passive monitoring interface	Name of the passive monitoring interface.
Local interface index	Index counter of the local interface.
Memory utilization	
Allocation count	Number of flow records allocated.
Free count	Number of flow records freed.
Maximum allocated	Maximum number of flow records allocated since the monitoring station booted. This number represents the peak number of flow records allocated at a time.
Allocations per second	Flow records allocated per second during the last statistics interval on the PIC.
Frees per second	Flow records freed per second during the last statistics interval on the PIC.
Total memory used, Total memory free	Total memory currently used and total amount of memory currently free (in bytes).

## Sample Output

```

user@host> show passive-monitoring memory all
Passive monitoring interface: mo-4/0/0, Local interface index: 44
Memory utilization
Allocation count: 1600, Free count: 1599, Maximum allocated: 1600

```

Allocations per second: 3200, Frees per second: 1438  
Total memory used (in bytes): 103579176, Total memory free (in bytes):  
163914184

## show passive-monitoring status

<b>Syntax</b>	show passive-monitoring status (*  all   mo-fpc/pic/port)
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M40e, M160, and M320 routers and T Series routers only) Display passive monitoring status.
<b>Options</b>	*  all   mo-fpc/pic/port—Display status for monitoring interfaces. Use a wildcard character, specify all interfaces, or provide a specific interface name.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show passive-monitoring status all on page 1358
<b>Output Fields</b>	Table 244 on page 1357 lists the output fields for the <b>show passive-monitoring status</b> command. Output fields are listed in the approximate order in which they appear.

**Table 244: show passive-monitoring status Output Fields**

Output Field	Output Field Description
Passive monitoring interface	Name of the passive monitoring interface.
Local interface index	Index counter of the local interface.
Interface state	Monitoring state of the passive monitoring interface. <ul style="list-style-type: none"> <li>• <b>Monitoring</b>—PIC is actively monitoring.</li> <li>• <b>Disabled</b>—PIC has been disabled using the CLI.</li> <li>• <b>Not monitoring</b>—PIC is operational, but not monitoring. This condition can happen while the PIC is coming online, or when the PIC is operational but has no logical unit configured under the physical interface.</li> <li>• <b>Unknown</b></li> </ul>
Group index	Integer that represents the monitoring group of which the PIC is a member. <b>Group index</b> is a mapping from the group name to an index. It is not related to the number of monitoring groups.
Export interval	Configured export interval for cflowd records, in seconds.
Export format	Configured export format (only cflowd version 5 is supported).
Protocol	Protocol the PIC is configured to monitor (only IPv4 is supported).
Engine type	Configured engine type that is inserted in output cflowd packets.
Engine ID	Configured engine ID that is inserted in output cflowd packets.

## Sample Output

```
show user@host> show passive-monitoring status all
passive-monitoring Passive monitoring interface: mo-4/0/0, Local interface index: 44
status all         Interface state: Monitoring
                   Group index: 0
                   Export interval: 15 secs, Export format: cflowd v5
                   Protocol: IPv4, Engine type: 1, Engine ID: 1

Passive monitoring interface: mo-4/1/0, Local interface index: 45
Interface state: Disabled

Passive monitoring interface: mo-4/2/0, Local interface index: 46
Interface state: Not monitoring
```

## show passive-monitoring usage

<b>Syntax</b>	<code>show passive-monitoring usage (*   all   mo-fpc/pic/port)</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M40e, M160, and M320 routers and T Series routers only) Display passive monitoring usage statistics.
<b>Options</b>	<code>*   all   mo-fpc/pic/port</code> —Display usage statistics for monitoring interfaces. Use a wildcard character, specify all interfaces, or provide a specific interface name.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show passive-monitoring usage all on page 1359</b>
<b>Output Fields</b>	Table 245 on page 1359 lists the output fields for the <b>show passive-monitoring usage</b> command. Output fields are listed in the approximate order in which they appear.

**Table 245: show passive-monitoring usage Output Fields**

Output Field	Output Field Description
Passive monitoring interface	Name of the passive monitoring interface.
Local interface index	Index counter of the local interface.
CPU utilization	
Uptime	Time, in milliseconds, that the PIC has been operational.
Interrupt time	Total time that the PIC has spent processing packets since the last PIC reset.
Load (5 second)	CPU load on the PIC, averaged more than 5 seconds. The number is a percentage obtained by dividing the time spent on active tasks by the total elapsed time.
Load (1 minute)	CPU load on the PIC, averaged more than 1 minute. The number is a percentage obtained by dividing the time spent on active tasks by the total elapsed time.

## Sample Output

```

user@host> show passive-monitoring usage
Passive monitoring interface: mo-4/0/0, Local interface index: 44
CPU utilization
  Uptime: 653155 milliseconds, Interrupt time: 40213754 microseconds
  Load (5 second): 20%, Load (1 minute): 17%

Passive monitoring interface: mo-4/1/0, Local interface index: 45
CPU utilization
  Uptime: 652292 milliseconds, Interrupt time: 40223178 microseconds
  Load (5 second): 22%, Load (1 minute): 15%
```

```
Passive monitoring interface: mo-4/2/0, Local interface index: 46
CPU utilization
  Uptime: 649491 milliseconds, Interrupt time: 40173645 microseconds
  Load (5 second): 22%, Load (1 minute): 10098862%
```



## show services accounting aggregation

<b>Syntax</b>	<pre>show services accounting aggregation <i>aggregation-type</i> &lt;<i>aggregation-value</i>&gt; &lt;detail   extensive   terse&gt; &lt;limit <i>limit-value</i>&gt; &lt; name <i>service-name</i>&gt; &lt;order (bytes   packets)&gt;</pre>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Display information about the aggregated active flows being processed by the accounting service.
<b>Options</b>	<p><i>aggregation-type</i> &lt;<i>aggregation-value</i>&gt;—Display information for a particular aggregation type and optional value:</p> <ul style="list-style-type: none"> <li><i>as</i> &lt;<i>source-as-value</i>   <i>destination-as-value</i>   <i>input-snmp-interface-index-value</i>   <i>output-snmp-interface-index-value</i>&gt;—Aggregate by autonomous system (AS).</li> <li><i>destination-prefix</i> &lt;<i>destination-prefix-value</i>   <i>destination-as-value</i>   <i>output-snmp-interface-index-value</i>&gt;—Aggregate by destination prefix.</li> <li><i>protocol-port</i> &lt;<i>protocol-value</i>   <i>source-port-value</i>   <i>destination-port-value</i>&gt;—Aggregate by protocol and port.</li> <li><i>source-destination-prefix</i> &lt;<i>source-prefix-value</i>   <i>destination-prefix-value</i>   <i>destination-as-value</i>   <i>source-as-value</i>   <i>input-snmp-interface-index-value</i>   <i>output-snmp-interface-index-value</i>&gt;—Aggregate by source and destination prefix.</li> <li><i>source-prefix</i> &lt;<i>source-prefix-value</i>   <i>source-as-value</i>   <i>input-snmp-interface-index-value</i>&gt;—Aggregate by source prefix.</li> </ul> <p><i>detail</i>   <i>extensive</i>   <i>terse</i>—(Optional) Display the specified level of output.</p> <p><i>limit</i> <i>limit-value</i>—(Optional) Limit the display output to this number of flows. The default is no limit.</p> <p><i>name</i> <i>service-name</i>—(Optional) Display information about the aggregated flows for a particular service name.</p> <p><i>order</i> (bytes   packets)—(Optional) Display the flow with the ordering of the highest number, either by byte count or by packet count.</p>
<b>Additional Information</b>	For information about aggregation configuration options, see the <i>Junos OS Services Interfaces Configuration Guide</i> .
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<pre>show services accounting aggregation protocol-port detail on page 1363 show services accounting aggregation source-destination-prefix on page 1363</pre>

**show services accounting aggregation source-destination- prefix order packet detail on page 1363**

**show services accounting aggregation source-destination- prefix extensive limit on page 1364**

**show services accounting aggregation source-destination-prefix name terse on page 1364**

**Output Fields** Table 246 on page 1362 lists the output fields for the **show services accounting aggregation** command. Output fields are listed in the approximate order in which they appear.

**Table 246: show services accounting aggregation Output Fields**

Field Name	Field Description
Service Accounting interface	Name of the service accounting interface.
Local interface index	Index corresponding to the service accounting interface.
Service name	Name of a service that was configured at the [edit forwarding-options accounting] hierarchy level. The default display, (default sampling), indicates the service was configured at the [edit forwarding-options sampling-level] hierarchy level.
Protocol	Protocol identifier and number.
Source Port	Source port identifier and number.
Destination Port	Destination port identifier and number.
Source-AS	Source autonomous system (AS) number.
Destination-AS	Destination AS number.
Source Prefix	Source prefix.
Destination Prefix	Destination prefix.
Source address	Source address.
Source prefix length	Source prefix length.
Destination address	Destination address.
Destination prefix length	Destination prefix length.
Input SNMP interface index	SNMP index of the interface the packet came in on.
Output SNMP interface index	SNMP index of the interface the packet went out on.

Table 246: show services accounting aggregation Output Fields (*continued*)

Field Name	Field Description
Start time	Actual time when the packet in this aggregation was first seen.
End time	Actual time when the packet in this aggregation was last seen.
Flow count	Number of flows in the aggregation.
Packet count	Number of packets in the aggregation.
Byte count	Number of bytes in the aggregation.

## Sample Output

```

show services accounting aggregation protocol-port detail
user@host> show service accounting aggregation protocol-port detail
Service Accounting interface: mo-2/0/0, Local interface index: 468
Service name: (default sampling)
  Protocol: 6, Source port: 20, Destination port: 20
  Start time: 442349, End time: 6425714
  Flow count: 194, Packet count: 4294964388, Byte count: 4294781184

  Protocol: 0, Source port: 0, Destination port: 0
  Start time: 442349, End time: 6425749
  Flow count: 204, Packet count: 4294964324, Byte count: 4294777088

  Protocol: 17, Source port: 123, Destination port: 123
  Start time: 442364, End time: 6425784
  Flow count: 186, Packet count: 4294964152, Byte count: 4294766080

show services accounting aggregation source-destination-prefix
user@host> show service accounting aggregation source-destination-prefix
Service Accounting interface: rsp0, Local interface index: 171
Service name: (default sampling)
Interface state: Accounting
Source          Destination    Input          Output          Flow    Packet
              Byte          prefix         interface       interface      count      count
prefix          count
11.1.0.0/20      40.0.0.0/24   ge-5/0/1.0     ge-5/0/0.0      256     491761
31472704
11.1.0.0/20      40.0.1.36/32  ge-5/0/1.0     ge-5/0/0.0       1
1926            123264
11.1.0.0/20      40.0.1.59/32  ge-5/0/1.0     ge-5/0/0.0       1
1926            123264
11.1.0.0/20      40.0.3.63/32  ge-5/0/1.0     ge-5/0/0.0       1
1925            123200
11.1.0.0/20      40.0.3.32/32  ge-5/0/1.0     ge-5/0/0.0       1
1925

show services accounting aggregation source-destination-
user@host> show service accounting aggregation source-destination-prefix order packet detail
name t2 input-snmp-interface-index 538
Service Accounting interface: mo-2/0/0, Local interface index: 468
Service name: t2
Source          Destination    Input SNMP      Output SNMP      Flow    Packet    Byte

```

prefix order packet detail	Prefix	Prefix	Index	Index	Count	Count	Count
	11.1.1.2/20	30.0.167.1/0	538	432	1	60	46483
	11.1.1.2/20	30.0.168.1/0	538	432	1	60	5191
	11.1.1.2/20	30.0.154.1/0	538	432	2	60	45504
	11.1.1.2/20	30.0.76.1/0	538	432	1	60	42177
	11.1.1.2/20	30.0.149.1/0	538	432	1	60	49184
	11.1.1.2/20	30.0.113.1/0	538	432	2	60	48757

```

show services user@host> show service accounting aggregation source-destination-prefix name t2 extensive
accounting limit 3
aggregation Service Accounting interface: mo-2/0/0, Local interface index: 542
source-destination- Service name: t2
prefix extensive limit

```

```

Source address: 11.1.1.2, Source prefix length: 20
Destination address: 44.200.176.1, Destination prefix length: 0
Input SNMP interface index: 24, Output SNMP interface index: 26
Source-AS: 69, Destination-AS: 69
Start time: Fri Feb 21 14:16:57 2003, End time: Fri Feb 21 14:22:50 2003
Flow count: 0, Packet count: 6, Byte count: 5340

```

```

Source address: 11.1.1.2, Source prefix length: 20
Destination address: 45.243.160.1, Destination prefix length: 0
Input SNMP interface index: 24, Output SNMP interface index: 26
Source-AS: 69, Destination-AS: 69
Start time: Fri Feb 21 14:16:57 2003, End time: Fri Feb 21 14:22:50 2003
Flow count: 0, Packet count: 6, Byte count: 5490

```

```

Source address: 11.1.1.2, Source prefix length: 20
Destination address: 45.162.160.1, Destination prefix length: 0
Input SNMP interface index: 24, Output SNMP interface index: 26
Source-AS: 69, Destination-AS: 69
Start time: Fri Feb 21 14:16:57 2003, End time: Fri Feb 21 14:22:50 2003
Flow count: 0, Packet count: 6, Byte count: 4079

```

```

show services user@host> show service accounting aggregation source-destination-prefix name T3 terse
accounting Service Accounting interface: rsp0, Local interface index: 171
aggregation Service name: T3
source-destination-prefix Interface state: Accounting
name terse Source Destination Input Output Flow Packet
           Byte prefix interface interface count count
           count
11.1.0.0/20 50.0.0.0/24 ge-5/0/1.0 ge-5/0/0.0 256 639822
           40948608
11.1.0.0/20 50.0.2.67/32 ge-5/0/1.0 ge-5/0/0.0 1
2485 159040
11.1.0.0/20 50.0.2.92/32 ge-5/0/1.0 ge-5/0/0.0 1
2485

```

## show services accounting aggregation template

<b>Syntax</b>	<b>show services accounting aggregation template</b> <b>&lt;template-name <i>template-name</i>&gt;</b>
<b>Release Information</b>	Command introduced in Junos OS Release 8.3.
<b>Description</b>	Display information for flow aggregation version 9 templates.
<b>Options</b>	<b>&lt;template-name <i>template-name</i>&gt;</b> —(Optional) Display information for the specified template only.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show services accounting aggregation template on page 1365</b>
<b>Output Fields</b>	Table 247 on page 1365 lists the output fields for the <b>show services accounting aggregation template</b> command. Output fields are listed in the approximate order in which they appear.

**Table 247: show services accounting aggregation template Output Fields**

Field Name	Field Description
<b>MPLS Label 1</b>	Position of first MPLS label.
<b>MPLS Label 2</b>	Position of second MPLS label.
<b>MPLS Label 3</b>	Position of third MPLS label.
<b>MPLS Top Level Address</b>	Outer top label FEC IP address.
<b>Packet Count</b>	Number of packets sent.

## Sample Output

```

show services      user@host> show services accounting aggregation template template-name mpls
accounting      MPLS label 1: 299808, MPLS label 2: 0, MPLS label 3: 0
aggregation template Source address: 11.1.1.2, Destination address: 10.255.15.22, Top Label Address:
                        22.15.255.10
                        Source port: 0, Destination port: 0
                        Protocol: 61, TOS: 0, TCP flags: 0
                        Source mask: 24, Destination mask: 32
                        Input SNMP interface index: 503, Output SNMP interface index: 505
                        Start time: 40780, End time: 157330
                        Packet count: 3949198, Byte count: 181663062

```

## show services accounting errors

<b>Syntax</b>	show services accounting errors <name (*   all   <i>service-name</i> )>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Display active flow error statistics.
<b>Options</b>	<p>none—Display error statistics for all services accounting instances.</p> <p>name (*   all   <i>service-name</i>)—(Optional) Display active flow error statistics. Use a wildcard character, specify all services, or provide a specific service name.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p><b>show services accounting errors (Monitoring PIC interface) on page 1367</b></p> <p><b>show services accounting errors (Service PIC interface) on page 1367</b></p>
<b>Output Fields</b>	Table 248 on page 1366 lists the output fields for the <b>show services accounting errors</b> command. Output fields are listed in the approximate order in which they appear.

**Table 248: show services accounting errors Output Fields**

Field	Field Description
<b>Service Accounting interface</b>	Name of the service accounting interface.
<b>Local interface index</b>	Index counter of the local interface.
<b>Service name</b>	Name of a service that was configured at the [edit forwarding-options accounting] hierarchy level. The default display, ( <b>default sampling</b> ), indicates the service was configured at the [edit forwarding-options sampling-level] hierarchy level.
<b>Error Information</b>	
<b>Packets dropped (no memory)</b>	Number of packets dropped because of memory shortage.
<b>Packets dropped (not IP)</b>	Number of non-IP packets dropped.
<b>Packets dropped (not IPv4)</b>	Number of packets dropped because they failed the IPv4 version check.
<b>Packets dropped (header too small)</b>	Number of packets dropped because the packet length or IP header length was too small.
<b>Memory allocation failures</b>	Number of flow record memory allocation failures. A small number reflects failures to replenish the free list. A large number indicates the monitoring station is almost out of memory space.

Table 248: show services accounting errors Output Fields (*continued*)

Field	Field Description
<b>Memory free failures</b>	Number of flow record memory free failures.
<b>Memory free list failures</b>	Number of flow records received from the free list that failed. Memory is nearly exhausted, or too many new flows greater than 128 KB are being created per second.
<b>Memory overload</b>	Whether the memory has been overloaded. The response can be <b>Yes</b> or <b>No</b> .
<b>PPS overload</b>	Whether the PIC is receiving more packets per second than the configured threshold. The response can be <b>Yes</b> or <b>No</b> .
<b>BPS overload</b>	Whether the PIC is receiving more bits per second than the configured threshold. The response can be <b>Yes</b> or <b>No</b> .

### Sample Output

```

show services accounting errors (Monitoring PIC interface)
user@host> show services accounting errors
Service Accounting interface: mo-1/1/0, Local interface index: 15
Service name: (default sampling)
Error information
  Packets dropped (no memory): 0, Packets dropped (not IP): 0
  Packets dropped (not IPv4): 0, Packets dropped (header too small): 0
  Memory allocation failures: 0, Memory free failures: 0
  Memory free list failures: 0
  Memory overload: No, PPS overload: No, BPS overload: No

```

### Sample Output

```

show services accounting errors (Service PIC interface)
user@host> show services accounting errors
Service Accounting interface: sp-0/1/0
Service name: (default sampling)
Error information
  Service sets dropped: 0, Active timeout failures: 0
  Export packet failures: 0, Flow creation failures: 0
  Memory overload: No

Service Accounting interface: sp-1/0/0
Service name: (default sampling)
Error information
  Service sets dropped: 0, Active timeout failures: 0
  Export packet failures: 0, Flow creation failures: 0
  Memory overload: No

```

## show services accounting flow

<b>Syntax</b>	show services accounting flow <name (*   all   <i>service-name</i> )>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Junos OS Release 10.0 added the capability to display output from multiple sampling instances.
<b>Description</b>	Display active flow statistics.
<b>Options</b>	none—Display active flow statistics for all service instances.  name (*   all   <i>service-name</i> )—(Optional) Display services accounting active flow statistics. Use a wildcard character, specify all services, or provide a specific service name.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show services accounting flow (flow aggregation v5/v8 configuration) on page 1369 show services accounting flow (flow aggregation v9 configuration) on page 1369 show services accounting flow name on page 1369 show services accounting flow name all on page 1369 show services accounting flow (multiple sampling instances) on page 1370
<b>Output Fields</b>	Table 249 on page 1368 lists the output fields for the <b>show services accounting flow</b> command. Output fields are listed in the approximate order in which they appear.

Table 249: show services accounting flow Output Fields

Output Field	Output Field Description
Service Accounting interface	Name of the service accounting interface.
Local interface index	Index counter of the local interface.
Service name	Name of a service that was configured at the [edit forwarding-options accounting] hierarchy level. The default display, (default sampling), indicates the service was configured at the [edit forwarding-options sampling-level] hierarchy level.
Flow Information	
Flow packets	Number of packets received by an operational PIC.
Flow bytes	Number of bytes received by an operational PIC.
Flow packets 10-second rate	Number of packets per second handled by the PIC and displayed as a 10-second average.
Flow bytes 10-second rate	Number of bytes per second handled by the PIC and displayed as a 10-second average.



Table 249: show services accounting flow Output Fields (*continued*)

Output Field	Output Field Description
Active flows	Number of currently active flows tracked by the PIC.
Total flows	Total number of flows received by an operational PIC.
Flows exported	Total number of flows exported by an operational PIC.
Flows packets exported	Total number of cflowd packets exported by an operational PIC.
Flows inactive timed out	Total number of flows that are exported because of inactivity.
Flows active timed out	Total number of long-lived flows that are exported because of an active timeout.

### Sample Output

```

show services accounting flow (flow aggregation v5/v8 configuration)
user@host> show services accounting flow
Service Accounting interface: rsp0, Local interface index: 171
Service name: (default sampling)
Interface state: Accounting
Flow information
  Flow packets: 87168293, Flow bytes: 5578770752
  Flow packets 10-second rate: 45762, Flow bytes 10-second rate: 2928962
  Active flows: 1000, Total flows: 2000
  Flows exported: 19960, Flows packets exported: 582
  Flows inactive timed out: 1000, Flows active timed out: 29000

show services accounting flow (flow aggregation v9 configuration)
user@host> show services accounting flow
Flow information
  Service Accounting interface: sp-7/1/0, Local interface index: 149
  Flow packets: 0, Flow bytes: 0
  Flow packets 10-second rate: 0, Flow bytes 10-second rate: 0
  Active flows: 0, Total flows: 0
  Flows exported: 0, Flows packets exported: 1
  Flows inactive timed out: 0, Flows active timed out: 0

show services accounting flow name
user@host> show services accounting flow count2
Service Accounting interface: mo-1/1/0, Local interface index: 15
Service name: count2
Flow information
  Flow packets: 0, Flow bytes: 0
  Flow packets 10-second rate: 0, Flow bytes 10-second rate: 0
  Active flows: 0, Total flows: 0
  Flows exported: 0, Flows packets exported: 0
  Flows inactive timed out: 0, Flows active timed out: 0

show services accounting flow name all
user@host> show services accounting flow name all
Service Accounting interface: rsp0, Local interface index: 171
Service name: T2
Interface state: Accounting
Flow information
  Flow packets: 37609891, Flow bytes: 2407033024
  Flow packets 10-second rate: 45762, Flow bytes 10-second rate: 2928953
  Active flows: 1000, Total flows: 1000

```

```
Flows exported: 6705, Flows packets exported: 198
Flows inactive timed out: 0, Flows active timed out: 13000
```

```
Service Accounting interface: rsp0, Local interface index: 171
```

```
Service name: T3
```

```
Interface state: Accounting
```

```
Flow information
```

```
Flow packets: 37750807, Flow bytes: 2416051712
```

```
Flow packets 10-second rate: 45762, Flow bytes 10-second rate: 2928940
```

```
Active flows: 1000, Total flows: 1000
```

```
Flows exported: 13437, Flows packets exported: 378
```

```
Flows inactive timed out: 0, Flows active timed out: 13000
```

```
Service Accounting interface: rsp0, Local interface index: 171
```

```
Service name: T4
```

```
Interface state: Accounting
```

```
Flow information
```

```
Flow packets: 0, Flow bytes: 0
```

```
Flow packets 10-second rate: 0, Flow bytes 10-second rate: 0
```

```
Active flows: 0, Total flows: 0
```

```
Flows exported: 0, Flows packets exported: 0
```

```
Flows inactive timed out: 0, Flows active timed out: 0
```

```
Service Accounting interface: rsp0, Local interface index: 171
```

```
Service name: count1
```

```
Interface state: Accounting
```

```
Flow information
```

```
Flow packets: 0, Flow bytes: 0
```

```
Flow packets 10-second rate: 0, Flow bytes 10-second rate: 0
```

```
Active flows: 0, Total flows: 0
```

```
Flows exported: 0, Flows packets exported: 0
```

```
Flows inactive timed out: 0, Flows active timed out: 0
```

**show services  
accounting flow  
(multiple sampling  
instances)**

```
user@host> show services accounting flow
```

```
Flow information
```

```
Service Accounting interface: sp-2/0/0, Local interface index: 215
```

```
Flow packets: 9867, Flow bytes: 631488
```

```
Flow packets 10-second rate: 0, Flow bytes 10-second rate: 628
```

```
Active flows: 2, Total flows: 10
```

```
Flows exported: 4028, Flows packets exported: 6150
```

```
Flows inactive timed out: 8, Flows active timed out: 4026
```

```
Service Accounting interface: sp-2/1/0, Local interface index: 223
```

```
Flow packets: 0, Flow bytes: 0
```

```
Flow packets 10-second rate: 0, Flow bytes 10-second rate: 0
```

```
Active flows: 0, Total flows: 0
```

```
Flows exported: 0, Flows packets exported: 1
```

```
Flows inactive timed out: 0, Flows active timed out: 0
```

## show services accounting flow-detail

<b>Syntax</b>	<pre>show services accounting flow-detail &lt;detail   extensive   terse&gt; &lt;filters&gt; &lt;limit limit-value&gt; &lt;name (*   all   service-name)&gt; &lt;order (bytes   packets)&gt;</pre>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Display information about the flows being processed by the accounting service.
<b>Options</b>	<p>detail   extensive   terse—(Optional) Display the specified level of output.</p> <p><i>filters</i>—(Optional) Filter the display output of the currently active flow records. The following filters query actively changing data structures and result in different results for multiple invocations:</p> <ul style="list-style-type: none"> <li>• <b>destination-as</b>—Display flow records filtered by destination autonomous system information.</li> <li>• <b>destination-port</b>—Display flow records filtered by destination port information.</li> <li>• <b>destination-prefix</b>—Display flow records filtered by destination prefix information.</li> <li>• <b>input-snmp-interface-index</b>—Display flow records filtered by SNMP input interface index information.</li> <li>• <b>output-snmp-interface-index</b>—Display flow records filtered by SNMP output interface index information.</li> <li>• <b>proto</b>—Display flow records filtered by protocol type.</li> <li>• <b>source-as</b>—Display flow records filtered by source autonomous system information.</li> <li>• <b>source-port</b>—Display flow records filtered by source port information.</li> <li>• <b>source-prefix</b>—Display flow records filtered by source prefix information.</li> <li>• <b>tos</b>—Display flow records filtered by type of service classification.</li> </ul> <p>limit <i>limit-value</i>—(Optional) Limit the display output to the specified number of flows. The default is no limit.</p> <p>name (*   all   <i>service-name</i>)—(Optional) Display information about the flows being processed. Use a wildcard character, specify all services, or provide a specific services name.</p> <p>order (bytes   packets)—(Optional) Display the flow with the ordering of the highest number, either by byte count or by packet count.</p>
<b>Additional Information</b>	When no PIC is active, or when no route record has been downloaded from the PIC, this command reports no flows, even though packets are being sampled. This command

displays information about two concurrent sessions only. If a third session is attempted, the command pauses with no output until one of the previous sessions is completed.

**Required Privilege Level** view

**List of Sample Output** [show services accounting flow-detail on page 1373](#)  
[show services accounting flow-detail limit on page 1374](#)  
[show services accounting flow-detail name extensive on page 1374](#)  
[show services accounting flow-detail limit order bytes on page 1374](#)  
[show services accounting flow-detail source-port on page 1375](#)

**Output Fields** Table 250 on page 1372 lists the output fields for the **show services accounting flow-detail** command. Output fields are listed in the approximate order in which they appear.

**Table 250: show services accounting flow-detail Output Fields**

Field Name	Field Description	Output Level
<b>Service Accounting interface</b>	Name of the service accounting interface.	All levels
<b>Service name</b>	Name of a service that was configured at the <b>[edit forwarding-options accounting]</b> hierarchy level. The default display, <b>(default sampling)</b> , indicates the service was configured at the <b>[edit forwarding-options sampling]</b> hierarchy level.	All levels
<b>Local interface index</b>	Index counter of the local interface.	All levels
<b>TOS</b>	Type-of-service value from the IP header.	<b>extensive</b>
<b>Input SNMP interface index</b>	SNMP index of the interface on which the packet came in.	<b>extensive</b>
<b>Output SNMP interface index</b>	SNMP index of the interface on which the packet went out.	<b>extensive</b>
<b>Source-AS</b>	Source AS number.	<b>extensive</b>
<b>Destination-AS</b>	Destination AS number.	<b>extensive</b>
<b>Protocol</b>	Name of the protocol used for the packet flow from the corresponding source address.	All levels
<b>Input interface</b>	Interface on which the packets were received.	All levels
<b>Output interface</b>	Interface on which the packets were transmitted.	All levels
<b>TCP flags</b>	Number of TCP header flags detected in the flow.	<b>extensive</b>
<b>Source address</b>	Address where the flow originated.	All levels
<b>Source port</b>	Name of the source port.	All levels

Table 250: show services accounting flow-detail Output Fields (*continued*)

Field Name	Field Description	Output Level
Source prefix length	Source prefix length.	extensive
Destination address	Address where the flow is sent.	All levels
Destination prefix length	Destination prefix length.	extensive
Destination port	Name of the destination port.	All levels
Start time	Actual time when the packet in this aggregation was first seen.	detail extensive
End time	Actual time when the packet in this aggregation was last seen.	detail extensive
Packet count	Number of packets in the aggregation.	All levels
Byte count	Number of bytes in the aggregation.	All levels
Time since last active timeout	Amount of time elapsed since the last active timeout, in the format <i>hh:mm:ss</i> .	None specified
Packet count for last active timeout	Number of packets in the aggregation since the last active timeout.	None specified
Byte count for last active timeout	Number of bytes in the aggregation since the last active timeout.	None specified

## Sample Output

**show services accounting flow-detail** In this sample, the output is split into three sections, with ellipses (...) indicating where the sections are continued.

```

user@host> show services accounting flow-detail
Service Accounting interface: rsp0, Local interface index: 171
Service name: (default sampling)
Interface state: Accounting

```

Protocol	Input interface	Source address	Source port	Output interface...
tcp(6)	ge-5/0/1.0	11.1.1.2	0	ge-5/0/0.0
tcp(6)	ge-5/0/1.0	11.1.1.2	0	ge-5/0/0.0

Destination address	Destination port	Packet count	Byte count	Time since last active timeout...
40.0.3.149	0	2660	170240	00:00:58
40.0.3.138	0	2660	170240	00:00:58

Packet count for last active timeout	Byte count for last active timeout
2805	179520
2805	179520

**show services accounting flow-detail limit** In this sample, the output is split into three sections, with ellipses (...) indicating where the sections are continued.

```
user@host> show services accounting flow-detail limit 1
Service Accounting interface: rsp0, Local interface index: 171
Service name: (default sampling)
Interface state: Accounting
Protocol  Input          Source          Source  Output
          interface      address         port    interface...
tcp(6)    ge-5/0/1.0          11.1.1.2        0       ge-5/0/0.0

Destination      Destination      Packet      Byte      Time since last
address          port            count       count    active timeout...
40.0.3.149              0             2158      138112    00:00:47

Packet count for      Byte count for
last active timeout   last active timeout
2827                  180928
```

**show services accounting flow-detail name extensive**

```
user@host> show services accounting flow-detail name cf-2 extensive
Service Accounting interface: mo-0/2/0, Local interface index: 145
Service name: cf-2
  TOS: 0, Protocol: udp(17), TCP flags: 0
  Source address: 10.10.10.1, Source prefix length: 0, Destination address:
20.20.20.20,
Destination prefix length: 0, Source port: 1173, Destination port: 69
  Input SNMP interface index: 65, Output SNMP interface index: 0, Source-AS: 0,
Destination-AS: 0
  Start time: 62425, End time: 635265, Packet count: 165845, Byte count: 9453165
```

**show services accounting flow-detail limit order bytes** The output of the following command is displayed over 141 columns, not the standard 80 columns. In this sample, the output is split into three sections, with ellipses (...) indicating where the sections are continued.

```
user@host> show services accounting flow-detail limit 5 order bytes
Service Accounting interface: mo-2/0/0, Local interface index: 356
Service name: (default sampling)
Protocol  Input          Source          Source  Output
          interface      address         port    interface...
icmp(1)    ge-2/3/0.0          11.1.1.2        0       .local.
icmp(1)    ge-2/3/0.0          11.1.1.2        0       .local.
icmp(1)    ge-2/3/0.0          11.1.1.2        0       .local.
icmp(1)    ge-2/3/0.0          11.1.1.2        0       .local.
icmp(1)    ge-2/3/0.0          11.1.1.2        0       .local.

Destination      Destination      Packet      Byte      Time since last
address          port            count       count    active timeout...
51.88.128.2              0             16        12148    Not applicable
52.78.144.2              0             16        15229    Not applicable
51.147.192.2             0             16        13296    Not applicable
51.136.16.2              0             16        13924    Not applicable
50.214.48.2              0             16        13428    Not applicable

Packet count for      Byte count for
last active timeout   last active timeout
Not applicable        Not applicable
Not applicable        Not applicable
Not applicable        Not applicable
```

Not applicable	Not applicable
Not applicable	Not applicable

```
show services accounting flow-detail name cf-2 detail source-port 1173
user@host>
Service Accounting interface: mo-0/2/0, Local interface index: 145
Service name: cf-2
Protocol: udp(17), Source address: 10.10.10.1, Source port: 1173, Destination
address: 20.20.20.20, Destination port: 69
Start time: 62425, End time: 811115, Packet count: 142438, Byte count: 8118966
```

## show services accounting memory

<b>Syntax</b>	show services accounting memory
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Display memory and flow record statistics.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show services accounting memory (Monitoring PIC interface) on page 1376</b> <b>show services accounting memory (Service PIC interface) on page 1377</b>
<b>Output Fields</b>	Table 251 on page 1376 lists the output fields for the <b>show services accounting memory</b> command. Output fields are listed in the approximate order in which they appear.

**Table 251: show services accounting memory Output Fields**

Output Field	Output Field Description
<b>Service Accounting interface</b>	Name of the service accounting interface.
<b>Memory Utilization</b>	
<b>Local interface index</b>	Index counter of the local interface.
<b>Allocation count</b>	Number of flow records allocated.
<b>Free count</b>	Number of flow records freed.
<b>Maximum allocated</b>	Maximum number of flow records allocated since the monitoring station booted. This number represents the peak number of flow records allocated at a time.
<b>Allocations per second</b>	Flow records allocated per second during the last statistics interval on the PIC.
<b>Frees per second</b>	Flow records freed per second during the last statistics interval on the PIC.
<b>Total memory used</b>	Total amount of memory currently used (in bytes).
<b>Total memory free</b>	Total amount of memory currently free (in bytes).

## Sample Output

```

show services accounting memory (Monitoring PIC interface)
user@host> show services accounting memory
Service Accounting interface: mo-2/0/0, Local interface index: 468
Memory utilization
Allocation count: 437340, Free count: 433699, Maximum allocated: 6782
Allocations per second: 3366, Frees per second: 6412

```



```
Total memory used (in bytes): 133460320,  
Total memory free (in bytes): 133918352
```

## Sample Output

```
show services accounting memory  
(Service PIC interface) user@host> show services accounting memory  
Service Accounting interface: sp-0/1/0  
Memory utilization  
Allocation count: 1000, Free count: 0  
Allocations per second: 0, Frees per second: 0  
Total memory used (in bytes): 218158272  
Total memory free (in bytes): 587147696  
  
Service Accounting interface: sp-1/0/0  
Memory utilization  
Allocation count: 1000, Free count: 0  
Allocations per second: 0, Frees per second: 0  
Total memory used (in bytes): 218157592  
Total memory free (in bytes): 587148376
```

## show services accounting packet-size-distribution

<b>Syntax</b>	show services accounting packet-size-distribution <name (*   all   <i>service-name</i> )>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Display a packet size distribution histogram.
<b>Options</b>	<p>none—Display a packet size distribution histogram of all accounting services.</p> <p>name (*   all   <i>service-name</i>)—(Optional) Display a packet size distribution histogram. Use a wildcard character, specify all services, or provide a specific services name.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show services accounting packet-size-distribution name on page 1378
<b>Output Fields</b>	Table 252 on page 1378 lists the output fields for the <b>show services accounting packet-size-distribution</b> command. Output fields are listed in the approximate order in which they appear.

Table 252: show services accounting packet-size-distribution Output Fields

Field Name	Field Description
Service Accounting interface	Name of the service accounting interface.
Service name	Name of a service that was configured at the [edit-forwarding-options accounting] hierarchy level. The default display, (default sampling), indicates the service was configured at the [edit-forwarding-options sampling-level] hierarchy level.
Local interface index	Index counter of the local interface.
Range start	Smallest packet length (in bytes) to count.
Range end	Largest packet length (in bytes) to count.
Number of packets	Count of packets detected in the size between Range start and Range end.
Percentage packets	Percentage of the total number of packets that are in this size range.

### Sample Output

```

show services accounting packet-size-distribution name
user@host> show services accounting packet-size-distribution name test3
Service Accounting interface: mo-0/2/0, Local interface index: 163
Service name: test3

```

Range start	Range end	Number of packets	Percentage packets
32	64	2924	100

## show services accounting status

<b>Syntax</b>	show services accounting status <name (*   all   <i>service-name</i> )>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Display available Physical Interface Cards (PICs) for accounting services.
<b>Options</b>	<p>none—Display available PICs for all accounting services.</p> <p>name (*   all   <i>service-name</i>)—(Optional) Display available PICs. Use a wildcard character, specify all services, or provide a specific services name.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p><b>show services accounting status name (Monitoring PIC interface) on page 1381</b></p> <p><b>show services accounting status name (Service PIC interface) on page 1381</b></p>
<b>Output Fields</b>	Table 253 on page 1380 lists the output fields for the <b>show services accounting status</b> command. Output fields are listed in the approximate order in which they appear.

**Table 253: show services accounting status Output Fields**

Field	Field Description
<b>Service Accounting interface</b>	Name of the service accounting interface.
<b>Service name</b>	Name of a service that was configured at the [edit-forwarding-options accounting] hierarchy level. The default display, ( <b>default sampling</b> ), indicates the service was configured at the [edit-forwarding-options sampling-level] hierarchy level.
<b>Local interface index</b>	Index counter of the local interface.
<b>Interface state</b>	<p>Accounting state of the passive monitoring interface.</p> <ul style="list-style-type: none"> <li>• <b>Accounting</b>—PIC is actively accounting.</li> <li>• <b>Disabled</b>—PIC has been disabled from the CLI.</li> <li>• <b>Not accounting</b>—PIC is up but not accounting. This can happen while the PIC is coming online, or when the PIC is up but has no logical unit configured under the physical interface.</li> <li>• <b>Unknown</b></li> </ul>
<b>Group index</b>	Integer that represents the monitoring group of which the PIC is a member. <b>Group index</b> is a mapping from the group name to an index. It is not related to the number of monitoring groups.
<b>Export interval (in seconds)</b>	Configured export interval for cflowd records, in seconds.
<b>Export format</b>	Configured export format (only cflowd version 5 is supported).

Table 253: show services accounting status Output Fields (*continued*)

Field	Field Description
Protocol	Protocol the PIC is configured to monitor (only IPv4 is supported).
Engine type	Configured engine type that is inserted in output cflowd packets.
Engine ID	Configured engine ID that is inserted in output cflowd packets.

### Sample Output

```

show services user@host> show services accounting status name count1
accounting status Service Accounting interface: mo-2/0/0, Local interface index: 468
name (Monitoring PIC Service name: count1
interface) Interface state: Accounting
Group index: 0
Export interval (in seconds): 60, Export format: cflowd v8
Protocol: IPv4, Engine type: 55, Engine ID: 5

```

### Sample Output

```

show services user@host> show services accounting status name
accounting status Service Accounting interface: sp-0/1/0
name (Service PIC Interface state: Accounting
interface) Export format: 9, Route record count: 0
IFL to SNMP index count: 7, AS count: 0
Configuration set: Yes, Route record set: No, IFL SNMP map set: Yes

Service Accounting interface: sp-1/0/0
Interface state: Accounting
Export format: 9, Route record count: 33
IFL to SNMP index count: 7, AS count: 1
Configuration set: Yes, Route record set: Yes, IFL SNMP map set: Yes

```

## show services accounting usage

<b>Syntax</b>	show services accounting usage <name <i>service-name</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Display the CPU usage of PIC used for active flow monitoring.
<b>Options</b>	none—Display CPU usage for all service names.  name <i>service-name</i> —(Optional) Display CPU usage for the specified service name.
<b>Additional Information</b>	When no route record has been downloaded from the PIC, this command reports no flows, even though packets are being sampled.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show services accounting usage (Monitoring PIC interface) on page 1383 show services accounting usage (Service PIC interface) on page 1383
<b>Output Fields</b>	Table 254 on page 1382 lists the output fields for the <b>show services accounting usage</b> command. Output fields are listed in the approximate order in which they appear.

**Table 254: show services accounting usage Output Fields**

Output Field	Output Field Description
Service Accounting interface	Name of the service accounting interface.
Service name	Name of a service that was configured at the [edit-forwarding-options accounting] hierarchy level. The default display, (default sampling), indicates the service was configured at the [edit-forwarding-options sampling-level] hierarchy level.
Local interface index	Index counter of the local interface.
Uptime	Time that the PIC has been operational (in milliseconds).
Interrupt time	Total time that the PIC has spent processing packets since the last PIC reset (in microseconds).
Load (5 second)	CPU load on the PIC, averaged more than 5 seconds. The number is a percentage obtained by dividing the time spent on active tasks by the total elapsed time.
Load (1 minute)	CPU load on the PIC, averaged more than 1 minute. The number is a percentage obtained by dividing the time spent on active tasks by the total elapsed time.

## Sample Output

```
show services accounting usage (Monitoring PIC interface) user@host> show services accounting usage
Service Accounting interface: mo-1/1/0, Local interface index: 15
Service name: (default sampling)
CPU utilization
  Uptime: 600413856 milliseconds, Interrupt time: 2403 microseconds
  Load (5 second): 43%, Load (1 minute): 24%
```

## Sample Output

```
show services accounting usage (Service PIC interface) user@host> show services accounting usage
Service Accounting interface: sp-0/1/0
Service name: (default sampling)
CPU utilization
  Uptime: 7853940 milliseconds, Interrupt time: 0 microseconds
  Load (5 second): 2%, Load (1 minute): 0%

Service Accounting interface: sp-0/1/0
Service name: (default sampling)
CPU utilization
  Uptime: 331160 milliseconds, Interrupt time: 0 microseconds
  Load (5 second): 2%, Load (1 minute): 0%
```

## show services dynamic-flow-capture content-destination

<b>Syntax</b>	show services dynamic-flow-capture content-destination capture-group <i>group-name</i> destination-identifier <i>identifier</i> <terse>
<b>Release Information</b>	Command introduced in Junos OS Release 7.4.
<b>Description</b>	(M320 routers and T Series routers only) Display information about the content destination that receives packets from the dynamic flow capture (DFC) interface.
<b>Options</b>	capture-group <i>group-name</i> —Capture-group identifier.  destination-identifier <i>identifier</i> —Content destination identifier.  terse—(Optional) Display summary information.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show services dynamic-flow-capture content-destination on page 1385
<b>Output Fields</b>	Table 255 on page 1384 lists the output fields for the <b>show services dynamic-flow-capture content-destination</b> command. Output fields are listed in the approximate order in which they appear.

**Table 255: show services dynamic-flow-capture content-destination Output Fields**

Output Field	Output Field Description	Level of Output
<b>Capture group</b>	Name of the capture group.	to be provided
<b>Content destination</b>	Name of the content destination.	to be provided
<b>Criteria</b>	Number of criteria specified.	to be provided
<b>Bandwidth</b>	Bandwidth used by the matched traffic.	to be provided
<b>Matched packets</b>	Number of matched packets sent to the content destination.	to be provided
<b>Matched bytes</b>	Number of matched bytes sent to the content destination.	to be provided
<b>Congestion notifications</b>	Number of notification messages sent.	to be provided



## Sample Output

```
show services      user@host> show services dynamic-flow-capture content-destination capture-group g1
dynamic-flow-capture destination-identifier cd1 terse
content-destination    Capture group: g1, Content destination: cd1, Criteria: 0, Bandwidth: 0, Matched
                        packets: 0, Matched bytes: 0, Congestion notifications: 0
```

## show services dynamic-flow-capture control-source

<b>Syntax</b>	show services dynamic-flow-capture control-source capture-group <i>group-name</i> control-source <i>identifier</i> <detail   terse>
<b>Release Information</b>	Command introduced in Junos OS Release 7.4.
<b>Description</b>	(M320 routers and T Series routers only) Display information about the control source that makes dynamic flow capture requests to the dynamic flow capture interface.
<b>Options</b>	capture-group <i>group-name</i> —Capture group identifier.  control-source <i>identifier</i> —Control source identifier.  detail   terse—(Optional) Display the specified level of output.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show services dynamic-flow-capture control-source on page 1387 show services dynamic-flow-capture control-source detail on page 1387
<b>Output Fields</b>	Table 256 on page 1386 lists the output fields for the <b>show services dynamic-flow-capture control-source</b> command. Output fields are listed in the approximate order in which they appear.

**Table 256: show services dynamic-flow-capture control-source Output Fields**

Output Field	Output Field Description
Capture group	Name of the capture group.
Control source	Name of the control source.
Criteria added, Criteria add failed	Number of criteria added or added and failed.
Active criteria	Number of active criteria.
Static criteria, Dynamic criteria	Number of static or dynamic criteria.
Control protocol requests	Total number of control protocol requests.
Requests	Number of <b>Add</b> , <b>Delete</b> , <b>List</b> , <b>Refresh</b> , and <b>No-op</b> control protocol requests.
Failed	Number of <b>Add</b> , <b>Delete</b> , <b>List</b> , <b>Refresh</b> , and <b>No-op</b> failed control protocol requests.
Add request rate	Rate of add requests.

Table 256: show services dynamic-flow-capture control-source Output Fields (*continued*)

Output Field	Output Field Description
Add request peak rate	Peak rate of add requests.
Bandwidth across all criteria	Bandwidth used by all the requests.
Total notifications	Total number of notifications sent and the number of notifications by category: <b>Restart</b> , <b>Rollover</b> , <b>Timeout</b> , <b>Congestion</b> , <b>Congestion delete</b> , and <b>Dups</b> (duplicates) dropped.
Criteria deleted	Total number of criteria deleted and the number of deleted criteria by category: <b>Timeout idle</b> , <b>Timeout total</b> , <b>Packets</b> , and <b>Bytes</b> .
Sequence number	Sequence number.

## Sample Output

```

show services dynamic-flow-capture control-source user@host> show services dynamic-flow-capture control-source source-identifier cs0_cg0
capture-group cg_0
Capture group: cg_0, Control source: cs0_cg0
Criteria added: 28, Criteria add failed: 0, Active criteria: 0, Control protocol
requests: 28, Add request rate: 0,
Add request peak rate: 1, Bandwidth across all criteria: 0, Total notifications:
1, Criteria deleted: 28, Sequence number: 0

show services dynamic-flow-capture control-source detail user@host> show services dynamic-flow-capture control-source source-identifier cs0_cg0
capture-group cg_0 detail
Capture group: cg_0, Control source: cs0_cg0
Criteria added: 28, Criteria add failed: 0
Active criteria: 0
Static criteria: 0, Dynamic criteria: 0
Control protocol requests: 28

```

	Add	Delete	List	Refresh	No-op
Requests	28	0	0	0	0
Failed	0	0	0	0	0

```

Add request rate: 0
Add request peak rate: 1
Bandwidth across all criteria: 0
Total notifications: 1
Restart: 1, Rollover: 0, No-op: 0, Timeout: 0, Congestion: 0, Congestion
delete: 0, Dups dropped: 0
Criteria deleted: 28
Timeout idle: 0, Timeout total: 0, Packets: 0, Bytes: 0
Sequence number: 0

```

## show services dynamic-flow-capture statistics

<b>Syntax</b>	show services dynamic-flow-capture statistics capture-group <i>group-name</i>
<b>Release Information</b>	Command introduced in Junos OS Release 7.4.
<b>Description</b>	(M320 routers and T Series routers only) Display statistics information about the capture group specified for dynamic flow capture.
<b>Options</b>	capture-group <i>group-name</i> —Capture group identifier.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show services dynamic-flow-capture statistics on page 1389
<b>Output Fields</b>	Table 257 on page 1388 lists the output fields for the <b>show services dynamic-flow-capture statistics</b> command. Output fields are listed in the approximate order in which they appear.

**Table 257: show services dynamic-flow-capture statistics Output Fields**

Output Field	Output Field Description
Input	<p>Incoming dynamic flow capture packet statistics:</p> <ul style="list-style-type: none"> <li>• <b>Control protocol packets</b>—Number of control protocol packets received.</li> <li>• <b>Captured data packets</b>—Number of data packets captured.</li> <li>• <b>Control IRI packets</b>—Number of control IRI packets received.</li> </ul>
Control protocol drops	<p>Control protocol packets dropped for the following reasons:</p> <ul style="list-style-type: none"> <li>• <b>Not IP packets</b>—Dropped packets were not IP packets.</li> <li>• <b>Not UDP packets</b>—Dropped packets were not User Datagram Protocol (UDP) packets.</li> <li>• <b>Invalid destination address</b>—Dropped packets had invalid destination addresses.</li> <li>• <b>No memory</b>—Packets dropped because of insufficient memory.</li> <li>• <b>Unauthorized control source</b>—Packets dropped because the control source was not authenticated.</li> <li>• <b>Bad request</b>—Packets dropped because the request was invalid.</li> <li>• <b>Unknown control source</b>—Packets dropped because the control source was not known.</li> <li>• <b>Not DTCP</b>—Dropped packets did not adhere to the control protocol format.</li> <li>• <b>Bad command line</b>—Packets dropped because of a version mismatch.</li> <li>• <b>Bandwidth exceeded</b>—Packets dropped because the bandwidth was exceeded.</li> <li>• <b>Drop rate due to exceeded bandwidth</b>—Rate of traffic dropped because the bandwidth was exceeded.</li> <li>• <b>Other</b>—Packets dropped for other reasons or undetermined causes.</li> </ul>

Table 257: show services dynamic-flow-capture statistics Output Fields (*continued*)

Output Field	Output Field Description
<b>Input drops</b>	Incoming dynamic flow capture packets dropped for the following reasons: <ul style="list-style-type: none"> <li>• <b>Unknown packets</b>—Packets dropped because the packet type was not recognized.</li> <li>• <b>Captured data not IPv4</b>—Packets dropped because they were not IPv4 packets.</li> <li>• <b>Captured data too small</b>—Packets dropped because they were smaller than the size reported in their headers.</li> <li>• <b>Captured data drops</b>—Data packets dropped because of undetermined causes.</li> <li>• <b>Captured data not matched</b>—Packets dropped because they did not match filter criteria.</li> <li>• <b>Bandwidth exceeded</b>—Packets dropped because the bandwidth was exceeded.</li> <li>• <b>Drop rate due to exceeded bandwidth</b>—Rate of traffic dropped because the bandwidth was exceeded.</li> </ul>
<b>Output</b>	Outgoing dynamic flow capture packet statistics: <ul style="list-style-type: none"> <li>• <b>Control protocol packets</b>—Number of control protocol packets sent.</li> <li>• <b>Captured data packets</b>—Number of captured data packets sent.</li> </ul>
<b>Output drops</b>	Outgoing packets dropped: <ul style="list-style-type: none"> <li>• <b>Control protocol drops</b>—Number of control protocol packets dropped.</li> <li>• <b>Captured data drops</b>—Number of captured data packets dropped.</li> </ul>
<b>Flow Statistics</b>	DFC flow statistics: <ul style="list-style-type: none"> <li>• <b>Active flow cache entries</b></li> <li>• <b>Active flow cache usage percentage</b></li> <li>• <b>Flow cache entries allocated</b></li> <li>• <b>Number of control sources</b></li> <li>• <b>Number of content destinations</b></li> <li>• <b>Number of criteria</b></li> <li>• <b>Maximum criteria matching one flow</b></li> <li>• <b>Cached flows purged for memory</b></li> <li>• <b>Maximum filters matching one packet</b></li> </ul>

## Sample Output

```

show services dynamic-flow-capture statistics
user@host> show services dynamic-flow-capture statistics capture-group g1
Input:
    Control protocol packets: 643, Captured data packets: 69977, Control IRI packets:
    337

Control protocol drops:

    Not IP packets: 0, Not UDP packets: 3, Invalid destination address: 0, No memory:
    0, Unauthorized control source: 0,

    Bad request: 0, Unknown control source: 0, Not DTCP: 0, Bad command line: 0,
    Bandwidth exceeded: 0,

    Drop rate due to exceeded bandwidth: 0, Other: 0

```

Input drops:

Unknown packets: 0, Captured data not IPv4: 0, Captured data too small: 0,  
Captured data drops: 0, Captured data not matched: 0,

Bandwidth exceeded: 0, Drop rate due to exceeded bandwidth: 0

Output:

Control protocol packets: 644, Captured data packets: 1119624

Output drops:

Control protocol drops: 0, Captured data drops: 0

Flow Statistics:

Active flow cache entries: 40, Active flow cache usage percentage: 0, Flow cache  
entries allocated: 40,

Number of control sources: 4, Number of content destinations: 64, Number of  
criteria: 640,

Maximum criteria matching one flow: 16, Cached flows purged for memory: 0,  
Maximum filters matching one packet: 16

## show services flow-collector file interface

<b>Syntax</b>	show services flow-collector file interface (all   cp-fpc/pic/port) <detail   extensive   terse>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M40e, M160, and M320 routers and T Series routers only) Display information about flow collector files.
<b>Options</b>	all   cp-fpc/pic/port—Display file information for all configured flow collector interfaces or for the specified interface.  detail   extensive   terse—(Optional) Display the specified level of output.
<b>Additional Information</b>	No entries are displayed for files that have been successfully transferred.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show services flow-collector file interface extensive on page 1392
<b>Output Fields</b>	Table 258 on page 1391 lists the output fields for the <b>show services flow-collector file interface</b> command. Output fields are listed in the approximate order in which they appear.

**Table 258: show services flow-collector file interface Output Fields**

Output Field	Output Field Description	Level of Output
<b>Filename</b>	Name of the file created on the flow collector interface.	All levels
<b>Flows</b>	Total number of collector flows for which records are present in the file.	none specified
<b>Throughput</b>	Throughput statistics: <ul style="list-style-type: none"> <li>• <b>Flow records</b>—Number of flow records in the file. <ul style="list-style-type: none"> <li>• <b>per second</b>—Average number of flow records per second.</li> <li>• <b>peak per second</b>—Peak number of flow records per second.</li> </ul> </li> <li>• <b>Uncompressed bytes</b>—Total file size before compression. <ul style="list-style-type: none"> <li>• <b>per second</b>—Average number of uncompressed bytes per second.</li> <li>• <b>peak per second</b>—Peak number of uncompressed bytes per second.</li> </ul> </li> <li>• <b>Compressed bytes</b>—Total file size after compression. <ul style="list-style-type: none"> <li>• <b>per second</b>—Average number of compressed bytes per second.</li> <li>• <b>peak per second</b>—Peak number of compressed bytes per second.</li> </ul> </li> </ul>	<b>extensive</b>

Table 258: show services flow-collector file interface Output Fields (*continued*)

Output Field	Output Field Description	Level of Output
Status	<p>File statistics:</p> <ul style="list-style-type: none"> <li>• <b>Compressed blocks</b>—(<b>extensive</b> output only) Data blocks in the file that have been compressed. The file is exported only when the compressed block count and block count become the same.</li> <li>• <b>Block count</b>—(<b>extensive</b> output only) Total number of data blocks in the file.</li> <li>• <b>State</b>—Processing state of the file. <ul style="list-style-type: none"> <li>• <b>Active</b>—The flow collector interface is writing to the file.</li> <li>• <b>Export 1</b>—File export is in progress to the primary server.</li> <li>• <b>Export 2</b>—File export is in progress to the secondary server.</li> <li>• <b>Wait</b>—File is pending export.</li> </ul> </li> <li>• <b>Transfer attempts 0</b>—Number of attempts made to transfer the file. If the file is successfully transferred in the first attempt, this field is 0.</li> </ul>	All levels

### Sample Output

```

show services user@host> show services flow-collector file interface cp-3/2/0 extensive
flow-collector file Filename: cFlowd-py69Ni69-0-20031112_014301-so_3_0_0.bcp.bi.gz
interface extensive Throughput:
                        Flow records: 188365, per second: 238, peak per second: 287
                        Uncompressed bytes: 21267756, per second: 27007, peak per second: 32526
                        Compressed bytes: 2965643, per second: 0, peak per second: 22999
Status:
  Compressed blocks: 156, Block count: 156
  State: Active, Transfer attempts: 0

```



## show services flow-collector input interface

<b>Syntax</b>	show services flow-collector input interface (all   cp-fpc/pic/port) <detail   extensive   terse>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M40e, M160, and M320 routers and T Series routers only) Display the number of packets received by collector interfaces from monitoring interfaces.
<b>Options</b>	all   cp-fpc/pic/port—Display packets received by all configured flow collector interfaces or by the specified interface.  detail   extensive   terse—(Optional) Display the specified level of output.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show services flow-collector input interface on page 1393 show services flow-collector input interface all on page 1393
<b>Output Fields</b>	Table 259 on page 1393 lists the output fields for the <b>show services flow-collector input interface</b> command. Output fields are listed in the approximate order in which they appear.

**Table 259: show services flow-collector input interface Output Fields**

Output Field	Output Field Description
<b>Interface</b>	Name of the monitoring interface.
<b>Packets</b>	Number of packets traveling from the monitoring interface to the flow collector interface.
<b>Bytes</b>	Number of bytes traveling from the monitoring interface to the flow collector interface.

## Sample Output

```

show services flow-collector input interface user@host> show services flow-collector input interface cp-3/2/0
Interface                                     Packets      Bytes
mo-3/0/0.0                                   21706        32328568
mo-3/1/0.0                                   21706        32329096

show services flow-collector input interface all user@host> show services flow-collector input interface all
Flow collector interface: cp-6/1/0
Interface state: Collecting flows
Interface                                     Packets      Bytes
mo-3/0/0.0                                   274          416232
mo-3/3/0.0                                   274          416184
mo-1/0/0.0                                   274          416232
mo-1/1/0.0                                   274          416232
mo-1/2/0.0                                   274          416232

```

mo-1/3/0.0	274	416232
mo-3/1/0.0	274	416232
mo-4/0/0.0	274	416232
mo-4/1/0.0	274	416232
mo-4/2/0.0	274	416184
mo-4/3/0.0	274	416232
mo-5/0/0.0	274	416232
mo-5/1/0.0	274	416232
mo-5/2/0.0	274	416232
mo-5/3/0.0	274	416232
mo-6/0/0.0	274	416232

Flow collector interface: cp-6/3/0  
 Interface state: Collecting flows

## show services flow-collector interface

<b>Syntax</b>	show services flow-collector interface (all   <i>cp-fpc/pic/port</i> ) <detail   extensive   terse>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M40e, M160, and M320 routers and T Series routers only) Display overall statistics for the flow collector application.
<b>Options</b>	all   <i>cp-fpc/pic/port</i> —Display statistics for flow collector applications on all interfaces or for the specified interface.  detail   extensive   terse—(Optional) Display the specified level of output.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show services flow-collector interface all detail on page 1398 show services flow-collector interface all extensive on page 1398 show services flow-collector interface all terse on page 1400 show services flow-collector interface extensive on page 1400
<b>Output Fields</b>	Table 260 on page 1395 lists the output fields for the <b>show services flow-collector interface</b> command. Output fields are listed in the approximate order in which they appear.

Table 260: show services flow-collector interface Output Fields

Output Field	Output Field Description	Level of Output
Flow collector interface	Name of the flow collector interface.	All levels
Interface state	Collecting flow state for the interface.	All levels
Packets	Total number of packets received.	none specified
Flows Uncompressed Bytes	Total uncompressed data size for all files created on this PIC.	none specified
Compressed Bytes	Total compressed data size for all files created on this PIC.	none specified
FTP bytes	Total number of bytes transferred to the FTP server, including those dropped during transfer.	none specified
FTP files	Total number of FTP transfers attempted by the server.	none specified
Memory	Bytes used on the PIC and bytes free.	detail extensive

Table 260: show services flow-collector interface Output Fields (*continued*)

Output Field	Output Field Description	Level of Output
<b>Input</b>	Incoming flow collector packet statistics: <ul style="list-style-type: none"> <li>• <b>Packets</b>—Number of packets received on the unit.               <ul style="list-style-type: none"> <li>• <b>per second</b>—Average number of packets per second.</li> <li>• <b>peak per second</b>—Peak number of packets per second.</li> </ul> </li> <li>• <b>Bytes</b>—Number of bytes received on the unit.               <ul style="list-style-type: none"> <li>• <b>per second</b>—Average number of bytes per second.</li> <li>• <b>peak per second</b>—Peak number of bytes per second.</li> </ul> </li> <li>• <b>Flow records processed</b>—Number of records in the flow collector packets that were processed by the flow-collector interface.               <ul style="list-style-type: none"> <li>• <b>per second</b>—Average number of flow records processed per second.</li> <li>• <b>peak per second</b>—Peak number of flow records per second.</li> </ul> </li> </ul>	<b>detail extensive</b>
<b>Allocation</b>	Data block statistics: <ul style="list-style-type: none"> <li>• <b>Blocks allocated</b>—Total number of data blocks (containing flow records) allocated to the files created on this PIC.               <ul style="list-style-type: none"> <li>• <b>per second</b>—Average number of blocks allocated per second.</li> <li>• <b>peak per second</b>—Peak number of blocks allocated per second.</li> </ul> </li> <li>• <b>Blocks freed</b>—Total number of data blocks freed.               <ul style="list-style-type: none"> <li>• <b>per second</b>—Average number of blocks freed per second.</li> <li>• <b>peak per second</b>—Peak number of blocks freed per second.</li> </ul> </li> <li>• <b>Blocks unavailable</b>—Total number of data block requests denied, typically because of a memory shortage.               <ul style="list-style-type: none"> <li>• <b>per second</b>—Average number of blocks unavailable per second.</li> <li>• <b>peak per second</b>—Peak number of blocks unavailable per second.</li> </ul> </li> </ul>	<b>extensive</b>
<b>Files</b>	File statistics, incremented since the PIC last booted: <ul style="list-style-type: none"> <li>• <b>Files created</b>—Total number of files created on this PIC.</li> <li>• <b>Files exported</b>— Number of files successfully created and exported.</li> <li>• <b>Files destroyed</b>— (<b>extensive</b> output only) Number of files successfully exported and files dropped by the flow collection interface.</li> </ul>	<b>detail extensive</b>
<b>Throughput</b>	Throughput statistics: <ul style="list-style-type: none"> <li>• <b>Uncompressed bytes</b>—Total uncompressed data size for all files created on this PIC.               <ul style="list-style-type: none"> <li>• <b>per second</b>—Average number of uncompressed bytes per second.</li> <li>• <b>peak per second</b>—Peak number of uncompressed bytes per second.</li> </ul> </li> <li>• <b>Compressed bytes</b>—Total compressed data size for all files created on this PIC.               <ul style="list-style-type: none"> <li>• <b>per second</b>—Average number of compressed bytes per second.</li> <li>• <b>peak per second</b>—Peak number of compressed bytes per second.</li> </ul> </li> </ul>	<b>detail extensive</b>

Table 260: show services flow-collector interface Output Fields (*continued*)

Output Field	Output Field Description	Level of Output
<b>Packet drops</b>	<p>Number of packets dropped for the following causes:</p> <ul style="list-style-type: none"> <li>• <b>No memory</b>—Packets dropped because of insufficient memory.</li> <li>• <b>Not IP</b>—Packets dropped because they are not IP packets.</li> <li>• <b>Not IPv4</b>—Packets dropped because they are not IP version 4 packets.</li> <li>• <b>Too small</b>—Packets dropped because each packet was smaller than the size reported in its header.</li> <li>• <b>Fragments</b>—Packets dropped because of fragmentation. Fragments are not reassembled.</li> <li>• <b>ICMP</b>—Packets dropped because they are not ICMP packets.</li> <li>• <b>TCP</b>—Packets dropped because they are not TCP packets.</li> <li>• <b>Unknown</b>—Packets dropped because of undetermined causes.</li> <li>• <b>Not Junos flow</b>—Packets dropped because they are not interpreted by the Junos OS. The Junos OS interprets only IPv4, UDP cflowd version 5 packets.</li> </ul>	<b>extensive</b>
<b>File transfer</b>	<p>File transfer statistics:</p> <ul style="list-style-type: none"> <li>• <b>FTP bytes</b>—Total number of bytes transferred to the FTP server, including those dropped during transfer.</li> <li>• <b>FTP files</b>—Total number of FTP transfers attempted by the server.</li> <li>• <b>FTP failure</b>—Total number of FTP failures encountered by the server.</li> </ul>	<b>detail extensive</b>
<b>Flow collector interface</b>	Physical interface acting as a flow collector.	<b>detail</b>
<b>Export channel</b>	<p>Export channel 0 is unit 0. Export channel 1 is unit 1. Flow receive channel is unit 2. Server status statistics are the following:</p> <ul style="list-style-type: none"> <li>• <b>Current server Primary or Secondary</b>—Current FTP server being used. Value is</li> <li>• <b>Primary server state</b>—State of the server: <ul style="list-style-type: none"> <li>• <b>OK</b>—Server is operating without problems.</li> <li>• <b>FTP error</b>—Server encountered an FTP protocol error while sending files.</li> <li>• <b>Network error</b>—Flow-collector interface has errors when contacting the primary FTP server.</li> <li>• <b>Unknown</b>—First file transfer has not been sent to the primary server.</li> </ul> </li> <li>• <b>Secondary server state</b>—State of the server: <ul style="list-style-type: none"> <li>• <b>OK</b>—Server is operating without errors.</li> <li>• <b>FTP error</b>—Server encountered an FTP protocol error while sending files.</li> <li>• <b>Network error</b>—Flow-collector interface has errors when contacting the secondary FTP server.</li> <li>• <b>Unknown</b>—First file transfer has not been sent to the secondary server.</li> </ul> </li> <li>• <b>Not configured</b>—Secondary server is not configured.</li> </ul>	<b>detail extensive</b>

## Sample Output

```

show services user@host> show services flow-collector interface all detail
flow-collector
interface all detail
Flow collector interface: cp-6/1/0
Interface state: Collecting flows
Memory:
  Used: 51452732, Free: 440329088
Input:
  Packets: 4384, per second: 0, peak per second: 156
  Bytes: 6659616, per second: 0, peak per second: 249695
  Flow records processed: 131070, per second: 0, peak per second: 4914
Files:
  Files created: 1, per second: 0, peak per second: 0
  Files exported: 1, per second: 0, peak per second: 0
Throughput:
  Uncompressed bytes: 13742307, per second: 0, peak per second: 593564
  Compressed bytes: 3786177, per second: 0, peak per second: 162826
File Transfer:
  FTP bytes: 3786247, per second: 0, peak per second: 378620
  FTP files: 1, per second: 0, peak per second: 0
  FTP failure: 0
Export channel: 0
  Current server: Primary
  Primary server state: OK, Secondary server state: OK
Export channel: 1
  Current server: Primary
  Primary server state: Unknown, Secondary server state: OK

Flow collector interface: cp-6/3/0
Interface state: Collecting flows
Memory:
  Used: 51452732, Free: 440329088
Input:
  Packets: 0, per second: 0, peak per second: 0
  Bytes: 0, per second: 0, peak per second: 0
  Flow records processed: 0, per second: 0, peak per second: 0
Files:
  Files created: 0, per second: 0, peak per second: 0
  Files exported: 0, per second: 0, peak per second: 0
Throughput:
  Uncompressed bytes: 0, per second: 0, peak per second: 0
  Compressed bytes: 0, per second: 0, peak per second: 0
File Transfer:
  FTP bytes: 70, per second: 0, peak per second: 6
  FTP files: 0, per second: 0, peak per second: 0
  FTP failure: 0
Export channel: 0
  Current server: Primary
  Primary server state: Unknown, Secondary server state: OK
Export channel: 1
  Current server: Primary
  Primary server state: Unknown, Secondary server state: OK

show services user@host> show services flow-collector interface all extensive
flow-collector
interface all extensive
Flow collector interface: cp-6/1/0
Interface state: Collecting flows
Memory:
  Used: 51452732, Free: 440329088
Input:
  Packets: 4384, per second: 0, peak per second: 156

```

Bytes: 6659616, per second: 0, peak per second: 249695  
Flow records processed: 131070, per second: 0, peak per second: 4914  
Allocation:  
Blocks allocated: 108, per second: 0, peak per second: 0  
Blocks freed: 108, per second: 0, peak per second: 10  
Blocks unavailable: 0, per second: 0, peak per second: 0  
Files:  
Files created: 1, per second: 0, peak per second: 0  
Files exported: 1, per second: 0, peak per second: 0  
Files destroyed: 1, per second: 0, peak per second: 0  
Throughput:  
Uncompressed bytes: 13742307, per second: 0, peak per second: 593564  
Compressed bytes: 3786177, per second: 0, peak per second: 162826  
Packet drops:  
No memory: 0, Not IP: 0  
Not IPv4: 0, Too small: 0  
Fragments: 0, ICMP: 0  
TCP: 0, Unknown: 0  
Not JUNOS flow: 0  
File Transfer:  
FTP bytes: 3786247, per second: 0, peak per second: 378620  
FTP files: 1, per second: 0, peak per second: 0  
FTP failure: 0  
Export channel: 0  
Current server: Primary  
Primary server state: OK, Secondary server state: OK  
Export channel: 1  
Current server: Primary  
Primary server state: Unknown, Secondary server state: OK  
  
Flow collector interface: cp-6/3/0  
Interface state: Collecting flows  
Memory:  
Used: 51452732, Free: 440329088  
Input:  
Packets: 0, per second: 0, peak per second: 0  
Bytes: 0, per second: 0, peak per second: 0  
Flow records processed: 0, per second: 0, peak per second: 0  
Allocation:  
Blocks allocated: 0, per second: 0, peak per second: 0  
Blocks freed: 0, per second: 0, peak per second: 0  
Blocks unavailable: 0, per second: 0, peak per second: 0  
Files:  
Files created: 0, per second: 0, peak per second: 0  
Files exported: 0, per second: 0, peak per second: 0  
Files destroyed: 0, per second: 0, peak per second: 0  
Throughput:  
Uncompressed bytes: 0, per second: 0, peak per second: 0  
Compressed bytes: 0, per second: 0, peak per second: 0  
Packet drops:  
No memory: 0, Not IP: 0  
Not IPv4: 0, Too small: 0  
Fragments: 0, ICMP: 0  
TCP: 0, Unknown: 0  
Not JUNOS flow: 0  
File Transfer:  
FTP bytes: 70, per second: 0, peak per second: 6  
FTP files: 0, per second: 0, peak per second: 0  
FTP failure: 0  
Export channel: 0  
Current server: Primary

```

Primary server state: Unknown, Secondary server state: OK
Export channel: 1
Current server: Primary
Primary server state: Unknown, Secondary server state: OK

```

**show services  
flow-collector  
interface all terse**

```

user@host> show services flow-collector interface all terse
Flow collector interface: cp-6/1/0
Interface state: Collecting flows

```

Packets	Bytes	Flows	Uncompressed Bytes	Compressed Bytes	FTP bytes	FTP files
4384	6659616	131070	13742307	3786177	3786247	1

```

Flow collector interface: cp-6/3/0
Interface state: Collecting flows

```

Packets	Bytes	Flows	Uncompressed Bytes	Compressed Bytes	FTP bytes	FTP files
0	0	0	0	0	70	0

**show services  
flow-collector  
interface extensive**

```

user@host> show services flow-collector interface cp-5/2/0 extensive
Flow collector interface: cp-5/2/0
Interface state: Collecting flows
Memory:
  Used: 458311860, Free: 40810008
Input:
  Packets: 922629, per second: 2069, peak per second: 3266
  Bytes: 1376559252, per second: 3096940, peak per second: 4880051
  Flow records processed: 25764957, per second: 42564, peak per second: 98124
Allocation:
  Blocks allocated: 20862, per second: 31, peak per second: 72
  Blocks freed: 17161, per second: 40, peak per second: 202
  Blocks unavailable: 58786, per second: 652, peak per second: 1120
Files:
  Files created: 52, per second: 0, peak per second: 0
  Files exported: 42, per second: 0, peak per second: 0
  Files destroyed: 42, per second: 0, peak per second: 0
Throughput:
  Uncompressed bytes: 2592070401, per second: 7297307,
  peak per second: 8630023
  Compressed bytes: 659600068, per second: 1858458, peak per second: 2198471
Packet drops:
  No memory: 58786, Not IP: 0
  Not IPv4: 0, Too small: 0
  Fragments: 0, ICMP: 0
  TCP: 0, Unknown: 0
  Not JUNOS flow: 0
File Transfer:
  FTP bytes: 585981447, per second: 1313320, peak per second: 4857798
  FTP files: 48, per second: 0, peak per second: 0
  FTP failure: 8
Export channel: 0
  Current server: Primary
  Primary server state: FTP error, Secondary server state: Not configured
Export channel: 1
  Current server: Primary
  Primary server state: OK, Secondary server state: Not configured

```



# Intrusion Detection Service Operational Mode Commands

Table 261 on page 1401 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot the intrusion detection service (IDS). Commands are listed in alphabetical order.

Table 261: IDS Operational Mode Commands

Task	Command
Clear (set to zero) IDS events and event information.	<code>clear services ids</code>
Clear the IDS events for a particular address that might be under attack.	<code>clear services ids destination-table</code>
Clear the IDS attack source and destination address pair table.	<code>clear services ids pair-table</code>
Clear all IDS events for addresses that are suspected attackers.	<code>clear services ids source-table</code>
Display IDS event information.	<code>show services ids</code>



**NOTE:** IDS is supported on the adaptive services interface on the following routers:

- J Series routers—*sp-pim/0/slot*
- M Series and T Series routers—*sp-fpc/pic/port*

IDS is also supported on the redundant adaptive services interface (*rspnumber*) on M Series and T Series routers.



**NOTE:** For information about how to configure IDS, see the *Junos OS Services Interfaces Configuration Guide*.

## clear services ids

---

<b>Syntax</b>	clear services ids <interface <i>interface-name</i> > <service-set <i>service-set-name</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Clear intrusion detection service (IDS) events.
<b>Options</b>	<p>none—Clear all IDS events for all adaptive services interfaces for all service sets, and clear and reset IDS.</p> <p>interface <i>interface-name</i>—(Optional) On M Series and T Series routers, the <i>interface-name</i> can be <i>sp-fpc/pic/port</i> or <i>rspnumber</i>. On the J Series, the <i>interface-name</i> is <i>sp-pim/0/port</i>.</p> <p>service-set <i>service-set-name</i>—(Optional) Clear all IDS events for a particular service set.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	clear services ids on page 1402
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

clear services ids     user@host> clear services ids

## clear services ids destination-table

<b>Syntax</b>	clear services ids destination-table <destination-prefix <i>destination-prefix-name</i> > <interface <i>interface-name</i> > <service-set <i>service-set-name</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Clear the intrusion detection service (IDS) events for a particular address that might be under attack.
<b>Options</b>	<p>none—Clear the attack destination address table.</p> <p>destination-prefix <i>destination-prefix-name</i>—(Optional) Clear the attack destination table for a particular destination prefix.</p> <p>interface <i>interface-name</i>—(Optional) Clear the attack destination table for a particular interface. On M Series and T Series routers, the <i>interface-name</i> can be <i>sp-fpc/pic/port</i> or <i>rspnumber</i>. On the J Series routers, the <i>interface-name</i> is <i>sp-pim/O/port</i>.</p> <p>service-set <i>service-set-name</i>—(Optional) Clear the attack destination table for a particular service set.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	clear services ids destination-table on page 1403
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```
clear services ids destination-table
user@host> clear services ids destination-table
```

## clear services ids pair-table

---

<b>Syntax</b>	<code>clear services ids pair-table</code> <code>&lt;destination-prefix <i>destination-prefix-name</i>&gt;</code> <code>&lt;interface <i>interface-name</i>&gt;</code> <code>&lt;service-set <i>service-set-name</i>&gt;</code> <code>&lt;source-prefix <i>source-prefix-name</i>&gt;</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Clear the intrusion detection service (IDS) attack source and destination address pair table.
<b>Options</b>	<p><code>none</code>—Clear the attack source and destination address pair table.</p> <p><code>destination-prefix <i>destination-prefix-name</i></code>—(Optional) Clear the attack source and destination address pair table for a particular destination prefix.</p> <p><code>interface <i>interface-name</i></code>—(Optional) Clear the attack destination table for a particular interface. On M Series and T Series routers, the <i>interface-name</i> can be <code>sp-fpc/pic/port</code> or <code>rspnumber</code>. On the J Series routers, the <i>interface-name</i> is <code>sp-pim/0/port</code>.</p> <p><code>service-set <i>service-set-name</i></code>—(Optional) Clear the attack source and destination address pair table for a particular service set.</p> <p><code>source-prefix <i>source-prefix-name</i></code>—(Optional) Clear the attack source and destination address pair table for a particular source prefix.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	clear services ids pair-table on page 1404
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

<code>clear services ids pair-table</code>	<code>user@host&gt; clear services ids pair-table</code>
--------------------------------------------	----------------------------------------------------------

## clear services ids source-table

<b>Syntax</b>	clear services ids source-table <interface <i>interface-name</i> > <service-set <i>service-set-name</i> > <source-prefix <i>source-prefix-name</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Clear all intrusion detection service (IDS) events for addresses that are suspected attackers.
<b>Options</b>	<p>none—Clear the attack source address table.</p> <p>interface <i>interface-name</i>—(Optional) On M Series and T Series routers, the <i>interface-name</i> can be <i>sp-fpc/pic/port</i> or <i>rspnumber</i>. On the J Series routers, the <i>interface-name</i> is <i>sp-pim/0/port</i>.</p> <p>service-set <i>service-set-name</i>—(Optional) Clear the attack source address table for a particular service set.</p> <p>source-prefix <i>source-prefix-name</i>—(Optional) Clear the attack source address table for a particular source prefix.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	clear services ids source-table on page 1405
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```
clear services ids source-table
user@host> clear services ids source-table
```

## show services ids

---

**Syntax**    show services ids (destination-table | pair-table | source-table)  
              <brief | extensive | terse>  
              <destination-prefix *destination-prefix-name*>  
              <interface *interface-name*>  
              <limit *number*>  
              <order (anomalies | bytes | flows | packets)>  
              <service-set *service-set-name*>  
              <source-prefix *source-prefix-name*>  
              <threshold *number*>

**Release Information**    Command introduced before Junos OS Release 7.4.

**Description**    Display information about intrusion detection service (IDS) events. All events gathered by IDS are reported as anomalies. For example, events such as **create forward or watch flow**, **FTP passive**, and **FTP active** are genuinely allowed by the stateful firewall but are logged as anomalies to track the rates and number for these events.

**Options**    destination-table—Display information for an address under possible attack.

              pair-table—Display information for a particular suspected attack source and destination address pair.

              source-table—Display information for an address that is a suspected attacker.

              brief | extensive | terse—(Optional) Display the specified level of output.

              destination-prefix *destination-prefix-name*—(Optional) Display information for a particular destination prefix.

              interface *interface-name*—(Optional) On M Series and T Series routers, the *interface-name* can be **sp-fpc/pic/port** or **rspnumber**. On J Series routers, the *interface-name* is **sp-pim/O/port**.

              limit *number*—(Optional) Maximum number of entries to display. By default, all tables display the top 32 entries sorted by the number of events for the criteria chosen. To display additional entries, configure the limit option to set up to 256 entries.

              order—(Optional) Display events according to one of the following table-ordering criteria. The default is anomalies.

- **anomalies**—Display information for particular anomalies.
- **bytes**—Order output by number of bytes received.
- **flows**—Order output by number of flows.
- **packets**—Order output by number of packets received.

              service-set *service-set-name*—(Optional) Display information about a particular service set.

`source-prefix` *source-prefix-name*—(Optional) Display information about a particular source prefix.

`threshold` *number*—(Optional) Limit the display to events with this number of anomalies, bytes, flows, or packets, whichever criterion you specify for order. For example, to display all events with more than 100 flows, specify `order flows and threshold 100`.

**Required Privilege Level** view

**List of Sample Output** `show services ids destination-table` on page 1410  
`show services ids destination-table extensive` on page 1410  
`show services ids destination-table extensive order anomalies` on page 1410  
`show services ids pair-table extensive` on page 1411  
`show services ids pair-table extensive limit` on page 1411  
`show services ids source-table extensive` on page 1412  
`show services ids source-table extensive limit` on page 1412

**Output Fields** Table 262 on page 1407 lists the output fields for the `show services ids` command. Output fields are listed in the approximate order in which they appear.

**Table 262: show services ids Output Fields**

Field Name	Field Description	Output Level
<b>Interface</b>	Name of an adaptive services interface.	All levels
<b>Service set</b>	Name of a service set. Individual empty service sets are not displayed, but if no service set has any flows, a flow table header is printed for each service set.	All levels
<b>Sorting order</b>	Primary mode to display information: <b>Anomalies</b> , <b>Bytes</b> , <b>Flows</b> , or <b>Packets</b> .	All levels
<b>Source address</b>	Name of the source address.	All levels
<b>Dest address</b>	Name of the destination address.	All levels
<b>Time</b>	Total time the information has been in the table.	All levels
<b>Flags</b>	<b>Flags</b> can be <b>Forced</b> , <b>F</b> (terse output only), <b>SYNcookie</b> , <b>S</b> (terse output only), <b>Forced+SYNcookie</b> , and <b>F+S</b> (terse output only). The <b>SYNcookie</b> flag is visible only in the destination table.	All levels
<b>Application</b>	Configured application, such as <b>FTP</b> or <b>Telnet</b> .	All levels
<b>Bytes</b>	Total number of bytes sent from the source to the destination address, in thousands ( <b>k</b> ) or millions ( <b>m</b> ).	All levels
<b>Packets</b>	Total number of packets sent from the source to the destination address, in thousands ( <b>k</b> ) or millions ( <b>m</b> ).	All levels
<b>Flows</b>	Total number of flows of packets sent from the source to the destination address, in thousands ( <b>k</b> ) or millions ( <b>m</b> ).	All levels

Table 262: show services ids Output Fields (*continued*)

Field Name	Field Description	Output Level
<b>Anomalies</b>	Total number of packets in the anomaly table, in thousands (k) or millions (m).	All levels
<b>Anomaly description</b>	<p>One or more of the following types of anomalies. For more information, see the detailed descriptions in the stateful firewall section of the <i>Junos OS System Log Messages Reference</i>.</p> <ul style="list-style-type: none"> <li>• First packet of TCP session not SYN</li> <li>• ICMP echo request dropped, because sequence number duplicated</li> <li>• ICMP echo reply dropped. No matching sequence number</li> <li>• ICMP echo request dropped. Too many echo requests without echo reply</li> <li>• ICMP header length check failed</li> <li>• ICMP packet length greater than 64K</li> <li>• IP fragment assembly timeout</li> <li>• IP fragment length error</li> <li>• IP fragment overlap</li> <li>• IP packet length greater than 64K</li> <li>• IP packet too short</li> <li>• IP packet with broadcast destination address</li> <li>• IP packet with checksum error</li> <li>• IP packet with incorrect length</li> <li>• IP packet with TTL equal to 0</li> </ul>	<b>extensive</b>



Table 262: show services ids Output Fields (*continued*)

Field Name	Field Description	Output Level
Anomaly description (continued)	<ul style="list-style-type: none"> <li>• IP packet with version other than 4</li> <li>• Land attack (IP src address = dest address)</li> <li>• No matching SFW rule; attempting to create discard flow</li> <li>• Number of open sessions exceeds IDS limit; packet dropped</li> <li>• Packet rate exceeds IDS limit; packet dropped</li> <li>• Session creation rate exceeds IDS limit; packet dropped</li> <li>• SFW application message too long</li> <li>• SFW discard packet contains non-configured IP option types</li> <li>• SFW drop packet because of discard flow</li> <li>• SFW dropped TCP watch packet</li> <li>• SFW rules request FTP active mode data packets to be accepted; attempting to create forward flow</li> <li>• SFW rules request FTP passive mode data packets to be accepted; attempting to create forward flow</li> <li>• SFW rules request packet to be accepted; attempting to create forward or watch flow</li> <li>• SFW rules request packet to be discarded; attempting to create discard flow</li> <li>• SFW rules request packet to be rejected; attempting to create reject flow</li> <li>• SFW discard flow requires packet to be dropped</li> <li>• SFW SYN defense</li> <li>• Smurf attack (ping to IP broadcast address)</li> <li>• TCP FIN/RST or SYN/(URG FIN RST) flags set</li> <li>• TCP header length check failed</li> <li>• TCP port scan (port not in LISTEN state)</li> <li>• TCP seq number zero and FIN/PSH/RST flags set</li> <li>• TCP seq number zero and no flags set</li> <li>• TCP source or destination port zero</li> <li>• TCP SYN flood attack</li> <li>• UDP header length check failed</li> <li>• UDP port scan (port not in LISTEN state)</li> <li>• UDP source or destination port zero</li> </ul>	extensive
Count	Number of times that a particular anomaly occurred, in thousands (k) or millions (M).	extensive
Rate (eps)	Anomaly events per second. The IDS subsystem attempts to maintain a weighted average of rates, which might not reflect the exact incoming rate of attack at low rates. However, at high rates exceeding 160 events per second, the rates generally match.	extensive
Elapsed	Time since the same type of event last occurred.	extensive
Total IDS table entries	Number of entries in the IDS table. This number is not necessarily the sum of all entries displayed.	All levels

Table 262: show services ids Output Fields (*continued*)

Field Name	Field Description	Output Level
Total failed IDS table entry insertions	Number of IDS entries not allowed into the table because the table was full	All levels
Total number of events (closed flows and anomalies detected)	Total number of events since the system was started or since the <b>show ids services</b> command was executed.	All levels

### Sample Output

```

show services ids destination-table
user@host> show services ids destination-table
Interface: sp-1/3/0, Service set: null-sfw
Sorting order: Packets
Source address      Dest address   Time    Flags           Application
any                 -> 10.58.255.146 36m12s SYN cookie
Bytes: 35.0 m, Packets: 822.0 k, Flows: 274.0 k, Anomalies: 2251.0 k

Total IDS table entries: 87
Total failed IDS table entry insertions 0
Total number of events (closed flows and anomalies detected): 2606018

show services ids destination-table extensive
user@host> show services ids destination-table extensive
Interface: sp-1/3/0, Service set: null-sfw
Sorting order: Packets
Source address      Dest address   Time    Flags           Application
any                 -> 10.58.255.146 35m52s SYN cookie
Bytes: 34.0 m, Packets: 798.0 k, Flows: 266.0 k, Anomalies: 2251.0 k
Anomalies
First packet of TCP session not SYN      160.0 k    0        14s
TCP source or destination port zero      634.0 k    154.6    3m37s
UDP source or destination port zero      633.0 k    170.0    3m37s
ICMP header length check failed          2875      0.9      3m37s
IP fragment assembly timeout             820.0 k    12.8     3m18s
UDP header length check failed            385       0.5      3m53s
TCP header length check failed            383       0.5      3m53s

Total IDS table entries:
87
Total failed IDS table entry insertions
0
Total number of events (closed flows and anomalies detected):
2598063

show services ids destination-table extensive order anomalies
user@host> show services ids destination-table extensive order anomalies
Interface: sp-0/2/0, Service set: ss1
IDS sorting order: Anomalies
Source address      Dest address   Time    Flags           Application
15.1.1.1            -> 15.99.1.1     1m28s    junos-ftp
Bytes: 1065, Packets: 18, Flows: 1, Anomalies: 10

```

```

Anomaly description                                Count  Rate(eps)  Elapsed
creating forward or watch flow                     1      15.6      1m28s
Number of open sessions exceeds IDS limit           9       0.8       18s

Total IDS table entries:                           3
Total failed IDS table entry insertions             0
Total number of events (closed flows and anomalies): 11

show services ids pair-table extensive
user@host> show services ids pair-table extensive
Interface: sp-3/2/0, Service set: ss_all_limits
IDS sorting order: Packets
Source address  Dest address  Time  Flags  Application
15.1.1.4        -> 15.99.1.4    2m20s  junos-ftp

Bytes: 5.7k, Packets: 102.0, Flows: 41.0, Anomalies: 462.0
Anomaly description                                Count  Rate  Elapsed
creating forward or watch flow                     41.0    8.8    2m17s

Packet rate exceeds IDS src limit                   21.0    7.1    2m17s

Session creation rate exceeds IDS src limit          359.0   99.7    2m16s

TCP SYN flood attack                               41.0    1.9    1m30s

Total IDS table entries:                           3
Total failed IDS table entry insertions             0
Total number of events (closed flows and anomalies): 462

show services ids pair-table extensive limit
user@host> show services ids pair-table extensive limit 3
Interface: sp-1/3/0, Service set: null-sfw
Sorting order: Packets
Source address  Dest address  Time  Flags  Application
10.58.255.18    -> 10.58.255.146 38m41s SYN cookie

Bytes: 286.0 m, Packets: 2823.0 k, Flows: 324.0 k, Anomalies: 387.0 k
Anomalies
First packet of TCP session not SYN                 160.0 k  0.1    25s
TCP source or destination port zero                 69.0 k  14.1   6m26s
UDP source or destination port zero                 68.0 k  12.7   6m26s
ICMP header length check failed                     318     0.1    7m6s
IP fragment assembly timeout                        88.0 k  1.3    6m7s
UDP header length check failed                      39      0.0   6m58s
TCP header length check failed                      46      0.0   6m45s

10.58.255.23    -> 10.58.255.146 18m48s SYN cookie
Bytes: 104.0 m, Packets: 421.0 k, Flows: 230, Anomalies: 124.0 k
Anomalies
TCP source or destination port zero                 37.0 k  9.8    6m26s
UDP source or destination port zero                 37.0 k  8.4    6m26s
IP fragment assembly timeout                        48.0 k  1.0    6m7s
ICMP header length check failed                     190     0.2   6m47s
UDP header length check failed                      29      0.0   6m51s
TCP header length check failed                      23      0.0   6m59s

10.58.255.25    -> 10.58.255.146 18m48s SYN cookie
Bytes: 104.0 m, Packets: 420.0 k, Flows: 232, Anomalies: 123.0 k
Anomalies
TCP source or destination port zero                 37.0 k  9.8    6m26s
UDP source or destination port zero                 37.0 k  8.6    6m26s
IP fragment assembly timeout                        48.0 k  1.5    6m7s

```

ICMP header length check failed	173	0.1	6m43s
UDP header length check failed	24	0.0	6m43s
TCP header length check failed	19	0.0	6m56s

Total IDS table entries:

87

Total failed IDS table entry insertions

0

Total number of events (closed flows and anomalies detected):

2659291

#### show services ids source-table extensive

user@host> show services ids source-table extensive

Interface: sp-3/2/0, Service set: ss\_all\_limits

IDS sorting order: Packets

Source address	Dest address	Time	Flags	Application
15.1.1.4	->	any	2m43s	junos-ftp

Bytes: 5.7k, Packets: 102.0, Flows: 41.0, Anomalies: 462.0

Anomaly description	Count	Rate	Elapsed
creating forward or watch flow	41.0	8.8	2m40s
Packet rate exceeds IDS src limit	21.0	7.1	2m40s
Session creation rate exceeds IDS src limit	359.0	99.7	2m39s
TCP SYN flood attack	41.0	1.9	1m53s

Total IDS table entries:

3

Total failed IDS table entry insertions

0

Total number of events (closed flows and anomalies):

462

#### show services ids source-table extensive limit

user@host> show services ids source-table extensive limit 3

Interface: sp-1/3/0, Service set: null-sfw

Sorting order: Packets

Source address	Dest address	Time	Flags	Application
----------------	--------------	------	-------	-------------

10.58.255.18 -> any 40m 0s SYN cookie

Bytes: 250.0 m, Packets: 1978.0 k, Flows: 356.0 k, Anomalies: 387.0 k

Anomalies	Count	Rate(eps)	Elapsed
TCP source or destination port zero	37.0 k	9.8	6m26s
First packet of TCP session not SYN	160.0 k	0.0	40s
TCP source or destination port zero	69.0 k	62.5	7m45s
UDP source or destination port zero	68.0 k	56.2	7m45s
ICMP header length check failed	319	0.1	7m49s
IP fragment assembly timeout	89.0 k	4.4	7m26s
UDP header length check failed	39	0.0	8m17s
TCP header length check failed	46	0.0	8m4s

10.58.255.30 -> any 20m 7s SYN cookie

Bytes: 107.0 m, Packets: 427.0 k, Flows: 264, Anomalies: 125.0 k

Anomalies	Count	Rate(eps)	Elapsed
UDP source or destination port zero	38.0 k	65.5	7m45s
TCP source or destination port zero	37.0 k	38.1	7m45s
IP fragment assembly timeout	49.0 k	4.1	7m26s
TCP header length check failed	24	0.0	9m23s
ICMP header length check failed	165	0.1	8m6s
UDP header length check failed	26	0.0	8m13s

10.58.255.17 -> any 20m10s SYN cookie

Bytes: 107.0 m, Packets: 426.0 k, Flows: 262, Anomalies: 125.0 k

Anomalies	Count	Rate(eps)	Elapsed
TCP source or destination port zero	38.0 k	55.	7m45s
UDP source or destination port zero	38.0 k	55.1	7m45s
ICMP header length check failed	147	0.1	7m50s
IP fragment assembly timeout	49.0 k	2.8	7m26s
TCP header length check failed	22	0.0	9m33s
UDP header length check failed	22	0.0	8m1s

Total IDS table entries:  
87

Total failed IDS table entry insertions  
0

Total number of events (closed flows and anomalies detected):  
2691423

Interface: sp-1/3/0, Service set: blue

NAT pool	Address	Port	Ports in use
d2-pool	10.59.16.100-10.59.16.100	4000-4002	1



# IP Security Operational Mode Commands

Table 263 on page 1415 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot IP Security (IPsec) services. In the table, the commands are grouped by the interfaces on which they are supported. In the remainder of this chapter, the commands are listed in alphabetical order.

- Services Interfaces:
  - M Series, MX Series and T Series routers—***sp-fpc/pic/port*** or ***ms-fpc/pic/port***. IPsec is also supported on the redundant services interface (***rspnumber***).
- Encryption Interfaces (M Series and T Series routers only) ***es-fpc/pic/port***.

**Table 263: IPsec Services Operational Mode Commands**

Task	Command
<b>Services Interface</b>	
Delete certificate authority (CA) digital certificates from the router.	<b>clear security pki ca-certificate</b>
Delete manually generated local digital certificate requests from the router.	<b>clear security pki certificate-request</b>
Delete all CRLs from the router.	<b>clear security pki crl</b>
Clear public key infrastructure (PKI) key pair information for local digital certificates from the router.	<b>clear security pki key-pair</b>
Delete local digital certificates, certificate requests, and the corresponding public/private key pairs from the router.	<b>clear security pki local-certificate</b>
Delete local and remote certificates from the IPsec configuration memory cache.	<b>clear services ipsec-vpn certificates</b>
Clear IPsec statistics.	<b>clear services ipsec-vpn ipsec statistics</b>

**Table 263: IPsec Services Operational Mode Commands** (*continued*)

Task	Command
Clear either Internet Key Exchange (IKE) or IPsec VPN security associations.	<b>clear services ipsec-vpn ike security-associations</b> <b>clear services ipsec-vpn ipsec security-associations</b>
Request a digital certificate from a CA online by using the Simple Certificate Enrollment Protocol (SCEP).	<b>request security pki ca-certificate enroll</b>
Manually load a CA digital certificate from a specified location.	<b>request security pki ca-certificate load</b>
Verify the digital certificate installed for the specified certificate authority (CA).	<b>request security pki ca-certificate verify</b>
Manually install a CRL on the router.	<b>request security pki crl load</b>
Manually generate a local digital certificate request in the Public-Key Cryptography Standards #10 (PKCS-10) format.	<b>request security pki generate-certificate-request</b>
Generate a Public Key Infrastructure (PKI) public and private key pair for a local digital certificate.	<b>request security pki generate-key-pair</b>
Request a CA to enroll and install a local digital certificate online by using the SCEP.	<b>request security pki local-certificate enroll</b>
Manually generate a self-signed certificate for the given distinguished name.	<b>request security pki local-certificate generate-self-signed</b>
Manually load a local digital certificate from a specified location.	<b>request security pki local-certificate load</b>
Verify the validity of the local digital certificate identifier.	<b>request security pki local-certificate verify</b>
Switch between the primary and backup IPsec VPN tunnels.	<b>request services ipsec-vpn ipsec switch tunnel</b>
Display information about certificate authority (CA) digital certificates installed in the router.	<b>show security pki ca-certificate</b>
Display information about manually generated local digital certificate requests that are stored in the router.	<b>show security pki certificate-request</b>
Display information about the local digital certificates and the corresponding public keys installed in the router.	<b>show security pki local-certificate</b>
Display local and remote certificates installed in the IPsec configuration memory cache that are used for the IKE negotiation.	<b>show services ipsec-vpn certificates</b>



Table 263: IPsec Services Operational Mode Commands (*continued*)

Task	Command
Display IKE VPN security associations for service sets.	<b>show services ipsec-vpn ike security-associations</b>
Display IPsec VPN security associations for service sets.	<b>show services ipsec-vpn ipsec security-associations</b>
Display IPsec VPN statistics for service sets.	<b>show services ipsec-vpn ipsec statistics</b>
<b>Encryption Interface</b>	
Clear Internet Key Exchange (IKE) security associations.	<b>clear ike security-associations</b>
Clear IPsec security associations.	<b>clear ipsec security-associations</b>
Switch between primary and backup interfaces and tunnels.	<b>request ipsec switch</b>
Obtain a public key certificate from a certification authority.	<b>request security certificate (signed)</b> <b>request security certificate (unsigned)</b>
Generate a public and private key pair.	<b>request security key-pair</b>
Add a certificate provided by the Juniper Networks certificate authority.	<b>request system certificate add</b>
Display IKE security association information.	<b>show ike security-associations</b>
Display the IPsec certificate database.	<b>show ipsec certificates</b>
Display primary and backup interface and tunnel information.	<b>show ipsec redundancy</b>
Display IPsec security association information.	<b>show ipsec security-associations</b>
Display installed certificates signed by the Juniper Networks certificate authority.	<b>show system certificate</b>



**NOTE:** For information about how to configure IPsec services, see the *Junos OS Services Interfaces Configuration Guide* for adaptive services interfaces and the *Junos OS System Basics Configuration Guide* for encryption interfaces.

## clear ike security-associations

---

<b>Syntax</b>	clear ike security-associations <destination-ip-address>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(Encryption interface on M Series and T Series routers only) Clear information about the current Internet Key Exchange (IKE) security association. This command is valid for dynamic security associations only.
<b>Options</b>	none—Clear all IKE security associations.  destination-ip-address—(Optional) Clear the IKE security association at the specified destination address.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show ike security-associations on page 1448</a></li></ul>
<b>List of Sample Output</b>	<a href="#">clear ike security-associations on page 1418</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

<b>clear ike security-associations</b>	user@host> clear ike security-associations
----------------------------------------	--------------------------------------------

## clear ipsec security-associations

<b>Syntax</b>	<code>clear ipsec security-associations</code> <code>&lt;sa-name&gt;</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(Encryption interface on M Series and T Series routers only) Clear information about the current IP Security (IPsec) security association. This command is valid for dynamic security associations only. When this command is issued, a new security association is created.
<b>Options</b>	<p><code>none</code>—Clear all IPsec security associations.</p> <p><code>sa-name</code>—(Optional) Clear the specified security association.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">show ipsec security-associations on page 1457</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">clear ipsec security-associations on page 1419</a>
<b>Output Fields</b>	See the <a href="#">show ipsec security-associations</a> for an explanation of output fields.

## Sample Output

**clear ipsec security-associations** The following output from the **show ipsec security-associations detail** command is displayed before and after the **clear ipsec security-associations** command is issued:

```

user@host> show ipsec security-associations detail
Security association: sa-dynamic, Interface family: Up

Direction: inbound, SPI: 242379418, State: Installed
Mode: tunnel, Type: dynamic
Protocol: ESP, Authentication: hmac-md5-96, Encryption: None
Soft lifetime: Expires in 22979 seconds
Hard lifetime: Expires in 28739 seconds

Direction: outbound, SPI: 368592771, State: Installed
Mode: tunnel, Type: dynamic
Protocol: ESP, Authentication: hmac-md5-96, Encryption: None
Soft lifetime: Expires in 22979 seconds
Hard lifetime: Expires in 28739 seconds

user@host> clear ipsec security-associations

user@host> show ipsec security-associations detail
Security association: sa-dynamic, Interface family: Up

Direction: inbound, SPI: 1031597683, State: Installed
Mode: tunnel, Type: dynamic
Protocol: ESP, Authentication: hmac-md5-96, Encryption: None
Soft lifetime: Expires in 23037 seconds

```

Hard lifetime: Expires in 28797 seconds

Direction: outbound, SPI: 1618419878, State: Installed

Mode: tunnel, Type: dynamic

Protocol: ESP, Authentication: hmac-md5-96, Encryption: None

Soft lifetime: Expires in 23037 seconds

Hard lifetime: Expires in 28797 seconds

## clear security pki ca-certificate

---

<b>Syntax</b>	clear security pki ca-certificate (all   ca-profile <i>ca-profile-name</i> )
<b>Release Information</b>	Command introduced in Junos OS Release 7.5.
<b>Description</b>	Delete certificate authority (CA) digital certificates from the router.
<b>Options</b>	all—Delete all CA digital certificates from the router.  ca-profile <i>ca-profile-name</i> —Delete the specified CA profile.
<b>Required Privilege Level</b>	clear
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• request security pki ca-certificate enroll on page 1433</li> <li>• request security pki ca-certificate load on page 1434</li> <li>• show security pki ca-certificate on page 1460</li> </ul>
<b>List of Sample Output</b>	clear security pki ca-certificate all on page 1421
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

```
clear security pki user@host> clear security pki ca-certificate all
ca-certificate all
```

## clear security pki certificate-request

---

<b>Syntax</b>	clear security pki certificate-request (all   certificate-id <i>certificate-id-name</i> )
<b>Release Information</b>	Command introduced in Junos OS Release 7.5.
<b>Description</b>	Delete manually generated local digital certificate requests from the router.
<b>Options</b>	<p>all—Delete all local digital certificate requests from the router.</p> <p>certificate-id <i>certificate-id-name</i>—Delete the specified local digital certificate and corresponding public/private key pair.</p>
<b>Required Privilege Level</b>	clear
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show security pki certificate-request on page 1464</a></li></ul>
<b>List of Sample Output</b>	<a href="#">clear security pki certificate-request all on page 1422</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

```
clear security pki certificate-request all
user@host> clear security pki certificate-request all
```

## clear security pki crl

---

<b>Syntax</b>	clear security pki crl (all   ca-profile <i>ca-profile-name</i> )
<b>Release Information</b>	Command introduced in Junos 8.1
<b>Description</b>	) Delete certificate revocation lists (CRLs) from the router.
<b>Options</b>	all—Delete all CRLs from the router.  ca-profile <i>ca-profile-name</i> —Delete CRLs associated with the specified CA profile.
<b>Required Privilege Level</b>	clear
<b>List of Sample Output</b>	clear security pki crl ca-profile all on page 1423
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

clear security pki crl ca-profile all	user@host> clear security pki crl ca-profile all
------------------------------------------	--------------------------------------------------

## clear security pki key-pair

---

<b>Syntax</b>	clear security pki key-pair (all   certificate-id <i>certificate-id-name</i> )
<b>Release Information</b>	Command introduced in Junos OS Release 8.5.
<b>Description</b>	Clear public key infrastructure (PKI) key pair information for local digital certificates from the router.
<b>Options</b>	<p>all—Delete all local digital certificates, certificate requests, and the corresponding public and private key pairs from the router.</p> <p>certificate-id <i>certificate-id-name</i>—Delete the specified local digital certificate and corresponding public/private key pair.</p>
<b>Required Privilege Level</b>	clear
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• request security pki local-certificate enroll on page 1440</li><li>• show security pki local-certificate on page 1468</li></ul>
<b>Output Fields</b>	This command produces no output.

## Sample Output

```
clear security pki key pair

user@host> clear security pki key pair
```



## clear security pki local-certificate

<b>Syntax</b>	clear security pki local-certificate <all   certificate-id <i>certificate-id-name</i>   system-generated>
<b>Release Information</b>	Command introduced in Junos OS Release 7.5.
<b>Description</b>	Delete local digital certificates, certificate requests, and the corresponding public/private key pairs from the router.
<b>Options</b>	<p>all—(Optional) Delete all local digital certificates, certificate requests, and the corresponding public and private key pairs from the router.</p> <p>certificate-id <i>certificate-id-name</i>—(Optional) Delete the specified local digital certificate and corresponding public and private key pair.</p> <p>system-generated—(Optional) Auto-generated self-signed certificate.</p>
<b>Required Privilege Level</b>	clear
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>request security pki local-certificate enroll on page 1440</li> <li>show security pki local-certificate on page 1468</li> </ul>
<b>List of Sample Output</b>	clear security pki local-certificate all on page 1425
<b>Output Fields</b>	This command produces no output.

### Sample Output

```
clear security pki  user@host> clear security pki local-certificate all
local-certificate all
```

## clear services ipsec-vpn certificates

---

<b>Syntax</b>	clear services ipsec-vpn certificates (all   service-set <i>service-set</i> ) <certificate-cache-entry <i>number</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 7.5.
<b>Description</b>	(Adaptive services interfaces only) Delete digital certificates from the IPsec configuration memory cache. Issuing this command also clears the certificate revocation list (CRL) from the cache along with the certificates.
<b>Options</b>	<p>all—Delete digital certificates for all service sets.</p> <p>service-set <i>service-set</i>—Delete digital certificates for the specified service set.</p> <p>certificate-cache-entry <i>number</i>—(Optional) Delete digital certificates matching a specified cache entry number. To view the certificate cache entry numbers, issue the <b>show services ipsec-vpn certificates</b> command.</p>
<b>Required Privilege Level</b>	clear
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show services ipsec-vpn certificates on page 1471</a></li></ul>
<b>List of Sample Output</b>	<a href="#">clear services ipsec-vpn certificates all on page 1426</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

```
clear services ipsec-vpn certificates all
user@host> clear services ipsec-vpn certificates all
```

## clear services ipsec-vpn ike security-associations

<b>Syntax</b>	clear services ipsec-vpn ike security-associations <peer-address-name> <service-set service-set-name>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. service-set option added in Junos OS Release 8.5.
<b>Description</b>	(Adaptive services interfaces only) Clear Internet Key Exchange (IKE) security associations.
<b>Options</b>	peer-address-name—(Optional) Clear only the security association specified by the peer address.  service-set service-set-name—(Optional) Clear only the security association specified by the service-set name.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">show services ipsec-vpn ike security-associations on page 1474</a></li> </ul>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

```
clear services ipsec-vpn ike security-associations
user@host> clear services ipsec-vpn ike security-associations
```

## clear services ipsec-vpn ipsec statistics

---

<b>Syntax</b>	clear services ipsec-vpn ipsec statistics <remote-gateway <i>address</i> > <service-set <i>service-set-name</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 8.1.
<b>Description</b>	(Adaptive services interface only) Clear IP Security (IPsec) statistics.
<b>Options</b>	<i>remote-gateway address</i> —(Optional) Clear statistics for the specified remote system.  <i>service-set service-set-name</i> —(Optional) Clear statistics for the specified service set.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show services ipsec-vpn ipsec statistics on page 1481</a></li></ul>
<b>List of Sample Output</b>	<a href="#">clear services ipsec-vpn ipsec statistics on page 1428</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

clear services ipsec-vpn ipsec statistics	user@host> clear services ipsec-vpn ipsec statistics
-------------------------------------------------	------------------------------------------------------

## clear services ipsec-vpn ipsec security-associations

<b>Syntax</b>	clear services ipsec-vpn security-associations <peer-address-name> <remote-gateway remote-gateway-address> <service-set-name> <tunnel-index tunnel-index-number>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. <b>remote-gateway</b> , <b>service-set-name</b> , and <b>tunnel-index</b> options added in Junos OS Release 8.4.
<b>Description</b>	(Adaptive services interfaces only) Clear IP Security (IPsec) security associations. You can combine the options for greater specificity.
<b>Options</b>	<p><i>peer-address-name</i>—(Optional) Clear only the security association specified by the peer address.</p> <p><i>remote-gateway remote-gateway-address</i>—(Optional) Clear only the security association specified by the remote gateway address.</p> <p><i>service-set-name</i>—(Optional) Clear only the security association specified by the service-set name.</p> <p><i>tunnel-index tunnel-index-number</i>—(Optional) Clear only the security association specified by the tunnel index number.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">show services ipsec-vpn ipsec security-associations on page 1478</a></li> </ul>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```
clear services      user@host> clear services ipsec-vpn ipsec security-associations
ipsec-vpn ipsec
security-associations
```

## request security certificate (signed)

<b>Syntax</b>	request security certificate enroll filename <i>filename</i> subject <i>subject</i> alternative-subject <i>alternative-subject</i> certification-authority <i>certification-authority</i> encoding (binary   pem) key-file <i>key-file</i> domain-name <i>domain-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>Description</b>	(Encryption interface on M Series and T Series routers and EX Series switches only) Obtain a signed certificate from a certificate authority (CA). The signed certificate validates the CA and the owner of the certificate. The results are saved in a specified file to the <code>/var/etc/ikecert</code> directory.
<b>Options</b>	filename <i>filename</i> —File that stores the certificate.  subject <i>subject</i> —Distinguished name ( <b>dn</b> ), which consists of a set of components—for example, an organization ( <b>o</b> ), an organization unit ( <b>ou</b> ), a country ( <b>c</b> ), and a locality ( <b>l</b> ).  alternative-subject <i>alternative-subject</i> —Tunnel source address.  certification-authority <i>certification-authority</i> —Name of the certificate authority profile in the configuration.  encoding (binary   pem)—File format used for the certificate. The format can be a binary file or privacy-enhanced mail (PEM), an ASCII base64-encoded format. The default format is binary.  key-file <i>key-file</i> —File containing a local private key.  domain-name <i>domain-name</i> —Fully qualified domain name.
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	request security certificate (signed) on page 1430
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

```
request security certificate (signed) user@host> request security certificate enroll filename host.crt subject c=uk,o=london
alternative-subject 10.50.1.4 certification-authority verisign key-file host-1.prv domain-name
host.juniper.net
CA name: juniper.net CA file: ca_verisign
local pub/private key pair: host.prv
subject: c=uk,o=london domain name: host.juniper.net
alternative subject: 10.50.1.4
Encoding: binary
Certificate enrollment has started. To view the status of your enrollment, check
the key management process (kmd) log file at /var/log/kmd. <-----
```

## request security certificate (unsigned)

<b>Syntax</b>	<code>request security certificate enroll filename <i>filename</i> ca-file <i>ca-file</i> ca-name <i>ca-name</i> encoding (binary   perm) url <i>url</i></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.
<b>Description</b>	(Encryption interface on M Series and T Series routers and EX Series switches only) Obtain a certificate from a certificate authority (CA). The results are saved in a specified file to the <code>/var/etc/ikecert</code> directory.
<b>Options</b>	<p><code>filename <i>filename</i></code>—File that stores the public key certificate.</p> <p><code>ca-file <i>ca-file</i></code>—Name of the certificate authority profile in the configuration.</p> <p><code>ca-name <i>ca-name</i></code>—Name of the certificate authority.</p> <p><code>encoding (binary   pem)</code>—File format used for the certificate. The format can be a binary file or privacy-enhanced mail (PEM), an ASCII base64-encoded format. The default value is <b>binary</b>.</p> <p><code>url <i>url</i></code>—Certificate authority URL.</p>
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<b>request security certificate (unsigned) on page 1431</b>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```

request security certificate (unsigned) user@host> request security certificate enroll filename ca_verisign ca-file verisign ca-name
juniper.net urlxyzcompany URL
http://<verisign ca-name xyzcompany url>/cgi-bin/pkiclient.exe CA name: juniper.net
CA file: verisign Encoding: binary
Certificate enrollment has started. To view the status of your enrollment, check
the key management process (kmd) log file at /var/log/kmd. <-----

```

## request security key-pair

---

<b>Syntax</b>	<code>request security key-pair <i>filename</i></code> <code>&lt;size <i>key-size</i>&gt;</code> <code>&lt;type (rsa   dsa)&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.
<b>Description</b>	(Encryption interface on M Series and T Series routers and EX Series switches only) Generate a public and private key pair for a digital certificate.
<b>Options</b>	<i>filename</i> —Name of a file in which to store the key pair.  <i>size key-size</i> —(Optional) Key size, in bits. The key size can be <b>512</b> , <b>1024</b> , or <b>2048</b> . The default value is <b>1024</b> .  <i>type</i> —(Optional) Algorithm used to encrypt the key: <ul style="list-style-type: none"><li>• <b>rsa</b>—RSA algorithm. This is the default.</li><li>• <b>dsa</b>—Digital signature algorithm with Secure Hash Algorithm (SHA).</li></ul>
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<a href="#">request security key-pair on page 1432</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

<code>request security key-pair</code>	<code>user@host&gt; request security key-pair security-key-file</code>
----------------------------------------	------------------------------------------------------------------------



## request security pki ca-certificate enroll

<b>Syntax</b>	request security pki ca-certificate enroll ca-profile <i>ca-profile-name</i>
<b>Release Information</b>	Command introduced in Junos OS Release 7.5.
<b>Description</b>	Request a digital certificate from a certificate authority (CA) online by using the Simple Certificate Enrollment Protocol (SCEP).
<b>Options</b>	ca-profile <i>ca-profile-name</i> —CA profile name.
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• clear security pki ca-certificate on page 1421</li> <li>• show security pki ca-certificate on page 1460</li> </ul>
<b>List of Sample Output</b>	request security pki ca-certificate enroll on page 1433
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

```

request security pki ca-certificate enroll user@host> request security pki ca-certificate enroll ca-profile entrust
Received following certificates:
Certificate: C=us, O=juniper, CN=First Officer
Fingerprint: 46:71:15:34:f0:a6:41:76:65:81:33:4f:68:47:c4:df:78:b8:e3:3f
Certificate: C=us, O=juniper, CN=First Officer
Fingerprint: bc:78:87:9b:a7:91:13:20:71:db:ac:b5:56:71:42:ad:1a:b6:46:17
Certificate: C=us, O=juniper
Fingerprint: 00:8e:6f:58:dd:68:bf:25:0a:e3:f9:17:70:d6:61:f3:53:a7:79:10
Do you want to load the above CA certificate ? [yes,no] (no) yes

```

## request security pki ca-certificate load

---

<b>Syntax</b>	<code>request security pki ca-certificate load ca-profile <i>ca-profile-name</i> filename <i>path/filename</i></code>
<b>Release Information</b>	Command introduced in Junos OS Release 7.5.
<b>Description</b>	Manually load a certificate authority (CA) digital certificate from a specified location.
<b>Options</b>	<code>ca-profile <i>ca-profile-name</i></code> —Load the specified CA profile. <code>filename <i>path/filename</i></code> —Directory location and filename of the CA digital certificate.
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">clear security pki ca-certificate on page 1421</a></li><li>• <a href="#">show security pki ca-certificate on page 1460</a></li></ul>
<b>List of Sample Output</b>	<a href="#">request security pki ca-certificate load on page 1434</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

<code>request security pki ca-certificate load</code>	<code>user@host&gt; request security pki ca-certificate load ca-profile ca-private filename pki-file</code>
-----------------------------------------------------------	-------------------------------------------------------------------------------------------------------------

---

## request security pki ca-certificate verify

---

<b>Syntax</b>	request security pki ca-certificate verify ca-profile <i>ca-profile-name</i>
<b>Release Information</b>	Command introduced in Junos OS Release 8.5.
<b>Description</b>	Verify the digital certificate installed for the specified certificate authority (CA).
<b>Options</b>	ca-profile <i>ca-profile-name</i> —Name of the local digital certificate identifier.
<b>Required Privilege Level</b>	maintenance
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

You receive the following response before the certificate revocation list (CRL) is downloaded:

```
request security pki ca-certificate verify ca-profile ca1 (CRL not downloaded)
user@host> request security pki ca-certificate verify ca-profile ca1
```

```
CA certificate ca1: CRL verification in progress. Please check the PKId debug
logs for completion status
```

## request security pki crt load

---

<b>Syntax</b>	<code>request security pki crt load ca-profile <i>ca-profile-name</i> filename <i>path/filename</i></code>
<b>Release Information</b>	Command introduced in Junos OS Release 8.1.
<b>Description</b>	Manually install a certificate revocation list (CRL) on the router from a specified location.
<b>Options</b>	<code>ca-profile <i>ca-profile-name</i></code> —Load the specified certificate authority (CA) profile. <code>filename <i>path/filename</i></code> —Directory location and filename of the CRL.
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<a href="#">request security pki crt load on page 1436</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

<code>request security pki crt load</code>	<code>user@host&gt; request security pki crt load ca-profile ca-private filename pki-file</code>
--------------------------------------------	--------------------------------------------------------------------------------------------------

## request security pki generate-certificate-request

<b>Syntax</b>	request security pki generate-certificate-request certificate-id <i>certificate-id-name</i> domain-name <i>domain-name</i> subject <i>subject-distinguished-name</i> <email <i>email-address</i> > <filename ( <i>path</i>   terminal)> <ip-address <i>ip-address</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 7.5.
<b>Description</b>	Manually generate a local digital certificate request in the Public-Key Cryptography Standards #10 (PKCS-10) format.
<b>Options</b>	<p>certificate-id <i>certificate-id-name</i>—Name of the local digital certificate and the public/private key pair.</p> <p>domain-name <i>domain-name</i>—Fully qualified domain name (FQDN). The FQDN provides the identity of the certificate owner for Internet Key Exchange (IKE) negotiations and provides an alternative to the subject name.</p> <p>subject <i>subject-distinguished-name</i>—Distinguished name format that contains the common name, department, company name, state, and country:</p> <ul style="list-style-type: none"> <li>• CN—Common name</li> <li>• OU—Organizational unit name</li> <li>• O—Organization name</li> <li>• ST—State</li> <li>• C—Country</li> </ul> <p>email <i>email-address</i>—(Optional) E-mail address of the certificate holder.</p> <p>filename (<i>path</i>   terminal)—(Optional) Location where the local digital certificate request should be placed or the login terminal.</p> <p>ip-address <i>ip-address</i>—(Optional) IP address of the router.</p>
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• clear security pki certificate-request on page 1422</li> <li>• show security pki certificate-request on page 1464</li> </ul>
<b>List of Sample Output</b>	request security pki generate-certificate-request on page 1438
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```
request security pki user@host> request security pki generate-certificate-request certificate-id local-entrust2
generate-certificate-request domain-name router2.juniper.net filename entrust-req2 subject cn=router2.juniper.net
```

```
Generated certificate request
-----BEGIN CERTIFICATE REQUEST-----
MIIBoTCCAQoCAQAwGjEYMBYGA1UEAxMPdHxLmp1bm1wZXIubmVOMIGfMA0GCSqG
SIb3DQEBAQUAA4GNADCBiQKBgQCiuFk1Qws1Ud+AqN5DDxRs2kVyKEhh9qoVFnz+
Hz4c9vsy3B8E1wTJ1kmIt2cB3yi fB6zePd+6WYpf57Crwre7YqPkiXM31F6z3YjX
H+1BPNbCxNWYvyrnSyVYDbFj8o0Xyqog8ACDFVL2JBWrPNBYy7imq/K9soDBbAs6
5hZqqwIDAQABoEcwRQYJKoZIhvcNAQkOMTgwNjA0BgNVHQ8BAf8EBAMCB4AwJAYD
VR0RAQH/BBowGIIWdHxLmVuZ2xhYi5qdW5pcGVyLm51dDANBgkqhkiG9w0BAQQF
AAOBgQBc2rq1v5S0QXH7LCb/FdqAL8ZM6GoaN5d6cGwq4bB6a7UQFgtOH406gQ3G
3iH0Zfz4xMIBpJYuGd1dkqgvcdH3AgTsLkfn7Wi3x5H2qeQVs9bvL4P5nvEZLND
EIMUHwteo1ZCiZ70f09Fer9cXWHSQs1UtXtgPqQJy2xIeImLgw==
-----END CERTIFICATE REQUEST-----
Fingerprint:
0d:90:b8:d2:56:74:fc:84:59:62:b9:78:71:9c:e4:9c:54:ba:16:97 (sha1)
1b:08:d4:f7:90:f1:c4:39:08:c9:de:76:00:86:62:b8 (md5)
```

## request security pki generate-key-pair

---

<b>Syntax</b>	request security pki generate-key-pair certificate-id <i>certificate-id-name</i> <size (512   1024   2048) >
<b>Release Information</b>	Command introduced in Junos OS Release 7.5.
<b>Description</b>	Generate a Public Key Infrastructure (PKI) public and private key pair for a local digital certificate.
<b>Options</b>	certificate-id <i>certificate-id-name</i> —Name of the local digital certificate and the public/private key pair.  size—(Optional) Key pair size. The key pair size can be <b>512</b> , <b>1024</b> , or <b>2048</b> bits.
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<b>request security pki generate-key-pair on page 1439</b>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

request security pki generate-key-pair	user@host> request security pki generate-key-pair certificate-id billy size 2048 Generated key pair billy, key size 2048 bits
-------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------

## request security pki local-certificate enroll

---

<b>Syntax</b>	<code>request security pki local-certificate enroll ca-profile <i>ca-profile-name</i> certificate-id <i>certificate-id-name</i> challenge-password <i>password</i> domain-name <i>domain-name</i> subject <i>subject-distinguished-name</i> &lt;email <i>email-address</i>&gt; &lt;ip-address <i>ip-address</i>&gt;</code>
<b>Release Information</b>	Command introduced in Junos OS Release 7.5.
<b>Description</b>	Request that a certificate authority (CA) enroll and install a local digital certificate online by using the Simple Certificate Enrollment Protocol (SCEP).
<b>Options</b>	<p><code>ca-profile <i>ca-profile-name</i></code>—CA profile name.</p> <p><code>certificate-id <i>certificate-id-name</i></code>—Name of the local digital certificate and the public/private key pair.</p> <p><code>challenge-password <i>password</i></code>—Password set by the administrator and normally obtained from the SCEP enrollment webpage of the CA. The password is 16 characters in length.</p> <p><code>domain-name <i>domain-name</i></code>—Fully qualified domain name (FQDN). The FQDN provides the identity of the certificate owner for Internet Key Exchange (IKE) negotiations and provides an alternative to the subject name.</p> <p><code>subject <i>subject-distinguished-name</i></code>—Distinguished name format that contains the common name, department, company name, state, and country:</p> <ul style="list-style-type: none"><li>• <b>CN</b>—Common name</li><li>• <b>OU</b>—Organizational unit name</li><li>• <b>O</b>—Organization name</li><li>• <b>ST</b>—State</li><li>• <b>C</b>—Country</li></ul> <p><code>email <i>email-address</i></code>—(Optional) E-mail address of the certificate holder.</p> <p><code>ip-address <i>ip-address</i></code>—(Optional) IP address of the router.</p>
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show security pki local-certificate</a> on page 1468</li></ul>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.



## Sample Output

```
user@host> request security pki local-certificate enroll certificate-id r3-entrust-scep ca-profile  
entrust domain-name router3.juniper.net subject "CN=router3,OU=Engineering,O=juniper,C=US"  
challenge-password 123
```

Certificate enrollment has started. To view the status of your enrollment, check the public key infrastructure log (pkid) log file at /var/log/pkid. Please save the challenge-password for revoking this certificate in future. Note that this password is not stored on the router.

## request security pki local-certificate generate-self-signed

---

<b>Syntax</b>	request security pki local-certificate generate-self-signed certificate-id <i>certificate-id-name</i> domain-name <i>domain-name</i> ip-address <i>ip-address</i> email <i>email-address</i> subject <i>subject-distinguished-name</i>
<b>Release Information</b>	Command introduced in Junos OS Release 9.1.
<b>Description</b>	Manually generate a self-signed certificate for the given distinguished name.
<b>Options</b>	<p>certificate-id <i>certificate-id-name</i>—Name of the local digital certificate and the public/private key pair.</p> <p>domain-name <i>domain-name</i>—Fully qualified domain name (FQDN). The FQDN provides the identity of the certificate owner for Internet Key Exchange (IKE) negotiations and provides an alternative to the subject name.</p> <p>email <i>email-address</i>—E-mail address of the certificate holder.</p> <p>ip-address <i>ip-address</i>—IP address of the router.</p> <p>subject <i>subject-distinguished-name</i>—Distinguished name format that contains the common name, department, company name, state, and country:</p> <ul style="list-style-type: none"><li>• <b>CN</b>—Common name</li><li>• <b>OU</b>—Organizational unit name</li><li>• <b>O</b>—Organization name</li><li>• <b>ST</b>—State</li><li>• <b>C</b>—Country</li></ul>
<b>Required Privilege Level</b>	maintenance security
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show security pki local-certificate</a> on page 1468</li></ul>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

```
user@host> request security pki local-certificate generate-self-signed certificate-id self-cert  
subject cn=abc domain-name juniper.net email mholmes@juniper.net  
Self-signed certificate generated and loaded successfully
```

## request security pki local-certificate load

<b>Syntax</b>	<code>request security pki local-certificate load certificate-id <i>certificate-id-name</i> filename <i>path</i></code>
<b>Release Information</b>	Command introduced in Junos OS Release 7.5.
<b>Description</b>	Manually load a local digital certificate from a specified location.
<b>Options</b>	<p><code>certificate-id <i>certificate-id-name</i></code>—Name of the public/private key pair mapped to the local digital certificate.</p> <p><code>filename <i>path/filename</i></code>—Directory location and filename of the local digital certificate provided by the CA.</p>
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<b>request security pki local-certificate load on page 1443</b>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

```

request security pki user@host> request security pki local-certificate load filename /tmp/router2-cert certificate-id
local-certificate load local-entrust2
Local certificate local-entrust2 loaded successfully

```

## request security pki local-certificate verify

---

<b>Syntax</b>	request security pki local-certificate verify certificate-id <i>certificate-id-name</i>
<b>Release Information</b>	Command introduced in Junos OS Release 8.5.
<b>Description</b>	Verify the validity of the local digital certificate identifier.
<b>Options</b>	certificate-id <i>certificate-id-name</i> —Display the specified certificate identifier name.
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show security pki local-certificate</a> on page 1468</li></ul>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

You receive the following response before the certificate revocation list (CRL) is downloaded:

```
request security pki local-certificate verify certificate-id bme1 (not downloaded)
user@host> request security pki local-certificate verify certificate-id bme1
```

```
Local certificate bme1: CRL verification in progress. Please check the PKId debug
logs for completion status
```

You receive the following response after the certificate revocation list (CRL) is downloaded

```
request security pki local-certificate verify certificate bme1 (downloaded)
user@host> request security pki local-certificate verify certificate-id bme1
Local certificate bme1 verification success
```

## request ipsec switch

---

<b>Syntax</b>	request ipsec switch (interface <es-fpc/pic/port>   security-associations <sa-name>)
<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>	(Encryption interface on M Series and T Series routers and EX series switches only) Manually switch from the primary to the backup encryption services interface, or switch from the primary to the backup IP Security (IPsec) tunnel.
<b>Options</b>	interface <es-fpc/pic/port>—Switch to the backup encryption interface.  security-associations <sa-name>—Switch to the backup tunnel.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">show ipsec redundancy on page 1455</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">request ipsec switch on page 1445</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```
request ipsec switch  user@host> request ipsec switch security-associations sa-private
```

## request services ipsec-vpn ipsec switch tunnel

---

<b>Syntax</b>	<code>request services ipsec-vpn ipsec switch tunnel local-gateway <i>address</i> remote-gateway <i>address</i></code> <code>&lt;routing-instance <i>instance-name</i>&gt;</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. <b>routing-instance</b> option added in Release 8.1.
<b>Description</b>	(Adaptive services interface only) Manually switch between primary and backup IP Security (IPsec) tunnels.
<b>Options</b>	<code>local-gateway <i>address</i></code> —Gateway address of the local system.  <code>remote-gateway <i>address</i></code> —Gateway address of the remote system.  <code>routing-instance <i>instance-name</i></code> —(Optional) VRF instance associated with local gateway address.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show services ipsec-vpn ipsec security-associations on page 1478</a></li></ul>
<b>List of Sample Output</b>	<a href="#">request services ipsec-vpn ipsec switch tunnel on page 1446</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

<code>request services ipsec-vpn ipsec switch tunnel</code>	<code>user@host&gt; request services ipsec-vpn ipsec switch tunnel local-gateway 10.1.1.1 remote gateway 10.100.10.1</code>
---------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------

## request system certificate add

---

<b>Syntax</b>	<code>request system certificate add (<i>filename</i>   terminal)</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 11.1 for the QFX Series.
<b>Description</b>	(Encryption interface on M Series and T Series routers only) Add a certificate provided by the Juniper Networks certificate authority (CA).
<b>Options</b>	<i>filename</i> —Filename (URL, local, or remote).  terminal—Use login terminal.
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<b>request system certificate add on page 1447</b>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

<b>request system certificate add</b>	<code>user@host&gt; request system certificate add terminal</code>
-------------------------------------------	--------------------------------------------------------------------

## show ike security-associations

<b>Syntax</b>	show ike security-associations <brief   detail> <peer-address>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(Encryption interface on M Series and T Series routers only) Display information about Internet Key Exchange (IKE) security associations.
<b>Options</b>	<p>none—Display standard information about all IKE security associations.</p> <p>brief   detail—(Optional) Display the specified level of output.</p> <p>peer-address—(Optional) Display IKE security associations for the specified peer address.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>clear ike security-associations on page 1418</li> </ul>
<b>List of Sample Output</b>	<p>show ike security-associations on page 1451</p> <p>show ike security-associations detail on page 1451</p>
<b>Output Fields</b>	Table 264 on page 1448 lists the output fields for the <b>show ike security-associations</b> command. Output fields are listed in the approximate order in which they appear.

**Table 264: show ike security-associations Output Fields**

Field Name	Field Description	Level of Output
<b>IKE peer</b>	Remote end of the IKE negotiation.	<b>detail</b>
<b>Role</b>	Part played in the IKE session. The router triggering the IKE negotiation is the initiator, and the router accepting the first IKE exchange packets is the responder.	<b>detail</b>
<b>Remote Address</b>	Responder's address.	none specified
<b>State</b>	State of the IKE security association: <ul style="list-style-type: none"> <li><b>Matured</b>—The IKE security association is established.</li> <li><b>Not matured</b>—The IKE security association is in the process of negotiation.</li> </ul>	none specified
<b>Initiator cookie</b>	When the IKE negotiation is triggered, a random number is sent to the remote node.	All levels



Table 264: show ike security-associations Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Responder cookie</b>	<p>The remote node generates its own random number and sends it back to the initiator as a verification that the packets were received.</p> <p>Of the numerous security services available, protection against denial of service (DoS) is one of the most difficult to address. A “cookie” or anticlogging token (ACT) is aimed at protecting the computing resources from attack without spending excessive CPU resources to determine the cookie's authenticity. An exchange prior to CPU-intensive public key operations can thwart some DoS attempts (such as simple flooding with invalid IP source addresses).</p>	All levels
<b>Exchange type</b>	<p>Specifies the number of messages in an IKE exchange, and the payload types that are contained in each message. Each exchange type provides a particular set of security services, such as anonymity of the participants, perfect forward secrecy of the keying material, and authentication of the participants. Junos OS supports two types of exchanges:</p> <ul style="list-style-type: none"> <li>• <b>Main</b>—The exchange is done with six messages. <b>Main</b> encrypts the payload, protecting the identity of the neighbor.</li> <li>• <b>Aggressive</b>—The exchange is done with three messages. <b>Aggressive</b> does not encrypt the payload, leaving the identity of the neighbor unprotected.</li> </ul>	All Levels
<b>Authentication method</b>	Type of authentication determines which payloads are exchanged and when they are exchanged. The Junos OS supports only <b>pre-shared keys</b> .	<b>detail</b>
<b>Local</b>	Prefix and port number of the local end.	<b>detail</b>
<b>Remote</b>	Prefix and port number of the remote end.	<b>detail</b>
<b>Lifetime</b>	Number of seconds remaining until the IKE security association expires.	<b>detail</b>
<b>Algorithms</b>	<p>Header for the IKE algorithms output.</p> <ul style="list-style-type: none"> <li>• <b>Authentication</b>—Type of authentication algorithm used: <b>md5</b> or <b>sha1</b>.</li> <li>• <b>Encryption</b>—Type of encryption algorithm used: <b>des-cbc</b>, <b>3des-cbc</b>, or <b>None</b>.</li> <li>• <b>Pseudo random function</b>—Function that generates highly unpredictable random numbers: <b>hmac-md5</b> or <b>hmac-sha1</b>.</li> </ul>	<b>detail</b>
<b>Traffic statistics</b>	<p>Number of bytes and packets received and transmitted on the IKE security association.</p> <ul style="list-style-type: none"> <li>• <b>Input bytes, Output bytes</b>—Number of bytes received and transmitted on the IKE security association.</li> <li>• <b>Input packets, Output packets</b>—Number of packets received and transmitted on the IKE security association.</li> </ul>	<b>detail</b>

Table 264: show ike security-associations Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Flags</b>	Notification to the key management process of the status of the IKE negotiation: <ul style="list-style-type: none"> <li>• <b>caller notification sent</b>—Caller program notified about the completion of the IKE negotiation.</li> <li>• <b>waiting for done</b>—Negotiation is done. The library is waiting for the remote end retransmission timers to expire.</li> <li>• <b>waiting for remove</b>—Negotiation has failed. The library is waiting for the remote end retransmission timers to expire before removing this negotiation.</li> <li>• <b>waiting for policy manager</b>—Negotiation is waiting for a response from the policy manager.</li> </ul>	<b>detail</b>
<b>IPsec security associates</b>	Number of IPsec security associations created and deleted with this IKE security association.	<b>detail</b>
<b>Phase 2 negotiations in progress</b>	Number of phase 2 IKE negotiations in progress and status information: <ul style="list-style-type: none"> <li>• <b>Negotiation type</b>—Type of phase 2 negotiation. The Junos OS currently supports <b>quick mode</b>.</li> <li>• <b>Message ID</b>—Unique identifier for a phase 2 negotiation.</li> <li>• <b>Local identity</b>—Identity of the local phase 2 negotiation. The format is <i>id-type-name (proto-name:port-number,[O..id-data-len] = iddata-presentation)</i></li> <li>• <b>Remote identity</b>—Identity of the remote phase 2 negotiation. The format is <i>id-type-name (proto-name:port-number,[O..id-data-len] = iddata-presentation)</i></li> <li>• <b>Flags</b>—Notification to the key management process of the status of the IKE negotiation: <ul style="list-style-type: none"> <li>• <b>caller notification sent</b>—Caller program notified about the completion of the IKE negotiation.</li> <li>• <b>waiting for done</b>—Negotiation is done. The library is waiting for the remote end retransmission timers to expire.</li> <li>• <b>waiting for remove</b>—Negotiation has failed. The library is waiting for the remote end retransmission timers to expire before removing this negotiation.</li> <li>• <b>waiting for policy manager</b>—Negotiation is waiting for a response from the policy manager.</li> </ul> </li> </ul>	<b>detail</b>

## Sample Output

```

show ike security-associations user@host> show ike security-associations
Remote Address  State      Initiator cookie  Responder cookie  Exchange type
4.4.4.4         Matured          93870456fa000011  723a20713700003e  Main

show ike security-associations detail user@host> show ike security-associations detail
IKE peer 4.4.4.4
Role: Initiator, State: Matured
Initiator cookie: cf22bd81a7000001, Responder cookie: fe83795c2800002e
Exchange type: Main, Authentication method: Pre-shared-keys
Local: 4.4.4.5:500, Remote: 4.4.4.4:500
Lifetime: Expires in 187 seconds
Algorithms:
Authentication      : md5
Encryption           : 3des-cbc
Pseudo random function: hmac-md5
Traffic statistics:
Input bytes  :          1000
Output bytes :          1280
Input packets:           5
Output packets:          9
Flags: Caller notification sent
IPsec security associations: 2 created, 0 deleted
Phase 2 negotiations in progress: 1

Negotiation type: Quick mode, Role: Initiator, Message ID: 3582889153
Local: 4.4.4.5:500, Remote: 4.4.4.4:500
Local identity: ipv4_subnet(tcp:80,[0..7]=10.1.1.0/24)
Remote identity: ipv4_subnet(tcp:100,[0..7]=10.1.2.0/24)
Flags: Caller notification sent, Waiting for done

```

## show ipsec certificates

<b>Syntax</b>	show ipsec certificates <brief   detail> <crl <i>crl-name</i>   <i>serial-number</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(Encryption interface on M Series and T Series routers only) Display information about the IPsec certificate database.
<b>Options</b>	<p>none—Display standard information about all of the entries in the IPsec certificate database.</p> <p>brief   detail—(Optional) Display the specified level of output.</p> <p>crl <i>crl-name</i>   <i>serial-number</i>—(Optional) Display information about the entries on the certificate revocation list (CRL) or for the specified serial number. A CRL is a timestamped list identifying revoked certificates. The CRL is signed by a certificate authority (CA) or CRL issuer and made freely available in a public repository. Each revoked certificate is identified in a CRL by its certificate serial number.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>clear ipsec security-associations on page 1419</li> </ul>
<b>List of Sample Output</b>	show ipsec certificates detail on page 1453
<b>Output Fields</b>	Table 265 on page 1452 lists the output fields for the <b>show ipsec certificates</b> command. Output fields are listed in the approximate order in which they appear.

**Table 265: show ipsec certificates Output Fields**

Field Name	Field Description	Level of Output
<b>Database</b>	Display information about the IPsec certificate database. <ul style="list-style-type: none"> <li><b>Total entries</b>—Number of database entries, including entries that are not trusted or that are in the process of being deleted.</li> <li><b>Active entries</b>—Number of database entries, excluding entries that are marked as deleted.</li> <li><b>Locked entries</b>—Number of statically configured database entries that cannot expire, such as CA certificates that are root or trusted.</li> </ul>	All levels
<b>Subject</b>	Distinguished name for the certificate for <b>C, O, CN</b> , as described in RFC 3280, <i>Internet x.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile</i> .	All levels
<b>ID</b>	Identification number of the database entry. <b>ID</b> is generated by the internal certificate database.	All levels

Table 265: show ipsec certificates Output Fields (*continued*)

Field Name	Field Description	Level of Output
References	Reference number the certificate manager has for the particular entry.	detail
Serial	Unique serial number assigned to each certificate by the CA.	All levels
Flags	State of the certificate. <ul style="list-style-type: none"> <li>• <b>Trusted</b>—Passed validity checks.</li> <li>• <b>Not trusted</b>—Failed validity checks.</li> <li>• <b>Root</b>—Entry is locked and may have been learned through IKE or a locally configured CA certificate.</li> <li>• <b>Non-root</b>—Entry is not locked.</li> <li>• <b>Crl-issuer</b>—Entity issues CRLs.</li> <li>• <b>Non-crl-issuer</b>—Entity does not issue CRLs.</li> </ul>	detail
Validity period starts	Start time that the certificate is valid, in the format <i>yyyy mon dd, hh:mm:ss GMT</i> .	detail
Validity period ends	End time that the certificate is valid, in the format <i>yyyy mon dd, hh:mm:ss GMT</i> .	detail
Alternative name information	Auxiliary identity for the certificate: <i>dns-name</i> , <i>email-address</i> , <i>ip-address</i> , or <i>uri</i> (uniform resource identifier).	detail
Issuer	Information about the entity that has signed and issued the CRL as described in RFC 2459, <i>Internet X.509 Public Key Infrastructure Certificate and CRL Profile</i> .	detail

## Sample Output

```

show ipsec certificates user@host> show ipsec certificates detail
detail Database: Total entries: 3 Active entries: 4 Locked entries: 1
Subject: C=us, O=x
ID: 5, References: 0, Serial: 22314868
Flags: Trusted Non-root Crl-issuer
Validity period starts: 2003 Mar 1st, 01:20:42 GMT
Validity period ends: 2003 Mar 31st, 01:50:42 GMT
Alternative name information:
IP address: 10.20.210.1
Issuer: C=FI, O=Company-ABC, CN=Company ABC class 2

Subject: C=us, O=x
ID: 4, References: 0, Serial: 22315496
Flags: Trusted Non-root Crl-issuer
Validity period starts: 2003 Mar 1st, 01:21:45 GMT
Validity period ends: 2003 Mar 31st, 01:51:45 GMT
Alternative name information:
IP address: 10.20.210.20
Issuer: C=FI, O=Company-ABC, CN=Company ABC class 2

Subject: C=FI, O=SSH Company-ABC, CN=Company ABC class 2
ID: 1, References: 1, Serial: 1538512
Flags: Trusted Root Non-crl-issuer
Validity period starts: 2001 Aug 1st, 07:08:32 GMT

```

Validity period ends: 2004 Aug 1st, 07:08:32 GMT  
Alternative name information:  
Email address: certifier-support@ssh.com  
Issuer: C=FI, O=Company-ABC, CN=Company ABC class 2

## show ipsec redundancy

<b>Syntax</b>	show ipsec redundancy (interface <es-fpc/pic/port>   security association <sa-name>)
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(Encryption interface on M Series and T Series routers only) Display information about IPsec redundancy.
<b>Options</b>	<p>interface &lt;es-fpc/pic/port&gt;—Display information about all encryption interfaces, or optionally, about a particular encryption interface.</p> <p>security association &lt;sa-name&gt;—Display information about all remote tunnels, or optionally, about a particular remote tunnel.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>request ipsec switch on page 1445</li> </ul>
<b>List of Sample Output</b>	<p>show ipsec redundancy interface on page 1456</p> <p>show ipsec redundancy security-associations on page 1456</p>
<b>Output Fields</b>	Table 266 on page 1455 lists the output fields for the <b>show ipsec redundancy</b> command. Output fields are listed in the approximate order in which they appear.

**Table 266: show ipsec redundancy Output Fields**

Field Name	Field Description
<b>Failure counter</b>	Number of times a PIC switched between primary and backup interfaces, or the number of times the tunnel switched between the primary and remote peers since the software has been activated.
<b>Primary interface '</b>	Name of the interface configured to be the primary interface.
<b>Backup interface</b>	Name of the interface configured to be the backup interface.
<b>State</b>	State of the primary or backup interface can be <b>Active</b> , <b>Offline</b> , or <b>Standby</b> . Both ES PICs are initialized to <b>Offline</b> . For primary and remote peers, <b>State</b> can be <b>Active</b> or <b>Standby</b> . Both peers are in a state of <b>Standby</b> by default (there is not yet a connection between the two peers).
<b>Security association</b>	Name of the security association.
<b>Local IP</b>	Local IP address.
<b>Primary remote IP</b>	IP address of the configured primary remote peer.
<b>Backup remote IP</b>	IP address of the configured backup remote peer.

## Sample Output

<b>show ipsec redundancy interface</b>	<pre>user@host&gt; show ipsec redundancy interface Failure counter: 0 Primary interface: es-1/3/0, State: Active Backup interface : es-1/1/0, State: Standby</pre>
<b>show ipsec redundancy security-associations</b>	<pre>user@host&gt; show ipsec redundancy security-associations sa-dynamic Security association: sa-dynamic, Failure counter: 0 Local IP: 4.4.4.4 Primary remote IP: 4.4.4.5, State: Standby Backup remote IP : 3.3.3.3, State: Standby</pre>



## show ipsec security-associations

<b>Syntax</b>	show ipsec security-associations <brief   detail> <sa-name>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(Encryption interface on M Series and T Series routers only) Display information about the IPsec security associations applied to the local or transit traffic stream.
<b>Options</b>	<p>none—Display standard information about all IPsec security associations.</p> <p>brief   detail—(Optional) Display the specified level of output.</p> <p>sa-name—(Optional) Display the specified IPsec security association.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p><b>show ipsec security-associations sa-name on page 1459</b></p> <p><b>show ipsec security-associations sa-name detail on page 1459</b></p>
<b>Output Fields</b>	Table 267 on page 1457 lists the output fields for the <b>show ipsec security-associations</b> command. Output fields are listed in the approximate order in which they appear.

**Table 267: show ipsec security-associations Output Fields**

Field Name	Field Description	Level of Output
<b>Security association</b>	Name of the security association.	All levels
<b>Interface family</b>	<p>Status of the interface family of the security association. If the interface family field is absent, it is a transport mode security association. The interface family can have one of three options:</p> <ul style="list-style-type: none"> <li>• <b>Up</b>—The security association is referenced in the interface family and the interface family is up.</li> <li>• <b>Down</b>—The security association is referenced in the interface family and the interface family is down.</li> <li>• <b>No reference</b>—The security association is not referenced in the interface family.</li> </ul>	All levels
<b>Local gateway</b>	Gateway address of the local system.	All levels
<b>Remote gateway</b>	Gateway address of the remote system.	All levels
<b>Local identity</b>	Prefix and port number of the local end	All levels
<b>Remote identity</b>	Prefix and port number of the remote end.	All levels
<b>Direction</b>	Direction of the security association: <b>inbound</b> or <b>outbound</b> .	All levels
<b>SPI</b>	Value of the security parameter index.	All levels

Table 267: show ipsec security-associations Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>AUX-SPI</b>	Value of the auxiliary security parameter index. <ul style="list-style-type: none"> <li>When the value is <b>AH</b> or <b>ESP</b>, <b>AUX-SPI</b> is always <b>0</b>.</li> <li>When the value is <b>AH+ESP</b>, <b>AUX-SPI</b> is always a positive integer.</li> </ul>	All levels
<b>State</b>	Status of the security association: <ul style="list-style-type: none"> <li><b>Installed</b>—The security association is installed in the security association database. (For transport mode security associations, the value of <b>State</b> must always be <b>Installed</b>.)</li> <li><b>Not installed</b>—The security association is not installed in the security association database.</li> </ul>	<b>detail</b>
<b>Mode</b>	Mode of the security association: <ul style="list-style-type: none"> <li><b>transport</b>—Protects single host-to-host protections.</li> <li><b>tunnel</b>—Protects connections between security gateways.</li> </ul>	All levels
<b>Type</b>	Type of security association: <ul style="list-style-type: none"> <li><b>manual</b>—Security parameters require no negotiation. They are static, and are configured by the user.</li> <li><b>dynamic</b>—Security parameters are negotiated by the IKE protocol. Dynamic security associations are not supported in transport mode.</li> </ul>	All levels
<b>Protocol</b>	Protocol supported: <ul style="list-style-type: none"> <li><b>transport mode</b>—Supports Encapsulation Security Protocol (<b>ESP</b>) or Authentication Header (<b>AH</b>).</li> <li><b>tunnel mode</b>—Supports <b>ESP</b> or <b>AH+ESP</b>.</li> </ul>	All levels
<b>Authentication</b>	Type of authentication used: <b>hmac-md5-96</b> , <b>hmac-sha1-96</b> , or <b>None</b> .	<b>detail</b>
<b>Encryption</b>	Type of encryption used: <b>des-cbc</b> , <b>3des-csc</b> , or <b>None</b> .	<b>detail</b>
<b>Soft lifetime</b> <b>Hard lifetime</b>	( <b>dynamic</b> output only) Each lifetime of a security association has two display options, hard and soft, one of which must be present for a dynamic security association. The <b>hard lifetime</b> specifies the lifetime of the SA. The <b>soft lifetime</b> , which is derived from the hard lifetime, informs the IPsec key management system that the SA is about to expire. This allows the key management system to negotiate a new SA before the hard lifetime expires. <ul style="list-style-type: none"> <li><b>Expires in seconds seconds</b>—Number of seconds left until the security association expires.</li> <li><b>Expires in kilobytes kilobytes</b>—Number of kilobytes left until the security association expires.</li> </ul>	<b>detail</b>
<b>Anti-replay service</b>	State of the service that prevents packets from being replayed: <b>Enabled</b> or <b>Disabled</b> .	<b>detail</b>

Table 267: show ipsec security-associations Output Fields (*continued*)

Field Name	Field Description	Level of Output
Replay window size	Configured size, in packets, of the antireplay service window: <b>32</b> or <b>64</b> . The antireplay window size protects the receiver against replay attacks by rejecting old or duplicate packets. If the replay window size is <b>0</b> , the antireplay service is disabled.	detail

### Sample Output

```

show ipsec security-associations sa-name
user@host> show ipsec security-associations sa-cosmic brief
Security association: sa-cosmic, Interface family: Up
Local gateway: 21.21.1.1, Remote gateway: 21.21.2.1
Local identity: ipv4_subnet(any:0,[0..7]=0.0.0.0/0)
Remote identity: ipv4_subnet(any:0,[0..7]=0.0.0.0/0)
Direction SPI      AUX-SPI      Mode      Type      Protocol
inbound  2908734119  0          tunnel    dynamic   AH
outbound  3494029335  0          tunnel    dynamic   AH

show ipsec security-associations sa-name detail
user@host> show ipsec security-associations sa-cosmic detail
Security association: sa-cosmic, Interface family: Up

Local gateway: 21.21.1.1, Remote gateway: 21.21.2.1
Local identity: ipv4_subnet(any:0,[0..7]=0.0.0.0/0)
Remote identity: ipv4_subnet(any:0,[0..7]=0.0.0.0/0)
Direction: inbound, SPI: 2908734119, AUX-SPI: 0, State: Installed
Mode: tunnel, Type: dynamic
Protocol: AH, Authentication: hmac-md5-96, Encryption: None
Soft lifetime: Expired
Hard lifetime: Expires in 120 seconds
Anti-replay service: Disabled

Direction: outbound, SPI: 3494029335, AUX-SPI: 0, State: Installed
Mode: tunnel, Type: dynamic
Protocol: AH, Authentication: hmac-md5-96, Encryption: None
Soft lifetime: Expired
Hard lifetime: Expires in 120 seconds
Anti-replay service: Disabled

```

## show security pki ca-certificate

<b>Syntax</b>	show security pki ca-certificate <brief   detail> <ca-profile <i>ca-profile-name</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 7.5.
<b>Description</b>	Display information about certificate authority (CA) digital certificates installed in the router.
<b>Options</b>	<p>none—(Same as brief) Display information about all CA digital certificates.</p> <p>brief   detail—(Optional) Display the specified level of output.</p> <p>ca-profile <i>ca-profile-name</i>—(Optional) Display information about only the specified CA profile.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p>show security pki ca-certificate on page 1461</p> <p>show security pki ca-certificate detail on page 1462</p>
<b>Output Fields</b>	Table 268 on page 1460 lists the output fields for the <b>show security pki ca-certificate</b> command. Output fields are listed in the approximate order in which they appear.

**Table 268: show security pki ca-certificate Output Fields**

Field Name	Field Description	Level of Output
<b>Certificate identifier</b>	Name of the digital certificate.	All levels
<b>Certificate version</b>	Revision number of the digital certificate.	<b>detail</b>
<b>Serial number</b>	Unique serial number of the digital certificate.	<b>detail</b>
<b>Issued by</b>	Authority that issued the digital certificate.	<b>none brief</b>
<b>Issued to</b>	Device that was issued the digital certificate.	<b>none brief</b>
<b>Issuer</b>	<p>Authority that issued the digital certificate, including details of the authority organized using the distinguished name format. Possible subfields are:</p> <ul style="list-style-type: none"> <li>• <b>Common name</b>—Name of the authority.</li> <li>• <b>Organization</b>—Organization of origin.</li> <li>• <b>Organizational unit</b>—Department within an organization.</li> <li>• <b>State</b>—State of origin.</li> <li>• <b>Country</b>—Country of origin.</li> </ul>	<b>detail</b>

Table 268: show security pki ca-certificate Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Subject</b>	Details of the digital certificate holder organized using the distinguished name format. Possible subfields are: <ul style="list-style-type: none"> <li>• <b>Common name</b>—Name of the requestor.</li> <li>• <b>Organization</b>—Organization of origin.</li> <li>• <b>Organizational unit</b>—Department within an organization.</li> <li>• <b>State</b>—State of origin.</li> <li>• <b>Country</b>—Country of origin.</li> </ul>	<b>detail</b>
<b>Validity</b>	Time period when the digital certificate is valid. Values are: <ul style="list-style-type: none"> <li>• <b>Not before</b>—Start time when the digital certificate becomes valid.</li> <li>• <b>Not after</b>—End time when the digital certificate becomes invalid.</li> </ul>	All levels
<b>Public key algorithm</b>	Encryption algorithm used with the private key, such as <b>rsaEncryption(1024 bits)</b> .	All levels
<b>Signature algorithm</b>	Encryption algorithm that the CA used to sign the digital certificate, such as <b>sha1WithRSAEncryption</b> .	<b>detail</b>
<b>Fingerprint</b>	Secure Hash Algorithm (SHA1) and Message Digest 5 (MD5) hashes used to identify the digital certificate.	<b>detail</b>
<b>Distribution CRL</b>	Distinguished name information and the URL for the certificate revocation list (CRL) server.	<b>detail</b>
<b>Use for key</b>	Use of the public key, such as <b>Certificate signing</b> , <b>CRL signing</b> , <b>Digital signature</b> , or <b>Key encipherment</b> .	<b>detail</b>

## Sample Output

```

show security pki user@host> show security pki ca-certificate
ca-certificate Certificate identifier: entrust
                Issued to: juniper, Issued by: juniper
                Validity:
                  Not before: 2005 Oct 18th, 23:54:22 GMT
                  Not after: 2025 Oct 19th, 00:24:22 GMT
                Public key algorithm: rsaEncryption(1024 bits)

Certificate identifier: entrust
                Issued to: First Officer, Issued by: juniper
                Validity:
                  Not before: 2005 Oct 18th, 23:55:59 GMT
                  Not after: 2008 Oct 19th, 00:25:59 GMT
                Public key algorithm: rsaEncryption(1024 bits)

Certificate identifier: entrust
                Issued to: First Officer, Issued by: juniper
                Validity:
                  Not before: 2005 Oct 18th, 23:55:59 GMT

```

**show security pki  
ca-certificate detail**

```

Not after: 2008 Oct 19th, 00:25:59 GMT
Public key algorithm: rsaEncryption(1024 bits)

user@host> show security pki ca-certificate detail
Certificate identifier: entrust
Certificate version: 3
Serial number: 4355 9235
Issuer:
  Organization: juniper, Country: us
Subject:
  Organization: juniper, Country: us
Validity:
  Not before: 2005 Oct 18th, 23:54:22 GMT
  Not after: 2025 Oct 19th, 00:24:22 GMT
Public key algorithm: rsaEncryption(1024 bits)
cb:9e:2d:c0:70:f8:ea:3c:f2:b5:f0:02:48:87:dc:68:99:a3:57:4f
0e:b9:98:0b:95:47:0d:1f:97:7c:53:17:dd:1a:f8:da:e5:08:d1:1c
78:68:1f:2f:72:9f:a2:cf:81:e3:ce:c5:56:89:ce:f0:97:93:fa:36
19:3e:18:7d:8c:9d:21:fe:1f:c3:87:8d:b3:5d:f3:03:66:9d:16:a7
bf:18:3f:f0:7a:80:f0:62:50:43:83:4f:0e:d7:c6:42:48:c0:8a:b2
c7:46:30:38:df:9b:dc:bc:b5:08:7a:f3:cd:64:db:2b:71:67:fe:d8
04:47:08:07:de:17:23:13
Signature algorithm: sha1WithRSAEncryption
Fingerprint:
  00:8e:6f:58:dd:68:bf:25:0a:e3:f9:17:70:d6:61:f3:53:a7:79:10 (sha1)
  71:6f:6a:76:17:9b:d6:2a:e7:5a:72:97:82:6d:26:86 (md5)
Distribution CRL:
  C=us, O=juniper, CN=CRL1
  http://CA-1/CRL/juniper_us_crlfile.crl
Use for key: CRL signing, Certificate signing
Certificate identifier: entrust
Certificate version: 3
Serial number: 4355 925c
Issuer:
  Organization: juniper, Country: us
Subject:
  Organization: juniper, Country: us, Common name: First Officer
Validity:
  Not before: 2005 Oct 18th, 23:55:59 GMT
  Not after: 2008 Oct 19th, 00:25:59 GMT
Public key algorithm: rsaEncryption(1024 bits)
c0:a4:21:32:95:0a:cd:ec:12:03:d1:a2:89:71:8e:ce:4e:a6:f9:2f
1a:9a:13:8c:f6:a0:3d:c9:bd:9d:c2:a0:41:77:99:1b:1e:ed:5b:80
34:46:f8:5b:28:34:38:2e:91:7d:4e:ad:14:86:78:67:e7:02:1d:2e
19:11:b7:fa:0d:ba:64:20:e1:28:4e:3e:bb:6e:64:dc:cd:b1:b4:7a
ca:8f:47:dd:40:69:c2:35:95:ce:b8:85:56:d7:0f:2d:04:4d:5d:d8
42:e1:4f:6b:bf:38:c0:45:1e:9e:f0:b4:7f:74:6f:e9:70:fd:4a:78
da:eb:10:27:bd:46:34:33
Signature algorithm: sha1WithRSAEncryption
Fingerprint:
  bc:78:87:9b:a7:91:13:20:71:db:ac:b5:56:71:42:ad:1a:b6:46:17 (sha1)
  23:79:40:c9:6d:a6:f0:ca:e0:13:30:d4:29:6f:86:79 (md5)
Distribution CRL:
  C=us, O=juniper, CN=CRL1
  http://CA-1/CRL/juniper_us_crlfile.crl
Use for key: Key encipherment
Certificate identifier: entrust
Certificate version: 3
Serial number: 4355 925b
Issuer:
  Organization: juniper, Country: us

```

Subject:  
Organization: juniper, Country: us, Common name: First Officer  
Validity:  
Not before: 2005 Oct 18th, 23:55:59 GMT  
Not after: 2008 Oct 19th, 00:25:59 GMT  
Public key algorithm: rsaEncryption(1024 bits)  
ea:75:c4:f3:58:08:ea:65:5c:7e:b3:de:63:0a:cf:cf:ec:9a:82:e2  
d7:e8:b9:2f:bd:4b:cd:86:2f:f1:dd:d8:a2:95:af:ab:51:a5:49:4e  
00:10:c6:25:ff:b5:49:6a:99:64:74:69:e5:8c:23:5b:b4:70:62:8e  
e4:f9:a2:28:d4:54:e2:0b:1f:50:a2:92:cf:6c:8f:ae:10:d4:69:3c  
90:e2:1f:04:ea:ac:05:9b:3a:93:74:d0:59:24:e9:d2:9d:c2:ef:22  
b9:32:c7:2c:29:4f:91:cb:5a:26:fe:1d:c0:36:dc:f4:9c:8b:f5:26  
af:44:bf:53:aa:d4:5f:67  
Signature algorithm: sha1WithRSAEncryption  
Fingerprint:  
46:71:15:34:f0:a6:41:76:65:81:33:4f:68:47:c4:df:78:b8:e3:3f (sha1)  
ee:cc:c7:f4:5d:ac:65:33:0a:55:db:59:72:2c:dd:16 (md5)  
Distribution CRL:  
C=us, O=juniper, CN=CRL1  
[http://CA-1/CRL/juniper\\_us\\_crlfile.crl](http://CA-1/CRL/juniper_us_crlfile.crl)  
Use for key: Digital signature

## show security pki certificate-request

<b>Syntax</b>	show security pki certificate-request <brief   detail> <certificate-id <i>certificate-id-name</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 7.5.
<b>Description</b>	Display information about manually generated local digital certificate requests that are stored in the router.
<b>Options</b>	<p>none—(same as brief) Display information about all local digital certificate requests.</p> <p>brief   detail—(Optional) Display the specified level of output.</p> <p>certificate-id <i>certificate-id-name</i>—(Optional) Display information about only the specified local digital certificate request</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>clear security pki certificate-request on page 1422</li> </ul>
<b>List of Sample Output</b>	<p>show security pki certificate-request on page 1465</p> <p>show security pki certificate-request detail on page 1465</p>
<b>Output Fields</b>	Table 269 on page 1464 lists the output fields for the <b>show security pki certificate-request</b> command. Output fields are listed in the approximate order in which they appear.

**Table 269: show security pki certificate-request Output Fields**

Field Name	Field Description	Level of Output
<b>Certificate identifier</b>	Name of the digital certificate.	All levels
<b>Certificate version</b>	Revision number of the digital certificate.	<b>detail</b>
<b>Issued to</b>	Device that was issued the digital certificate.	<b>none brief</b>
<b>Subject</b>	<p>Details of the digital certificate holder organized using the distinguished name format. Possible subfields are:</p> <ul style="list-style-type: none"> <li><b>Common name</b>—Name of the authority.</li> <li><b>Organization</b>—Organization of origin.</li> <li><b>Organizational unit</b>—Department within an organization.</li> <li><b>State</b>—State of origin.</li> <li><b>Country</b>—Country of origin.</li> </ul>	<b>detail</b>
<b>Alternate subject</b>	Domain name or IP address of the device related to the digital certificate.	<b>detail</b>



Table 269: show security pki certificate-request Output Fields (*continued*)

Field Name	Field Description	Level of Output
Validity	Time period when the digital certificate is valid. Values are: <ul style="list-style-type: none"> <li>• <b>Not before</b>—Time when the digital certificate becomes valid.</li> <li>• <b>Not after</b>—End time when the digital certificate becomes invalid.</li> </ul>	All levels
Public key algorithm	Encryption algorithm used with the private key, such as <b>rsaEncryption(1024 bits)</b> .	All levels
Public key verification status	Public key verification status: <b>Failed</b> or <b>Passed</b> . The <b>detail</b> output also provides the verification hash.	All levels
Fingerprint	Secure Hash Algorithm (SHA1) and Message Digest 5 (MD5) hashes used to identify the digital certificate.	<b>detail</b>
Use for key	Use of the public key, such as <b>Certificate signing</b> , <b>CRL signing</b> , <b>Digital signature</b> , or <b>Key encipherment</b> .	<b>detail</b>

### Sample Output

```

show security pki certificate-request user@host> show security pki certificate-request
Certificate identifier: local-microsoft-2
Issued to: router2.juniper.net
Public key algorithm: rsaEncryption(1024 bits)
Public key verification status: Passed

show security pki certificate-request detail user@host> show security pki certificate-request detail
Certificate identifier: local-entrust3
Certificate version: 3
Subject:
  Common name: router3.juniper.net
Alternate subject: router3.juniper.net
Public key algorithm: rsaEncryption(1024 bits)
Public key verification status: Passed
fb:79:df:d4:a9:03:0f:d3:69:7e:c1:e4:27:35:9c:d9:b1:a2:47:78
d2:6d:f3:e5:f4:68:4f:b3:04:45:88:57:99:82:39:a6:51:9e:5f:42
23:3f:d7:6e:3d:a5:54:a9:b1:2d:6e:90:dd:12:8a:bf:ef:2b:20:50
ba:f0:da:d9:0c:ad:5e:d6:c6:98:3a:ae:3f:90:dd:94:78:c1:ea:2e
7c:f0:2d:d4:79:d4:cd:f0:52:df:5e:72:f2:e7:ae:66:f7:61:f4:bc
72:57:3e:6c:6d:d3:24:58:8b:f4:ef:da:2a:6a:fa:eb:98:f8:34:84
79:54:da:4f:d3:6f:52:1f
Fingerprint:
7c:e8:f9:45:93:8d:a3:92:7f:18:29:02:f1:c8:e2:85:3d:ad:df:1f (sha1)
00:4e:df:a0:6b:ad:8c:50:da:7c:a1:cf:5d:37:b0:ea (md5)
Use for key: Digital signature

```

## show security pki crt

<b>Syntax</b>	show security pki crt <brief   detail> <ca-profile <i>ca-profile-name</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 8.1.
<b>Description</b>	Display information about the certificate revocation lists (CRLs) that are stored in the router.
<b>Options</b>	<p>none—(same as brief) Display information about all CRLs.</p> <p>brief   detail—(Optional) Display the specified level of output.</p> <p>ca-profile <i>ca-profile-name</i>—(Optional) Display CRL information about only the specified CA profile.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>clear security pki crt on page 1423</li> </ul>
<b>List of Sample Output</b>	<p>show security pki crt on page 1467</p> <p>show security pki crt detail on page 1467</p>
<b>Output Fields</b>	Table 270 on page 1466 shows the output fields for the <b>show security pki crt</b> command. Output fields are listed in the approximate order in which they appear.

**Table 270: show security pki crt Output Fields**

Field Name	Field Description	Level of Output
CA profile	Name of the configured CA profile.	All levels
CRL version	Revision number of the certificate revocation list.	All levels
CRL number	Number of the certificate revocation list	All levels
CRL Issuer	Device that was issued the certificate revocation list.	All levels
Issuer	<p>Details of the digital certificate holder organized using the distinguished name format. Possible subfields are:</p> <ul style="list-style-type: none"> <li><b>Common name</b>—Name of the authority.</li> <li><b>Organization</b>—Organization of origin.</li> <li><b>Organizational unit</b>—Department within an organization.</li> <li><b>State</b>—State of origin.</li> <li><b>Country</b>—Country of origin.</li> </ul>	<b>detail</b>
Effective date	Date and time the certificate revocation list becomes valid.	All levels

Table 270: show security pki crl Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Next update</b>	Date and time the router will download the latest version of the certificate revocation list.	All levels
<b>Revocation List</b>	<p>List of digital certificates that have been revoked before their expiration date. Values are:</p> <ul style="list-style-type: none"> <li>• <b>Serial number</b>—Unique serial number of the digital certificate</li> <li>• <b>Revocation date</b>—Date and time that the digital certificate was revoked.</li> </ul>	<b>detail</b>

### Sample Output

```

show security pki crl  CA profile entrust
                       CRL version: V2
                       CRL number: 24
                       CRL issuer: C=CA, O=juniper
                       Effective date: 2006 May 31st, 05:35:25 GMT
                       Next update: 2006 Jun 1st, 06:35:25 GMT

show security pki crl  CA profile: entrust
detail                CRL version: V2
                       CRL number: 24
                       Issuer:
                       Organization: juniper, Country: ca
                       Validity:
                       Effective date: 2006 May 31st, 05:35:25 GMT
                       Next update: 2006 Jun 1st, 06:35:25 GMT
                       Revocation List:
                       Serial number      Revocation date
                       4451aca3 2006      May 25th, 09:13:38 GMT
                       4451aca4 2006      May 25th, 10:11:33 GMT
                       4451acb4 2006      May 29th, 11:28:54 GMT
                       4451aceb 2006      May 29th, 11:29:01 GMT
                       4451acfe 2006      May 29th, 11:29:17 GMT
                       4451acff 2006      May 31st, 05:29:55 GMT

```

## show security pki local-certificate

<b>Syntax</b>	show security pki local-certificate <brief   detail> <certificate-id <i>certificate-id-name</i> > <system-generated>
<b>Release Information</b>	Command introduced in Junos OS Release 7.5.
<b>Description</b>	Display information about the local digital certificates and the corresponding public keys installed in the router.
<b>Options</b>	<p>none—(same as brief) Display information about all local digital certificates and corresponding public keys.</p> <p>brief   detail—(Optional) Display the specified level of output.</p> <p>certificate-id <i>certificate-id-name</i>—(Optional) Display information about only the specified the local digital certificate and corresponding public keys.</p> <p>system-generated—(Optional) Auto-generated self-signed certificate.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>clear security pki local-certificate on page 1425</li> </ul>
<b>List of Sample Output</b>	<p>show security pki local-certificate on page 1469</p> <p>show security pki local-certificate detail on page 1470</p>
<b>Output Fields</b>	Table 271 on page 1468 lists the output fields for the <b>show security pki local-certificate</b> command. Output fields are listed in the approximate order in which they appear.

**Table 271: show security pki local-certificate Output Fields**

Field Name	Field Description	Level of Output
<b>Certificate identifier</b>	Name of the digital certificate.	All levels
<b>Certificate version</b>	Revision number of the digital certificate.	<b>detail</b>
<b>Serial number</b>	Unique serial number of the digital certificate.	<b>detail</b>
<b>Issued by</b>	Authority that issued the digital certificate.	none <b>brief</b>
<b>Issued to</b>	Device that was issued the digital certificate.	none <b>brief</b>

Table 271: show security pki local-certificate Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Issuer</b>	Authority that issued the digital certificate, including details of the authority organized using the distinguished name format. Possible subfields are: <ul style="list-style-type: none"> <li>• <b>Common name</b>—Name of the authority.</li> <li>• <b>Organization</b>—Organization of origin.</li> <li>• <b>Organizational unit</b>—Department within an organization.</li> <li>• <b>State</b>—State of origin.</li> <li>• <b>Country</b>—Country of origin.</li> </ul>	<b>detail</b>
<b>Subject</b>	Details of the digital certificate holder organized using the distinguished name format. Possible subfields are: <ul style="list-style-type: none"> <li>• <b>Common name</b>—Name of the authority.</li> <li>• <b>Organization</b>—Organization of origin.</li> <li>• <b>Organizational unit</b>—Department within an organization.</li> <li>• <b>State</b>—State of origin.</li> <li>• <b>Country</b>—Country of origin.</li> </ul>	<b>detail</b>
<b>Alternate subject</b>	Domain name or IP address of the device related to the digital certificate.	<b>detail</b>
<b>Validity</b>	Time period when the digital certificate is valid. Values are: <ul style="list-style-type: none"> <li>• <b>Not before</b>—Start time when the digital certificate becomes valid.</li> <li>• <b>Not after</b>—End time when the digital certificate becomes invalid.</li> </ul>	All levels
<b>Public key algorithm</b>	Encryption algorithm used with the private key, such as <b>rsaEncryption (1024 bits)</b> .	All levels
<b>Public key verification status</b>	Public key verification status: <b>Failed</b> or <b>Passed</b> . The <b>detail</b> output also provides the verification hash.	All levels
<b>Signature algorithm</b>	Encryption algorithm that the CA used to sign the digital certificate, such as <b>sha1WithRSAEncryption</b> .	<b>detail</b>
<b>Fingerprint</b>	Secure Hash Algorithm (SHA1) and Message Digest 5 (MD5) hashes used to identify the digital certificate.	<b>detail</b>
<b>Distribution CRL</b>	Distinguished name information and URL for the certificate revocation list (CRL) server.	<b>detail</b>
<b>Use for key</b>	Use of the public key, such as <b>Certificate signing</b> , <b>CRL signing</b> , <b>Digital signature</b> , or <b>Key encipherment</b> .	<b>detail</b>

## Sample Output

```

show security pki  user@host> show security pki local-certificate
local-certificate  Certificate identifier: local-entrust2
                   Issued to: router2.juniper.net, Issued by: juniper
                   Validity:

```

```
Not before: 2005 Nov 21st, 23:28:22 GMT
Not after: 2008 Nov 21st, 23:58:22 GMT
Public key algorithm: rsaEncryption(1024 bits)
Public key verification status: Passed
```

```
show security pki local-certificate detail
user@host> show security pki local-certificate detail
Certificate identifier: local-entrust3
Certificate version: 3
Serial number: 4355 94f9
Issuer:
  Organization: juniper, Country: us
Subject:
  Organization: juniper, Country: us, Common name: router3.juniper.net
Alternate subject: router3.juniper.net
Validity:
  Not before: 2005 Nov 21st, 23:33:58 GMT
  Not after: 2008 Nov 22nd, 00:03:58 GMT
Public key algorithm: rsaEncryption(1024 bits)
Public key verification status: Passed
fb:79:df:d4:a9:03:0f:d3:69:7e:c1:e4:27:35:9c:d9:b1:a2:47:78
d2:6d:f3:e5:f4:68:4f:b3:04:45:88:57:99:82:39:a6:51:9e:5f:42
23:3f:d7:6e:3d:a5:54:a9:b1:2d:6e:90:dd:12:8a:bf:ef:2b:20:50
ba:f0:da:d9:0c:ad:5e:d6:c6:98:3a:ae:3f:90:dd:94:78:c1:ea:2e
7c:f0:2d:d4:79:d4:cd:f0:52:df:5e:72:f2:e7:ae:66:f7:61:f4:bc
72:57:3e:6c:6d:d3:24:58:8b:f4:ef:da:2a:6a:fa:eb:98:f8:34:84
79:54:da:4f:d3:6f:52:1f
Signature algorithm: sha1WithRSAEncryption
Fingerprint:
  61:3a:d0:b4:7a:16:9b:39:ba:81:3f:9d:ab:34:e5:c8:be:3b:a1:6d (sha1)
  60:a0:ff:58:05:4a:65:73:9d:74:3a:e1:83:6f:1b:c8 (md5)
Distribution CRL:
  C=us, O=juniper, CN=CRL1
  http://CA-1/CRL/juniper_us_crlfile.crl
Use for key: Digital signature
```

## show services ipsec-vpn certificates

<b>Syntax</b>	show services ipsec-vpn certificates <brief   detail> <service-set <i>service-set</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 7.5.
<b>Description</b>	(Adaptive services interfaces only) Display local and remote certificates installed in the IPsec configuration memory cache that are used for the IKE negotiation.
<b>Options</b>	<p>none—(same as brief) Display information about local and remote certificates associated with all service sets.</p> <p>brief   detail—(Optional) Display the specified level of output.</p> <p>service-set <i>service-set</i>—(Optional) Display information about local and remote certificates associated with only the specified service set.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p>show security ipsec-vpn certificates on page 1472</p> <p>show security ipsec-vpn certificates detail on page 1472</p>
<b>Output Fields</b>	Table 272 on page 1471 lists the output fields for the <b>show services ipsec-vpn certificates</b> command. Output fields are listed in the approximate order in which they appear.

**Table 272: show services ipsec-vpn certificates Output Fields**

Field Name	Field Description	Level of Output
<b>Service set</b>	Name of the IPsec service set.	All levels
<b>Total entries</b>	Number of certificate cache entries.	All levels
<b>Certificate cache entry</b>	Identification number of the certificate cache entry.	All levels
<b>Flags</b>	Information about the digital certificate, including whether the certificate is a root certificate and trusted.	none <b>brief</b>
<b>Issued to</b>	Device that was issued the digital certificate.	none <b>brief</b>
<b>Issued by</b>	Authority that issued the digital certificate.	none <b>brief</b>
<b>Certificate version</b>	Revision number of the digital certificate.	<b>detail</b>
<b>Serial number</b>	Unique serial number of the digital certificate.	<b>detail</b>
<b>Alternate subject</b>	Domain name or IP address of the device related to the digital certificate.	All levels

Table 272: show services ipsec-vpn certificates Output Fields (*continued*)

Field Name	Field Description	Level of Output
Validity	Time period when the digital certificate is valid. Values are: <ul style="list-style-type: none"> <li><b>Not before</b>—Start time when the digital certificate becomes valid.</li> <li><b>Not after</b>—End time when the digital certificate becomes invalid.</li> </ul>	none <b>brief</b>
Public key algorithm	Specifies the encryption algorithm used with the private key, such as <b>rsaEncryption (1024 bits)</b> .	<b>detail</b>
Signature algorithm	Encryption algorithm that the CA used to sign the digital certificate, such as <b>sha1WithRSAEncryption</b> .	<b>detail</b>
Fingerprint	Secure Hash Algorithm (SHA1) and Message Digest 5 (MD5) hashes used to identify the digital certificate.	<b>detail</b>
Distribution CRL	Distinguished name information and the URL for the certificate revocation list (CRL) server.	<b>detail</b>
Use for key	Use of the public key, such as <b>Certificate signing</b> , <b>CRL signing</b> , <b>Digital signature</b> , or <b>Key encipherment</b> .	<b>detail</b>

## Sample Output

```

show security ipsec-vpn certificates user@host> show services ipsec-vpn certificates
Service set: serviceset-dynamic-BiEspsha3des, Total entries: 3
Certificate cache entry: 3
  Flags: Non-root Trusted
  Issued to: router3.juniper.net, Issued by: juniper
  Alternate subject: router3.juniper.net
  Validity:
    Not before: 2005 Nov 21st, 23:33:58 GMT
    Not after: 2008 Nov 22nd, 00:03:58 GMT

Certificate cache entry: 2
  Flags: Non-root Trusted
  Issued to: router2.juniper.net, Issued by: juniper
  Alternate subject: router2.juniper.net
  Validity:
    Not before: 2005 Nov 21st, 23:28:22 GMT
    Not after: 2008 Nov 21st, 23:58:22 GMT

Certificate cache entry: 1
  Flags: Root Trusted
  Issued to: juniper, Issued by: juniper
  Validity:
    Not before: 2005 Oct 18th, 23:54:22 GMT
    Not after: 2025 Oct 19th, 00:24:22 GMT

show security ipsec-vpn certificates detail user@host> show services ipsec-vpn certificates detail
Service set: serviceset-dynamic-BiEspsha3des, Total entries: 3
Certificate cache entry: 3
  Certificate version: 3
  Serial number: 4355 94f9
  Alternate subject: router3.juniper.net

```



```
Public key algorithm: rsaEncryption
Signature algorithm: sha1WithRSAEncryption
Fingerprint:
  61:3a:d0:b4:7a:16:9b:39:ba:81:3f:9d:ab:34:e5:c8:be:3b:a1:6d (sha1)
  60:a0:ff:58:05:4a:65:73:9d:74:3a:e1:83:6f:1b:c8 (md5)
Distribution CRL:
  C=us, O=juniper, CN=CRL1
  http://CA-1/CRL/juniper_us_crlfile.crl
Use for key: Digital signature

Certificate cache entry: 2
Certificate version: 3
Serial number: 4355 94f8
Alternate subject: router2.juniper.net
Public key algorithm: rsaEncryption
Signature algorithm: sha1WithRSAEncryption
Fingerprint:
  30:c3:a4:04:da:33:9d:60:23:5a:48:75:48:2c:f0:c6:96:6c:31:fa (sha1)
  9a:a2:ce:ef:7e:10:80:a0:c8:4d:2f:e7:e1:d3:69:9d (md5)
Distribution CRL:
  C=us, O=juniper, CN=CRL1
  http://CA-1/CRL/juniper_us_crlfile.crl
Use for key: Digital signature

Certificate cache entry: 1
Certificate version: 3
Flags: Root
Serial number: 4355 9235
Public key algorithm: rsaEncryption
Signature algorithm: sha1WithRSAEncryption
Fingerprint:
  00:8e:6f:58:dd:68:bf:25:0a:e3:f9:17:70:d6:61:f3:53:a7:79:10 (sha1)
  71:6f:6a:76:17:9b:d6:2a:e7:5a:72:97:82:6d:26:86 (md5)
Distribution CRL:
  C=us, O=juniper, CN=CRL1
  http://CA-1/CRL/juniper_us_crlfile.crl
Use for key: CRL signing, Certificate signing
```

## show services ipsec-vpn ike security-associations

<b>Syntax</b>	show services ipsec-vpn ike security-associations <brief   detail> <peer-address>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(Adaptive services interface only) Display information for Internet Key Exchange (IKE) security associations. If no security association is specified, the information for all security associations is displayed.
<b>Options</b>	<p>none—(same as brief) Display standard information for all IPsec security associations.</p> <p>brief   detail—(Optional) Display the specified level of output.</p> <p>peer-address—(Optional) Display information about a particular security association address.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p>show services ipsec-vpn ike security-associations on page 1476</p> <p>show services ipsec-vpn ike security-associations detail on page 1476</p>
<b>Output Fields</b>	Table 273 on page 1474 lists the output fields for the <b>show services ipsec-vpn ike security-associations</b> command. Output fields are listed in the approximate order in which they appear.

**Table 273: show services ipsec-vpn ike security-associations Output Fields**

Field Name	Field Description	Level of Output
<b>IKE peer</b>	Remote end of the IKE negotiation.	<b>detail</b>
<b>Role</b>	Part played in the IKE session. The router triggering the IKE negotiation is the initiator, and the router accepting the first IKE exchange packets is the responder.	<b>detail</b>
<b>Remote Address</b>	Responder's address.	none specified
<b>State</b>	State of the IKE security association: <ul style="list-style-type: none"> <li>• <b>Matured</b>—IKE security association is established.</li> <li>• <b>Not matured</b>—The IKE security association is in the process of negotiation.</li> </ul>	none specified
<b>Initiator cookie</b>	When the IKE negotiation is triggered, a random number is sent to the remote node.	All levels

Table 273: show services ipsec-vpn ike security-associations Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Responder cookie</b>	<p>The remote node generates its own random number and sends it back to the initiator as a verification that the packets were received.</p> <p>Of the numerous security services available, protection against denial of service (DoS) is one of the most difficult to address. A “cookie” or anticlogging token (ACT) is aimed at protecting the computing resources from attack without spending excessive CPU resources to determine the cookie's authenticity. An exchange prior to CPU-intensive public key operations can thwart some DoS attempts (such as simple flooding with invalid IP source addresses).</p>	All levels
<b>Exchange type</b>	<p>Specifies the number of messages in an IKE exchange, and the payload types that are contained in each message. Each exchange type provides a particular set of security services, such as anonymity of the participants, perfect forward secrecy of the keying material, and authentication of the participants. Junos OS supports two types of exchanges:</p> <ul style="list-style-type: none"> <li>• <b>Main</b>—The exchange is done with six messages. <b>Main</b> encrypts the payload, protecting the identity of the neighbor.</li> <li>• <b>Aggressive</b>—The exchange is done with three messages. <b>Aggressive</b> does not encrypt the payload, leaving the identity of the neighbor unprotected.</li> </ul>	All levels
<b>Authentication method</b>	Type of authentication determines which payloads are exchanged and when they are exchanged. The Junos OS supports only <b>pre-shared keys</b> .	<b>detail</b>
<b>Local</b>	Prefix and port number of the local end.	<b>detail</b>
<b>Remote</b>	Prefix and port number of the remote end.	<b>detail</b>
<b>Lifetime</b>	Number of seconds remaining until the IKE security association expires.	<b>detail</b>
<b>Algorithms</b>	<p>Header for the IKE algorithms output.</p> <ul style="list-style-type: none"> <li>• <b>Authentication</b>—(<b>detail</b> output only) Type of authentication algorithm used: <b>md5</b> or <b>sha1</b></li> <li>• <b>Encryption</b>—(<b>detail</b> output only) Type of encryption algorithm used: <b>des-cbc</b>, <b>3des-cbc</b>, or <b>None</b>.</li> <li>• <b>Pseudo random function</b>—Function that generates highly unpredictable random numbers: <b>hmac-md5</b> or <b>hmac-sha1</b>.</li> </ul>	<b>detail</b>
<b>Traffic statistics</b>	<p>Number of bytes and packets received and transmitted on the IKE security association.</p> <ul style="list-style-type: none"> <li>• <b>Input bytes, Output bytes</b>—Number of bytes received and transmitted on the IKE security association.</li> <li>• <b>Input packets, Output packets</b>—Number of packets received and transmitted on the IKE security association.</li> </ul>	<b>detail</b>

Table 273: show services ipsec-vpn ike security-associations Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Flags</b>	Notification to the key management process of the status of the IKE negotiation: <ul style="list-style-type: none"> <li><b>caller notification sent</b>—Caller program notified about the completion of the IKE negotiation.</li> <li><b>waiting for done</b>—Negotiation is done. The library is waiting for the remote end retransmission timers to expire.</li> <li><b>waiting for remove</b>—Negotiation has failed. The library is waiting for the remote end retransmission timers to expire before removing this negotiation.</li> <li><b>waiting for policy manager</b>—Negotiation is waiting for a response from the policy manager.</li> </ul>	<b>detail</b>
<b>IPsec security associates</b>	Number of IPsec security associations created and deleted with this IKE security association.	<b>detail</b>
<b>Phase 2 negotiations in progress</b>	Number of phase 2 IKE negotiations in progress and status information: <ul style="list-style-type: none"> <li>Negotiation type—Type of phase 2 negotiation. The Junos OS currently supports <b>quick mode</b>.</li> <li>Message ID—Unique identifier for a phase 2 negotiation.</li> <li>Local identity—Identity of the local phase 2 negotiation. The format is <i>id-type-name (proto-name:port-number,[0..id-data-len] = iddata-presentation)</i>.</li> <li>Remote identity—Identity of the remote phase 2 negotiation. The format is <i>id-type-name (proto-name:port-number,[0..id-data-len] = iddata-presentation)</i>.</li> <li>Flags—Notification to the key management process of the status of the IKE negotiation: <ul style="list-style-type: none"> <li><b>caller notification sent</b>—Caller program notified about the completion of the IKE negotiation.</li> <li><b>waiting for done</b>—Negotiation is done. The library is waiting for the remote end retransmission timers to expire.</li> <li><b>waiting for remove</b>—Negotiation has failed. The library is waiting for the remote end retransmission timers to expire before removing this negotiation.</li> <li><b>waiting for policy manager</b>—Negotiation is waiting for a response from the policy manager.</li> </ul> </li> </ul>	<b>detail</b>

### Sample Output

```

show services ipsec-vpn ike security-associations user@host> show services ipsec-vpn ike security-associations
Remote Address      State      Initiator cookie  Responder cookie  Exchange type
6.6.6.1             Matured    062d291d21275fc7  82ef00e3d1f1c981  Main
6.6.6.1             Matured    cd6d581d7bb1664d  88a707779f3ad8d1  Main

show services ipsec-vpn ike security-associations detail user@host> show services ipsec-vpn ike security-associations detail
IKE peer 4.4.4.4
Role: Initiator, State: Matured
Initiator cookie: cf22bd81a7000001, Responder cookie: fe83795c2800002e
Exchange type: Main, Authentication method: Pre-shared-keys
Local: 4.4.4.5:500, Remote: 4.4.4.4:500
Lifetime: Expires in 187 seconds

```

Algorithms:  
Authentication : md5  
Encryption : 3des-cbc  
Pseudo random function: hmac-md5  
Traffic statistics:  
Input bytes : 1000  
Output bytes : 1280  
Input packets: 5  
Output packets: 9  
Flags: Caller notification sent  
IPsec security associations: 2 created, 0 deleted  
Phase 2 negotiations in progress: 1

Negotiation type: Quick mode, Role: Initiator, Message ID: 3582889153  
Local: 4.4.4.5:500, Remote: 4.4.4.4:500  
Local identity: ipv4\_subnet(tcp:80,[0..7]=10.1.1.0/24)  
Remote identity: ipv4\_subnet(tcp:100,[0..7]=10.1.2.0/24)  
Flags: Caller notification sent, Waiting for done

## show services ipsec-vpn ipsec security-associations

<b>Syntax</b>	show services ipsec-vpn ipsec security-associations <brief   detail   extensive> <service-set <i>service-set-name</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(Adaptive services interface only) Display IPsec security associations for the specified service set. If no service set is specified, the security associations for all service sets are displayed.
<b>Options</b>	<p>none—Display standard information about IPsec security associations for all service sets.</p> <p>brief   detail   extensive—(Optional) Display the specified level of output.</p> <p>service-set <i>service-set-name</i>—(Optional) Display information about a particular service set.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show services ipsec-vpn ipsec security associations extensive on page 1480
<b>Output Fields</b>	Table 274 on page 1478 lists the output fields for the <b>show services ipsec-vpn ipsec security-associations</b> command. Output fields are listed in the approximate order in which they appear.

**Table 274: show services ipsec-vpn ipsec security-associations Output Fields**

Field Name	Field Description	Level of Output
<b>Service set</b>	Name of the service set for which the IPsec security associations are defined. If appropriate, includes the outside service interface VRF name.	All levels
<b>Rule</b>	Name of the rule set applied to the security association.	detail extensive
<b>Term</b>	Name of the IPsec term applied to the security association.	detail extensive
<b>Tunnel index</b>	Numeric identifier of the specific IPsec tunnel for the security association.	detail extensive
<b>Local gateway</b>	Gateway address of the local system.	All levels
<b>Remote gateway</b>	Gateway address of the remote system.	All levels
<b>IPsec inside interface</b>	Name of the logical interface hosting the IPsec tunnels.	All levels
<b>Local identity</b>	Prefix and port number of the local end	All levels
<b>Remote identity</b>	Prefix and port number of the remote end.	All levels

Table 274: show services ipsec-vpn ipsec security-associations Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Primary remote gateway</b>	IP address of the configured primary remote peer.	All levels
<b>Backup remote gateway</b>	IP address of the configured backup remote peer.	All levels
<b>State</b>	State of the primary or backup interface: <b>Active</b> , <b>Offline</b> , or <b>Standby</b> . Both ES PICs are initialized to <b>Offline</b> . For primary and backup peers, <b>State</b> can be <b>Active</b> or <b>Standby</b> . If both peers are in a state of <b>Standby</b> , no connection exists yet between the two peers.	All levels
<b>Failover counter</b>	Number of times a PIC switched between primary and backup interfaces, or the number of times the tunnel switched between the primary and remote peers since the software has been activated.	All levels
<b>Direction</b>	Direction of the security association: <b>inbound</b> or <b>outbound</b> .	All levels
<b>SPI</b>	Value of the security parameter index.	All levels
<b>AUX-SPI</b>	Value of the auxiliary security parameter index. <ul style="list-style-type: none"> <li>When the value of <b>Protocol</b> is <b>AH</b> or <b>ESP</b>, <b>AUX-SPI</b> is always 0.</li> <li>When the value of <b>Protocol</b> is <b>AH+ESP</b>, <b>AUX-SPI</b> is always a positive integer.</li> </ul>	All levels
<b>Mode</b>	Mode of the security association: <ul style="list-style-type: none"> <li><b>transport</b>—Protects single host-to-host protections.</li> <li><b>tunnel</b>—Protects connections between security gateways.</li> </ul>	<b>detail extensive</b>
<b>Type</b>	Type of security association: <ul style="list-style-type: none"> <li><b>manual</b>—Security parameters require no negotiation. They are static, and are configured by the user.</li> <li><b>dynamic</b>—Security parameters are negotiated by the IKE protocol. Dynamic security associations are not supported in transport mode.</li> </ul>	<b>detail extensive</b>
<b>State</b>	Status of the security association: <ul style="list-style-type: none"> <li><b>Installed</b>—The security association is installed in the security association database. (For transport mode security associations, the value of State must always be Installed)</li> <li><b>Not installed</b>—The security association is not installed in the security association database.</li> </ul>	<b>detail extensive</b>
<b>Protocol</b>	Protocol supported: <ul style="list-style-type: none"> <li><b>transport</b> mode supports Encapsulation Security Protocol (<b>ESP</b>) or Authentication Header (<b>AH</b>).</li> <li><b>tunnel</b> mode supports <b>ESP</b> or <b>AH+ESP</b>.</li> </ul>	All levels
<b>Authentication</b>	Type of authentication used: <b>hmac-md5-96</b> , <b>hmac-sha1-96</b> , or <b>none</b> .	<b>detail extensive</b>

Table 274: show services ipsec-vpn ipsec security-associations Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Encryption</b>	Type of encryption algorithm used: can be <b>aes-cbc (128 bits)</b> , <b>aes-cbc (192 bits)</b> , <b>aes-cbc (256 bits)</b> , <b>des-cbc</b> , <b>3des-cbc</b> , or <b>None</b> .	<b>detail</b>
<b>Soft lifetime</b> <b>Hard lifetime</b>	Each lifetime of a security association has two display options, hard and soft, one of which must be present for a dynamic security association. The hard lifetime specifies the lifetime of the SA. The soft lifetime, which is derived from the hard lifetime, informs the IPsec key management system that the SA is about to expire. This information allows the key management system to negotiate a new SA before the hard lifetime expires. <ul style="list-style-type: none"> <li>• <b>Expires in seconds seconds</b>—Number of seconds left until the security association expires.</li> <li>• <b>Expires in kilobytes kilobytes</b>—Number of kilobytes left until the security association expires.</li> </ul>	<b>detail extensive</b>
<b>Anti-replay service</b>	State of the service that prevents packets from being replayed: <b>Enabled</b> or <b>Disabled</b> .	<b>detail extensive</b>
<b>Replay window size</b>	Configured size, in packets, of the antireplay service window: <b>32</b> or <b>64</b> . The antireplay window size protects the receiver against replay attacks by rejecting old or duplicate packets. If the replay window size is <b>0</b> , antireplay service is disabled.	<b>detail</b>

### Sample Output

```

show services ipsec-vpn ipsec security associations extensive
user@host> show services ipsec-vpn ipsec security-associations extensive
Service set: service-set-1
Rule: _junos_, Term: term-1, Tunnel index: 1
Local gateway: 101.101.101.2, Remote gateway: 14.14.14.4
IPSec inside interface: sp-2/0/0.1 Local identity:
ipv4_subnet(any:0,[0..7]=0.0.0.0/0)
Remote identity: ipv4_subnet(any:0,[0..7]=0.0.0.0/0)
Primary remote gateway: 101.101.101.1, State: Standby
Backup remote gateway: 14.14.14.4, State: Active
Failover counter: 1

Direction: inbound, SPI: 3743521590, AUX-SPI: 0
Mode: tunnel, Type: dynamic, State: Installed
Protocol: ESP, Authentication: hmac-sha1-96, Encryption: 3des-cbc
Soft lifetime: Expires in 23043 seconds
Hard lifetime: Expires in 23178 seconds
Anti-replay service: Enabled, Replay window size: 64

Direction: outbound, SPI: 2551045240, AUX-SPI: 0
Mode: tunnel, Type: dynamic, State: Installed
Protocol: ESP, Authentication: hmac-sha1-96, Encryption: 3des-cbc
Soft lifetime: Expires in 23043 seconds
Hard lifetime: Expires in 23178 seconds
Anti-replay service: Enabled, Replay window size: 64

```



## show services ipsec-vpn ipsec statistics

<b>Syntax</b>	show services ipsec-vpn ipsec statistics <brief   detail> <remote-gw remote-peer-address> <service-set service-set-name>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. New fields added in Junos OS Release 10.0.
<b>Description</b>	(Adaptive services interface only) Display IPsec statistics for the specified service set. If no service set is specified, the statistics for all service sets are displayed.
<b>Options</b>	none—Display standard IPsec statistics for all service sets.  brief   detail—(Optional) Display the specified level of output.  remote-gw remote-peer-address—(Optional) Display IPsec statistics for an individual IPsec tunnel and an individual remote host.  service-set service-set-name—(Optional) Display information about a particular service set.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show services ipsec-vpn ipsec statistics detail on page 1483 show services ipsec-vpn ipsec statistics remote-gw on page 1483
<b>Output Fields</b>	Table 275 on page 1481 lists the output fields for the <b>show services ipsec-vpn ipsec statistics</b> command. Output fields are listed in the approximate order in which they appear.

**Table 275: show services ipsec-vpn ipsec statistics Output Fields**

Field Name	Field Description	Level of Output
PIC	The physical interface on which the IPsec tunnel is configured.	All levels
Service set	Name of the service set for which the IPsec tunnel is defined.	All levels
Local gateway	Gateway address of the local system.	All levels
Remote gateway	Gateway address of the remote system.	All levels
Tunnel index	Numeric identifier of the specific IPsec tunnel for the security association.	All levels

Table 275: show services ipsec-vpn ipsec statistics Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>ESP statistics</b>	Encapsulation Security Payload (ESP) statistics: <ul style="list-style-type: none"> <li>• <b>Encrypted bytes</b>—Total number of bytes encrypted by the local system across the IPsec tunnel.</li> <li>• <b>Decrypted bytes</b>—Total number of bytes decrypted by the local system across the IPsec tunnel.</li> <li>• <b>Encrypted packets</b>—Total number of packets encrypted by the local system across the IPsec tunnel.</li> <li>• <b>Decrypted packets</b>—Total number of packets decrypted by the local system across the IPsec tunnel.</li> </ul>	All levels
<b>AH Statistics</b>	Authentication Header statistics: <ul style="list-style-type: none"> <li>• <b>Input bytes</b>—Total number of bytes received by the local system across the IPsec tunnel.</li> <li>• <b>Output bytes</b>—Total number of bytes transmitted by the local system across the IPsec tunnel.</li> <li>• <b>Input packets</b>—Total number of packets received by the local system across the IPsec tunnel.</li> <li>• <b>Output packets</b>—Total number of packets transmitted by the local system across the IPsec tunnel.</li> </ul>	All levels
<b>Errors</b>	<ul style="list-style-type: none"> <li>• <b>AH authentication failures</b>—Number of authentication header (AH) failures. An AH failure occurs when there is a mismatch of the authentication header in a packet transmitted across an IPsec tunnel.</li> <li>• <b>ESP authentication failures</b>—Number of Encapsulation Security Payload (ESP) failures. An ESP failure occurs when there is an authentication mismatch in ESP packets.</li> <li>• <b>ESP Decryption failures</b>—Number of ESP decryption failures.</li> <li>• <b>Bad headers</b>—Number of invalid headers detected.</li> <li>• <b>Bad trailers</b>—Number of invalid trailers detected.</li> <li>• <b>Replay before window drops</b>—Number of replay errors. A replay error is generated when a duplicate packet is received within the replay window.</li> <li>• <b>Replayed pkts</b>—Number of packets replayed.</li> <li>• <b>IP integrity errors</b>—Number of IP integrity errors.</li> <li>• <b>Exceeds tunnel MTU</b>—Number of times the tunnel maximum transmission unit (MTU) value was exceeded.</li> <li>• <b>Rule lookup failures</b>—Number of rule lookup failures.</li> <li>• <b>No SA errors</b>—Number of errors resulting from a missing security association (SA).</li> <li>• <b>Flow errors</b>—Number of flow errors.</li> <li>• <b>Misc errors</b>—Number of miscellaneous errors.</li> </ul>	All levels

## Sample Output

```

show services user@host> show services ipsec-vpn ipsec statistics
ipsec-vpn ipsec PIC: sp-0/2/0, Service set: ss0
statistics detail
ESP Statistics:
  Encrypted bytes:          0
  Decrypted bytes:          0
  Encrypted packets:        0
  Decrypted packets:        0
AH Statistics:
  Input bytes:              168
  Output bytes:             168
  Input packets:            2
  Output packets:           2
Errors:
  AH authentication failures: 0
  ESP authentication failures: 0
  ESP decryption failures:    0
  Bad headers: 0, Bad trailers: 0
  Replay before window drops: 0, Replayed pkts: 0
  IP integrity errors: 0, Exceeds tunnel MTU: 0
  Rule lookup failures: 0, No SA errors: 0
  Flow errors: 0, Misc errors: 0

show services user@host> show services ipsec-vpn ipsec statistics remote-gw 22.22.2.1
ipsec-vpn ipsec PIC: sp-3/1/0, Service set: service-set-2
statistics remote-gw Local gateway: 22.22.1.1, Remote gateway: 22.22.2.1, Tunnel index: 2
ESP Statistics:
  Encrypted bytes:          0
  Decrypted bytes:          0
  Encrypted packets:        0
  Decrypted packets:        0
AH Statistics:
  Input bytes:              0
  Output bytes:             0
  Input packets:            0
  Output packets:           0
Errors:
  AH authentication failures: 0
  ESP authentication failures: 0
  ESP decryption failures:    0
  Bad headers: 0, Bad trailers: 0
  Replay before window drops: 0, Replayed pkts: 0
  IP integrity errors: 0, Exceeds tunnel MTU: 0
  Rule lookup failures: 0, No SA errors: 0
  Flow errors: 0, Misc errors: 0

```

## show system certificate

<b>Syntax</b>	show system certificate <certificate-id>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 11.1 for the QFX Series.
<b>Description</b>	(Encryption interface on M Series and T Series routers only) Display installed certificates signed by the Juniper Networks certificate authority.
<b>Options</b>	none—Display all installed certificates signed by the Juniper Networks certificate authority.  certificate-id—(Optional) Display the details of a particular certificate.
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	show system certificate on page 1485 show system certificate (QFX Series) on page 1485
<b>Output Fields</b>	Table 276 on page 1484 lists the output fields for the <b>show system certificate</b> command. Output fields are listed in the approximate order in which they appear.

**Table 276: show system certificate Output Fields**

Field Name	Field Description
<b>Certificate identifier</b>	Unique identifier associated with a certificate. The certificate identifier is the common name of the subject.
<b>Issuer</b> <b>Subject</b>	Information about the certificate issuer and the distinguished name (DN) of the issuer, respectively: <ul style="list-style-type: none"> <li>• <b>Organization</b>—Name of the owner's organization.</li> <li>• <b>Organizational unit</b>—Name of the owner's department.</li> <li>• <b>Country</b>—Two-character country code in which the owner's system is located.</li> <li>• <b>State</b>—State in the USA in which the owner is using the certificate.</li> <li>• <b>Locality</b>—City in which the owner's system is located.</li> <li>• <b>Common name</b>—Name of the owner of the certificate.</li> <li>• <b>E-mail address</b>—E-mail address of the owner of the certificate.</li> </ul>
<b>Validity</b>	When a certificate is valid.
<b>Signature algorithm</b>	Encryption algorithm applied to the installed certificate.
<b>Public key algorithm</b>	Encryption algorithm applied to the public key.

## Sample Output

```

user@host> show system certificate
Certificate identifier: Dallas-v3
  Issuer:
    Organization: Juniper Networks, Organizational unit: Juniper CA,
    Country: US, State: CA, Locality: Sunnyvale, Common name: Dallas CA,
    E-mail address:ca@juniper.net
  Subject:
    Organization: Juniper Networks, Organizational unit: Juniper CA,
    Country: US, State: CA, Locality: Sunnyvale, Common name: Dallas-v3,
    E-mail address:ca@juniper.net
  Validity:
    Not before: Mar 13 03:23:25 2004 GMT
    Not after: Mar 24 03:23:25 2014 GMT
  Signature algorithm: sha1WithRSAEncryption
  Public key algorithm: dsaEncryption

```

## Sample Output

```

user@host> show system certificate
Certificate identifier: Dallas-v3
  Issuer:
    Organization: Juniper Networks, Organizational unit: Juniper CA,
    Country: US, State: CA, Locality: Sunnyvale, Common name: Dallas CA,
    E-mail address:ca@juniper.net
  Subject:
    Organization: Juniper Networks, Organizational unit: Juniper CA,
    Country: US, State: CA, Locality: Sunnyvale, Common name: Dallas-v3,
    E-mail address:ca@juniper.net
  Validity:
    Not before: Mar 13 03:23:25 2004 GMT
    Not after: Mar 24 03:23:25 2014 GMT
  Signature algorithm: sha1WithRSAEncryption
  Public key algorithm: dsaEncryption

```



# Layer 2 Tunneling Protocol Operational Mode Commands

Table 277 on page 1487 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot Layer 2 Tunneling Protocol (L2TP) services. Commands are listed in alphabetical order.

**Table 277: L2TP Services Operational Mode Commands**

Task	Command
Clear L2TP destinations.	<code>clear services l2tp destination</code>
Clear L2TP multilink bundles.	<code>clear services l2tp multilink</code>
Clear L2TP sessions.	<code>clear services l2tp session</code>
Clear statistics for L2TP sessions.	<code>clear services l2tp session statistics</code>
Clear L2TP tunnels.	<code>clear services l2tp tunnel</code>
Clear statistics for L2TP tunnels.	<code>clear services l2tp tunnel statistics</code>
Display information about L2TP tunnel destinations.	<code>show services l2tp destination</code>
Display L2TP multilink bundles.	<code>show services l2tp multilink</code>
Display RADIUS server and statistics information.	<code>show services l2tp radius</code>
Display active L2TP sessions.	<code>show services l2tp session</code>
Display L2TP summary information.	<code>show services l2tp summary</code>
Display active L2TP tunnels.	<code>show services l2tp tunnel</code>
Display active L2TP users.	<code>show services l2tp user</code>



.....

**NOTE:** L2TP services are supported on the adaptive services (*sp-fpc/pic/port*) interface on M7i and M10i routers.

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**NOTE:** For information about how to configure L2TP services, see the *Junos OS Services Interfaces Configuration Guide*.

.....



## clear services l2tp destination

---

<b>Syntax</b>	clear services l2tp destination all
<b>Release Information</b>	Command introduced in Junos OS Release 10.4.
<b>Description</b>	Clear all Layer 2 Tunneling Protocol (L2TP) destinations and all tunnels and sessions that belong to the destinations. This command is available only for LAC on MX Series routers.
<b>Required Privilege Level</b>	clear
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show services l2tp destination on page 1499</a></li></ul>
<b>List of Sample Output</b>	<a href="#">clear services l2tp destination all on page 1489</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```
clear services l2tp destination all
user@host> clear services l2tp destination all
Destination 2 closed
```

## clear services l2tp multilink

---

<b>Syntax</b>	clear services l2tp multilink (all <statistics>   bundle-id <i>number</i> <statistics>   statistics (all   bundle-id <i>number</i> ))
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M10i and M7i routers only) Close Layer 2 Tunneling Protocol (L2TP) multilink sessions or clear session statistics.
<b>Options</b>	<p>all &lt;statistics&gt;—Close all L2TP multilink sessions or clear statistics for all L2TP multilink sessions.</p> <p>bundle-id <i>number</i> &lt;statistics&gt;—L2TP multilink bundle ID. The value is an internally generated number from 1 to 65535. Close the specified L2TP multilink session, or using the <b>statistics</b> keyword with this option, clear statistics for the specified session.</p> <p>statistics (all   bundle-id <i>number</i>)—Clear all session statistics or clear statistics for the specified multilink bundle ID.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show services l2tp multilink on page 1501</a></li></ul>
<b>List of Sample Output</b>	<a href="#">clear services l2tp multilink statistics all on page 1490</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

clear services l2tp multilink statistics all	user@host> clear services l2tp multilink statistics all Multilink 1 statistics cleared
-------------------------------------------------	-------------------------------------------------------------------------------------------

## clear services l2tp session

<b>Syntax</b>	clear services l2tp session (all   interface <i>sp-fpc/pic/port</i>   local-gateway <i>gateway-address</i>   local-gateway-name <i>gateway-name</i>   local-tunnel-id <i>tunnel-id</i>   peer-gateway <i>gateway-address</i>   peer-gateway-name <i>gateway-name</i>   tunnel-group <i>group-name</i>   user <i>username</i> )
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Support for MX Series routers added in Junos OS Release 10.4.
<b>Description</b>	(M10i and M7i routers: LNS only. MX Series routers: LAC only.) Clear Layer 2 Tunneling Protocol (L2TP) sessions.
<b>Options</b>	<p>all—Close all L2TP sessions.</p> <p>interface <i>sp-fpc/pic/port</i>—Clear only the L2TP sessions using the specified adaptive services interface. This option is not available for L2TP LAC on MX Series routers.</p> <p>local-gateway <i>gateway-address</i>—Clear only the L2TP sessions associated with the specified local gateway address.</p> <p>local-gateway-name <i>gateway-name</i>—Clear only the L2TP sessions associated with the specified local gateway name.</p> <p>local-session-id <i>session-id</i> —Clear only the L2TP sessions with this identifier for the local endpoint of the L2TP session.</p> <p>local-tunnel-id <i>tunnel-id</i>—Clear only the L2TP sessions associated with the specified local tunnel identifier.</p> <p>peer-gateway <i>gateway-address</i>—Clear only the L2TP sessions associated with the peer gateway with the specified address.</p> <p>peer-gateway-name <i>gateway-name</i>—Clear only the L2TP sessions associated with the peer gateway with the specified name.</p> <p>tunnel-group <i>group-name</i>—Clear only the L2TP sessions associated with the specified tunnel group. This option is not available for L2TP LAC on MX Series routers.</p> <p>user <i>username</i> —Clear only the L2TP sessions for the specified username. This option is not available for L2TP LAC on MX Series routers.</p>
<b>Required Privilege Level</b>	clear
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">clear services l2tp session statistics on page 1493</a></li> <li>• <a href="#">show services l2tp session on page 1508</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">clear services l2tp session on page 1492</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```
clear services l2tp session user@host> clear services l2tp session 31694
Session 31694 closed
```

## clear services l2tp session statistics

<b>Syntax</b>	clear services l2tp session statistics (all   interface <i>sp-fpc/pic/port</i>   local-gateway <i>gateway-address</i>   local-gateway-name <i>gateway-name</i>   local-session-id <i>session-id</i>   local-tunnel-id <i>tunnel-id</i>   peer-gateway <i>gateway-address</i>   peer-gateway-name <i>gateway-name</i>   tunnel-group <i>group-name</i>   user <i>username</i> )
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Support for MX Series routers added in Junos OS Release 10.4.
<b>Description</b>	(M10i and M7i routers: LNS only. MX Series routers: LAC only.) Clear statistics for Layer 2 Tunneling Protocol (L2TP) sessions.
<b>Options</b>	<p>all—Clear statistics for all L2TP sessions.</p> <p>interface <i>sp-fpc/pic/port</i>—Clear statistics for only the L2TP sessions using the specified adaptive services interface. This option is not available for L2TP LAC on MX Series routers.</p> <p>local-gateway <i>gateway-address</i>—Clear statistics for only the L2TP sessions associated with the local gateway with the specified address.</p> <p>local-gateway-name <i>gateway-name</i>—Clear statistics for only the L2TP sessions associated with the local gateway with the specified name.</p> <p>local-session-id <i>session-id</i>—Clear statistics for only the L2TP sessions with this identifier for the local endpoint of the L2TP session.</p> <p>local-tunnel-id <i>tunnel-id</i>—Clear statistics for only the L2TP sessions associated with the specified local tunnel identifier.</p> <p>peer-gateway <i>gateway-address</i>—Clear statistics for only the L2TP sessions associated with the peer gateway with the specified address.</p> <p>peer-gateway-name <i>gateway-name</i>—Clear statistics for only the L2TP sessions associated with the peer gateway with the specified name.</p> <p>tunnel-group <i>group-name</i>—Clear statistics for only the L2TP sessions associated with the specified tunnel group. This option is not available for L2TP LAC on MX Series routers.</p> <p>user <i>username</i> &lt;statistics&gt;—Clear statistics for only the L2TP sessions for the specified username. This option is not available for L2TP LAC on MX Series routers.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">clear services l2tp session on page 1491</a></li> <li>• <a href="#">show services l2tp session on page 1508</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">clear services l2tp session statistics all on page 1494</a>

**Output Fields** When you enter this command, you are provided feedback on the status of your request.

### Sample Output

```
clear services l2tp session statistics all
user@host> clear services l2tp session statistics all
Session 26497 statistics cleared
```

## clear services l2tp tunnel

<b>Syntax</b>	clear services l2tp tunnel (all   interface <i>sp-fpc/pic/port</i>   local-gateway <i>gateway-address</i>   local-gateway-name <i>gateway-name</i>   local-tunnel-id <i>tunnel-id</i>   peer-gateway <i>gateway-address</i>   peer-gateway-name <i>gateway-name</i>   tunnel-group <i>group-name</i> )
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Support for MX Series routers added in Junos OS Release 10.4.
<b>Description</b>	(M10i and M7i routers: LNS only. MX Series routers: LAC only.) Clear Layer 2 Tunneling Protocol (L2TP) tunnels.
<b>Options</b>	<p>all—Clear all L2TP tunnels.</p> <p>interface <i>sp-fpc/pic/port</i>—Clear only the L2TP tunnels using the specified adaptive services interface. This option is not available for L2TP LAC on MX Series routers.</p> <p>local-gateway <i>gateway-address</i>—Clear only the L2TP tunnels associated with the local gateway with the specified address.</p> <p>local-gateway-name <i>gateway-name</i>—Clear only the L2TP tunnels associated with the local gateway with the specified name.</p> <p>local-tunnel-id <i>tunnel-id</i>—Clear only the L2TP tunnels that have the specified local tunnel identifier.</p> <p>peer-gateway <i>gateway-address</i>—Clear only the L2TP tunnels associated with the peer gateway with the specified address.</p> <p>peer-gateway-name <i>gateway-name</i>—Clear only the L2TP tunnels associated with the peer gateway with the specified name.</p> <p>tunnel-group <i>group-name</i>—Clear only the L2TP tunnels in the specified tunnel group. This option is not available for L2TP LAC on MX Series routers.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">clear services l2tp tunnel statistics on page 1497</a></li> <li>• <a href="#">show services l2tp tunnel on page 1516</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">clear services l2tp tunnel on page 1495</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```
clear services l2tp tunnel  user@host> clear services l2tp tunnel 17185
tunnel
```

Tunnel 17185 closed



## clear services l2tp tunnel statistics

<b>Syntax</b>	clear services l2tp tunnel statistics (all   interface <i>sp-fpc/pic/port</i>   local-gateway <i>gateway-address</i>   local-gateway-name <i>gateway-name</i>   local-tunnel-id <i>tunnel-id</i>   peer-gateway <i>gateway-address</i>   peer-gateway-name <i>gateway-name</i>   tunnel-group <i>group-name</i> )
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Support for MX Series routers added in Junos OS Release 10.4.
<b>Description</b>	(M10i and M7i routers: LNS only. MX Series routers: LAC only.) Clear statistics for Layer 2 Tunneling Protocol (L2TP) tunnels.
<b>Options</b>	<p>all—Clear statistics for all L2TP tunnels.</p> <p>interface <i>sp-fpc/pic/port</i>—Clear statistics for only the L2TP tunnels using the specified adaptive services interface. This option is not available for L2TP LAC on MX Series routers.</p> <p>local-gateway <i>gateway-address</i>—Clear statistics for only the L2TP tunnels associated with the local gateway with the specified address.</p> <p>local-gateway-name <i>gateway-name</i>—Clear statistics for only the L2TP tunnels associated with the local gateway with the specified name.</p> <p>local-tunnel-id <i>tunnel-id</i>—Clear statistics for only the L2TP tunnels that have the specified local tunnel identifier.</p> <p>peer-gateway <i>gateway-address</i>—Clear statistics for only the L2TP tunnels associated with the peer gateway with the specified address.</p> <p>peer-gateway-name <i>gateway-name</i>—Clear statistics for only the L2TP tunnels associated with the peer gateway with the specified name.</p> <p>tunnel-group <i>group-name</i>—Clear statistics for only the L2TP tunnels in the specified tunnel group. This option is not available for L2TP LAC on MX Series routers.</p>
<b>Required Privilege Level</b>	clear
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">clear services l2tp tunnel on page 1495</a></li> <li>• <a href="#">show services l2tp tunnel on page 1516</a></li> </ul>
<b>List of Sample Output</b>	clear services l2tp tunnel statistics all on page 1497
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```
clear services l2tp tunnel statistics all
user@host> clear services l2tp tunnel statistics all
```

Tunnel 9933 statistics cleared

## show services l2tp destination

<b>Syntax</b>	show services l2tp destination <brief   detail   extensive> <local-gateway <i>gateway-address</i> > <peer-gateway <i>gateway-address</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 10.4.
<b>Description</b>	Display information about L2TP tunnel destinations. This statement is available only for LAC on MX Series routers.
<b>Options</b>	brief   detail—(Optional) Display the specified level of information.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show services l2tp destination on page 1500 show services l2tp destination detail on page 1500 show services l2tp destination extensive on page 1500
<b>Output Fields</b>	Table 278 on page 1499 lists the output fields for the <b>show services l2tp destination</b> command. Output fields are listed in the approximate order in which they appear.

**Table 278: show services l2tp destination Output Fields**

Field Name	Field Description
<b>Local Name</b>	Name of this destination.
<b>Remote IP</b>	IP address of the remote peer (LNS).
<b>Tunnels</b>	Number of tunnel connections for the destination in the following categories: <ul style="list-style-type: none"> <li>total</li> <li>active</li> <li>failed</li> </ul>
<b>Sessions</b>	Number of session connections for the destination in the following categories: <ul style="list-style-type: none"> <li>total</li> <li>active</li> <li>failed</li> </ul>
<b>State</b>	Administrative state of the L2TP destination: <ul style="list-style-type: none"> <li><b>Enabled</b>—No restrictions exist on creation or operation of sessions and tunnels for this destination.</li> <li><b>Disabled</b>—Existing sessions and tunnels for this destination have been disabled and no new sessions or tunnels will be created while in the <b>Disabled</b> state.</li> </ul>
<b>Local IP</b>	IP address of the local gateway (LAC).
<b>Transport</b>	Medium used for tunneling. Only <b>ipUdp</b> is supported.

Table 278: show services l2tp destination Output Fields (*continued*)

Field Name	Field Description
Router instance	Routing instance in which the tunnel is configured.
Connections	Number of tunnel and session connections for the destination.

### Sample Output

```

show services l2tp destination user@host> show services l2tp destination
                                Local Name  Remote IP  Tunnels  Sessions  State
                                1           10.10.1.1  1         1          Enabled

show services l2tp destination detail user@host> show services l2tp destination detail
Local name: 1
Remote IP: 10.1.1.1
Tunnels: 1, Sessions: 1
State: Enabled
Local IP: 10.1.1.2
Transport: ipUdp, Logical System: default, Router Instance: default

show services l2tp destination extensive user@host> show services l2tp destination extensive
Local name: 1
Remote IP: 10.1.1.1
State: Enabled
Local IP: 10.1.1.2
Transport: ipUdp, Logical System: default, Router Instance: default
Connections  Totals      Active      Failed
Tunnels      1           1           0
Sessions     1           1           0

```

## show services l2tp multilink

<b>Syntax</b>	show services l2tp multilink <brief   detail   extensive   statistics> <bundle-id <i>number</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M10i and M7i routers only) Display L2TP output organized by multilink bundle.
<b>Options</b>	<p>none—Same as brief.</p> <p>brief   detail   extensive   statistics—(Optional) Display the specified level of output. Use the <b>statistics</b> option to display packets and bytes that have been encapsulated in the Multilink Protocol. Nonmultilink packets received on member sessions are not counted here.</p> <p>bundle-id <i>number</i>—(Optional) Display L2TP multilink bundle information for only the specified bundle.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>clear services l2tp multilink on page 1490</li> </ul>
<b>List of Sample Output</b>	show services l2tp multilink extensive on page 1503
<b>Output Fields</b>	Table 279 on page 1501 lists the output fields for the <b>show services l2tp multilink</b> command. Output fields are listed in the approximate order in which they appear.

**Table 279: show services l2tp multilink Output Fields**

Field Name	Field Description
Bundle ID	Bundle identifier.
Links	Number of links in the multilink bundle.
Bundle endpoint	Endpoint discriminator that represents the device transmitting the packet.
Input MRRU	Maximum packet size that the input interface can process.
Output MRRU	Maximum packet size that the output interface can process.
Session local ID	Identifier of the local endpoint of the L2TP session, as assigned by the L2TP network server (LNS).
Session remote ID	Identifier of the remote endpoint of the L2TP session, as assigned by the L2TP access concentrator (LAC).

Table 279: show services l2tp multilink Output Fields (*continued*)

Field Name	Field Description
<b>State</b>	Status of the L2TP session: <ul style="list-style-type: none"> <li>• <b>Established</b>—The session is operating.</li> <li>• <b>closed</b>—The session is being closed.</li> <li>• <b>destroyed</b>—The session is being destroyed.</li> <li>• <b>clean-up</b>—The session is being cleaned up.</li> <li>• <b>lns-ic-accept-new</b>—A new session is being accepted.</li> <li>• <b>lns-ic-idle</b>—The session has been created and is idle.</li> <li>• <b>lns-ic-reject-new</b>—The new session is being rejected.</li> <li>• <b>lns-ic-wait-connect</b>—The session is waiting for the peer's incoming call connected (ICCN) message.</li> </ul>
<b>Username</b>	Name of the user logged in to the session.
<b>Mode</b>	Mode of the interface representing the multilink bundle: <b>dedicated</b> or <b>shared</b> .
<b>Local IP</b>	IP address of the local endpoint of the Point-to-Point Protocol (PPP) session.
<b>Remote IP</b>	IP address of the remote endpoint of the PPP session.
<b>Local name</b>	Name of the LNS instance in which the session was created.
<b>Remote name</b>	Name of the LAC from which the session was created.
<b>Local MRU</b>	Maximum receive unit (MRU) setting of the local device, in bytes.
<b>Remote MRU</b>	MRU setting of the remote device, in bytes.
<b>Statistics since</b>	Date and time when collection of the following statistics began: <ul style="list-style-type: none"> <li>• <b>Control Tx</b>—Amount of control information transmitted, in packets and bytes.</li> <li>• <b>Control Rx</b>—Amount of control information received, in packets and bytes.</li> <li>• <b>Data Tx</b>—Amount of data transmitted, in packets and bytes.</li> <li>• <b>Data Rx</b>—Amount of data received, in packets and bytes.</li> <li>• <b>Errors Tx</b>—Number of errors transmitted, in packets.</li> <li>• <b>Errors Rx</b>—Number of errors received, in packets.</li> </ul>

## Sample Output

```

show services l2tp      user@host> show services l2tp multilink extensive
multilink extensive    Bundle ID: 1
                        Links: 2, Bundle endpoint: user@juniper.com
                        Input MRRU: 1524, Output MRRU: 1524
                        Session local ID: 46122, Session remote ID: 39307
                        State: Established, Username: user1@juniper.com, Mode: dedicated
                        Local IP: 10.58.255.129:1701, Remote IP: 10.58.255.131:1701
                        Local name: router3, Remote name: router4
                        Session local ID: 4254, Session remote ID: 39308
                        State: Established, Username: user2@juniper.com, Mode: dedicated
                        Local IP: 10.1.255.1:1701, Remote IP: 10.1.255.2:1701
                        Local name: router1, Remote name: router2
                        Statistics since: Mon May 17 11:47:35 2004

```

	Packets	Bytes
Control Tx	7	196
Control Rx	3	90
Data Tx	0	0
Data Rx	0	0
Errors Tx	0	
Errors Rx	0	

## show services l2tp radius

<b>Syntax</b>	<pre>show services l2tp radius &lt;accounting (servers   statistics)&gt; &lt;authentication (servers   statistics)&gt; &lt;servers&gt; &lt;statistics&gt;</pre>
<b>Release Information</b>	Command introduced in Junos OS Release 9.0.
<b>Description</b>	(M7i, M10i, and M120 routers only) Display RADIUS servers and statistics information for the RADIUS servers configured on the router.
<b>Options</b>	<p>You must include one of the following keywords to provide a valid completion for the command:</p> <p>accounting (servers   statistics)—(Optional) Display RADIUS servers or statistical accounting information only.</p> <p>authentication (servers   statistics)—(Optional) Display RADIUS servers or statistical authentication information only.</p> <p>servers—(Optional) Display RADIUS authentication and accounting server information only.</p> <p>statistics—(Optional) Display RADIUS authentication and accounting statistics information only.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p><b>show services l2tp radius servers on page 1505</b></p> <p><b>show services l2tp radius statistics on page 1506</b></p>
<b>Output Fields</b>	Table 280 on page 1504 lists the output fields for the <b>show services l2tp radius</b> command. Output fields are listed in the approximate order in which they appear.

**Table 280: show services l2tp radius Output Fields**

Field Name	Field Description
IP Address	IP address of the server.
State	( <b>servers</b> keyword only) Present state of the server.
UDP Port	Number of the UDP port used to send authentication or accounting messages to the server.
Retry Count	( <b>servers</b> keyword only) Number of times the RADIUS client resends a packet if no ACK is received.
Timeout	( <b>servers</b> keyword only) Length of time the client waits for an ACK before retransmission.
Pending Requests	( <b>servers</b> keyword only) Number of client pending authentication or accounting requests.



Table 280: show services l2tp radius Output Fields (*continued*)

Field Name	Field Description
Maximum Sessions	( <b>servers</b> keyword only) Maximum number of pending requests on each RADIUS client before the server moves to the next RADIUS client, which is 200 times the maximum number of clients that can be created on a server (which is 12).
Dead Time	( <b>servers</b> keyword only) Interval to wait before retrying a server after it fails to send a response to an authentication or accounting request.
Secret Type	( <b>servers</b> keyword only) Secret type configured on the RADIUS server.
Profile	( <b>servers</b> keyword only) Name of profile configured for the RADIUS server.
Access requests	( <b>statistics</b> keyword only) Number of access requests sent to the server.
Rollover requests	( <b>statistics</b> keyword only) Number of requests coming into the server as a result of the previous server timing out.
Retransmissions	( <b>statistics</b> keyword only) Number of retransmissions.
Access accepts	( <b>statistics</b> keyword only) Number of access accept messages received from the server.
Access rejects	( <b>statistics</b> keyword only) Number of access reject messages received from the server.
Access challenges	( <b>statistics</b> keyword only) Number of access challenges received from the server.
Malformed responses	( <b>statistics</b> keyword only) Number of responses with attributes having an invalid length or unexpected attributes (such as two attributes when the response is required to have at most one).
Bad authenticators	( <b>statistics</b> keyword only) Number of responses in which the authenticator is incorrect for the matching request. This can occur if the RADIUS secrets for the client and server do not match.
Requests pending	( <b>statistics</b> keyword only) Number of requests waiting for a response.
Request timeouts	( <b>statistics</b> keyword only) Number of requests that timed out.
Unknown responses	( <b>statistics</b> keyword only) Number of unknown responses. The RADIUS response type in the header is invalid or unsupported.
Packets dropped	( <b>statistics</b> keyword only) Number of packets dropped because they are too short or because the router receives a response for which there is no corresponding request. For example, if the router sends a request that times out, the router removes the request from the list and sends a new request. If the server is slow and sends a response to the first request after the router removes the request, the packet is dropped.

## Sample Output

```

show services l2tp radius servers user@host> show services l2tp radius servers
                                     RADIUS Authentication Servers

                                     UDP  Retry          Pending  Maximum  Dead    Secret

```

IP Address	State	Port	Count	Timeout	Requests	Sessions	Time	Type
17.1.1.1	Active	1812	2	25	0	2400	300	radius-key
133.122.1.1	Active	1812	5	35	0	2400	300	radius-key
134.141.1.1	Active	1812	2	25	0	2400	300	radius-key
172.28.30.174	Active	1812	7	75	0	2400	300	radius-key
172.28.30.175	Active	1812	7	75	0	2400	300	radius-key
172.28.30.176	Active	1812	4	55	0	2400	300	radius-key
172.128.30.176	Active	1812	3	3	0	2400	300	none-set
172.128.130.174	Active	1812	7	75	0	2400	300	radius-key

## RADIUS Accounting Servers

IP Address	State	UDP Port	Retry Count	Timeout	Pending Requests	Maximum Sessions	Dead Time	Secret Type
17.1.1.1	Active	1813	2	25	0	2400	300	radius-key
133.122.1.1	Active	1813	5	35	0	2400	300	radius-key
134.141.1.1	Active	1813	2	25	0	2400	300	radius-key
172.28.30.174	Active	1813	7	75	0	2400	300	radius-key
172.28.30.175	Active	1813	7	75	0	2400	300	radius-key
172.28.30.176	Active	1813	4	55	0	2400	300	radius-key
172.128.30.176	Active	1813	3	3	0	2400	300	none-set
172.128.130.174	Active	1813	7	75	0	2400	300	radius-key

## RADIUS Accounting Servers

Profile: user1

```
show services l2tp radius statistics
user@host> show services l2tp radius statistics
RADIUS Authentication Statistics
```

```
Authentication statistics:
Server 17.1.1.1, UDP port: 1812
Access requests      : 40
Rollover requests    : 5
Retransmissions      : 2
Access accepts       : 39
Access rejects       : 1
Access challenges     : 3
Malformed responses  : 0
Bad authenticators    : 0
Requests pending     : 1
Request timeouts     : 0
Unknown responses    : 0
Packets dropped      : 0
```

RADIUS Accounting Statistics

```
Accounting statistics:
Server 172.128.130.174, UDP port: 1813
  Total requests      : 9
  Start requests     : 6
  Interim requests    : 1
  Stop requests       : 2
  Rollover requests   : 0
  Retransmissions     : 1
  Total response      : 9
  Start responses     : 6
  Interim responses   : 1
  Stop responses      : 2
  Malformed responses : 0
  Bad authenticators  : 0
  Requests pending    : 1
  Request timeouts    : 0
  Unknown responses   : 0
  Packets dropped     : 0
```

## show services l2tp session

---

**Syntax**    show services l2tp session  
             <brief | detail | extensive | statistics>  
             <interface *sp-fpc/pic/port*>  
             <local-gateway *gateway-address*>  
             <local-gateway-name *gateway-name*>  
             <local-session-id *session-id*>  
             <local-tunnel-id *tunnel-id*>  
             <peer-gateway *gateway-address*>  
             <peer-gateway-name *gateway-name*>  
             <tunnel-group *group-name*>  
             <user *username*>

**Release Information**    Command introduced before Junos OS Release 7.4.  
                             Support for MX Series routers added in Junos OS Release 10.4.

**Description**    (M10i and M7i routers: LNS only. MX Series routers: LAC only.) Display a list of active L2TP sessions.

**Options**    none—Display standard information about all active L2TP sessions.

             brief | detail | extensive | statistics—(Optional) Display the specified level of output. Use the **statistics** option to display packet and byte counts for each session.

             interface *sp-fpc/pic/port*—(Optional) Display L2TP session information for only the specified adaptive services interface. This option is not available for L2TP LAC on MX Series routers.

             local-gateway *gateway-address*—(Optional) Display L2TP session information for only the specified local gateway address.

             local-gateway-name *gateway-name*—(Optional) Display L2TP session information for only the specified local gateway name.

             local-session-id *session-id*—(Optional) Display L2TP session information for only the specified local session identifier.

             local-tunnel-id *tunnel-id*—(Optional) Display L2TP session information for only the specified local tunnel identifier.

             peer-gateway *gateway-address*—(Optional) Display L2TP session information for only the specified peer gateway address.

             peer-gateway-name *gateway-name*—(Optional) Display L2TP session information for only the specified peer gateway name.

             tunnel-group *group-name*—(Optional) Display L2TP session information for only the specified tunnel group. To display information about L2TP CPU and memory usage, you can include the tunnel group name in the **show services service-sets memory-usage *group-name*** and **show services service-sets cpu-usage *group-name*** commands. This option is not available for L2TP LAC on MX Series routers.

*user username*—(Optional) Display L2TP session information for only the specified username.

**Required Privilege Level** view

**Related Documentation**

- [clear services l2tp session on page 1491](#)

**List of Sample Output**

[show services l2tp session \(LNS\) on page 1511](#)  
[show services l2tp session \(LAC\) on page 1511](#)  
[show services l2tp session detail \(LAC\) on page 1511](#)  
[show services l2tp session extensive \(LAC\) on page 1512](#)  
[show services l2tp session extensive \(LNS\) on page 1512](#)

**Output Fields** Table 281 on page 1509 lists the output fields for the **show services l2tp session** command. Output fields are listed in the approximate order in which they appear.

**Table 281: show services l2tp session Output Fields**

Field Name	Field Description	Level of Output
<b>Interface</b>	(LNS only) Name of an adaptive services interface.	All levels
<b>Tunnel group</b>	(LNS only) Name of a tunnel group.	All levels
<b>Tunnel local ID</b>	Identifier of the local endpoint of the tunnel, as assigned by the L2TP network server (LNS).	All levels
<b>Session local ID</b>	Identifier of the local endpoint of the L2TP session, as assigned by the LNS.	All levels
<b>Session remote ID</b>	Identifier of the remote endpoint of the L2TP session, as assigned by the L2TP access concentrator (LAC).	All levels
<b>State</b>	State of the L2TP session: <ul style="list-style-type: none"> <li>• <b>Established</b>—The session is operating. This is the only state supported for the LAC.</li> <li>• <b>closed</b>—The session is being closed.</li> <li>• <b>destroyed</b>—The session is being destroyed.</li> <li>• <b>clean-up</b>—The session is being cleaned up.</li> <li>• <b>lns-ic-accept-new</b>—A new session is being accepted.</li> <li>• <b>lns-ic-idle</b>—The session has been created and is idle.</li> <li>• <b>lns-ic-reject-new</b>—The new session is being rejected.</li> <li>• <b>lns-ic-wait-connect</b>—The session is waiting for the peer's incoming call connected (ICCN) message.</li> </ul>	All levels
<b>Bundle ID</b>	(LNS only) Bundle identifier. Indicates the session is part of a multilink bundle. Sessions that have a blank <b>Bundle</b> field are not participating in the Multilink Protocol. Sessions in a multilink bundle might belong to different L2TP tunnels. For L2TP output organized by bundle ID, issue the <b>show services l2tp multilink extensive</b> command.	All levels

Table 281: show services l2tp session Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Mode</b>	(LNS) Mode of the interface representing the session: <b>shared</b> or <b>exclusive</b> .  (LAC) Mode of the interface representing the session: <b>shared</b> or <b>dedicated</b> . Only <b>dedicated</b> is currently supported for the LAC.	<b>extensive</b>
<b>Local IP</b>	IP address of local endpoint of the Point-to-Point Protocol (PPP) session.	<b>extensive</b>
<b>Remote IP</b>	IP address of remote endpoint of the PPP session.	<b>extensive</b>
<b>Username</b>	(LNS only) Name of the user logged in to the session.	All levels
<b>Assigned IP address</b>	(LNS only) IP address assigned to remote client.	<b>extensive</b>
<b>Local name</b>	For LNS, name of the LNS instance in which the session was created. For LAC, name of the LAC.	<b>extensive</b>
<b>Remote name</b>	For LNS, name of the LAC from which the session was created. For LAC, name of the LAC instance.	<b>extensive</b>
<b>Local MRU</b>	(LNS only) Maximum receive unit (MRU) setting of the local device, in bytes.	<b>extensive</b>
<b>Remote MRU</b>	(LNS only) MRU setting of the remote device, in bytes.	<b>extensive</b>
<b>Tx speed</b>	Transmit speed of the physical PPP link, in bps.	<b>extensive</b>
<b>Rx speed</b>	Receive speed of the physical PPP link, in bps.	<b>extensive</b>
<b>Bearer type</b>	Type of bearer enabled: <ul style="list-style-type: none"> <li>• 0—Might indicate that the call was not received over a physical link (for example, when the LAC and PPP are located in the same subsystem).</li> <li>• 1—Digital access requested.</li> <li>• 2—Analog access requested.</li> <li>• 4—Asynchronous Transfer Mode (ATM) bearer support.</li> </ul>	<b>extensive</b>
<b>Framing type</b>	Type of framing enabled: <ul style="list-style-type: none"> <li>• 1—Synchronous framing</li> <li>• 2—Asynchronous framing</li> </ul>	<b>extensive</b>
<b>LCP renegotiation</b>	(LNS only) Whether Link Control Protocol (LCP) renegotiation is configured: <b>On</b> or <b>Off</b> .	<b>extensive</b>
<b>Authentication</b>	Type of authentication algorithm used: Challenge Handshake Authentication Protocol (CHAP) or Password Authentication Protocol (PAP).	<b>extensive</b>
<b>Interface ID</b>	(LNS only) Identifier used to look up the logical interface for this session.	<b>extensive</b>
<b>Interface unit</b>	Logical interface for this session.	All levels

Table 281: show services l2tp session Output Fields (*continued*)

Field Name	Field Description	Level of Output
Call serial number	Unique serial number assigned to the call.	extensive
Policer bandwidth	Maximum policer bandwidth configured for this session.	extensive
Policer burst size	Maximum policer burst size configured for this session.	extensive
Firewall filter	Configured firewall filter name.	extensive
Session encapsulation overhead	Overhead allowance configured for this session, in bytes.	extensive
Session cell overhead	Cell overhead activation ( <b>On</b> or <b>Off</b> ).	extensive
Create time	Date and time when the call was created.	extensive
Up time	Length of time elapsed since the call became active, in hours, minutes, and seconds.	extensive
Idle time	Length of time elapsed since the call became idle, in hours, minutes, and seconds.	extensive
Statistics since	Date and time when collection of the following statistics began: <ul style="list-style-type: none"> <li>• <b>Control Tx</b>—Amount of control information transmitted, in packets and bytes.</li> <li>• <b>Control Rx</b>—Amount of control information received, in packets and bytes.</li> <li>• <b>Data Tx</b>—Amount of data transmitted, in packets and bytes.</li> <li>• <b>Data Rx</b>—Amount of data received, in packets and bytes.</li> <li>• <b>Errors Tx</b>—Number of errors transmitted, in packets.</li> <li>• <b>Errors Rx</b>—Number of errors received, in packets.</li> </ul>	extensive

## Sample Output

```

show services l2tp session (LNS) user@host> show services l2tp session
Interface: sp-1/2/0, Tunnel group: group1, Tunnel local ID: 8802
Local Remote Interface State Bundle Username
ID ID unit
37966 5 2 Established

show services l2tp session (LAC) user@host> show services l2tp session
Tunnel local ID: 31889
Local Remote State Interface Interface
ID ID unit unit Name
31694 1 Established 311 pp0

show services l2tp session detail (LAC) user@host> show services l2tp session detail
Tunnel local ID: 31889
Session local ID: 31694, Session remote ID: 1, Interface unit: 311

```

```

State: Established, Interface: pp0, Mode: Dedicated
Local IP: 10.1.1.2:1701, Remote IP: 10.1.1.1:1701
Local name: ce-lac, Remote name: ce-lns

```

**show services l2tp  
session extensive  
(LAC)**

```

user@host> show services l2tp session extensive
Tunnel local ID: 31889
  Session local ID: 31694, Session remote ID: 1
    Interface unit: 311
    State: Established, Mode: Dedicated
    Local IP: 10.10.1.2:1701, Remote IP: 10.10.1.1:1701
    Local name: ce-lac, Remote name: ce-lns
    Tx speed: 0, Rx speed: 0
    Bearer type: 1, Framing type: 1
    LCP renegotiation: N/A, Authentication: None, Interface ID: N/A
    Interface unit: 311, Call serial number: 0
    Policer bandwidth: 0, Policer burst size: 0
    Policer exclude bandwidth: 0, Firewall filter: 0
    Session encapsulation overhead: 0, Session cell overhead: 0
    Create time: Tue Aug 24 14:38:23 2010, Up time: 01:06:25
    Idle time: N/A

```

**show services l2tp  
session extensive  
(LNS)**

```

user@host> show services l2tp session extensive
Interface: sp-1/2/0, Tunnel group: group1, Tunnel local ID: 62746
  Session local ID: 56793, Session remote ID: 53304
    State: Established, Bundle ID: 5, Mode: shared
    Local IP: 10.128.1.1:1701, Remote IP: 10.128.1.2:1701
    Username: usr1@juniper_1.net, Assigned IP address: 10.50.2.1/32
    Local MRU: 4000, Remote MRU: 1500, Tx speed: 64000, Rx speed: 64000
    Bearer type: 2, Framing type: 1
    LCP renegotiation: Off, Authentication: CHAP, Interface ID: unit_20
    Interface unit: 20, Call serial number: 4137941434
    Policer bandwidth: 64000, Policer burst size: 51200
    Firewall filter: f1
    Session encapsulation overhead: 16, Session cell overhead: On
    Create time: Tue Mar 23 14:13:15 2004, Up time: 01:16:41
    Idle time: 00:00:00
    Statistics since: Tue Mar 23 14:13:13 2004
      Packets      Bytes
      Control Tx      4      88
      Control Rx      2      28
      Data Tx         0       0
      Data Rx        461    29.0k
      Errors Tx       0
      Errors Rx       0

Interface: sp-1/2/0, Tunnel group: group_company_dns, Tunnel local ID: 37266
  Session local ID: 39962, Session remote ID: 53303
    State: Established, Bundle ID: 5, Mode: shared
    Local IP: 10.128.11.1:1701, Remote IP: 10.128.11.2:1701
    Username: usr1@company.com, Assigned IP address: 10.46.2.3/24
    Local name: router-1, Remote name: router-2
    Local MRU: 4470, Remote MRU: 4470, Tx speed: 155000000, Rx speed: 155000000
    Bearer type: 2, Framing type: 1
    LCP renegotiation: Off, Authentication: CHAP, Interface ID: unit_31
    Interface unit: 31, Call serial number: 4137941433
    Policer bandwidth: 64000, Policer burst size: 51200
    Firewall filter: f1
    Create time: Tue Mar 23 14:13:17 2004, Up time: 01:16:39
    Idle time: 01:16:36
    Statistics since: Tue Mar 23 14:13:15 2004
      Packets      Bytes

```



Control Tx	6	196
Control Rx	4	150
Data Tx	0	0
Data Rx	1	80
Errors Tx	0	
Errors Rx	0	

## show services l2tp summary

<b>Syntax</b>	show services l2tp summary <interface sp-fpc/pic/port>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Support for MX Series routers added in Junos OS Release 10.4.
<b>Description</b>	(M10i and M7i routers: LNS only. MX Series routers: LAC only.) Display Layer 2 Tunneling Protocol (L2TP) summary information.
<b>Options</b>	none—Display complete L2TP summary information. For LNS on M Series routers, display L2TP summary information for all adaptive services interfaces.  interface sp-fpc/pic/port—(Optional) Display L2TP summary information for only the specified adaptive services interface. This option is not available for L2TP LAC on MX Series routers.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show services l2tp summary (LAC) on page 1515</b> <b>show services l2tp summary (LNS) on page 1515</b>
<b>Output Fields</b>	Table 282 on page 1514 lists the output fields for the <b>show services l2tp summary</b> command. Output fields are listed in the approximate order in which they appear.

**Table 282: show services l2tp summary Output Fields**

Field Name	Field Description
Failover within a preference level	(LAC only) State of this tunnel selection method on the LAC. When enabled, tunnel selection fails over within a preference level. When disabled, tunnel selection drops to the next lower preference level.
Weighted load balancing	(LAC only) State of this tunnel selection method on the LAC. When enabled, the maximum session limit of a tunnel determines its weight within a preference level. Tunnel selection proceeds from greatest to least weight. When disabled, selection defaults to a round robin method.
Tunnel authentication challenge	(LAC only) State of tunnel authentication, indicating whether the LAC and LNS exchange an authentication challenge and response during the establishment of the tunnel. The state is <b>enabled</b> when a secret is configured in the tunnel profile or on the RADIUS server in the Tunnel-Password attribute [69]. The state is <b>disabled</b> when the secret is not present.
Calling number avp	(LAC only) When the state is enabled, the LAC includes the value of the Calling Number AVP 22 in ICRQ packets sent to the LNS. When the state is disabled, the value is not sent to the LNS.
Destinations	(LAC only) Number of L2TP destinations for the LAC.

Table 282: show services l2tp summary Output Fields (*continued*)

Field Name	Field Description
<b>Tunnels</b>	Number of tunnels established on the router.
<b>Sessions</b>	Number of sessions established on the router.
<b>Control</b>	Amount of control information transmitted and received, in packets and bytes.
<b>Data</b>	Amount of data transmitted and received, in packets and bytes.
<b>Errors</b>	Number of errors.

### Sample Output

```

show services l2tp summary (LAC) user@host> show services l2tp summary
Failover within a preference level is disabled
Weighted load balancing is enabled
Tunnel authentication challenge is enabled
Calling number avp is enabled
Destinations: 1 Tunnels: 1, Sessions: 1
  Tx packets  Rx packets  Memory (bytes)
Control      260          144      11513856
Data         7.5k         16.9k       8.3k
Errors         0           0

```

```

show services l2tp summary (LNS) user@host> show services l2tp summary
user@host> show services l2tp summary
Tunnels: 2, Sessions: 2, Errors: 0
  Tx packets  Rx packets  Memory (bytes)
Control       6k           9k       688k
Data         70k          70k       3054

```

## show services l2tp tunnel

<b>Syntax</b>	<pre>show services l2tp tunnel &lt;brief   detail   extensive   statistics&gt; &lt;interface sp-fpc/pic/port&gt; &lt;local-gateway gateway-address&gt; &lt;local-gateway-name gateway-name&gt; &lt;local-tunnel-id tunnel-id&gt; &lt;peer-gateway gateway-address&gt; &lt;peer-gateway-name gateway-name&gt; &lt;tunnel-group group-name&gt;</pre>
<b>Release Information</b>	<p>Command introduced before Junos OS Release 7.4.</p> <p>Support for MX Series routers added in Junos OS Release 10.4.</p>
<b>Description</b>	(M10i and M7i routers: LNS only. MX Series routers: LAC only.) Display a list of active Layer 2 Tunneling Protocol (L2TP) tunnels.
<b>Options</b>	<p>none—Display standard information about all active L2TP tunnels.</p> <p>brief   detail   extensive   statistics—(Default) Display the specified level of output. Use the statistics option to display L2TP tunnel statistics.</p> <p>interface sp-fpc/pic/port—(Optional) Display L2TP tunnel information for only the specified adaptive services interface. This option is not available for L2TP LAC on MX Series routers.</p> <p>local-gateway gateway-address—(Optional) Display L2TP tunnel information for only the specified local gateway address.</p> <p>local-gateway-name gateway-name—(Optional) Display L2TP tunnel information for only the specified local gateway name.</p> <p>local-tunnel-id tunnel-id—(Optional) Display L2TP tunnel information for only the specified local tunnel identifier.</p> <p>peer-gateway gateway-address—(Optional) Display L2TP tunnel information for only the specified peer gateway address.</p> <p>peer-gateway-name gateway-name—(Optional) Display L2TP tunnel information for only the specified peer gateway name.</p> <p>tunnel-group group-name—(Optional) Display L2TP tunnel information for only the specified tunnel group. This option is not available for L2TP LAC on MX Series routers.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<pre>show services l2tp tunnel (LAC) on page 1518 show services l2tp tunnel detail (LAC) on page 1518 show services l2tp tunnel extensive (LAC) on page 1518 show services l2tp tunnel extensive (LNS) on page 1518</pre>

**Output Fields** Table 283 on page 1517 lists the output fields for the **show services l2tp tunnel** command. Output fields are listed in the approximate order in which they appear.

**Table 283: show services l2tp tunnel Output Fields**

Field Name	Field Description
<b>Interface</b>	(LNS only) Name of an adaptive services interface.
<b>Tunnel group</b>	(LNS only) Name of a tunnel group.
<b>Local ID</b>	On the LNS, number assigned by the LNS that identifies the local endpoint of the tunnel relative to the LNS: the LNS.  On the LAC, number assigned by the LAC that identifies the local endpoint of the tunnel relative to the LAC: the LAC.
<b>Remote ID</b>	On the LNS, number assigned by the LAC that identifies the remote endpoint of the tunnel relative to the LNS: the LAC.  On the LAC, number assigned by the LNS that identifies the remote endpoint of the tunnel relative to the LAC: the LNS.
<b>Remote IP</b>	IP address of the peer endpoint of the tunnel.
<b>Sessions</b>	Number of L2TP sessions established through the tunnel.
<b>State</b>	State of the L2TP tunnel: <ul style="list-style-type: none"> <li>• <b>cc_responder_accept_new</b>—The tunnel has received and accepted the start control connection request (SCCRQ).</li> <li>• <b>cc_responder_reject_new</b>—The tunnel has received and rejected the SCCRQ.</li> <li>• <b>cc_responder_idle</b>—The tunnel has just been created.</li> <li>• <b>cc_responder_wait_ctl_conn</b>—The tunnel has sent the start control connection response (SCCRP) and is waiting for the start control connection connected (SCCCN) message.</li> <li>• <b>clean-up</b>—The tunnel is being cleaned up.</li> <li>• <b>closed</b>—The tunnel is being closed.</li> <li>• <b>destroyed</b>—The tunnel is being destroyed.</li> <li>• <b>Established</b>—The tunnel is operating. This is the only state supported for the LAC.</li> <li>• <b>Terminate</b>—The tunnel is terminating.</li> <li>• <b>Unknown</b>—The tunnel is not connected to the router.</li> </ul>
<b>Local IP</b>	IP address of the local endpoint of the tunnel.
<b>Local name</b>	Name used for local tunnel endpoint during tunnel negotiation.
<b>Remote name</b>	Name used for remote tunnel endpoint during tunnel negotiation.
<b>Max sessions</b>	Maximum number of sessions that can be established on this tunnel.
<b>Window size</b>	Number of control messages that can be sent without receipt of an acknowledgment.
<b>Hello interval</b>	Interval between the transmission of hello messages, in seconds.

Table 283: show services l2tp tunnel Output Fields (*continued*)

Field Name	Field Description
<b>Create time</b>	Date and time when the tunnel was created. While the LNS and LAC are connected, this value should correspond to the router's uptime. If connection to the LAC is severed, the State changes to <b>Unknown</b> and the <b>Create time</b> value resets.
<b>Up time</b>	Amount of time elapsed since the tunnel became active, in hours, minutes, and seconds.
<b>Idle time</b>	Amount of time elapsed since the tunnel became idle, in hours, minutes, and seconds.
<b>Statistics since</b>	<p>Date and time when collection of the following statistics began:</p> <ul style="list-style-type: none"> <li>• <b>Control Tx</b>—Amount of control information transmitted, in packets and bytes.</li> <li>• <b>Control Rx</b>—Amount of control information received, in packets and bytes.</li> <li>• <b>Data Tx</b>—Amount of data transmitted, in packets and bytes.</li> <li>• <b>Data Rx</b>—Amount of data received, in packets and bytes.</li> <li>• <b>Errors Tx</b>—Number of errors transmitted, in packets.</li> <li>• <b>Errors Rx</b>—Number of errors received, in packets.</li> </ul>

## Sample Output

```

show services l2tp tunnel (LAC) user@host> show services l2tp tunnel
                                Local ID Remote ID Remote IP           Sessions State
                                17185      1  10.10.1.1:1701           1    Established

show services l2tp tunnel detail (LAC) user@host> show services l2tp tunnel detail
Tunnel local ID: 17185, Tunnel remote ID: 1
Local IP: 10.10.1.2:1701, Remote IP: 10.10.1.1:1701
Local name: ce-lac, Remote name: ce-lns

show services l2tp tunnel extensive (LAC) user@host> show services l2tp tunnel extensive
Tunnel local ID: 17185, Tunnel remote ID: 1
Remote IP: 10.10.1.1:1701
Sessions: 1, State: Established
Local IP: 10.10.1.2:1701
Local name: ce-lac, Remote name: ce-lns
Max sessions: 32000, Window size: 4, Hello interval: 60
Create time: Tue Aug 24 15:55:27 2010, Up time: 00:03:06
Idle time: 00:00:00

show services l2tp tunnel extensive (LNS) user@host> show services l2tp tunnel extensive
Interface: sp-1/2/0, Tunnel group: group1
Tunnel local ID: 62746, Tunnel remote ID: 16930
Remote IP: 10.128.1.2:1701
Sessions: 1, State: Established
Local IP: 10.128.1.1:1701
Local name: router-1, Remote name: router-2
Max sessions: 50, Window size: 32, Hello interval: 60
Create time: Tue Mar 23 14:13:15 2004, Up time: 01:14:58
Idle time: 00:00:07
Statistics since: Tue Mar 23 14:13:13 2004
                                Packets      Bytes
Control Tx                       80        1152
Control Rx                        3         272

```

Data Tx	0	0
Data Rx	450	28.0k
Errors Tx	0	
Errors Rx	0	

Interface: sp-1/2/0, Tunnel group: group\_company\_dns  
Tunnel local ID: 37266, Tunnel remote ID: 36217  
Remote IP: 10.128.11.2:1701  
Sessions: 1, State: Established  
Local IP: 10.128.11.1:1701  
Local name: router-1, Remote name: router-2  
Max sessions: unlimited, Window size: 32, Hello interval: 60  
Create time: Tue Mar 23 14:13:15 2004, Up time: 01:14:59  
Idle time: 01:14:55  
Statistics since: Tue Mar 23 14:13:13 2004

	Packets	Bytes
Control Tx	81	1164
Control Rx	3	273
Data Tx	0	0
Data Rx	1	80
Errors Tx	0	
Errors Rx	0	

## show services l2tp user

<b>Syntax</b>	show services l2tp user <brief   detail   extensive   statistics> <user <i>username</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	(M10i and M7i routers only) Display a list of active Layer 2 Tunneling Protocol (L2TP) users.
<b>Options</b>	<p>none—Display all active L2TP users.</p> <p>brief   detail   extensive   statistics—(Optional) Display the specified level of output. Use the <b>statistics</b> option to display L2TP user statistics.</p> <p>user <i>username</i>—(Optional) Display L2TP user information for only the specified username.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show services l2tp user extensive on page 1522
<b>Output Fields</b>	Table 284 on page 1520 lists the output fields for the <b>show services l2tp user</b> command. Output fields are listed in the approximate order in which they appear.

Table 284: show services l2tp user Output Fields

Field Name	Field Description
<b>Interface</b>	Name of an adaptive services interface.
<b>Tunnel group</b>	Name of a tunnel group.
<b>Tunnel local ID</b>	Local identifier of the tunnel, as assigned by the L2TP network server (LNS).
<b>Session local ID</b>	Local identifier of the session, as assigned by the L2TP network server (LNS).
<b>Session remote ID</b>	Remote identifier of the session, as assigned by the L2TP access concentrator (LAC).
<b>State</b>	<p>State of the L2TP session:</p> <ul style="list-style-type: none"> <li>• <b>Established</b>—The session is operating.</li> <li>• <b>closed</b>—The session is being closed.</li> <li>• <b>destroyed</b>—The session is being destroyed.</li> <li>• <b>clean-up</b>—The session is being cleaned up.</li> <li>• <b>Ins-ic-accept-new</b>—A new session is being accepted.</li> <li>• <b>Ins-ic-idle</b>—The session has been created and is idle.</li> <li>• <b>Ins-ic-reject-new</b>—The new session is being rejected.</li> <li>• <b>Ins-ic-wait-connect</b>—The session is waiting for the peer's incoming call connected (ICCN) message.</li> </ul>



Table 284: show services l2tp user Output Fields (*continued*)

Field Name	Field Description
<b>Mode</b>	Mode of the interface representing the session: <b>shared</b> or <b>exclusive</b> .
<b>Local IP</b>	IP address of the local endpoint of the tunnel.
<b>Remote IP</b>	IP address of the peer endpoint of the tunnel.
<b>Username</b>	Name of the user logged in to the session.
<b>Assigned IP address</b>	IP address assigned to remote client.
<b>Local name</b>	Name of the local device.
<b>Remote name</b>	Name of the remote device.
<b>Local MRU</b>	Maximum receive unit (MRU) setting of the local device, in bytes.
<b>Remote MRU</b>	MRU setting of the remote device, in bytes.
<b>Tx speed</b>	Transmit speed of the tunnel session, in bps.
<b>Rx speed</b>	Receive speed of the tunnel session, in bps.
<b>Bearer type</b>	Type of bearer enabled: <ul style="list-style-type: none"> <li>• 0—Might indicate that the call was not received over a physical link (for example, when the LAC and PPP are located in the same subsystem)</li> <li>• 1—Digital access requested</li> <li>• 2—Analog access requested</li> <li>• 4—Asynchronous Transfer Mode (ATM) bearer support</li> </ul>
<b>Framing type</b>	Type of framing enabled: <ul style="list-style-type: none"> <li>• 1—Synchronous framing</li> <li>• 2—Asynchronous framing</li> </ul>
<b>LCP renegotiation</b>	Whether Link Control Protocol (LCP) renegotiation is configured: <b>On</b> or <b>Off</b> .
<b>Authentication</b>	Type of authentication algorithm used: Challenge Handshake Authentication Protocol (CHAP) or Password Authentication Protocol (PAP).
<b>Interface ID</b>	Name of the logical unit.
<b>Interface unit</b>	Logical unit number.
<b>Call serial number</b>	Unique serial number assigned to the call.
<b>Create time</b>	Date and time when the call was created.

Table 284: show services l2tp user Output Fields (*continued*)

Field Name	Field Description
<b>Up time</b>	Amount of time elapsed since the call became active, in hours, minutes, and seconds.
<b>Idle time</b>	Amount of time elapsed since the call became idle, in hours, minutes, and seconds.
<b>Statistics since</b>	<p>Date and time when collection of the following statistics began:</p> <ul style="list-style-type: none"> <li>• <b>Control Tx</b>—Amount of control information transmitted, in packets and bytes.</li> <li>• <b>Control Rx</b>—Amount of control information received, in packets and bytes.</li> <li>• <b>Data Tx</b>—Amount of data transmitted, in packets and bytes.</li> <li>• <b>Data Rx</b>—Amount of data received, in packets and bytes.</li> <li>• <b>Errors Tx</b>—Number of errors transmitted, in packets.</li> <li>• <b>Errors Rx</b>—Number of errors received, in packets.</li> </ul>

## Sample Output

```

user@host> show services l2tp user extensive
show services l2tp user extensive
  extensive
Interface: sp-1/2/0, Tunnel group: group1, Tunnel local ID: 62746
Session local ID: 56793, Session remote ID: 53304
State: Established, Mode: shared
Local IP: 10.128.1.1:1701, Remote IP: 10.128.1.2:1701
Username: usr1@juniper_1.net, Assigned IP address: 10.50.2.1/32
Local name: router-1, Remote name: router-2
Local MRU: 4000, Remote MRU: 1500, Tx speed: 64000, Rx speed: 64000
Bearer type: 2, Framing type: 1
LCP renegotiation: Off, Authentication: CHAP, Interface ID: unit_20
Interface unit: 20, Call serial number: 4137941434
Create time: Tue Mar 23 14:13:15 2004, Up time: 01:16:41
Idle time: 00:00:00
Statistics since: Tue Mar 23 14:13:13 2004
      Packets      Bytes
Control Tx         4        88
Control Rx         2        28
Data Tx            0         0
Data Rx          461      29.0k
Errors Tx           0
Errors Rx           0
Interface: sp-1/2/0, Tunnel group: group_company_dns, Tunnel local ID: 37266
Session local ID: 39962, Session remote ID: 53303
State: Established, Username: usr1@company_dns.com, Mode: shared
Local IP: 10.128.11.1:1701, Remote IP: 10.128.11.2:1701
Username: usr1@company_dns.com, Assigned IP address: 10.48.1.1/32
Local name: router-1, Remote name: router-2
Local MRU: 4470, Remote MRU: 4470, Tx speed: 155000000,
Rx speed: 155000000
Bearer type: 2, Framing type: 1
LCP renegotiation: Off, Authentication: CHAP, Interface ID: unit_31
Interface unit: 31, Call serial number: 4137941433
Create time: Tue Mar 23 14:13:17 2004, Up time: 01:16:39
Idle time: 01:16:36
Statistics since: Tue Mar 23 14:13:15 2004
      Packets      Bytes
Control Tx         6        196
Control Rx         4        150

```

Data Tx	0	0
Data Rx	1	80
Errors Tx	0	
Errors Rx	0	



# Link Services Operational Mode Commands

Table 285 on page 1525 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot Link Services IQ (LSQ) PICs.

Table 285: Link Services Operational Mode Commands

Task	Command
Display information about Link Services IQ (LSQ) PIC CPU usage.	<code>show services link-services cpu-usage</code>



**NOTE:** LSQ functionality is supported on the adaptive services interface on the following routers:

- J Series routers—`ls-pim/0/slot`
- M Series and T Series routers—`lsq-fpc/pic/port`



**NOTE:** For information about how to configure link services, see the *Junos OS Services Interfaces Configuration Guide*.

## show services link-services cpu-usage

<b>Syntax</b>	show services link-services cpu-usage <brief   detail> <interface <i>interface-name</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 8.4.
<b>Description</b>	Display information about Link Services IQ (LSQ) CPU usage (M Series and T Series routers only).
<b>Options</b>	none—Display standard information about CPU usage for all LSQ interfaces.  brief   detail—(Optional) Display the specified level of output.  interface <i>interface-name</i> —(Optional) Display information about the specified LSQ interface.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show services link-services cpu-usage brief (AS PIC) on page 1528 show services link-services cpu-usage brief (MultiServices PIC) on page 1528 show services link-services cpu-usage detail (AS PIC) on page 1528 show services link-services cpu-usage detail (MultiServices PIC) on page 1529
<b>Output Fields</b>	Table 286 on page 1526 lists the output fields for the <b>show services link-services cpu-usage</b> command. Output fields are listed in the approximate order in which they appear.

**Table 286: show services link-services cpu-usage Output Fields**

Field Name	Field Description	Level of Output
<b>Role</b>	CPU functional category.	<b>brief</b>
<b>1 Second Average</b>	Percentage of usage during 1-second duration.	All levels
<b>5 Second Average</b>	Percentage of usage during 5-second duration.	All levels
<b>QoS</b>	Quality of service (QoS) CPU, which takes care of queuing and scheduling of incoming IP packets on a per-bundle basis. It schedules packets with higher QoS values first.	All levels
<b>Sequencer</b>	Assigns sequence numbers to outgoing MLPPP fragments and interleaves link fragmentation and interleaving (LFI) traffic.	All levels
<b>Load Balancer</b>	Distributes load across different fragmenter CPUs.	All levels
<b>Fragmenter</b>	Main LSQ CPU; fragments IP packets into MLPPP fragments and also reassembles MLPPP fragments into IP packets.	All levels
<b>Total</b>	Sum of all CPU functions.	<b>brief</b>

Table 286: show services link-services cpu-usage Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Idle</b>	Counts idle cycles when the CPU does not have any work.	<b>detail</b>
<b>Timer</b>	Takes care of periodic events driven by a timer, such as timeouts.	<b>detail</b>
<b>System</b>	System housekeeping thread.	<b>detail</b>
<b>Input (QoS)</b>	Acquires and queues incoming IP frames from hardware interfaces.	<b>detail</b>
<b>Output (QoS)</b>	Sends scheduled frames to the next processing CPU.	<b>detail</b>
<b>Output Frags (QoS)</b>	Sends outstanding frames to the fragmenter CPU.	<b>detail</b>
<b>Bypass (QoS)</b>	Sends outstanding frames for LFI.	<b>detail</b>
<b>Free frame (QoS)</b>	Frees dropped frames.	<b>detail</b>
<b>CPUnumber</b>	Identifier number of specific CPU.	<b>detail</b>
<b>Drop (Fragmenter)</b>	Drops frames that have been marked by the QoS CPU.	<b>detail</b>
<b>Frag (Fragmenter)</b>	Fragments IP frames into MLPPP fragments.	<b>detail</b>
<b>Reass (Fragmenter)</b>	Reassembles MLPPP fragments into IP frames.	<b>detail</b>
<b>Freeback (Fragmenter)</b>	Handles freeback of credits from other CPUs (MultiServices PICs only).	<b>detail</b>
<b>Input LFI (Sequencer)</b>	Receives LFI traffic from QoS CPU and transmits it with strict priority over MLPPP.	<b>detail</b>
<b>Input Frag (Sequencer)</b>	Receives MLPPP fragments from fragmenter CPUs, assigns sequence numbers, and appends MLPPP headers.	<b>detail</b>
<b>Output Frag (Sequencer)</b>	Load-balances and transmits fragments across links.	<b>detail</b>
<b>Retry (Sequencer)</b>	Retries transmission if hardware was busy in the previous attempt.	<b>detail</b>
<b>Input Alloc (Load Balancer)</b>	Acquires frames from hardware interfaces and validates them.	<b>detail</b>
<b>Input (Load Balancer)</b>	Performs error and sanity checks and check frames for PortMapping.	<b>detail</b>
<b>Output (Load Balancer)</b>	Sends frame to next processing CPU.	<b>detail</b>

Table 286: show services link-services cpu-usage Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Freeback</b> (Load Balancer)	Handles freeback of credits from other CPUs.	<b>detail</b>

## Sample Output

```

show services user@host> show services link-services cpu-usage interface lsq-0/0/0 brief
link-services
cpu-usage brief (AS PIC)
  Role           1 Second Average    5 Second Average
  QoS              1.0%              1.0%
  Sequencer        0.1%              0.1%
  Fragmenter       0.1%              0.1%
  Total            0.1%              0.1%

```

```

show services user@host> show services link-services cpu-usage interface lsq-0/0/0 brief
link-services
cpu-usage brief (MultiServices PIC)
  Role           1 Second Average    5 Second Average
  QoS              0.1%              0.1%
  Fragmenter       0.1%              0.1%
  Load Balancer    0.0%              0.0%
  Total            0.1%              0.1%

```

```

show services user@host> show services link-services cpu-usage interface lsq-0/0/0 detail
link-services
cpu-usage detail (AS PIC)
  QoS           Idle  Timer  System  Input  Output  Output  Bypass  Free
                Idle  Timer  System  Input  Output  Frags   frame
                Idle  Timer  System  Drop   Frag   Reass   back

  CPU0          99.1%  0.9%  0.0%  0.0%  0.0%  0.0%  0.0%  0.0%
  CPU1          99.8%  0.1%  0.0%  0.0%  0.0%  0.0%  0.0%  0.0%
  1 sec ave     99.5%  0.5%  0.0%  0.0%  0.0%  0.0%  0.0%  0.0%
  5 sec ave     99.5%  0.5%  0.0%  0.0%  0.0%  0.0%  0.0%  0.0%

  Fragmenter    Idle  Timer  System  Drop   Frag   Reass   Free
                Idle  Timer  System  Drop   Frag   Reass   back

  CPU0          96.6%  0.1%  0.0%  0.0%  0.0%  3.3%  0.0%
  CPU1          99.9%  0.1%  0.0%  0.0%  0.0%  0.0%  0.0%
  CPU2          99.9%  0.1%  0.0%  0.0%  0.0%  0.0%  0.0%
  CPU3          99.9%  0.1%  0.0%  0.0%  0.0%  0.0%  0.0%
  CPU4          99.9%  0.1%  0.0%  0.0%  0.0%  0.0%  0.0%
  CPU5          99.9%  0.1%  0.0%  0.0%  0.0%  0.0%  0.0%
  CPU6          99.9%  0.1%  0.0%  0.0%  0.0%  0.0%  0.0%
  CPU7          99.9%  0.1%  0.0%  0.0%  0.0%  0.0%  0.0%
  CPU8          99.9%  0.1%  0.0%  0.0%  0.0%  0.0%  0.0%
  1 sec ave     99.5%  0.1%  0.0%  0.0%  0.0%  0.4%  0.0%
  5 sec ave     99.5%  0.1%  0.0%  0.0%  0.0%  0.4%  0.0%

  Sequencer     Idle  System  Input  Input  Output  Retry
                Idle  System  LFI    Frag   Frag
  CPU0          99.9%  0.1%  0.0%  0.0%  0.0%  0.0%
  CPU1          100.0% 0.0%  0.0%  0.0%  0.0%  0.0%
  1 sec ave     99.9%  0.1%  0.0%  0.0%  0.0%  0.0%
  5 sec ave     99.9%  0.1%  0.0%  0.0%  0.0%  0.0%

```



```

show services user@host> show services link-services cpu-usage interface lsq-0/0/0 detail
link-services QoS Idle Timer System Input Output Output Bypass Free
cpu-usage detail Frags frame
(MultiServices PIC)
CPU0 99.9% 0.1% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%
CPU1 99.9% 0.1% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%
CPU2 99.9% 0.1% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%
CPU3 99.9% 0.1% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%
CPU4 99.9% 0.1% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%
1 sec ave 99.9% 0.1% 0.0% 0.0% 0.0% 0.0% 0.0%
5 sec ave 99.9% 0.1% 0.0% 0.0% 0.0% 0.0% 0.0%

Fragmenter Idle Timer System Drop Frag Reass Free
back
CPU0 99.9% 0.1% 0.0% 0.0% 0.0% 0.0% 0.0%
CPU1 99.9% 0.1% 0.0% 0.0% 0.0% 0.0% 0.0%
CPU2 99.9% 0.1% 0.0% 0.0% 0.0% 0.0% 0.0%
CPU3 99.9% 0.1% 0.0% 0.0% 0.0% 0.0% 0.0%
CPU4 99.9% 0.1% 0.0% 0.0% 0.0% 0.0% 0.0%
CPU5 99.9% 0.1% 0.0% 0.0% 0.0% 0.0% 0.0%
CPU6 99.9% 0.1% 0.0% 0.0% 0.0% 0.0% 0.0%
CPU7 99.9% 0.1% 0.0% 0.0% 0.0% 0.0% 0.0%
CPU8 99.9% 0.1% 0.0% 0.0% 0.0% 0.0% 0.0%
CPU9 99.9% 0.1% 0.0% 0.0% 0.0% 0.0% 0.0%
CPU10 99.9% 0.1% 0.0% 0.0% 0.0% 0.0% 0.0%
CPU11 99.9% 0.1% 0.0% 0.0% 0.0% 0.0% 0.0%
CPU12 99.9% 0.1% 0.0% 0.0% 0.0% 0.0% 0.0%
CPU13 99.9% 0.1% 0.0% 0.0% 0.0% 0.0% 0.0%
CPU14 99.9% 0.1% 0.0% 0.0% 0.0% 0.0% 0.0%
CPU15 99.9% 0.1% 0.0% 0.0% 0.0% 0.0% 0.0%
CPU16 99.9% 0.1% 0.0% 0.0% 0.0% 0.0% 0.0%
CPU17 99.9% 0.1% 0.0% 0.0% 0.0% 0.0% 0.0%
1 sec ave 99.9% 0.1% 0.0% 0.0% 0.0% 0.0%
5 sec ave 99.9% 0.1% 0.0% 0.0% 0.0% 0.0%

Load-Balancer Idle System Input Input Output Free
Alloc back
CPU0 100.0% 0.0% 0.0% 0.0% 0.0% 0.0%
CPU1 100.0% 0.0% 0.0% 0.0% 0.0% 0.0%
1 sec ave 100.0% 0.0% 0.0% 0.0% 0.0%
5 sec ave 100.0% 0.0% 0.0% 0.0% 0.0%

```



## Mobile IP Operational Mode Commands

Table 287 on page 1531 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot Mobile IP services.

**Table 287: Mobile IP Operational Mode Commands**

Task	Command
Clear information about Mobile IP bindings.	<b>clear mobile-ip binding</b>
Display information about Mobile IP home agent bindings	<b>show mobile-ip home-agent bindings</b>
Display general information about Mobile IP home agent.	<b>show mobile-ip home-agent overview</b>
Display information about traffic specific to Mobile IP home agents.	<b>show mobile-ip home-agent traffic</b>
Display information about Mobile IP home agent virtual networks.	<b>show mobile-ip home-agent virtual-network</b>
Display information about the WiMAX Forum Network Architecture release.	<b>show mobile-ip wimax release</b>



**NOTE:** For information about how to configure Mobile IP services, see the *Junos OS Subscriber Access Configuration Guide*.

## clear mobile-ip binding

---

<b>Syntax</b>	<b>clear mobile-ip binding</b> ( <b>all</b>   <b>ip-address</b> <i>ip-address</i>   <b>nai</b> <i>nai-string</i> ) <logical-system <i>logical-system-name</i> > <routing-instance <i>routing-instance-name</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 9.3.
<b>Description</b>	Clear the Mobile IP binding.
<b>Options</b>	<p><b>all</b>—Clear all Mobile IP bindings.</p> <p><b>ip-address</b> <i>ip-address</i>—Clear the Mobile IP bindings for the specified IP home address (HoA).</p> <p><b>nai</b> <i>nai-string</i>—Clear the Mobile IP bindings for the specified network access identifier.</p> <p><b>logical-system</b> <i>logical-system-name</i>—(Optional) Clear the Mobile IP bindings for the specified logical system.</p> <p><b>routing-instance</b> <i>routing-instance-name</i>—(Optional) Clear the Mobile IP bindings for the specified routing instance.</p>
<b>Required Privilege Level</b>	clear
<b>List of Sample Output</b>	<b>clear mobile-ip binding on page 1532</b>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

**clear mobile-ip binding**     user@host> clear mobile-ip binding all

## show mobile-ip home-agent bindings

<b>Syntax</b>	show mobile-ip home-agent bindings <ip-address <i>ip-address</i>   nai <i>nai-string</i>   summary> <logical-system <i>logical-system-name</i> > <routing-instance <i>routing-instance-name</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 9.3.
<b>Description</b>	Display information about Mobile IP home agent bindings.
<b>Options</b>	<p>ip-address <i>ip-address</i>—(Optional) Display information for the specified Mobile IP home address.</p> <p>logical-system <i>logical-system-name</i>—(Optional) Display information for the specified logical system.</p> <p>nai <i>nai-string</i>—(Optional) Display information for the specified Mobile IP network access identifier.</p> <p>routing-instance <i>routing-instance-name</i>—(Optional) Display information for the specified routing instance.</p> <p>summary—(Optional) Display only summary (total bindings) information.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p>show mobile-ip home-agent bindings on page 1534</p> <p>show mobile-ip home-agent bindings ip-address on page 1534</p> <p>show mobile-ip home-agent bindings nai on page 1534</p> <p>show mobile-ip home-agent bindings summary on page 1535</p>
<b>Output Fields</b>	Table 288 on page 1533 lists the output fields for the <b>show mobile-ip home-agent bindings</b> command. Output fields are listed in the approximate order in which they appear.

**Table 288: show mobile-ip home-agent bindings Output Fields**

Field Name	Field Description
Home Address	Home address of the mobile node.
NAI	Network access identifier of the mobile node.
Home agent	Home agent address of the mobile node.
Care-of-address	Care of address used by the mobile node.
Lifetime Granted	Lifetime granted for the mobile node.
Lifetime Remaining	Remaining lifetime for the mobile node.

Table 288: show mobile-ip home-agent bindings Output Fields (*continued*)

Field Name	Field Description
<b>Tunnel Type</b>	Type of tunnel requested by the mobile node.
<b>Tunnel ID</b>	Tunnel ID the mobile node is using.
<b>Tunnel Source</b>	Tunnel source address the mobile node is using.
<b>Tunnel Destination</b>	Tunnel destination address the mobile node is using.
<b>Identification</b>	Identification value received from the mobile node.
<b>Revocation Support</b>	Whether registration revocation is supported for this binding.
<b>Notify MN</b>	Whether mobile node notification has been negotiated.
<b>Total Bindings</b>	Total number of Mobile IP home agent bindings.

### Sample Output

```

show mobile-ip user@host> show mobile-ip home-agent bindings
home-agent bindings
Home address  NAI          Home agent  Care-of-address
10.1.1.3      abcde@def.com  10.1.1.1   50.50.50.1
30.1.1.3      -              55.55.55.1 50.50.50.1
20.1.1.3      def@def.com    20.1.1.1   60.50.50.1

```

```

show mobile-ip user@host> show mobile-ip home-agent bindings ip-address 10.1.1.3
home-agent bindings
ip-address
Home address      : 10.1.1.3
NAI               : abcde@def.com
Home agent        : 10.1.1.1
Care-of-address   : 50.50.50.1
Lifetime Granted  : 180
Lifetime Remaining : 20
Tunnel Type       : IP-IP
Tunnel ID         : 10
Tunnel Source     : 10.1.1.1
Tunnel Destination : 50.50.50.1
Identification    : ABCD1234.4321ABCD
Revocation Support : Enabled
Notify MN of Revocation : Enabled

```

```

show mobile-ip user@host> show mobile-ip home-agent bindings nai abcde@def.com
home-agent bindings
nai
Home address      : 10.1.1.3
NAI               : abcde@def.com
Home agent        : 10.1.1.1
Care-of-address   : 50.50.50.1
Lifetime Granted  : 180
Lifetime Remaining : 20
Tunnel Type       : IP-IP
Tunnel ID         : 10
Tunnel Source     : 10.1.1.1
Tunnel Destination : 50.50.50.1
Identification    : ABCD1234.4321ABCD

```

```
Revocation Support : Enabled
Notify MN           : Enabled
```

```
show mobile-ip home-agent bindings summary
user@host> show mobile-ip home-agent bindings summary
Total bindings : 3
```

## show mobile-ip home-agent overview

<b>Syntax</b>	show mobile-ip home-agent overview <logical-system <i>logical-system-name</i> > <routing-instance <i>routing-instance-name</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 9.3.
<b>Description</b>	Display overview information for Mobile IP home agent.
<b>Options</b>	logical-system <i>logical-system-name</i> —(Optional) Display information for the specified logical system.  routing-instance <i>routing-instance-name</i> —(Optional) Display information for the specified routing instance.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show mobile-ip home-agent overview on page 1536
<b>Output Fields</b>	Table 289 on page 1536 lists the output fields for the <b>show mobile-ip home-agent overview</b> command. Output fields are listed in the approximate order in which they appear.

**Table 289: show mobile-ip home-agent overview Output Fields**

Field Name	Field Description
Status	Total number of registration requests received.
Service Enabled on	Total number of registration requests forwarded.
Home Agents	Total number of registration requests denied.
Authentication	Total number of registration replies sent.

## Sample Output

```

show mobile-ip user@host> show mobile-ip home-agent overview
home-agent overview
Status          : Active
Service Enabled on : ge-0/0/3.0, ge-0/0/2.0
Home agents     : 10.1.1.1, 20.1.1.1, 55.55.55.1
Authentication  : AAA

```



## show mobile-ip home-agent traffic

<b>Syntax</b>	show mobile-ip home-agent traffic <logical-system <i>logical-system-name</i> > <routing-instance <i>routing-instance-name</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 9.3.
<b>Description</b>	Display information about Mobile IP home agent protocol statistics.
<b>Options</b>	<p>logical-system <i>logical-system-name</i>—(Optional) Display information for the specified logical system.</p> <p>routing-instance <i>routing-instance-name</i>—(Optional) Display information for the specified routing instance.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show mobile-ip home-agent traffic on page 1538
<b>Output Fields</b>	Table 290 on page 1537 lists the output fields for the <b>show mobile-ip home-agent traffic</b> command. Output fields are listed in the approximate order in which they appear.

**Table 290: show mobile-ip home-agent traffic Output Fields**

Field Name	Field Description
Registration request received	Total number of registration requests received.
Registration request forwarded	Total number of registration requests forwarded.
Registration request denied	Total number of registration requests denied.
Registration replies sent	Total number of registration replies sent.
Registration Errors unspecified	Total number of registration requests denied by the home agent for reasons unspecified.
Registration Errors Administrative prohibited	Total number of registration requests denied by home agent as “administrative prohibited.”
Registration Errors Insufficient Resource	Total number of registration requests denied by the home agent for insufficient resources.
Registration Errors Bad request form	Total number of registration requests denied by the home agent due to a bad request form.

Table 290: show mobile-ip home-agent traffic Output Fields (*continued*)

Field Name	Field Description
<b>Registration Errors Too many Bindings</b>	Total number of registration requests denied by the home agent for having too many bindings.
<b>Registration Errors Unknown HA</b>	Total number of registration requests denied by the home agent for having an unknown home agent.
<b>Registration Errors ID mismatch</b>	Total number of registration requests denied by the home agent for having a mismatched ID.
<b>Registration Errors Authentication failed MN</b>	Total number of registration requests denied by the home agent because the mobile node failed authentication.
<b>Registration Errors Authentication failed FA</b>	Total number of registration requests denied by the home agent because the foreign agent failed authentication.

### Sample Output

```

show mobile-ip home-agent traffic user@host> show mobile-ip home-agent traffic
Registration Request
  Received : 10
  Forwarded : 5
  Denied : 5
Registration Replies
  Sent : 5
Registration Errors
  Unspecified : 0
  Administrative prohibited : 0
  Insufficient Resource : 0
  Bad request form : 0
  Too many Bindings : 0
  Unknown HA : 0
  ID mismatch : 0
  Unavailable Reverse tunnel : 0
  Unavailable Encapsulation : 0
  Reverse Tunnel Mandatory : 0
  Authentication failed MN : 0
  Authentication failed FA : 0

```

## show mobile-ip home-agent virtual-network

<b>Syntax</b>	show mobile-ip home-agent virtual-network <logical-system <i>logical-system-name</i> > <routing-instance <i>routing-instance-name</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 9.3.
<b>Description</b>	Display information about Mobile IP home agent virtual networks.
<b>Options</b>	<p>logical-system <i>logical-system-name</i>—(Optional) Display information for the specified logical system.</p> <p>routing-instance <i>routing-instance-name</i>—(Optional) Display information for the specified routing instance.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show mobile-ip home-agent virtual-network on page 1540
<b>Output Fields</b>	Table 291 on page 1539 lists the output fields for the <b>show mobile-ip home-agent virtual-network</b> command. Output fields are listed in the approximate order in which they appear.

**Table 291: show mobile-ip home-agent virtual-network Output Fields**

Field Name	Field Description
Home agent address	Home agent address of the mobile node.
Registration Lifetime	Maximum registration lifetime that home agent allows.
Time Tolerance	Number of seconds the time stamp may differ.
Address Pool	Address pool configured.
Total MNs	Current number of mobile nodes that the home agent is serving.
Home address	Home address of the mobile node.
NAI	Network access identifier of the mobile node.
Care-of-address	Care of address used by the mobile node.
RegLifetime Granted	Lifetime granted for the mobile node.
RegLifetime Remaining	Remaining lifetime for the mobile node.

## Sample Output

```
show mobile-ip user@host> show mobile-ip home-agent virtual-network
home-agent      Home Agent Address : 55.55.55.55
virtual-network Registration Lifetime : 1800
                Time Tolerance      : 120
                Address Pool         : 10.1.1.10 - 10.1.1.50
                Total MN's           : 2

                MN's :
                Home address          : 60.60.60.1
                NAI                   : abcde@def.com
                Care-of-address       : 50.50.50.1
                Reglifetime granted   : 120
                Reglifetime remaining: 100

                Home address          : 70.70.70.1
                NAI                   : def@def.com
                Care-of-address       : 80.80.80.1
                Reglifetime granted   : 120
                Reglifetime remaining: 100
```

## show mobile-ip wimax release

<b>Syntax</b>	show mobile-ip wimax release <logical-system <i>logical-system-name</i> > <routing-instance <i>routing-instance-name</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 9.5.
<b>Description</b>	Display the WiMAX Forum Network Architecture release that is supported by the current Mobile IP implementation.
<b>Options</b>	logical-system <i>logical-system-name</i> —(Optional) Display information for the specified logical system.  routing-instance <i>routing-instance-name</i> —(Optional) Display information for the specified routing instance.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show mobile-ip wimax release on page 1541
<b>Output Fields</b>	Table 292 on page 1541 lists the output fields for the <b>show mobile-ip wimax release</b> command. Output fields are listed in the approximate order in which they appear.

**Table 292: show mobile-ip wimax release Output Fields**

Field Name	Field Description
<b>Release</b>	WiMAX Forum Network Architecture release number.
<b>Version</b>	WiMAX Forum Network Architecture version number.

## Sample Output

```
show mobile-ip wimax release  user@host> show mobile-ip wimax release
                             Release 1, Version 1.2
```



# Network Address Translation Operational Mode Commands

Table 293 on page 1543 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot Network Address Translation (NAT) services.

Table 293: NAT Operational Mode Commands

Task	Command
Display information about NAT address and port mappings.	<code>show services nat mapping</code>
Display information about NAT pools.	<code>show services nat pool</code>



**NOTE:** NAT is supported on the adaptive services interface on the following routers:

- J Series routers—*sp-pim/0/slot*
- M Series and T Series routers—*sp-fpc/pic/port*

NAT is also supported on the redundant adaptive services interface (*rspnumber*) on M Series and T Series routers.



**NOTE:** For information about how to configure NAT services, see the *Junos OS Services Interfaces Configuration Guide*.

## show services nat mapping

<b>Syntax</b>	<code>show services nat mapping</code> <code>&lt;brief   detail   summary&gt;</code> <code>&lt;pool-name&gt;</code>
<b>Release Information</b>	Command introduced in Junos OS Release 10.1. <b>summary</b> option introduced in Junos OS Release 11.1.
<b>Description</b>	Display information about Network Address Translation (NAT) address and port mappings.
<b>Options</b>	none—Display standard information about all NAT pools.  brief   detail   summary—(Optional) Display the specified level of output.  pool-name—(Optional) Display information about the specified NAT pool.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<code>show services nat mapping brief</code> on page 1545 <code>show services nat mapping detail</code> on page 1545 <code>show services nat mapping pool-name</code> on page 1545 <code>show services nat mapping summary</code> on page 1545
<b>Output Fields</b>	Table 294 on page 1544 lists the output fields for the <b>show services nat mapping</b> command. Output fields are listed in the approximate order in which they appear.

**Table 294: show services nat mapping Output Fields**

Field Name	Field Description	Level of Output
<b>Interface</b>	Name of a service interface.	All levels
<b>Service set</b>	Name of a service set. Individual empty service sets are not displayed, but if none of the service sets has any flows, a flow table header is printed for each service set.	All levels
<b>NAT pool</b>	Name of the NAT pool.	All levels
<b>Address Mapping</b>	Mapping performed by NAT to conceal the network address.	All levels
<b>No. of Port Mappings</b>	Number of port mappings.	All levels
<b>Port mapping</b>	Port mapping performed by NAT.	<b>detail</b>
<b>Flow Count</b>	Number of flows.	<b>detail</b>
<b>Total number of address mappings:</b>	Total number of address mappings for all interfaces and service sets.	<b>summary</b>



Table 294: show services nat mapping Output Fields (*continued*)

Field Name	Field Description	Level of Output
Total number of endpoint independent port mappings:	Total number of port mappings for interfaces and services sets.	summary
Total number of endpoint independent filters:	Total number of independent filters that filter out only packets that are not destined to the internal address and port regardless of the external IP address and port source.	summary

### Sample Output

```

show services nat mapping brief  user@host> show services nat mapping brief
                                Interface: sp-2/3/0, Service set: s1

                                NAT pool: p1
                                Address Mapping: 2.1.20.10 ---> 34.34.34.34
                                No. of port mappings: 1

show services nat mapping detail user@host> show services nat mapping detail
                                Interface: sp-2/3/0, Service set: s1

                                NAT pool: p1
                                Address Mapping: 2.1.20.10 ---> 34.34.34.34, No. of port mappings: 1
                                Port mapping: 49604 --> 1024, Flow Count: 2

show services nat mapping pool-name user@host> show services nat mapping p1
                                Interface: sp-2/3/0, Service set: s1

                                NAT pool: p1
                                Address Mapping: 2.1.20.10 ---> 34.34.34.34
                                No. of port mappings: 1

show services nat mapping summary user@host> show services nat mapping summary
                                Total number of address mappings:          500000
                                Total number of endpoint independent port mappings: 500000
                                Total number of endpoint independent filters:    0

```

## show services nat pool

<b>Syntax</b>	show services nat pool <brief   detail> <pool-name> pgcp <ports-per-session   remotely-controlled>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. pgcp option added in Junos OS Release 8.5.
<b>Description</b>	Display information about Network Address Translation (NAT) pools.
<b>Options</b>	<p>none—Display standard information about all NAT pools.</p> <p>brief   detail—(Optional) Display the specified level of output.</p> <p>pool-name—(Optional) Display information about the specified NAT pool.</p> <p>pgcp—(Optional) Display information about a NAT pool that is exclusive to the BGF.</p> <p>ports-per-session—(Optional) Display the number of ports allocated per session from the NAT pool.</p> <p>remotely-controlled—(Optional) Display if the NAT pool is explicitly specified by the gateway controller.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p>show services nat pool brief on page 1547</p> <p>show services nat pool detail on page 1547</p>
<b>Output Fields</b>	Table 295 on page 1546 lists the output fields for the <b>show services nat pool</b> command. Output fields are listed in the approximate order in which they appear.

**Table 295: show services nat pool Output Fields**

Field Name	Field Description	Level of Output
<b>Interface</b>	Name of an adaptive services interface.	All levels
<b>Service set</b>	Name of a service set. Individual empty service sets are not displayed, but if none of the service sets has any flows, a flow table header is printed for each service set.	All levels
<b>NAT pool</b>	Name of the Network Address Translation pool.	All levels
<b>Type or Translation type</b>	Address translation type: <b>dynamic</b> or <b>static</b> .	All levels
<b>Address or Address range</b>	IPv4 address range of the pool.	All levels

Table 295: show services nat pool Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Port or Port range</b>	Port range of the pool. Applicable only for dynamic NAT pools. Not displayed for static NAT pools.	All levels
<b>Ports used' or Ports in use</b>	Number of ports allocated in this pool with this name. Applicable only for dynamic NAT pools. Not displayed for static NAT pools.	All levels
<b>Out of port errors</b>	Number of port allocation errors. Applicable only for dynamic NAT pools. Not displayed for static NAT pools.	<b>detail</b>
<b>Max ports used</b>	Maximum number of ports used. Applicable only for dynamic NAT pools. Not displayed for static NAT pools.	<b>detail</b>
<b>Addresses in use</b>	Number of addresses in use for dynamic source address NAT pools.	<b>detail</b>

## Sample Output

```

show services nat pool brief user@host> show services nat pool brief
                             Interface: sp-1/3/0, Service set: blue
                             NAT pool Type      Address                               Port      Ports used
                             pool1  static  100.100.100.100-100.100.100.100
                             pool2  static  200.200.200.200-200.200.200.200
                             pool3  dynamic 210.210.210.210-210.210.210.230 65530-65535      0

show services nat pool detail user@host> show services nat pool detail
                             Interface: sp-1/2/0, Service set: nat-2-internet-rsp0
                             NAT pool: src-nat-pool-pl01, Translation type: dynamic
                             Address range: 1.1.1.0-1.1.1.0
                             Address range: 2.2.2.2-2.2.2.2
                             Port range: 512-65535, Ports in use: 0, Out of port errors: 0, Max ports
                             used: 0

```



## PGCP Operational Mode Commands for the BGF Feature

Table 296 on page 1549 summarizes the Packet Gateway Control Protocol (PGCP) command-line interface (CLI) commands you can use to monitor and troubleshoot the PGCP service that is used for the border gateway function (BGF) feature. Commands are listed in alphabetical order.

**Table 296: PGCP Services Operational Mode Commands**

Task	Command
Clear gates on a virtual BGF.	<b>clear services pgcp gates</b>
Clear statistical information.	<b>clear services pgcp statistics</b>
Display information about the configuration for a virtual BGF.	<b>show services pgcp active-configuration</b>
Display in-depth information about a particular gate on a virtual BGF.	<b>show services pgcp gate</b>
Display summary information about all gates on a virtual BGF.	<b>show services pgcp gates</b>
Display information about H.248 root terminations.	<b>show services pgcp root-termination</b>
Display information about BGF statistics.	<b>show services pgcp statistics</b>
Display information about conversations.	<b>show services pgcp conversations</b>
Display information about flows.	<b>show services pgcp flows</b>
Display summary information about terminations.	<b>show services pgcp terminations</b>



NOTE:

PGCP services are supported on Adaptive Services (AS) PICS, Multiservices (*sp-fpc/pic/port*) PICS, and the Multiservices Dense Port Concentrator (MS-DPC) on the following routers:

- Juniper Networks M120 Multiservice Edge Router
- Juniper Networks M320 Multiservice Edge Router
- Juniper Networks T640 Core Router



NOTE: For information about how to use PGCP services to monitor the BGF feature, see the *Junos Multiplay Solutions Guide*.

## clear services pgcp gates

<b>Syntax</b>	<b>clear services pgcp gates gateway <i>gateway-name</i></b>
<b>Release Information</b>	Command introduced in Junos OS Release 8.5.
<b>Description</b>	<p>Clear all gates on a virtual border gateway function (BGF). Use this command only for debugging and testing purposes. The recommended way to clear the state of gates is to use the <b>set services-state out-of-service-graceful</b> statement at the [<b>edit services pgcp gateway &lt;gateway-name&gt;</b>] hierarchy.</p> <p>When you enter this command, the virtual BGF sends an H.248 FO/905 message to the gateway controller. The status of the virtual BGF then changes to In-Service (Disconnected). The virtual BGF then reregisters with the gateway controller by sending an RE/901 message, and the status of the virtual BGF changes to In-Service (Registered).</p>
<b>Options</b>	<p><b>gates</b>—Clear gate information.</p> <p><b>gateway <i>gateway-name</i></b>—Clear statistics associated with this virtual BGF.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>clear services pgcp gates on page 1551</b>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

```
clear services pgcp  user@host> clear services pgcp gates
gates
```

## clear services pgcp statistics

---

<b>Syntax</b>	<b>clear services pgcp statistics gateway <i>gateway-name</i></b> <b>&lt;virtual-interface <i>interface-number</i>&gt;</b>
<b>Release Information</b>	Command introduced in Junos OS Release 9.3. <b>gateway</b> option added in Junos OS Release 9.5. <b>virtual-interface</b> option added in Junos OS Release 11.1.
<b>Description</b>	Clear statistics for a virtual border gateway function (BGF).
<b>Options</b>	<i>gateway-name</i> —Name of the virtual BGF for which you want to clear statistics.  <i>interface-number</i> —Number of the virtual interface for which you want to clear statistics. When you specify a virtual interface, statistics are cleared for that virtual interface only.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>clear services pgcp statistics on page 1552</b>
<b>Output Fields</b>	When you enter this command, you receive either command prompt (indicating success) or an error message.

### Sample Output

<b>clear services pgcp statistics</b>	<b>user@host&gt; clear services pgcp statistics gateway <i>gateway-name</i></b>
---------------------------------------	---------------------------------------------------------------------------------



## show services pgcp active-configuration

<b>Syntax</b>	<b>show services pgcp active-configuration gateway <i>gateway-name</i></b> <b>&lt;backup&gt;   &lt;master&gt;</b>
<b>Release Information</b>	Command introduced in Junos OS Release 8.4. <b>gateway</b> option introduced in Junos OS Release 9.5. <b>backup</b> option introduced in Junos OS Release 9.6. <b>master</b> option introduced in Junos OS Release 9.6.
<b>Description</b>	Display information about the active Packet Gateway Control Protocol (PGCP) configuration, which includes information received from the adaptive services process and information negotiated with the gateway controller.
<b>Options</b>	<b>gateway <i>gateway-name</i></b> —Display information about the active configuration associated with this virtual border gateway function (BGF).  <b>backup</b> —(Optional) Display information for the backup services PIC. This option applies if you are running the virtual BGF on a services PIC or MS-DPC, and you have a primary and backup PIC configured on a virtual redundant MultiServices PIC (rms) interface.  <b>master</b> —(Optional) Display information for the Routing Engine or primary services PIC. If the virtual BGF is running on the Routing Engine, the active configuration on the Routing Engine is displayed. If the virtual BGF is running on a services PIC, the active configuration on the primary services PIC is displayed. If you do not specify the <b>master</b> or <b>backup</b> options, the <b>master</b> option is the default.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show services pgcp active-configuration (controller: border signaling gateway) on page 1557</b> <b>show services pgcp active-configuration (controller: external) on page 1559</b>
<b>Output Fields</b>	Table 297 on page 1553 lists the output fields for the <b>show services pgcp active-configuration</b> command. Output fields are listed in the approximate order in which they appear.

**Table 297: show services pgcp active-configuration Output Fields**

Field Name	Field Description
BGF virtual interface configuration	Information about the virtual interface configuration. <ul style="list-style-type: none"> <li><b>Virtual interface name</b>—Name of the virtual interface.</li> <li><b>Routing Instance name</b>—Name of the routing instance associated with the virtual interface.</li> <li><b>Status</b>—Service status of the virtual interface: <b>In-Service</b>, <b>In-Service (Graceful Shutdown)</b>, <b>Out-of-Service</b>, <b>Out-of-Service (Physical Interface)</b>.</li> <li><b>Interface name</b>—Name of the service interface for the virtual interface.</li> </ul>

Table 297: show services pgcp active-configuration Output Fields (*continued*)

Field Name	Field Description
<b>Virtual BGF configuration</b>	<p>Information about the active virtual BGF configuration.</p> <ul style="list-style-type: none"> <li>• <b>Name</b>—Name of the virtual BGF.</li> <li>• <b>IP address</b>—IP address of the virtual BGF.</li> <li>• <b>Routing Instance</b>—Name of the routing instance associated with the virtual BGF.</li> <li>• <b>Port</b>—Port of the virtual BGF.</li> <li>• <b>Platform</b>—Service interface for the BGF.</li> <li>• <b>Status</b>—Service state of the virtual BGF: <ul style="list-style-type: none"> <li>• <b>In-Service (Disconnected)</b>—The virtual BGF is configured to be in service; however, it is disconnected from the gateway controller.</li> <li>• <b>In-Service (Registering)</b>—The virtual BGF is in the process of registering with the gateway controller.</li> <li>• <b>In-Service (Registered)</b>—The virtual BGF has completed registration with the gateway controller.</li> <li>• <b>In-Service (Graceful Shutdown)</b>—The virtual BGF is in draining mode because of a graceful shutdown.</li> <li>• <b>In-Service (Shutdown)</b>—The virtual BGF is shut down because of a forced shutdown.</li> <li>• <b>Out-Of-Service</b>—The virtual BGF is not connected to the gateway controller.</li> </ul> </li> <li>• <b>Active gateway controller</b>—Gateway controller that is currently controlling this virtual BGF. NULL means that there is no active gateway controller.</li> <li>• <b>Replication socket</b> <ul style="list-style-type: none"> <li>• <b>Connected (Ready)</b>—The replication is ready and a switchover can be processed.</li> <li>• <b>Connected (Syncing)</b>—The replication is synchronizing. Performing a switchover is not safe.</li> <li>• <b>Connected (Error)</b>—An error occurred in the previous switchover.</li> <li>• <b>Disconnected</b>—The backup Routing Engine is down. There is no route to the backup Routing Engine.</li> </ul> </li> <li>• <b>Synchronization state</b>—The status of the synchronization between the internal state of the pgcpd process and the flow of media on a data PIC after a failover of the pgcpd process. <ul style="list-style-type: none"> <li>• <b>Idle</b>—The pgcpd process and the data PIC media flow are in synch.</li> <li>• <b>Initializing</b>—The pgcpd process is reading the current status of the data PIC to determine required synchronization.</li> <li>• <b>synchronizing</b>—The pgcpd process is synchronizing it's internal state with the data PIC.</li> </ul> </li> </ul> <p><b>NOTE:</b> BGF service is not affected when synchronizing. Gates can be created, modified, and deleted normally.</p> <ul style="list-style-type: none"> <li>• <b>Cleanup timeout [secs]</b>—Time to wait before the virtual BGF removes gates following a disconnection from the gateway controller.</li> <li>• <b>Maximum concurrent calls</b>—Maximum number of concurrent calls allowed on the BGF.</li> <li>• <b>Gate inactivity delay</b>—Time to wait before packet inactivity detection begins on a gate for which there is no latching event.</li> <li>• <b>Gate inactivity duration</b>—Time during which the virtual BGF monitors gates for packet inactivity.</li> </ul>

Table 297: show services pgcp active-configuration Output Fields (*continued*)

Field Name	Field Description
H248 timers configuration	<p>Information about the H.248 timers configuration.</p> <ul style="list-style-type: none"> <li>• <b>Max waiting delay (MWD)</b>—Maximum time the virtual BGF waits before contacting a new gateway controller when the connection to the controlling gateway controller is lost.</li> <li>• <b>Max retransmission delay (T-MAX)</b>—Maximum delay time allowed a transaction resulting from retransmissions.</li> <li>• <b>Initial average ack delay (I-AAD)</b>—Average network propagation delay time.</li> <li>• <b>Maximum net propagation delay (M-NPD)</b>—Maximum network propagation delay time.</li> </ul>
H248 options configuration	<p>Information about the H.248 options configuration.</p> <ul style="list-style-type: none"> <li>• <b>Wildcard response service-change</b>—Whether or not the virtual BGF issues service change notifications as wildcard notifications.</li> <li>• <b>Event history</b>—Whether or not the virtual BGF has enabled its history of all event notifications to be accessed by the gateway controller.</li> </ul>
H248 diffserv configuration	<p>Information about the H.248 DiffServ configuration.</p> <ul style="list-style-type: none"> <li>• <b>DSCP</b>—DSCP value set in the DiffServ configuration. If there is no configured value, the default value is shown.</li> </ul>
Notification Behavior	<p>Information about the regulation of media inactivity notifications sent to the gateway controller.</p> <ul style="list-style-type: none"> <li>• <b>Notification Regulation</b>—Either the percentage of notification to be suppressed, expressed as a number from 0 through 100, or the value <b>once</b>, meaning that only the first of a series of media inactivity notifications is sent to the gateway controller.</li> </ul>
Application data inactivity detection	<p>Information about the reporting of media inactivity events.</p> <ul style="list-style-type: none"> <li>• <b>IP flow stop detection</b>—Default method for reporting media inactivity.</li> </ul>
Event timestamp Notification	<p>Information about the availability of event timestamp information.</p> <ul style="list-style-type: none"> <li>• <b>Requested timestamp</b>—Whether or not the virtual BGF has enabled timestamp information for events to be viewed by the gateway controller.</li> </ul>
H248 segmentation	<p>Information about the H.248 segmentation configuration.</p> <ul style="list-style-type: none"> <li>• <b>MG segmentation timer</b>—The time within which the gateway controller waits to receive outstanding message segments from the virtual BGF after it receives the SegmentationCompleteToken message.</li> <li>• <b>MG maximum PDU size</b>—The maximum size of the virtual BGF's incoming protocol data unit for the control association's transport protocol. The gateway controller should avoid building messages that exceed this size.</li> <li>• <b>MGC segmentation timer</b>—The time within which the virtual BGF waits to receive outstanding message segments from the gateway controller after it receives the SegmentationCompleteToken message.</li> <li>• <b>MGC maximum PDU size</b>—The maximum size of the gateway controller's incoming protocol data unit for the control association's transport protocol. The virtual BGF will not build messages that exceed this size.</li> <li>• <b>minimum</b>—Minimum value accepted from the gateway controller.</li> <li>• <b>maximum</b>—Maximum value accepted from the gateway controller.</li> <li>• <b>default</b>—Default value that is used when the gateway controller does not set a value.</li> </ul>

Table 297: show services pgcp active-configuration Output Fields (*continued*)

Field Name	Field Description
<b>H248 base root</b>	<p>Information about the H.248 base root configuration.</p> <ul style="list-style-type: none"> <li>• <b>Normal MG execution time</b>—The interval within which the gateway controller waits for a response to transactions from the virtual BGF (exclusive of network delay).</li> <li>• <b>MG Provisional response timer</b>—The time within which the gateway controller waits for a pending response from the virtual BGF if a transaction cannot be completed.</li> <li>• <b>MG Originated pending limit</b>—The number of transaction pending messages that the gateway controller can receive from the virtual BGF.</li> <li>• <b>Normal MGC execution time</b>—The interval within which the virtual BGF waits for a response to a transaction from the gateway controller (exclusive of network delay).</li> <li>• <b>MGC Provisional response timer</b>—The time within which the virtual BGF waits for a pending response from the gateway controller if a transaction cannot be completed.</li> <li>• <b>MGC Originated pending limit</b>—The number of transaction pending messages that the virtual BGF can receive from the gateway controller.</li> <li>• <b>minimum</b>—Minimum value accepted from the gateway controller.</li> <li>• <b>maximum</b>—Maximum value accepted from the gateway controller.</li> <li>• <b>default</b>—Default value that is used when the gateway controller does not set a value.</li> </ul>
<b>Inactivity Timer</b>	<p>Information about inactivity timer configuration.</p> <ul style="list-style-type: none"> <li>• <b>Default</b>—Whether the inactivity timer is on or off by default.</li> <li>• <b>Maximum inactivity time default</b>—Default value for the inactivity timer. This value is used if the gateway controller does not send an inactivity timer value.</li> <li>• <b>minimum</b>—Minimum value accepted from the gateway controller.</li> <li>• <b>maximum</b>—Maximum value accepted from the gateway controller.</li> <li>• <b>default</b>—Default value that is used when the gateway controller does not set a value.</li> </ul>
<b>Fast update filters</b>	<p>Information about the fast update filter (FUF) configuration.</p> <ul style="list-style-type: none"> <li>• <b>Maximum terms</b>—Maximum number of FUF terms that can be installed for the virtual BGF.</li> <li>• <b>Maximum term percentage</b>—Maximum percentage of gates with FUF filters relative to all gates currently installed for the virtual BGF.</li> </ul>
<b>Overload control configuration</b>	<p>Information about the overload control configuration.</p> <ul style="list-style-type: none"> <li>• <b>Queue limit percentage</b>—Maximum percentage of the work queue for H.248 transactions that can be used before overload messages are generated.</li> <li>• <b>Reject new calls threshold</b>—Maximum percentage of the work queue for H.248 transactions that can be used before all new, non-emergency calls are rejected.</li> <li>• <b>Reject all transactions threshold</b>—Maximum percentage of the work queue for H.248 transactions that can be used before all non-emergency transactions are rejected.</li> </ul>
<b>Gateway controller configuration</b>	<p>Information about the gateway controller configuration.</p> <ul style="list-style-type: none"> <li>• <b>Controller name</b>—Name of the gateway controller.</li> <li>• <b>Controller IP address</b>—For an external controller, the IP address of the gateway controller. When the controller is a BSG instance, this field contains <b>internal</b>.</li> <li>• <b>Controller port</b>—Listening port of the gateway controller to which the virtual BGF sends messages.</li> </ul>

Table 297: show services pgcp active-configuration Output Fields (*continued*)

Field Name	Field Description
BGF rule configuration	<p>Information about the rule configuration.</p> <ul style="list-style-type: none"> <li>• <b>Rule name</b>—Name of the rule set.</li> <li>• <b>Virtual BGF</b>—Name of the virtual BGF that processes the rule set.</li> </ul>
BGF service set configuration	<p>Information about the service set configuration.</p> <ul style="list-style-type: none"> <li>• <b>Service set name</b>—Name of the service set.</li> <li>• <b>Service set id</b>—Numeric identifier of the service set.</li> <li>• <b>Rule name</b>—Name of the rule set configured for the service set.</li> </ul>
BGF MultiServices PIC status	<p>Information about the services PICs' status.</p> <ul style="list-style-type: none"> <li>• <b>Name</b>—Name of the services interface.</li> <li>• <b>Status</b>—Status of the services interface: <b>Connected</b>.</li> </ul>
Firewall	<p>Information about firewall filter status for the virtual BGF.</p> <ul style="list-style-type: none"> <li>• <b>Status</b>—Status of the firewall associated with the virtual BGF: <b>Connected</b> or <b>Unsupported Platform</b>.</li> <li>• <b>Number of terms</b>—Number of match condition terms used in the virtual BGF. For each filter, a default term is installed to allow traffic to pass through (otherwise, all traffic is dropped because it is the default firewall action). For example, there are two terms listed when there are two filters.</li> <li>• <b>Number of filters</b>—Number of firewall filters used in the virtual BGF.</li> </ul>

## Sample Output

```

show services pgcp active-configuration (controller: border signaling gateway)
user@host> show services pgcp active-configuration gateway BGF1

BGF virtual interface configuration:
  Virtual Interface name: 10
    Routing Instance name: inet.0
    Status                  : In-Service
    Interface name         : sp-1/0/0
BGF virtual interface configuration:
  Virtual Interface name: 20
    Routing Instance name: inet.0
    Status                  : In-Service
    Interface name         : sp-1/0/0
Virtual BGF configuration:
  Name                      : BGF1
  IP address                 : 0.0.0.0
  Routing-instance          : inet.0
  Port                      : 2944
  Platform                  : sp-1/1/0
  Status                    : In-Service (Registering)
  Active gateway controller : internal
  Replication socket        : Ready
  Synchronization state    : Disabled
  Cleanup timeout [secs]   : 0
  Maximum concurrent calls : 8101
  Gate inactivity delay [secs] : 3600
  Gate inactivity duration (Q-MI ) [secs] : 3600

```

```

H248 timers configuration:
  Max waiting delay (MWD) [millisec]      : 2000
  Max retransmission delay (T-MAX) [millisec] : 20000
  Initial average ack delay (I-AAD) [millisec]: 1000
  Max net propagation delay (M-NPD) [millisec]: 5000

H248 options configuration:
  Wildcard response service-change      : NO
  Event history                          : NO

H248 diffserv configuration:
  dscp                                   : 0x00

Notification Behavior:
  Notification Regulation                 : 0

Application data inactivity detection:
  IP flow stop detection                  : default - immediate

Event timestamp Notification
  Requested timestamp                    : requested

H248 segmentation      :          minimum    maximum    default
MG segmentation timer [millisec]      : 500      30000     4000
MG maximum PDU size [bytes]           : 512      65507     1472
MGC segmentation timer [millisec]     : 500      30000     4000
MGC maximum PDU size [bytes]          : 512      65507     1472

H248 base root         :          minimum    maximum    default
Normal MG execution time [millisec]   : 500      29000     500
MG Provisional response timer [millisec] : 500      30000     2000
MG Originated pending limit           : 1        512       4
Normal MGC execution time [millisec]   : 500      29000     500
MGC Provisional response timer [millisec]: 500      30000     4000
MGC Originated pending limit           : 1        512       4

Inactivity Timer:
  Detect                               : Off
  Maximum inactivity time [10 millisec]:
      minimum    maximum    default
      100        65535     12000

Fast update filters:
  Maximum terms                        : 2000

Overload control configuration:
  Queue limit percentage               : 70
  Reject new calls threshold           : 80
  Reject all commands threshold        : 90

Gateway controller configuration:
  Controller name                      : internal
  Controller IP address                 : 0.0.0.0
  Controller port                       : 2944

BGF rule configuration:
  Rule name                            : pgcp-rule
  Virtual BGF                          : BGF1

BGF service set configuration:
  Service set name                     : bgf-service-set
  Service set id                       : 1

```

```

Rule name          : pgcp-rule

BGF MultiServices PIC status:
Name       : sp-1/0/0
Status    : Connected

Firewall:
Status      : Unsupported platform
Number of terms : 0
Number of filters : 0

show services pgcp active-configuration (controller: external)
user@host> show services pgcp active-configuration gateway BGF1
BGF virtual interface configuration:
Virtual Interface name: 11
Routing Instance name: vrf_1
Status                : In-Service
Interface name        : sp-3/0/0.11

BGF virtual interface configuration:
Virtual Interface name: 10
Routing Instance name: vrf_0
Status                : In-Service
Interface name        : sp-3/0/0.10

Virtual BGF configuration:
Name                  : BGF1
IP address            : 1.1.24.1
Routing-instance      : vrf_1
Port                 : 2944
Platform             : rms1 [1]
Status               : In-Service (Registering)
Active gateway controller : PGC1
Replication socket    : Ready
Synchronization state : Disabled
Cleanup timeout [secs] : 0
Maximum concurrent calls : 8101
Gate inactivity delay [secs] : 3600
Gate inactivity duration (Q-MI ) [secs] : 3600

H248 timers configuration:
Max waiting delay (MWD) [millisec] : 2000
Max retransmission delay (T-MAX) [millisec] : 20000
Initial average ack delay (I-AAD) [millisec]: 1000
Max net propagation delay (M-NPD) [millisec]: 5000

H248 options configuration:
Wildcard response service-change : NO
Event history                     : NO

H248 diffserv configuration:
dscp : 0x00

Notification Behavior:
Notification Regulation : 0

Application data inactivity detection:
IP flow stop detection : default - immediate

Event timestamp Notification
Requested timestamp : requested

```

```

H248 segmentation      :          minimum      maximum
    default
    MG segmentation timer [millisec] : 500      30000
    4000
    MG maximum PDU size [bytes]      : 512      65507
    1472
    MGC segmentation timer [millisec] : 500      30000
    4000
    MGC maximum PDU size [bytes]      : 512      65507
    1472

H248 base root         :          minimum      maximum
    default
    Normal MG execution time [millisec] : 500      29000
    500
    MG Provisional response timer [millisec] : 500      30000
    2000
    MG Originated pending limit          : 1      512
    4
    Normal MGC execution time [millisec] : 500      29000
    500
    MGC Provisional response timer [millisec]: 500      30000
    4000
    MGC Originated pending limit          : 1      512
    4

Inactivity Timer:
    Detect                  :      Off
    Maximum inactivity time [10 millisec]:
v          minimum          maximum          default
          100              65535          12000

Fast update filters:
    Maximum terms          : 2000

Overload control configuration:
    Queue limit percentage : 70
    Reject new calls threshold : 80
    Reject all commands threshold : 90

Gateway controller configuration:
    Controller name        : PGC1
    Controller IP address  : 10.50.240.101
    Controller port        : 35101

    Controller name        : PGC2
    Controller IP address  : 0.0.0.0
    Controller port        : 2944

BGF rule configuration:
    Rule name              : pgcp-rule1
    Virtual BGF            : BGF1

BGF service set configuration:
    Service set name       : pgcp-svc-set1
    Service set id         : 1
    Rule name              : pgcp-rule1

BGF MultiServices PIC status:
    Name                   : sp-3/0/0
    Status                  : Connected

```



```
Firewall:
  Status      : Unsupported platform
  Number of terms : 0
  Number of filters : 0
```

## show services pgcp gate

---

<b>Syntax</b>	<b>show services pgcp gate gateway-name gateway-name gate-id gate-id</b> < brief   extensive   session-mirroring   statistics > < master   backup >
<b>Release Information</b>	Command introduced in Junos OS Release 9.5. <b>statistics</b> option introduced in Junos OS Release 9.1. <b>session-mirroring</b> option introduced in Junos OS Release 9.2. <b>gateway</b> option introduced in Junos OS Release 9.5. <b>master</b> option introduced in Junos OS Release 9.6 <b>backup</b> option introduced in Junos OS Release 9.6
<b>Description</b>	Display in-depth information about a Packet Gateway Control Protocol (PGCP) gate.
<b>Options</b>	<b>gateway gateway-name</b> —(Optional) Display information about gates associated with this virtual border gateway function (BGF).  <b>gate-id gate-id</b> —(Optional) Display information about a particular gate.  <b>brief</b> —(Optional) Display brief output.  <b>extensive</b> —(Optional) Display extensive output.  <b>session-mirroring</b> —(Optional) Display the session mirroring information for gates that are being mirrored. You must have a login with sufficient permission to view session mirroring information. The <b>set system login class class-name permissions pgcp-session-mirroring</b> command grants this permission.  <b>statistics</b> —(Optional) Display statistics for gates.  <b>master</b> —(Optional) Display information for the backup services PIC. This option applies if you are running the virtual BGF on a services PIC or MS-DPC, and you have a primary and backup PIC configured on a virtual redundant MultiServices PIC (rms) interface.  <b>backup</b> —(Optional) Display information for the Routing Engine or primary services PIC. If the virtual BGF is running on the Routing Engine, gate information for the routing engine is displayed. If the virtual BGF is running on a services PIC, gate information the primary services PIC is displayed. If you do not specify the <b>master</b> or <b>backup</b> options, the <b>master</b> option is the default.
<b>Required Privilege Level</b>	view pgcp-session-mirroring—To view session mirroring fields.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show services pgcp gates on page 1570</a></li></ul>
<b>List of Sample Output</b>	<a href="#">show services pgcp gate on page 1567</a> <a href="#">show services pgcp gate extensive on page 1568</a> <a href="#">show services pgcp gate statistics on page 1568</a> <a href="#">show services pgcp gate session-mirroring on page 1569</a>

**Output Fields** Table 298 on page 1563 lists the output fields for the **show services pgcp gate** command. Output fields are listed in the approximate order in which they appear.

**Table 298: show services pgcp gate Output Fields**

Field Name	Field Description	Output Level
<b>Gate information</b>	Information about the gate.	brief, extensive
<b>Direction</b>	Direction of the gate.	brief, extensive
<b>State</b>	State of the gate: <ul style="list-style-type: none"> <li>• <b>active</b></li> <li>• <b>disabled</b></li> <li>• <b>closed</b></li> </ul>	brief, extensive
<b>remote source address</b>	IP address of the remote source of the gate.	brief, extensive
<b>remote source port</b>	Port of the remote source of the gate.	brief, extensive
<b>remote dest address</b>	IP address of the remote destination of the gate.	brief, extensive
<b>remote dest port</b>	Port of the remote destination of the gate.	brief, extensive
<b>local source address</b>	IP address of the local source of the gate.	brief, extensive
<b>local source port</b>	Port of the local source of the gate.	brief, extensive
<b>local dest address</b>	IP address of the local destination of the gate.	brief, extensive
<b>local dest port</b>	Port of the local destination of the gate.	brief, extensive
<b>transport</b>	Transport protocol.	brief, extensive
<b>gate version</b>	Numeric identifier for the version of the gate.	brief, extensive
<b>latch</b>	Latch status: <ul style="list-style-type: none"> <li>• <b>latch</b></li> <li>• <b>none</b></li> </ul>	brief, extensive
<b>yellow action</b>	Action to take in this state.	brief, extensive
<b>red action</b>	Action to take in this state.	brief, extensive
<b>notifications</b>	Number of notifications.	brief, extensive
<b>User Data</b>	Numeric identifier for the user data.	brief, extensive

Table 298: show services pgcp gate Output Fields (*continued*)

Field Name	Field Description	Output Level
<b>Transport</b>	H.248 media descriptor field: <ul style="list-style-type: none"> <li>• <b>udp</b></li> <li>• <b>tcp</b></li> <li>• <b>rtp</b></li> <li>• <b>avp</b></li> </ul>	extensive
<b>RTCP</b>	Additional (shadow) gate allocated for the Real-Time Control Protocol (RTCP): auto or off.	extensive
<b>Latch</b>	State of the latch action on the gate: <ul style="list-style-type: none"> <li>• <b>none</b></li> <li>• <b>latch</b></li> <li>• <b>relatch</b></li> </ul>	extensive
<b>DSCP</b>	DiffServ code point (DSCP) marking value for the gate.	extensive
<b>Policing</b>	Status of policing on the gate: <ul style="list-style-type: none"> <li>• <b>On</b></li> <li>• <b>Off</b></li> </ul>	extensive
<b>Fast update filter</b>	Status of the fast update filter: <ul style="list-style-type: none"> <li>• <b>On</b></li> <li>• <b>Off</b></li> </ul>	extensive
<b>Gate Statistics</b>	Statistics for the specific gate.	statistics
<b>Output Packets</b>	Number of output packets from the PIC.	statistics
<b>Input Packets</b>	The number of PIC input packets plus the number of packets that the Packet Forwarding Engine dropped because they did not conform to rate limits.	statistics
<b>Dropped Packets</b>	Number of packets that the Packet Forwarding Engine and the PIC dropped because they did not conform to rate limits.	statistics
<b>Lost RTP Packets</b>	Number of RTP packets that have been lost on this gate.	statistics
<b>Fractional lost RTP Packets</b>	The fraction of RTP data packets that the remote side lost. The fraction is expressed as a percentage value.	statistics
<b>RTCP Statistics</b>	RTCP statistics for packets sent and received.	statistics
<b>RTCP Sender Statistics</b>	RTCP statistics for the sending endpoint.	statistics
<b>SSRC</b>	Synchronization source ID for the sending endpoint.	statistics

Table 298: show services pgcp gate Output Fields (*continued*)

Field Name	Field Description	Output Level
<b>Sender Octets</b>	Number of octets sent.	statistics
<b>Sender Packets</b>	Number of packets sent.	statistics
<b>Invalid Packets</b>	Number of invalid packets.	statistics
<b>RTCP Receiver Statistics</b>	Statistics for the endpoint receiving the RTCP packets.	statistics
<b>SSRC</b>	Synchronization source ID for the receiving endpoint.	statistics
<b>Lost packets</b>	The number of RTP data packets that the remote side lost in the current transmission.	statistics
<b>Lost fraction</b>	The fraction (percentage) of RTP data packets that the remote side lost in the current transmission.	statistics
<b>Jitter</b>	An estimate of the statistical variance of the RTP data packet interarrival time. The jitter is measured in the units of the RTP timestamp and represents the mean deviation of the difference in packet spacing at the receiver compared to the sender for a pair of packets.	statistics
<b>Received RTCP-XR Statistics:</b>	Statistics on RTCP packets sent and received.	statistics
<b>Packet loss concealment</b>	Method of packet loss concealment: <ul style="list-style-type: none"> <li>• U—Unspecified</li> <li>• E—Enhanced</li> <li>• D—Disabled</li> <li>• S—Standard</li> </ul>	statistics
<b>Loss Rate</b>	The fraction of RTP data packets from the source lost since the beginning of reception.	statistics
<b>Discard Rate</b>	The fraction of RTP data packets from the source that have been discarded since the beginning of reception.	statistics
<b>Round Trip Delay</b>	The most recent round-trip time between interfaces, in milliseconds.	statistics
<b>End System Delay</b>	The most recently estimated end system delay, expressed in milliseconds.	statistics
<b>Signal Level</b>	The voice signal relative level shown as the ratio of the signal level to dBm0.	statistics
<b>Noise Level</b>	The ratio of the silent period background noise level to dBm0.	statistics

Table 298: show services pgcp gate Output Fields (*continued*)

Field Name	Field Description	Output Level
<b>RERL</b>	The residual echo return loss value expressed as an integer in the range from 0 to 100 dB. A value of 94 corresponds to "toll quality", and values of 50 or less are regarded as unusable. This metric includes the effects of delay.	statistics
<b>R Factor</b>	A voice quality metric describing the segment of the call that is carried over this RTP session expressed as an integer in the range from 0 to 100 dB. A value of 94 corresponds to "toll quality", and values of 50 or less are regarded as unusable. This metric includes the effects of delay. A value of 127 indicates that this parameter is unavailable.	statistics
<b>Ext. R Factor</b>	The external R factor is a voice quality metric describing the segment of the call that is carried over a network segment external to the RTP segment, such as a cellular network. Its values are interpreted in the same manner as for the RTPR factor. This metric includes the effects of delay and relates to the outward voice path from the VoIP termination for which this metrics block applies.	statistics
<b>MOS-LQ</b>	The estimated mean opinion score for listening quality (MOS-LQ) is a voice quality metric on a scale from 1 to 5, in which 5 represents excellent and 1 represents unacceptable. It includes the effects of delay and other effects that would affect listening quality.	statistics
<b>MOS-CQ</b>	The estimated mean opinion score for conversational quality (MOS-CQ) is a voice quality metric on a scale from 1 to 5, in which 5 represents excellent and 1 represents unacceptable. It includes the effects of delay and other effects that would affect conversational quality.	statistics
<b>Received RTCP Burst Metrics Statistics</b>	This section provides statistics for burst metrics received from the far end of the RTCP session.	statistics
<b>Minimum Gap Threshold</b>	This field contains the value used for this report block to determine if a gap exists. The recommended value of 16 corresponds to a burst period having a minimum density of 6.25 percent of lost or discarded packets, which may cause noticeable degradation in call quality. During gap periods defined with a threshold of 16, each lost or discarded packet is preceded by and followed by a sequence of at least 16 received non-discarded packets.	statistics
<b>Burst Density</b>	The fraction of RTP data packets within burst periods since the beginning of reception that were either lost or discarded.	statistics
<b>Burst Duration</b>	The mean duration of the burst periods that have occurred since the beginning of reception, in milliseconds.	statistics
<b>Gap Loss Density</b>	The fraction of RTP data packets within inter-burst gaps since the beginning of reception that were either lost or discarded.	statistics

Table 298: show services pgcp gate Output Fields (*continued*)

Field Name	Field Description	Output Level
<b>Gap Duration</b>	The mean duration of the gap periods that have occurred since the beginning of reception, in milliseconds.	statistics
<b>Gate Measured Rate</b>	Current gate throughput measured in bytes per second.	statistics
<b>Rate-Limiting Statistics</b>	Counter showing data traffic statistics based on the TRTC (two-rate-three-colors) policer.	statistics
<b>FUF statistics</b>	The number of dropped packets when the Fast Update Filter was enabled on the gate.	statistics
<b>Drop count</b>	The number of packets dropped by the data PIC.	statistics
<b>Session mirroring status</b>	Status of session mirroring: <ul style="list-style-type: none"> <li>• On</li> <li>• Off</li> </ul>	session mirroring
<b>Session mirroring correlation number</b>	Indicates whether the data mirrors are encrypted.	session mirroring
<b>Session mirroring target ID list</b>	One or more targets of the mirrored packets.	session mirroring
<b>Session mirroring direction</b>	Direction of session mirroring: <ul style="list-style-type: none"> <li>• Egress</li> <li>• Ingress</li> </ul>	session mirroring

## Sample Output

```

show services pgcp gate user@host> show services pgcp gate gateway pg1 gate-id 4295033088
Gate information:
Direction: A->B

State: active

remote source address: 3.0.0.101

remote source port: *

remote dest address: 4.0.0.102

remote dest port: 5060

local source address: -

local source port: -

local dest address: 3.99.99.100

```

```
local dest port: 5060

transport: udp

gate version: 00

latch: none

yellow action: forward

red action: drop

notifications: 64

User Data: 0001102000000000
```

```
show services pgcp gate extensive
user@host> show services pgcp gate gateway pg1 gate-id 2817498611968 extensive
Gate information:
=====
```

```
Gate id: 2817498611968
Gate state: active
Direction: A->B
Action: drop
Remote source address: *
Remote source port: *
Remote destination address: 3.0.0.102
Remote destination port: 20000
Local source address: [20.50.150.1]
Local source port: [2334]
Local destination address: 10.50.150.1
Local destination port: 2334
Transport: rtp/avp
RTCP: On
Latch: none
DSCP: 0x40 (Effective 16)
Policing: Off
Fast update filter: Off
```

```
show services pgcp gate statistics
user@host> show services pgcp gate gateway pg1 gate-id 98784313601 statistics
Gate Statistics:
=====
```

```
Output packets: 0
Input packets: 0
Dropped packets: 0
Lost RTP packets: 0
Fractional lost RTP packets: 0
```

```
RTCP statistics:
=====
```

```
RTCP Sender statistics:
SSRC : 122598409 Sender octets: 268632      Sender packets: 1599
Invalid packets: 0
```

```
RTCP Receiver statistics:
SSRC: 14479      Lost packets: 0      Lost fraction: 0.00
Jitter: 0
```

```
Received RTCP-XR Statistics:
Packet Loss Concealment: 0      Loss Rate: 0      Discard Rate: 0
```



Round Trip Delay: 0                      End System Delay: 0                      Signal Level: 0  
 Noise Level: 0                              RERL: 0                                      R Factor: 0  
 Ext. R Factor: 0                           MOS-LQ: 0                                  MOS-CQ: 0

Received RTCP Burst Metrics Statistics:

Minimum Gap Threshold: 0                      Burst Density: 0                      Burst Duration: 0  
 Gap loss Density: 0                              Gap Duration: 0

Gate measured rate: 0

Rate limiting statistics:

Mark Color	Number of Packets	Number of Bytes
Green	205	41000
Yellow	0	0
Red	0	0

FUF statistics:  
 Drop count: 0

```

show services pgcp gate session-mirroring
user@host> show services pgcp gate gateway pg1 gate-id 4295033088 session-mirroring
Gate information:
Gate id: 4295033088
Session mirroring status: On
Session mirroring correlation number: 0x8040c020a060e010
Session mirroring target ID list: [008040c0, ffffffff80]
Session mirroring direction: Egress
  
```

## show services pgcp gates

---

<b>Syntax</b>	<b>show services pgcp gates gateway gateway-name</b> <brief   extensive   count> <destination-routing-instance vrf> <source-routing-instance vrf> <backup   master>
<b>Release Information</b>	Command introduced in Junos OS Release 8.4. <b>brief   extensive   count</b> options introduced in Junos OS Release 8.5. <b>gateway</b> option introduced in Junos OS Release 9.1 <b>destination-routing-instance</b> option introduced in Junos OS Release 9.3. <b>source-routing-instance</b> option introduced in Junos OS Release 9.3. <b>gateway</b> option was revised in Junos OS Release 9.5. <b>master</b> option introduced in Junos OS Release 9.6 <b>backup</b> option introduced in Junos OS Release 9.6
<b>Description</b>	Display information about gates.
<b>Options</b>	<b>brief</b> —(Optional) Display brief output. <b>extensive</b> —(Optional) Display extensive output. <b>count</b> —(Optional) Display the number of gates currently installed. <b>destination-routing-instance</b> —(Optional) Display information for a particular destination VPN routing and forwarding instance (VRF). <b>source-routing-instance</b> —(Optional) Display information for a particular source VPN routing and forwarding instance (VRF). <b>gateway-name</b> —Name of the virtual BGF for which you want to display gate information. <b>backup</b> —(Optional) Display information for the backup services PIC. This option applies if you are running the virtual BGF on a services PIC or MS-DPC, and you have a primary and backup PIC configured on a virtual redundant MultiServices PIC (rms) interface. <b>master</b> —(Optional) Display information for the Routing Engine or primary services PIC. If the virtual BGF is running on the Routing Engine, gate information for the routing engine is displayed. If the virtual BGF is running on a services PIC, gate information the primary services PIC is displayed. If you do not specify the <b>master</b> or <b>backup</b> options, the <b>master</b> option is the default.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show services pgcp gates on page 1573</b> <b>show services pgcp gates gateway count on page 1574</b> <b>show services pgcp gates gateway extensive on page 1574</b>

**Output Fields** Table 299 on page 1571 lists the output fields for the **show services pgcp gates** command. Output fields are listed in the approximate order in which they appear.

**Table 299: show services pgcp gates Output Fields**

Field Name	Field Description	Level of Output
<b>Virtual BGF configuration</b>	Information about the virtual BGF configuration. <ul style="list-style-type: none"><li>• <b>Name</b>—Name of the virtual BGF.</li><li>• <b>IP address</b>—IP address of the virtual BGF.</li><li>• <b>Port</b>—Port of the virtual BGF.</li><li>• <b>Status</b>—Service state of the virtual BGF.</li></ul>	All levels

Table 299: show services pgcp gates Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Gate information</b>	<p>Information about gates that are currently installed.</p> <ul style="list-style-type: none"> <li>• <b>Gate id</b>—Numeric identifier of the gate.</li> <li>• <b>Direction</b>—Direction of the gate. <ul style="list-style-type: none"> <li>• A is the termination that was created first.</li> <li>• B is the termination that was created second.</li> </ul> </li> <li>• <b>Gate state</b>—State of the gate: <b>Active</b>, <b>Disabled</b>, or <b>Closed</b>.</li> <li>• <b>Action</b>—(<b>extensive</b> level only) Action applied to the gate: <b>forward</b>, <b>add</b>, or <b>drop</b>.</li> <li>• <b>VRF</b>—(<b>extensive</b> level only) If you have VPN aggregation configured, shows the source (ingress) VRF and the destination (egress) VRF.</li> <li>• <b>Remote source address</b>—(<b>extensive</b> level only) IPv4 or IPv6 address of the remote source.</li> <li>• <b>Remote source port</b>—(<b>extensive</b> level only) Remote source port.</li> <li>• <b>Remote destination address</b>—(<b>extensive</b> level only) IPv4 or IPv6 address of the remote destination.</li> <li>• <b>Remote destination port</b>—(<b>extensive</b> level only) Remote destination port.</li> <li>• <b>Local source address</b>—(<b>extensive</b> level only) IPv4 or IPv6 address of the local source.</li> <li>• <b>Local source port</b>—(<b>extensive</b> level only) Local source port.</li> <li>• <b>Local destination address</b>—(<b>extensive</b> level only) IPv4 or IPv6 address of the local destination.</li> <li>• <b>Local destination address</b> —(<b>extensive</b> level only) Local destination port.</li> <li>• <b>Transport</b>—(<b>extensive</b> level only) H.248 media descriptor field: <b>udp</b>, <b>tcp</b>, or <b>rtp avp</b>.</li> <li>• <b>RTCP</b>—(<b>extensive</b> level only) Additional (shadow) gate allocated for the Real-Time Control Protocol (RTCP): <b>auto</b> or <b>off</b>.</li> <li>• <b>Latch</b>—(<b>extensive</b> level only) State of the latch action on the gate: <b>none</b>, <b>latch</b>, or <b>relatch</b>.</li> <li>• <b>DSCP</b>—(<b>extensive</b> level only) DiffServ code point (DSCP) marking value for the gate.</li> <li>• <b>Policing</b>—(<b>extensive</b> level only) Status of policing on the gate: <b>On</b> or <b>Off</b>.</li> <li>• <b>Gate SDR</b>—(<b>extensive</b> level only) Current sustained data rate enforced on the gate.</li> <li>• <b>Gate PDR</b>—(<b>extensive</b> level only) Current peak data rate enforced on the gate.</li> <li>• <b>Gate MBS</b>—(<b>extensive</b> level only) Current maximum burst size enforced on the gate.</li> <li>• <b>RTCP SDR</b>—(<b>extensive</b> level only) Current sustained data rate enforced on RTCP gates.</li> <li>• <b>RTCP PDR</b>—(<b>extensive</b> level only) Current peak data rate enforced on RTCP gates.</li> </ul>	All levels (unless otherwise specified)

Table 299: show services pgcp gates Output Fields (*continued*)

Field Name	Field Description	Level of Output
	<ul style="list-style-type: none"> <li>• <b>RTCP MBS</b>—(extensive level only) Current maximum burst size enforced on RTCP gates.</li> <li>• <b>Fast update filter</b>—(extensive level only) Status of the fast update filter: <b>On</b> or <b>Off</b>.</li> <li>• <b>Service set id</b>—Numeric identifier of the service set.</li> <li>• <b>Media card</b>—Name of the services interface.</li> <li>• <b>Media handler</b>—Name of the service set.</li> <li>• <b>termination-id-string</b>—Name of the termination.</li> </ul>	
<b>Virtual BGF</b>	(count keyword only) Name of the virtual BGF.	none specified
<b>Gate count</b>	(count keyword only) Number of gates currently installed on the virtual BGF.	none specified

## Sample Output

```

show services pgcp gates user@host> show services pgcp gates gateway bgf-1
Virtual BGF configuration:
    Name                : bgf-1
    IP address           : 3.0.0.2
    Port                 : 2944
    Status                : Connected

Gate information:
Gate id: 4295033088
Gate state: Active
Service set id: 1
Media card: sp-0/3/0
Media handler: pgcp-svc-set-1
Termination-id-string: ip/0/r1mvi2/1

Gate id: 4295033089
Gate state: Active
Service set id: 1
Media card: sp-0/3/0
Media handler: pgcp-svc-set-1
Termination-id-string: ip/0/r1mvi0/2

Gate id: 8590000384
Gate state: Active
Service set id: 1
Media card: sp-0/3/0
Media handler: pgcp-svc-set-1
Termination-id-string: ip/0/r1mvi2/3

Gate id: 8590000385
Gate state: Active
Service set id: 1
Media card: sp-0/3/0
Media handler: pgcp-svc-set-1
Termination-id-string: ip/0/r1mvi0/4

```

```

show services pgcp      user@host> show services pgcp gates gateway bgf-1 count
gates gateway count    Virtual BGF                               Gate count
bgf-1                                                            4

```

```

show services pgcp      user@host> show services pgcp gates gateway bgf-1 extensive
gates gateway          Virtual BGF configuration:
extensive

```

```

Name           : bgf-1
IP address      : 10.9.1.138
Port           : 2944
Status         : In-Service

```

Gate information:

=====

```

Gate id: 4295033089
Gate state: active
Direction: B->A
Action: forward
VRF: vrf-1 -> vrf-2
Remote source address: 4.0.0.102
Remote source port: *
Remote destination address: 3.0.0.101
Remote destination port: 20000
Local source address: [3.99.99.100]
Local source port: [1024]
Local destination address: 4.99.99.100
Local destination port: 1028
Transport: rtp/avp
RTCP: Off
Latch: none
DSCP: 0x00 (Effective 0)
Policing: On
Gate SDR : 10000 bytes per second
Gate PDR : 10000 bytes per second
Gate MBS : 1000 bytes
RTCP SDR : 500 bytes per second
RTCP PDR : 500 bytes per second
RTCP MBS : 1000 bytes
Fast update filter: Off

```

Gate information:

=====


```

Gate id: 4295033088
Gate state: active
Direction: A->B
Action: forward
VRF: vrf-2 -> vrf-1
Remote source address:
Remote source port: *
Remote destination address: 4.0.0.102
Remote destination port: 10000
Local source address: [4.99.99.100]
Local source port: [1028]
Local destination address: 3.99.99.100

```

Local destination port: 1024  
Transport: rtp/avp  
RTCP: Off  
Latch: none  
DSCP: 0x00 (Effective 0)  
Policing: Off  
Fast update filter: Off

## show services pgcp root-termination

<b>Syntax</b>	<b>show services pgcp root-termination gateway <i>gateway-name</i></b> <b>&lt;backup   master&gt;</b>
<b>Release Information</b>	Command introduced in Junos OS Release 8.5. <b>gateway</b> option introduced in Junos OS Release 9.5. <b>master</b> option introduced in Junos OS Release 9.6 <b>backup</b> option introduced in Junos OS Release 9.6
<b>Description</b>	Display information about the H.248 root termination.
	<div>  <p><b>NOTE:</b> This command is not applicable when the gateway controller for the BGF is a BSG.</p> </div>
<b>Options</b>	<p><b>gateway <i>gateway-name</i></b>—Display information about root terminations in H.248 transactions associated with this virtual BGF.</p> <p><b>backup</b>—(Optional) Display information for the backup services PIC. This option applies if you are running the virtual BGF on a services PIC or MS-DPC, and you have a primary and backup PIC configured on a virtual redundant MultiServices PIC (rms) interface.</p> <p><b>master</b>—(Optional) Display information for the Routing Engine or primary services PIC. If the virtual BGF is running on the Routing Engine, the route terminations on the routing engine are displayed. If the virtual BGF is running on a services PIC, the route terminations on primary services PIC are displayed. If you do not specify the <b>master</b> or <b>backup</b> options, the <b>master</b> option is the default.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show services pgcp root-termination on page 1576</b>
<b>Output Fields</b>	Table 300 on page 1576 lists the output fields for the <b>show services pgcp root-termination</b> command. Output fields are listed in the approximate order in which they appear.

**Table 300: show services pgcp root-termination Output Fields**

Field Name	Field Description
Root termination information	Information about the root terminations in H.248 transactions.

### Sample Output

```

show services pgcp root-termination  user@host> show services pgcp root-termination bgf-1
Root termination information:

ROOT {

```



```
MEDIA {  
    TERMINATIONSTATE { SERVICESTATES = INSERVICE,  
        ROOT/MAXNUMBEROFCONTEXTS = 20000,  
        ROOT/MAXTERMINATIONSPERCONTEXT = 2,  
        ROOT/MGCMORIGINATEDPENDINGLIMIT = 15,  
        ROOT/MGCPROVISIONALRESPONSETIMERVALUE = 2000,  
        ROOT/MGCMORIGINATEDPENDINGLIMIT = 15,  
        ROOT/MGPROVISIONALRESPONSETIMERVALUE = 2000,  
        ROOT/NORMALMGCEXECUTIONTIME = 1000,  
        ROOT/NORMALMGCEXECUTIONTIME = 1000,  
        SEG/MGCMAXPDUSIZE = 500,  
        SEG/MGCSEGMENTATIONTIMERVALUE = 6000,  
        SEG/MGMAXPDUSIZE = 500,  
        SEG/MGSEGMENTATIONTIMERVALUE = 6000 }  
    },
```

## show services pgcp statistics

---

<b>Syntax</b>	<b>show services pgcp statistics gateway <i>gateway-name</i></b> <brief   extensive> <backup   master> <virtual-interface <i>interface-number</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 8.4. <b>brief   extensive</b> option introduced in Junos OS Release 9.3. <b>gateway</b> option introduced in Junos OS Release 9.5. <b>master</b> option introduced in Junos OS Release 9.6. <b>backup</b> option introduced in Junos OS Release 9.6. <b>virtual-interface</b> option introduced in Junos OS 11.1
<b>Description</b>	Display information about statistics associated with the virtual border gateway function (vBGF) or for a specific virtual interface on the vBGF.
<b>Options</b>	<b>gateway <i>gateway-name</i></b> —Display information about statistics associated with this virtual BGF.  brief   extensive—(Optional) Display the specified level of output. The default level is brief.  <b>backup</b> —(Optional) Display information for the backup services PIC. This option applies if you are running the virtual BGF on a services PIC or MS-DPC, and you have a primary and backup PIC configured on a virtual redundant Multiservices PIC (rms) interface.  <b>master</b> —(Optional) Display information for the Routing Engine or primary services PIC. If the virtual BGF is running on the Routing Engine, statistics on the Routing Engine are displayed. If the virtual BGF is running on a services PIC, statistics on the primary services PIC are displayed. If you do not specify the <b>master</b> or <b>backup</b> options, the <b>master</b> option is the default.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show services pgcp statistics on page 1582</b> <b>show services pgcp statistics extensive on page 1583</b>
<b>Output Fields</b>	Table 301 on page 1579 lists the output fields for the <b>show services pgcp statistics</b> command. Output fields are listed in the approximate order in which they appear.

Table 301: show services pgcp statistics Output Fields

Field Name	Field Description	Level of Output
Virtual BGF configuration	<p>Information about the virtual BGF configuration.</p> <ul style="list-style-type: none"> <li>• <b>Name</b>—Name of the virtual BGF.</li> <li>• <b>Platform</b>—The service interface for the BGF.</li> <li>• <b>IP address</b>—IP address of the virtual BGF.</li> <li>• <b>Routing Instance</b>—Name of the routing instance associated with the virtual BGF.</li> <li>• <b>Port</b>—Port of the virtual BGF.</li> <li>• <b>Status</b>—Status of the virtual BGF: <b>In-Service</b>, <b>Out-of-Service</b>,</li> <li>• <b>Active gateway controller</b>—Gateway controller that is currently controlling this virtual BGF. NULL means that there is no active gateway controller.</li> <li>• <b>Replication socket</b> <ul style="list-style-type: none"> <li>• <b>Connected (Ready)</b>—The replication is ready and a switchover can be processed.</li> <li>• <b>Connected (Syncing)</b>—The replication is synchronizing. Performing a switchover is not safe.</li> <li>• <b>Connected (Error)</b>—An error occurred in the previous switchover.</li> <li>• <b>Disconnected</b>—The backup Routing Engine is down. There is no route to the backup Routing Engine.</li> </ul> </li> <li>• <b>Synchronization state</b>—The status of the synchronization between the internal state of the pgcpd process and the flow of media on a data PIC after a failover of the pgcpd process. <ul style="list-style-type: none"> <li>• <b>Idle</b>—The pgcpd process and the data PIC media flow are in synch.</li> <li>• <b>Initializing</b>—The pgcpd process is reading the current status of the data PIC to determine required synchronization.</li> <li>• <b>synchronizing</b>—The pgcpd process is synchronizing its internal state with the data PIC.</li> </ul> </li> </ul> <p><b>NOTE:</b> BGF service is not affected when synchronizing. Gates can be created, modified, and deleted normally.</p> <ul style="list-style-type: none"> <li>• <b>Up time</b>—The time, in hours, minutes, and seconds, since the pgcpd process started.</li> </ul> <p><b>NOTE:</b> This metric is not affected by changes to the BGF's administrative state (in-service, out-of-service) or clearing of statistics by use of the <b>clear services pgcp statistics</b> command.</p> <ul style="list-style-type: none"> <li>• <b>Load status</b>—Describes the current load on the system. <ul style="list-style-type: none"> <li>• <b>Normal</b>—The system is not overloaded.</li> <li>• <b>Overloaded</b>—The system is sending overload messages to the gateway controller.</li> <li>• <b>Overloaded (rejecting new calls)</b>—The system is overloaded and is rejecting all attempts to create new gates.</li> </ul> </li> </ul>	all
Usage Counters	<p>Information about usage of contexts and emergency contexts.</p> <ul style="list-style-type: none"> <li>• <b>Contexts</b>—The number of active contexts out of the total number of contexts.</li> <li>• <b>Emergency contexts</b>—The number of active contexts that are emergency contexts.</li> </ul>	
BGF MultiServices PIC status	<p>Information about the Multiservice PIC providing the BGF service.</p> <ul style="list-style-type: none"> <li>• <b>Name</b>—Service interface assigned for the BGF.</li> <li>• <b>Status</b>—Connection status of the BGF.</li> </ul>	

Table 301: show services pgcp statistics Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Traffic summary</b>	<p>Traffic statistics accumulated since the last time statistics were cleared. Statistics shown are for either the vBGF or for a specifically requested virtual interface.</p> <ul style="list-style-type: none"> <li>• <b>Input Packets</b>—Number of packets received.</li> <li>• <b>Output Packets</b>—Number of packets sent.</li> <li>• <b>Input Octets</b>—Number of octets received.</li> <li>• <b>Output Octets</b>—Number of octets sent.</li> <li>• <b>Dropped packets</b>—Number of packets dropped for each of the following reasons: <ul style="list-style-type: none"> <li>• <b>Rate limit</b>—Number of packets dropped due to rate limiting.</li> <li>• <b>Explicit drop</b>—Packets dropped due to actions on the control plane, such as send-only, receive-only, out-of-service, remote-destination-unknown.</li> <li>• <b>Algs</b>—Count of packets dropped due to L4-L7 validation by ALGs (Application Layer Gateways).</li> <li>• <b>Other</b>—Total number of packets dropped for any of the following reasons: <ul style="list-style-type: none"> <li>• Basic packet verification failure</li> <li>• Source ifl does not match</li> <li>• NAT translation failure ipv4 to ipv6</li> <li>• Virtual interface out of service</li> <li>• Latching operation not completed</li> </ul> </li> </ul> </li> </ul>	
<b>H.248 statistics</b>	<p>Information about H.248 statistics. Statistics shown are for either the vBGF or for a specifically requested virtual interface. If the vBGF's controller is a BSG, the statistics represent the number of API messages that are used in lieu of actual H.248 messages.</p> <ul style="list-style-type: none"> <li>• <b>Messages received</b>—Number of H.248 messages received.</li> <li>• <b>Messages sent</b>—Number of H.248 messages sent.</li> <li>• <b>Protocol errors</b>—Number of errors detected for this virtual BGF, including: <ul style="list-style-type: none"> <li>• Syntax errors detected in received messages.</li> <li>• Outgoing transactions that have failed for protocol reasons.</li> </ul> </li> </ul>	all
<b>Received Commands</b>	<p>Information about command requests received by the virtual BGF. The following information is shown for each possible command.</p> <ul style="list-style-type: none"> <li>• <b>Total</b>—Total number of commands received, including commands with wildcard termination IDs.</li> <li>• <b>Wildcards</b>—Number of commands received that contain wildcard termination IDs.</li> <li>• <b>Success</b>—Number of success replies sent by the virtual BGF.</li> <li>• <b>Error</b>—Number of error replies sent by the virtual BGF.</li> </ul> <p>Commands are not counted in the following cases:</p> <ul style="list-style-type: none"> <li>• The command was not executed because of a previous error.</li> <li>• The command was not fully executed because of its own syntax error, which made it impossible to obtain the command type itself.</li> </ul>	all

Table 301: show services pgcp statistics Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Sent Commands</b>	<p>Information about command requests sent by the virtual BGF. The following information is shown for each possible command.</p> <ul style="list-style-type: none"> <li>• <b>Total</b>—Total number of commands sent, including commands with wildcard termination IDs.</li> <li>• <b>Wildcards</b>—Number of commands sent that contain wildcard termination IDs.</li> <li>• <b>Success</b>—Number of success replies received by the virtual BGF.</li> <li>• <b>Error</b>—Number of error replies received by the virtual BGF.</li> </ul> <p>Commands are not counted in the following cases:</p> <ul style="list-style-type: none"> <li>• The command was not executed because of a previous error.</li> <li>• The command was not fully executed because of its own syntax error, which made it impossible to obtain the command type itself.</li> </ul>	none brief
<b>ROOT SVC</b>	<p>Information about ServiceChange requests sent by the virtual BGF on the root termination.</p> <ul style="list-style-type: none"> <li>• <b>Total</b>—Total number of commands sent, including commands with wildcard termination IDs.</li> <li>• <b>Wildcards</b>—Number of commands sent that contain wildcard termination IDs.</li> <li>• <b>Success</b>—Number of success replies received by the virtual BGF.</li> <li>• <b>Error</b>—Number of error replies received by the virtual BGF.</li> </ul> <p>Commands are not counted in the following cases:</p> <ul style="list-style-type: none"> <li>• The command was not executed because of a previous error.</li> <li>• The command was not fully executed because of its own syntax error, which made it impossible to obtain the command type itself.</li> </ul>	extensive
<b>Termination SVC</b>	<p>Information about ServiceChange requests sent by the virtual BGF on the IP termination.</p> <ul style="list-style-type: none"> <li>• <b>Total</b>—Total number of commands sent, including commands with wildcard termination IDs.</li> <li>• <b>Wildcards</b>—Number of commands sent that contain wildcard termination IDs.</li> <li>• <b>Success</b>—Number of success replies received by the virtual BGF.</li> <li>• <b>Error</b>—Number of error replies received by the virtual BGF.</li> </ul> <p>Commands are not counted in the following cases:</p> <ul style="list-style-type: none"> <li>• The command was not executed because of a previous error.</li> <li>• The command was not fully executed because of its own syntax error, which made it impossible to obtain the command type itself.</li> </ul>	extensive

Table 301: show services pgcp statistics Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>ROOT Notify</b>	<p>Information about notifications sent by the virtual BGF on the root termination.</p> <ul style="list-style-type: none"> <li>ocp/mg_overloaded—MG overload notifications.</li> <li>it/ito—Inactivity timeout notifications.</li> <li>Total—Total number of notifications sent, including notifications with wildcard termination IDs.</li> <li>Wildcards—Number of notifications sent that contain wildcard termination IDs.</li> <li>Success—Number of success replies received by the virtual BGF.</li> <li>Error—Number of error replies received by the virtual BGF.</li> </ul> <p>Commands are not counted in the following cases:</p> <ul style="list-style-type: none"> <li>The command was not executed because of a previous error.</li> <li>The command was not fully executed because of its own syntax error, which made it impossible to obtain the command type itself.</li> </ul>	extensive
<b>Termination Notify</b>	<p>Information about notifications sent by the virtual BGF on the IP termination.</p> <ul style="list-style-type: none"> <li>adid/ipstop—IP flow stop detection notifications.</li> <li>nt/qualert—Quality alert notifications.</li> <li>adr/rtac—Remote source address changed notifications.</li> <li>hangterm/thb—Termination heartbeat notifications.</li> <li>Total—Total number of notifications sent, including notifications with wildcard termination IDs.</li> <li>Wildcards—Number of notifications sent that contain wildcard termination IDs.</li> <li>Success—Number of success replies received by the virtual BGF.</li> <li>Error—Number of error replies received by the virtual BGF.</li> </ul> <p>Commands are not counted in the following cases:</p> <ul style="list-style-type: none"> <li>The command was not executed because of a previous error.</li> <li>The command was not fully executed because of its own syntax error, which made it impossible to obtain the command type itself.</li> </ul>	extensive

## Sample Output

```

show services pgcp statistics user@host> show services pgcp statistics gateway bgf-1
Virtual BGF configuration:
  Name                : bgf-1
  Platform             : routing-engine [0]
  IP address           : 10.50.30.100
  Routing-instance     : ri-2
  Port                : 2944
  Status              : In-Service (Registered)
  Active gateway controller : PGC1
  Replication socket   : Disconnected
  Synchronization state : Disabled
  Up time              : 1 day, 22 hours, 50 minutes, 37
seconds
  Load status         : Normal

```

## BGF MultiServices PIC status:

Name : sp-0/3/0  
Status : Connected

Statistics since: 3 Days 2 hours 20 secs

## Traffic Summary:

Input Packets: 1044066  
Output Packets: 1024066  
Input Octets: 121044066  
Output Octets: 101024066  
Dropped packets:  
Rate limit: 20/120  
Explicit drop: 0/0  
Algs: 10/540  
Other: 0/0

## Usage counters:

Contexts : 11 / 6000  
Emergency contexts : 0

## H.248 statistics:

Messages received : 5  
Messages sent : 3  
Protocol errors : 0

Received Commands	Total	Wildcard	Success	Error
Add	0	0	0	0
Add (emergency)	0	0	0	0
AuditValue	1	0	1	0
Modify	1	0	1	0
ServiceChange	0	0	0	0
Subtract	0	0	0	0
Sent Commands	Total	Wildcard	Success	Error
Notify	0	0	0	0
ServiceChange	1	0	1	0

**show services pgcp  
statistics extensive**

user@host> show services pgcp statistics gateway bgf-1 extensive

## Virtual BGF configuration:

Name : bgf-1  
IP address : 10.50.150.100  
Port : 2944  
Status : In-Service (Registered)

## H.248 statistics:

Messages received : 5  
Messages sent : 3  
Protocol errors : 0

Received Commands	Total	Wildcard	Success	Error
Add	0	0	0	0
Add (emergency)	0	0	0	0

AuditValue	1	0	1	0
Modify	1	0	1	0
ServiceChange	0	0	0	0
Subtract	0	0	0	0
Sent Commands	Total	Wildcard	Success	Error
Notify	0	0	0	0
ServiceChange	1	0	1	0
ROOT SVC	Total	Wildcard	Success	Error
DC/900	0	0	0	0
FL/908	0	0	0	0
FL/909	0	0	0	0
FL/919	0	0	0	0
FL/920	0	0	0	0
FO/904	0	0	0	0
FO/905	0	0	0	0
FO/908	0	0	0	0
GR/905	0	0	0	0
HO/903	0	0	0	0
RS/900	0	0	0	0
RS/901	1	0	1	0
RS/902	0	0	0	0
RS/918	0	0	0	0
Termination SVC	Total	Wildcard	Success	Error
FO/904	0	0	0	0
FO/905	0	0	0	0
FO/906	0	0	0	0
FO/907	0	0	0	0
FO/910	0	0	0	0
FO/915	0	0	0	0
GR/905	0	0	0	0
RS/900	0	0	0	0
RS/918	0	0	0	0
ROOT Notify	Total	Wildcard	Success	Error
ocp/mg_overloaded	0	0	0	0
it/ito	1404	0	1404	0
Termination Notify	Total	Wildcard	Success	Error
adid/ipstop	0	0	0	0
nt/qualert	0	0	0	0
adr/rtac	0	0	0	0
hangterm/thb	0	0	0	0



## show services pgcp conversations

**Syntax** show services pgcp conversations gateway *gateway-name*  
 <brief | extensive | terse>  
 <backup | master>  
 <destination-port *destination-port*>  
 <destination-prefix *destination-prefix*>  
 <destination-routing-instance *vrf*>  
 <gate-id *gate-id*>  
*gateway-name*  
 <protocol *protocol*>  
 <service-set *service-set*>  
 <source-port *source-port*>  
 <source-prefix *source-prefix*>  
 <source-routing-instance *vrf*>

**Release Information** Command introduced in Junos OS Release 8.4.  
*gateway-name* option added in Junos OS Release 9.2.  
**master** option introduced in Junos OS Release 9.6  
**backup** option introduced in Junos OS Release 9.6

**Description** Display information about Packet Gateway Control Protocol (PGCP) conversations.

**Options** gateway *gateway-name*—Display information about statistics associated with this virtual border gateway function (BGF).

none—Display standard information about all PGCP conversations.

brief | extensive | terse—(Optional) Display the specified level of output.

**backup**—(Optional) Display information for the backup services PIC. This option applies if you are running the virtual BGF on a services PIC or MS-DPC, and you have a primary and backup PIC configured on a virtual redundant Multiservices PIC (rms) interface.

**master**—(Optional) Display information for the Routing Engine or primary services PIC. If the virtual BGF is running on the Routing Engine, the conversations on the routing engine are displayed. If the virtual BGF is running on a services PIC, the conversations on the primary services PIC are displayed. If you do not specify the **master** or **backup** options, the **master** option is the default.

destination-port *destination-port*—(Optional) Display information for a particular destination port.

destination-prefix *destination-prefix*—(Optional) Display information for a particular destination prefix.

destination-routing-instance *vrf*—(Optional) Display information for a particular destination VPN routing and forwarding instance (VRF).

gate *gate-id*—(Optional) Display information about a particular gate.

*gateway-name*—Display information about a virtual BGF.

`protocol protocol`—(Optional) Display information about one of the following IP protocol types:

- **number**—Numeric protocol value from 0 to 255
- **ah**—IPsec Authentication Header protocol
- **egp**—An exterior gateway protocol
- **esp**—IPsec Encapsulating Security Payload protocol
- **gre**—A generic routing encapsulation protocol
- **icmp**—Internet Control Message Protocol
- **igmp**—Internet Group Management Protocol
- **ipip**—IP-over-IP Encapsulation Protocol
- **ospf**—Open Shortest Path First protocol
- **pim**—Protocol Independent Multicast protocol
- **rsvp**—Resource Reservation Protocol
- **sctp**—Stream Control Protocol
- **tcp**—Transmission Control Protocol
- **udp**—User Datagram Protocol

`service-set service-set`—(Optional) Display information for the specific service set.

`source-port source-port`—(Optional) Display information for a particular source port. The range of values is from 0 to 65535.

`source-prefix source-prefix`—(Optional) Display information for a particular source prefix.

`source-routing-instance vrf`—(Optional) Display information for a particular source VPN routing and forwarding instance (VRF).

**Required Privilege Level** view

**List of Sample Output** [show services pgcp conversations on page 1588](#)  
[show services pgcp conversations extensive on page 1588](#)

**Output Fields** Table 302 on page 1586 lists the output fields for the **show services pgcp conversations** command. Output fields are listed in the approximate order in which they appear.

**Table 302: show services pgcp conversations Output Fields**

Field Name	Field Description	Level of Output
<b>Interface</b>	Name of a services interface.	All levels
<b>Service set</b>	Name of a service set. Individual empty service sets are not displayed. If no service set has any flows, a flow table header is printed for each service set.	All levels

Table 302: show services pgcp conversations Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Conversation</b>	Information about a group of related flows. <ul style="list-style-type: none"> <li>• <b>ALG Protocol</b>—Application-level gateway protocol.</li> <li>• <b>Number of initiators</b>—Number of flows that initiated a session.</li> <li>• <b>Number of responders</b>—Number of flows that responded in a session.</li> </ul>	All levels
<b>Flow</b>	Protocol used for this flow.	All levels
<b>Source</b>	Source prefix of the flow, in the format <i>source-prefix-port</i> .	All levels
<b>Destination</b>	Destination prefix of the flow.	All levels
<b>State</b>	Status of the flow: <ul style="list-style-type: none"> <li>• <b>Drop</b>—Drop all packets in the flow without response.</li> <li>• <b>Forward</b>—Forward the packet in the flow without looking at it.</li> <li>• <b>Reject</b>—Drop all packets in the flow with response.</li> <li>• <b>Watch</b>—Inspect packets in the flow.</li> </ul>	All levels
<b>Dir</b>	Direction of the flow: input (I) or output (O).	All levels
<b>Frm Count</b>	Number of frames in the flow.	All levels
<b>Gate id</b>	Numeric identifier of the gate.	All levels
<b>NAT source</b>	Original and translated source IPv4 or IPv6 addresses are displayed if Network Address Translation (NAT) is configured on this particular flow or conversation.	All levels
<b>NAT dest</b>	Original and translated destination IPv4 or IPv6 addresses are displayed if NAT is configured on this particular flow or conversation.	All levels
<b>Byte count</b>	Number of bytes forwarded in the flow.	extensive
<b>Flow role</b>	Role of the flow that is under evaluation: <b>Initiator</b> , <b>Master</b> , <b>Responder</b> , or <b>Unknown</b> .	extensive
<b>Timeout</b>	Lifetime of the flow, in seconds.	extensive
<b>Tman Policing</b>	Whether traffic-management policing is <b>ON</b> or <b>OFF</b>	extensive
<b>SDR</b>	Sustained data rate being enforced for the gate.	extensive
<b>SDR MBS</b>	Sustained data rate maximum burst size being enforced for the gate.	extensive
<b>PDR</b>	Peak data rate being enforced for the gate.	extensive
<b>PDR MBS</b>	Peak data rate maximum burst size being enforced for the gate.	extensive

## Sample Output

```

user@host> show services pgcp conversations
Interface: sp-0/3/0, Service set: bgf-svc-set-1

Conversation: ALG protocol: any
Number of initiators: 2, Number of responders: 2
Flow                               State   Dir      Frm count
UDP                                4.0.0.102:0 -> 4.99.99.100:1024 Forward I      20051
Gate id: 8590000385
  NAT source 4.0.0.102:0 -> 3.99.99.100:1024
  NAT dest   4.99.99.100:1024 -> 3.0.0.101:49174
UDP                                4.0.0.102:0 -> 4.99.99.100:1025 Forward I      0
Gate id: 8590000385
  NAT source 4.0.0.102:0 -> 3.99.99.100:1025
  NAT dest   4.99.99.100:1025 -> 3.0.0.101:49175
UDP                                0.0.0.0:0 -> 3.99.99.100:1024 Forward I     19551
Gate id: 8590000384
  NAT source 0.0.0.0:0 -> 4.99.99.100:1024
  NAT dest   3.99.99.100:1024 -> 4.0.0.102:49234
UDP                                0.0.0.0:0 -> 3.99.99.100:1025 Forward I      0
Gate id: 8590000384
  NAT source 0.0.0.0:0 -> 4.99.99.100:1025
  NAT dest   3.99.99.100:1025 -> 4.0.0.102:49235

Conversation: ALG protocol: any
Number of initiators: 1, Number of responders: 1
Flow                               State   Dir      Frm count
UDP                                3.0.0.101:0 -> 3.99.99.100:5060 Forward I      2
Gate id: 4295033088
  NAT source 3.0.0.101:0 -> 4.99.99.100:5060
  NAT dest   3.99.99.100:5060 -> 4.0.0.102:5060
UDP                                4.0.0.102:0 -> 4.99.99.100:5060 Forward I      3
Gate id: 4295033089
  NAT source 4.0.0.102:0 -> 3.99.99.100:5060
  NAT dest   4.99.99.100:5060 -> 3.0.0.101:5060

user@host> show services pgcp conversations bgf-1 extensive
Interface: rsp1, Service set: bgf-svc-set-1

Number of initiators: 2, Number of responders: 2
Flow                               State   Dir      Frm count
Gate id: 4295033088
UDP                                4.0.0.102:0 -> 10.50.100.1:1024 Forward I      0
  NAT source 4.0.0.102:0 -> 20.50.100.1:1024
  NAT dest   10.50.100.1:1024 -> 4.0.0.101:10000
Byte count: 0
Flow role: Master, Timeout: 429496728
Tman Policing: ON
SDR   : 10000 bytes per second
SDR MBS: 1000 bytes
PDR   : 10000 bytes per second
PDR MBS: 1000 bytes
Gate id: 4295033088
UDP                                4.0.0.102:0 -> 10.50.100.1:1025 Forward I      0
  NAT source 4.0.0.102:0 -> 20.50.100.1:1025
  NAT dest   10.50.100.1:1025 -> 4.0.0.101:10001
Byte count: 0
Flow role: Initiator, Timeout: 429496728
Tman Policing: ON

```

```
SDR      : 500 bytes per second
SDR MBS: 1000 bytes
PDR      : 500 bytes per second
PDR MBS: 1000 bytes
Gate id: 4295033089
UDP      4.0.0.101:0    ->    20.50.100.1:1024 Forward I      0
    NAT source      4.0.0.101:0    ->    10.50.100.1:1024
    NAT dest        20.50.100.1:1024 ->    4.0.0.102:10000
Byte count: 0
Flow role: Responder, Timeout: 6000
Tman Policing: OFF
Gate id: 4295033089
UDP      4.0.0.101:0    ->    20.50.100.1:1025 Forward I      0
    NAT source      4.0.0.101:0    ->    10.50.100.1:1025
    NAT dest        20.50.100.1:1025 ->    4.0.0.102:10001
Byte count: 0
Flow role: Responder, Timeout: 429496728
Tman Policing: OFF
```

## show services pgcp flows

---

**Syntax**    `show services pgcp flows gateway gateway-name`  
              `<brief | extensive | terse>`  
              `<backup | master>`  
              `<count>`  
              `<destination-port destination-port>`  
              `<destination-prefix destination-prefix>`  
              `<destination-routing-instance vrf>`  
              `<gate-id gate-id>`  
              `<gateway-name>`  
              `<protocol protocol>`  
              `<service-set service-set>`  
              `<source-port source-port>`  
              `<source-prefix source-prefix>`  
              `<source-routing-instance vrf>`

**Release Information**    Command introduced in Junos OS Release 8.4.  
                              **gate-id** option added in Release 9.2.  
                              **gateway-name** option added in Junos OS Release 9.2.  
                              **destination-routing-instance** option added in Junos OS Release 9.3.  
                              **source-routing-instance** option added in Junos OS Release 9.3.  
                              **master** option introduced in Junos OS Release 9.6  
                              **backup** option introduced in Junos OS Release 9.6

**Description**    Display information for Packet Gateway Control Protocol (PGCP) flows.

**Options**    `gateway gateway-name`—Display information about statistics associated with this virtual border gateway function (BGF).

`none`—Display standard information about all PGCP flows.

`brief | extensive | terse`—(Optional) Display the specified level of output.

**backup**—(Optional) Display information for the backup services PIC. This option applies if you are running the virtual BGF on a services PIC or MS-DPC, and you have a primary and backup PIC configured on a virtual redundant Multiservices PIC (rms) interface.

**master**—(Optional) Display information for the Routing Engine or primary services PIC. If the virtual BGF is running on the Routing Engine, the flows on the routing engine are displayed. If the virtual BGF is running on a services PIC, the flows on the primary services PIC are displayed. If you do not specify the **master** or **backup** options, the **master** option is the default.

`count`—(Optional) Display a count of the matching entries.

`destination-port destination-port`—(Optional) Display information for a particular destination port.

`destination-prefix destination-prefix`—(Optional) Display information for a particular destination prefix.

destination-routing-instance *vrf*—(Optional) Display information for a particular destination VPN routing and forwarding instance (VRF).

gate *gate-id*—(Optional) Display information about a particular gate.

gateway-name—(Optional) Display information about a particular virtual BGF.

protocol *protocol*—(Optional) Display information about one of the following IP protocol types:

- **number**—Numeric protocol value from 0 to 255
- **ah**—IPsec Authentication Header protocol
- **egp**—An exterior gateway protocol
- **esp**—IPsec Encapsulating Security Payload protocol
- **gre**—A generic routing encapsulation protocol
- **icmp**—Internet Control Message Protocol
- **igmp**—Internet Group Management Protocol
- **ipip**—IP-within-IP Encapsulation Protocol
- **ospf**—Open Shortest Path First protocol
- **pim**—Protocol Independent Multicast protocol
- **rsvp**—Resource Reservation Protocol
- **sctp**—Stream Control Protocol
- **tcp**—Transmission Control Protocol
- **udp**—User Datagram Protocol

service-set *service-set*—(Optional) Display information for a particular service set.

source-port *source-port*—(Optional) Display information for a particular source port.

source-prefix *source-prefix*—(Optional) Display information for a particular source prefix.

source-routing-instance *vrf*—(Optional) Display information for a particular source VPN routing and forwarding instance (VRF).

Required Privilege Level	view
List of Sample Output	<b>show services pgcp flows on page 1593</b> <b>show services pgcp flows extensive on page 1593</b>
Output Fields	Table 303 on page 1592 lists the output fields for the <b>show services pgcp flows</b> command. Output fields are listed in the approximate order in which they appear.

Table 303: show services pgcp flows Output Fields

Field Name	Field Description	Level of Output
<b>Interface</b>	Name of the services interface.	All levels
<b>Service set</b>	Name of a service set. Individual empty service sets are not displayed. If no service set has any flows, a flow table header is displayed for each service set.	All levels
<b>Flow</b>	Protocol used for this flow.	All levels
<b>Source</b>	Source prefix of the flow in the format <i>source-prefix:port</i> .	All levels
<b>Dest</b>	Destination prefix of the flow.	All levels
<b>State</b>	Status of the flow: <ul style="list-style-type: none"> <li>• <b>Drop</b>—Drop all packets in the flow without response.</li> <li>• <b>Forward</b>—Forward the packet in the flow without looking at it.</li> <li>• <b>Reject</b>—Drop all packets in the flow with response.</li> <li>• <b>Watch</b>—Inspect packets in the flow.</li> </ul>	All levels
<b>Dir</b>	Direction of the flow: input ( <b>I</b> ), output ( <b>O</b> ), or unknown ( <b>U</b> ).	All levels
<b>Frm count</b>	Number of frames in the flow.	All levels
<b>Gate id</b>	Numeric identifier of the gate.	All levels
<b>NAT source</b>	Original and translated source IPv4 or IPv6 addresses are displayed if Network Address Translation (NAT) is configured on this particular flow or conversation.	All levels
<b>NAT dest</b>	Original and translated destination IPv4 or IPv6 addresses are displayed if NAT is configured on this particular flow or conversation.	All levels
<b>VRF</b>	If you have VPN aggregation configured, shows the source (ingress) VRF and the destination (egress) VRF.	<b>extensive</b>
<b>Byte count</b>	Number of bytes forwarded in the flow.	<b>extensive</b>
<b>Flow role</b>	Role of the flow that is under evaluation: <b>Initiator</b> , <b>Master</b> , <b>Responder</b> , or <b>Unknown</b> .	<b>extensive</b>
<b>Timeout</b>	Lifetime of the flow, in seconds.	<b>extensive</b>
<b>Tman Policing</b>	Whether traffic-management policing is <b>ON</b> or <b>OFF</b>	<b>extensive</b>
<b>SDR</b>	Sustained data rate being enforced for the gate.	<b>extensive</b>
<b>SDR MBS</b>	Sustained data rate maximum burst size being enforced for the gate.	<b>extensive</b>
<b>PDR</b>	Peak data rate being enforced for the gate.	<b>extensive</b>
<b>PDR MBS</b>	Peak data rate maximum burst size being enforced for the gate.	<b>extensive</b>



## Sample Output

```

show services pgcp flows user@host> show services pgcp flows gateway VBGF1
Interface: sp-0/3/0, Service set: bgf-svc-set-1
Flow State Dir Frm count
UDP 4.0.0.102:0 -> 4.99.99.100:1024 Forward I 21531
Gate id: 8590000385
  NAT source 4.0.0.102:0 -> 3.99.99.100:1024
  NAT dest 4.99.99.100:1024 -> 3.0.0.101:49174
UDP 0.0.0.0:0 -> 3.99.99.100:1024 Forward I 20999
Gate id: 8590000384
  NAT source 0.0.0.0:0 -> 4.99.99.100:1024
  NAT dest 3.99.99.100:1024 -> 4.0.0.102:49234
UDP 4.0.0.102:0 -> 4.99.99.100:5060 Forward I 3
Gate id: 4295033089
  NAT source 4.0.0.102:0 -> 3.99.99.100:5060
  NAT dest 4.99.99.100:5060 -> 3.0.0.101:5060
UDP 3.0.0.101:0 -> 3.99.99.100:5060 Forward I 2
Gate id: 4295033088
  NAT source 3.0.0.101:0 -> 4.99.99.100:5060
  NAT dest 3.99.99.100:5060 -> 4.0.0.102:5060
UDP 0.0.0.0:0 -> 3.99.99.100:1025 Forward I 0
Gate id: 8590000384
  NAT source 0.0.0.0:0 -> 4.99.99.100:1025
  NAT dest 3.99.99.100:1025 -> 4.0.0.102:49235
UDP 4.0.0.102:0 -> 4.99.99.100:1025 Forward I 0
Gate id: 8590000385
  NAT source 4.0.0.102:0 -> 3.99.99.100:1025
  NAT dest 4.99.99.100:1025 -> 3.0.0.101:49175

show services pgcp flows extensive user@host> show services pgcp flows bgf-1 extensive
Interface: rsp1, Service set: bgf-svc-set-1
Flow State Dir Frm count
Gate id: 4295033088
UDP 4.0.0.102:0 -> 10.50.100.1:1024 Forward U 0
  NAT source 4.0.0.102:0 -> 20.50.100.1:1024
  NAT dest 10.50.100.1:1024 -> 4.0.0.101:10000
VRF: vrf1 -> vrf2
  Byte count: 0
  Flow role: Master, Timeout: 429496728
  Tman Policing: ON
  SDR : 10000 bytes per second
  SDR MBS: 1000 bytes
  PDR : 10000 bytes per second
  PDR MBS: 1000 bytes
Gate id: 4295033088
UDP 4.0.0.102:0 -> 10.50.100.1:1025 Forward U 0
  NAT source 4.0.0.102:0 -> 20.50.100.1:1025
  NAT dest 10.50.100.1:1025 -> 4.0.0.101:10001
VRF: vrf1 -> vrf2
  Byte count: 0
  Flow role: Initiator, Timeout: 429496728
  Tman Policing: ON
  SDR : 500 bytes per second
  SDR MBS: 1000 bytes
  PDR : 500 bytes per second
  PDR MBS: 1000 bytes
Gate id: 4295033089
UDP 4.0.0.101:0 -> 20.50.100.1:1024 Forward U 0
  NAT source 4.0.0.101:0 -> 10.50.100.1:1024

```

```
      NAT dest      20.50.100.1:1024    ->      4.0.0.102:10000
VRF:  vrf1 -> vrf2
      Byte count: 0
      Flow role: Responder, Timeout: 6000
      Tman Policing: OFF
Gate id: 4295033089
UDP      4.0.0.101:0      ->      20.50.100.1:1025 Forward U      0
      NAT source      4.0.0.101:0      ->      10.50.100.1:1025
      NAT dest      20.50.100.1:1025    ->      4.0.0.102:10001
VRF:  vrf1 -> vrf2
      Byte count: 0
      Flow role: Responder, Timeout: 429496728
      Tman Policing: OFF
```

## show services pgcp terminations

<b>Syntax</b>	<b>show services pgcp terminations gateway <i>gateway-name</i></b> <b>&lt;brief   h248   count&gt;</b> <b>&lt;backup   master&gt;</b> <b>&lt;termination-prefix <i>prefix</i>&gt;</b>
<b>Release Information</b>	<p>Command introduced in Junos OS Release 8.4.</p> <p><b>brief   h248   count</b> option introduced in Junos OS Release 8.5.</p> <p><b>termination-prefix</b> option introduced in Junos OS Release 8.5.</p> <p><b>gateway</b> option revised in Junos OS Release 9.5.</p> <p><b>master</b> option introduced in Junos OS Release 9.6</p> <p><b>backup</b> option introduced in Junos OS Release 9.6</p>
<b>Description</b>	Display summary information about all Packet Gateway Control Protocol (PGCP) terminations.
<b>Options</b>	<p><b>gateway <i>gateway-name</i></b>—Display information about terminations associated with this virtual border gateway function (BGF).</p> <p><b>brief   h248   count</b>—(Optional) Display the specified level of output.</p> <p><b>backup</b>—(Optional) Display information for the backup services PIC. This option applies if you are running the virtual BGF on a services PIC or MS-DPC, and you have a primary and backup PIC configured on a virtual redundant Multiservices PIC (rms) interface.</p> <p><b>master</b>—(Optional) Display information for the Routing Engine or primary services PIC. If the virtual BGF is running on the Routing Engine, the terminations on the routing engine are displayed. If the virtual BGF is running on a services PIC, the terminations on the primary services PIC are displayed. If you do not specify the <b>master</b> or <b>backup</b> options, the <b>master</b> option is the default.</p> <p><b>termination-prefix <i>prefix</i></b>—(Optional) Display information based on the termination prefix.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p><b>show services pgcp terminations on page 1596</b></p> <p><b>show services pgcp terminations brief on page 1597</b></p> <p><b>show services pgcp terminations count on page 1597</b></p> <p><b>show services pgcp terminations h248 on page 1597</b></p> <p><b>show services pgcp terminations termination-prefix brief on page 1599</b></p> <p><b>show services pgcp terminations termination-prefix h248 on page 1599</b></p>
<b>Output Fields</b>	Table 304 on page 1596 lists the output fields for the <b>show services pgcp terminations</b> command. Output fields are listed in the approximate order in which they appear.

Table 304: show services pgcp terminations Output Fields

Field Name	Field Description	Level of Output
<b>virtual BGF configuration</b>	Information about the virtual BGF configuration. <ul style="list-style-type: none"> <li>• <b>Name</b>—Name of the BGF.</li> <li>• <b>IP address</b>—IP address of the BGF.</li> <li>• <b>Port</b>—Port of the BGF.</li> <li>• <b>Status</b>—Status of the BGF.</li> </ul>	All levels except <b>count</b>
<b>Termination name</b>	Name of the termination.	none specified and <b>brief</b>
<b>State</b>	State of the termination: <b>In-service</b> or <b>Out-of-service</b> .	none specified and <b>brief</b>
<b>Duration</b>	Period of time that termination and gates exist, in milliseconds.	none specified and <b>brief</b>
<b>Gate-id</b>	Numeric identifier of the termination.	none specified and <b>brief</b>
<b>Direction</b>	<ul style="list-style-type: none"> <li>• A is the termination that was created first.</li> <li>• B is the termination that was created second.</li> </ul>	none specified and <b>brief</b>
<b>State</b>	State of the gate: <b>active</b> , <b>disabled</b> , or <b>closed</b> .	none specified and <b>brief</b>
<b>Action</b>	Action applied to the gate: <b>forward</b> , <b>add</b> , or <b>drop</b> .	none specified and <b>brief</b>
<b>Gateway name</b>	Name of the BGF.	none specified and <b>brief</b>
<b>Terminations count</b>	Number of terminations.	<b>count</b>
<b>Termination Information</b>	Information about the termination in the form of an H.248 transaction.	<b>h248</b>

### Sample Output

```

show services pgcp terminations user@host> show services pgcp terminations gateway bgf-1
Virtual BGF configuration:

      Name                               : bgf-1
      IP address                         : 3.0.0.2
      Port                              : 2944
      Status                            : In-Service

      Termination name                   State      Duration(msecs)
      ip/4/vif-0/2                      In-service  9628

```

Gate-id	Direction	State	Action
4295033088	A->B	active	forward
4295033089	B->A	active	forward

Termination name	State	Duration(msecs)
ip/4/vif-0/3	In-service	9632

Gate-id	Direction	State	Action
4295033088	A->B	active	forward
4295033089	B->A	active	forward

**show services pgcp terminations brief** user@host> show services pgcp terminations bgf-1 brief  
Virtual BGF configuration:

```
Name                : pg1
IP address           : 3.0.0.2
Port                 : 2944
Status               : In-Service
```

Termination name	State	Duration(msecs)
ip/4/vif-0/1	In-service	109735

Gate-id	Direction	State	Action
4295033088	A->B	active	forward
4295033089	B->A	active	drop

Termination name	State	Duration(msecs)
ip/4/vif-0/2	In-service	109736

Gate-id	Direction	State	Action
4295033088	A->B	active	forward
4295033089	B->A	active	drop

**show services pgcp terminations count** user@host> show services pgcp terminations gateway bgf-1 count  
Virtual BGF Terminations Count  
bgf-1 2

**show services pgcp terminations h248** user@host> show services pgcp terminations gateway bgf-1 h248  
Termination information:

```
ip/4/vif-0/2 {
  MEDIA {
    TERMINATIONSTATE { SERVICESTATES = INSERVICE },
    STREAM = 1 {
      LOCALCONTROL { MODE = SENDRECEIVE,
        DS/DSCP = 00,
        TMAN/MBS = 10,
        TMAN/PDR = 0,
        TMAN/POL = ON,
        TMAN/SDR = 1000,
        MGCINFO/DB = 00,
        GM/RSB = ON,
        GM/SAF = ON,
        GM/SAM = "[42.0.3.11]",
        GM/SPF = OFF,
```

```

                                GM/ESAS = OFF,
                                GM/ESPS = OFF },

        LOCAL {
v=0
c=IN IP4 40.1.1.100
m=- 1024 rtp/avp -
b=AS:0
        },
        REMOTE {
v=0
c=IN IP4 42.0.3.11
m=- 10000 rtp/avp -
b=AS:0
        }
    },
    SIGNALS { IPNAPT/LATCH { STREAM = 1, NAPT = OFF, NOTIFYCOMPLETION = { TIMEOUT
} } },
    EVENTS { HANGTERM/THB { TIMERX= 30 } }

}

Termination information:
ip/4/vif-0/2 {
    MEDIA {
        TERMINATIONSTATE { SERVICESTATES = INSERVICE },
        STREAM = 1 {
            LOCALCONTROL { MODE = SENDRECEIVE,
                                DS/DSCP = 00,
                                TMAN/MBS = 10,
                                TMAN/PDR = 0,
                                TMAN/POL = ON,
                                TMAN/SDR = 1000,
                                MGCINFO/DB = 00,
                                GM/RSB = ON,
                                GM/SAF = ON,
                                GM/SAM = "[42.0.3.11]",
                                GM/SPF = OFF,
                                GM/ESAS = OFF,
                                GM/ESPS = OFF },

            LOCAL {
v=0
c=IN IP4 40.1.1.100
m=- 1024 rtp/avp -
b=AS:0
            },
            REMOTE {
v=0
c=IN IP4 42.0.3.11
m=- 10000 rtp/avp -
b=AS:0
            }
        },
        SIGNALS { IPNAPT/LATCH { STREAM = 1, NAPT = OFF, NOTIFYCOMPLETION = { TIMEOUT
} } }.
        EVENTS { HANGTERM/THB { TIMERX= 30 } }

    }
}

```

```

show services pgcp terminations brief gateway bgf-1 termination-prefix ip/4/vif-0/2
Virtual BGF configuration:
Name : bgf-1
IP address : 10.50.10.100
Port : 2944
Status : Connected

Termination name      State      Duration(msecs)
ip/4/vif-0/2          In-service 42068
Gate-id              Direction State      Action
184683659520         A->B      active    forward
184683659521         B->A      active    forward

show services pgcp terminations termination-prefix h248
user@host> show services pgcp termination gateway bgf-1 termination-prefix ip/4/vif-0/2 h248
Termination information:
ip/4/vif-0/2 {
  MEDIA {
    TERMINATIONSTATE { SERVICESTATES = INSERVICE },
    STREAM = 1 {
      LOCALCONTROL { MODE = SENDRECEIVE,
        DS/DSCP = 00,
        TMAN/MBS = 10,
        TMAN/PDR = 0,
        TMAN/POL = ON,
        TMAN/SDR = 1000,
        MGCINFO/DB = 00,
        GM/RSB = ON,
        GM/SAF = ON,
        GM/SAM = "[42.0.3.11]",
        GM/SPF = OFF,
        GM/ESAS = OFF,
        GM/ESPS = OFF },
      LOCAL {
        v=0
        c=IN IP4 40.1.1.100
        m=- 1024 rtp/avp -
        b=AS:0
      },
      REMOTE {
        v=0
        c=IN IP4 42.0.3.11
        m=- 10000 rtp/avp -
        b=AS:0
      }
    },
    SIGNALS { IPNAPT/LATCH { STREAM = 1, NAPT = OFF, NOTIFYCOMPLETION = { TIMEOUT
    } } },
    EVENTS { HANGTERM/THB { TIMERX= 30 } }
  }
}

```





# PTSP Operational Mode Commands

Table 305 on page 1601 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot the packet-triggered subscribers and policy control (PTSP) services. Commands are listed in alphabetical order.

**Table 305: PTSP Operational Mode Commands**

Task	Command
Clear the packet-triggered subscriber session and log out the specified subscriber.	<b>clear services subscriber sessions</b>
Display bandwidth information about the packet-triggered subscribers.	<b>show services subscriber bandwidth</b>
Display information about the active dynamic policies applied to the specific subscribers.	<b>show services subscriber dynamic-policies</b>
Display information about the data flows associated with the specific subscriber.	<b>show services subscriber flows</b>
Display information about the active packet-triggered subscriber sessions on the router.	<b>show services subscriber sessions</b>
Display information about the data traffic statistics for the specified packet-triggered subscriber and for each service rule attached to that subscriber.	<b>show services subscriber statistics</b>



**NOTE:** PTSP services are supported on the MultiServices Dense Port Concentrator (MS-DCP) on the MX Series routers.



**NOTE:** For information about how to configure the PTSP services, see the *Junos Subscriber Access Configuration Guide*.

## clear services subscriber sessions

---

<b>Syntax</b>	<code>clear services subscriber sessions client-id <i>client-id</i></code>
<b>Release Information</b>	Command introduced in Junos OS Release 10.2.
<b>Description</b>	Clear the packet-triggered subscriber sessions on the router to log out the subscribers.
<b>Options</b>	<code>client-id <i>client-id</i></code> —Logs out the packet-triggered subscriber with this client ID. The client ID is a generated identifier assigned to each packet-triggered subscriber known to the router.
<b>Required Privilege Level</b>	clear
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show services subscriber sessions on page 1610</a></li></ul>
<b>List of Sample Output</b>	<a href="#">clear services subscriber sessions on page 1602</a>
<b>Output Fields</b>	When you issue this command, you are provided feedback on the status of your request.

### Sample Output

<code>clear services subscriber sessions</code>	<pre>user@host&gt; clear services subscriber sessions client-id 1 Initiated logout request for 1 subscriber session(s)</pre>
-------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------

## show services subscriber bandwidth

<b>Syntax</b>	<pre>show services subscriber bandwidth &lt;client-id <i>client-id</i>&gt; &lt;interface <i>interface-name</i>&gt; &lt;top-talkers <i>top-talkers</i>&gt; &lt;ip-address <i>ip-address</i>&gt; &lt;service-interface <i>interface-name</i>&gt; &lt;top-talkers <i>top-talkers</i>&gt;</pre>
<b>Release Information</b>	Command introduced in Junos OS Release 10.2.
<b>Description</b>	Display bandwidth information about subscribers with the specified criteria. The bandwidth is computed at fixed intervals on the MS-DPC and only the last interval is used for comparison.
<b>Options</b>	<p><b>client-id <i>client-id</i></b>—(Optional) Displays bandwidth information for the subscriber with this client ID. The client ID is a generated identifier assigned to each packet-triggered subscriber known to the router.</p> <p><b>interface <i>interface-name</i></b>—(Optional) Displays bandwidth information for the subscriber with this underlying interface name.</p> <p><b>ip-address <i>ip-address</i></b>—(Optional) Displays bandwidth information for the subscriber with this IPv4 address.</p> <p><b>service-interface <i>interface-name</i></b>—(Optional) Displays bandwidth information for the subscriber with this service interface name.</p> <p><b>top-talkers <i>number-top-talkers</i></b>—(Optional) Displays bandwidth information for the specified number of subscribers using the most bandwidth based on the input-bps or output-bps values for the interface or service interface.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show services subscriber bandwidth client-id on page 1604
<b>Output Fields</b>	Table 306 on page 1603 lists the output fields for the <b>show services subscriber bandwidth</b> command. Output fields are listed in the approximate order in which they appear.

**Table 306: show services subscriber bandwidth Output Fields**

Field Name	Field Description
client-id	Client identifier.
input-bps	Ingress bandwidth in bytes per second.
output-bps	Egress bandwidth in bytes per second.
input-pps	Ingress bandwidth in packets per second.
output-pps	Egress bandwidth in packets per second.

## Sample Output

```
show services user@host> show services subscriber bandwidth client-id 1
subscriber bandwidth
client-id client-id input-bps output-bps input-pps output-pps
1 20 20 1000 1000
```

## show services subscriber dynamic-policies

<b>Syntax</b>	<b>show services subscriber dynamic-policies client-id <i>client-id</i></b>
<b>Release Information</b>	Command introduced in Junos OS Release 10.2.
<b>Description</b>	Display information about the active dynamic policies applied to the specified subscriber.
<b>Options</b>	<b>client-id <i>client-id</i></b> —Displays information about the active dynamic policies applied to the subscriber with this client ID. The client ID is a generated identifier assigned to each packet-triggered subscriber known to the router.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show services subscriber dynamic-policies client-id on page 1606</b>
<b>Output Fields</b>	Table 307 on page 1605 lists the output fields for the <b>show services subscriber dynamic-policies</b> command. Output fields are listed in the approximate order in which they appear.

**Table 307: show services subscriber dynamic-policies Output Fields**

Field Name	Field Description
<b>Subscriber session</b>	Client identifier.
<b>Policy name</b>	Dynamic policy identifier.
<b>rpr</b>	Rule precedence for the dynamic policy.
<b>d</b>	Direction of the dynamic policy.
<b>Template</b>	Service rule associated with the dynamic policy.
<b>tpr</b>	Term precedence.
<b>ra</b>	Remote address.
<b>rm</b>	Remote address mask.
<b>lpl</b>	Lower boundary for the local port range.
<b>lph</b>	Upper boundary for the local port range.
<b>rpl</b>	Lower boundary for the remote port range.
<b>rph</b>	Upper boundary for the remote port range.
<b>p</b>	Protocol.

Table 307: show services subscriber dynamic-policies Output Fields (*continued*)

Field Name	Field Description
<b>a-f</b>	Action.
<b>a-s</b>	Type of statistics collection and aggregation.
<b>a-fc</b>	Forwarding class.
<b>a-p-l</b>	Policer instance.
<b>a-p-bw</b>	Policer bandwidth.
<b>a-p-mbs</b>	Policer maximum burst size.
<b>a-fu</b>	Unit number for forwarding instance.
<b>anl</b>	Application names.
<b>agl</b>	Application group name.

## Sample Output

```

show services subscriber dynamic-policies client-id
user@host> show services subscriber dynamic-policies client-id 1
Subscriber session 1 policy
Policy name: 1311465998724890695
rpr: 200
d: input-output
  Template: __svc_rule__
  tpr: 100
  ra: 0.0.0.0
  rm: 0
  lpl: 0
  lph: 65535
  rpl: 0
  rph: 65535
  p: 0
  a-f: accept forwarding-class
  a-s:
  a-fc: assured-forwarding
  a-p-i: 0
  a-p-bw: 0
  a-p-mbs: 0
  a-fu: 0
  anl: junos:http
  agl: junos:web
  Template: __svc_rule__
  tpr: 100
  ra: 10.10.10.0
  rm: 0
  lpl: 0
  lph: 65535
  rpl: 0
  rph: 65535

```

```
p: 0
a-f: accept
a-s:
a-fc:
a-p-i: 0
a-p-bw: 0
a-p-mbs: 0
a-fu: 0
anl:
agl:
```

## show services subscriber flows

<b>Syntax</b>	<b>show services subscriber flows client-id <i>client-id</i></b>
<b>Release Information</b>	Command introduced in Junos OS Release 10.2.
<b>Description</b>	Display information about the data flows associated with the specified subscriber.
<b>Options</b>	<b>client-id <i>client-id</i></b> —Displays information about the data flows associated with the subscriber identified by this client ID. The client ID is a generated identifier assigned to each packet-triggered subscriber known to the router.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show services subscriber flows client-id on page 1608</b>
<b>Output Fields</b>	Table 308 on page 1608 lists the output fields for the <b>show services subscriber flows</b> command. Output fields are listed in the approximate order in which they appear.

**Table 308: show services subscriber flows Output Fields**

Field Name	Field Description
<b>Subscriber session</b>	Client identifier.
<b>Number of data flows</b>	Number of data sessions associated with this subscriber.
<b>Data flow high-water-mark</b>	High water mark number of concurrent data sessions for this subscriber. This value is never reset during the login session.
<b>5-tuple</b>	5 tuple information for each flow.
<b>Application-ID</b>	Application ID for each flow.
<b>Policy-name</b>	Service rule name for each flow.
<b>Dir</b>	Direction of each flow.
<b>Packets</b>	Information about counter statistics for each flow.
<b>Bytes</b>	Information about counter statistics for each flow.
<b>Action</b>	Action of the service rule for each flow.

## Sample Output

```

show services subscriber flows client-id
user@host> show services subscriber flows client-id 1
Subscriber session 1
Number of data flows: 1
Data flows high-water-mark: 8180

```



5-tuple			Application-ID	Policy-name	Dir
80.1.1.2:45287->90.2.255.2:80,6			junos:http	ptsp-appl/23	I
Packets	Bytes	Action			
6	511	C-T			

## show services subscriber sessions

---

Syntax	<pre>show services subscriber sessions &lt;brief   detail   summary&gt; &lt;client-id <i>client-id</i>&gt; &lt;interface <i>interface-name</i>&gt; &lt;ip-address <i>ip-address</i>&gt; &lt;routing-instance <i>routing-instance-name</i>&gt; &lt;service-interface <i>interface-name</i>&gt; &lt;user-id <i>user-id</i>&gt;</pre>
Release Information	Command introduced in Junos OS Release 10.2.
Description	Display information about the active packet-triggered subscriber sessions on the router.
Options	<p><b>brief   detail   summary</b>—(Optional) Display the specified level of output. The default level is brief.</p> <p><b>client-id <i>client-id</i></b>—(Optional) Displays information about the active packet-triggered subscriber sessions for this client ID. The client ID is a generated identifier assigned to each packet-triggered subscriber known to the router.</p> <p><b>interface <i>interface-name</i></b>—(Optional) Displays information about the active packet-triggered subscriber sessions for the subscriber with this underlying interface name.</p> <p><b>ip-address <i>ip-address</i></b>—(Optional) Displays information about the active packet-triggered subscriber sessions for the subscriber with this IP address.</p> <p><b>routing-instance <i>routing-instance-name</i></b>—(Optional) Displays information about the active packet-triggered subscriber sessions for the subscriber on this routing instance.</p> <p><b>service-interface <i>interface-name</i></b>—(Optional) Displays information about the active packet-triggered subscriber sessions for the subscriber with this service interface name.</p> <p><b>user-id <i>user-id</i></b>—(Optional) Displays information about the active packet-triggered subscriber sessions with this user ID.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"><li>• <a href="#">clear services subscriber sessions on page 1602</a></li></ul>
List of Sample Output	<p><a href="#">show services subscriber sessions client-id summary on page 1611</a></p> <p><a href="#">show services subscriber sessions client-id on page 1611</a></p> <p><a href="#">show services subscriber sessions client-id detail on page 1611</a></p>
Output Fields	Table 309 on page 1611 lists the output fields for the <b>show services subscriber sessions</b> command. Output fields are listed in the approximate order in which they appear.

Table 309: show services subscriber sessions Output Fields

Field Name	Field Description
Client-ID	Client identifier.
IP-address	IPv4 address.
Underlying-interface	Interface where services are applied.
User-name	Subscriber identifier.
Service interface name	Location of the MS-DPC on which the subscriber is instantiated.
Routing instance	Routing instance on which the subscriber is instantiated.
State	State of the subscriber.

### Sample Output

```

show services subscriber sessions client-id summary
user@host> show services subscriber sessions client-id 1 summary
1

show services subscriber sessions client-id
user@host> show services subscriber sessions client-id 1
Client-ID      IP-address      Underlying-interface  User-name
1              80.1.1.2        ge-1/3/2.1           ip80.1.1.2@default

show services subscriber sessions client-id detail
user@host> show services subscriber sessions client-id 1 detail
Subscriber session 1
  User name: ip80.1.1.2@default
  Interface name: ge-1/3/2.1
  User IP address: 80.1.1.2
  Service interface name: ms-2/0/0
  Routing instance: default
  State: logged in
  Login time: Tue Dec 29 19:56:07 2009
  1 service session(s) instantiated:
  Service session 1323423760868442114 => State: activated

```

## show services subscriber statistics

<b>Syntax</b>	<b>show services subscriber statistics client-id</b> <i>client-id</i>
<b>Release Information</b>	Command introduced in Junos OS Release 10.2.
<b>Description</b>	Display information about the data traffic statistics for the specified packet-triggered subscriber and for each service rule attached to that subscriber.
<b>Options</b>	<b>client-id</b> <i>client-id</i> —Displays information about the data traffic statistics associated with the subscriber identified by this client ID. The client ID is a generated identifier assigned to each packet-triggered subscriber known to the router.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show services subscriber statistics client-id by rule on page 1612</b> <b>show services subscriber statistics client-id by application on page 1612</b>
<b>Output Fields</b>	Table 310 on page 1612 lists the output fields for the <b>show services subscriber statistics</b> command. Output fields are listed in the approximate order in which they appear.

**Table 310: show services subscriber statistics Output Fields**

Field Name	Field Description
<b>Aggregation-level</b>	Type of statistics collected — subscriber and service rule or application.
<b>Name/Id</b>	Identifier for Aggregation-level field.
<b>Packets-in</b>	Number of ingress packets.
<b>Packets-out</b>	Number of egress packets.
<b>Bytes-in</b>	Number of ingress bytes.
<b>Bytes-out</b>	Number of egress bytes.

### Sample Output

```

show services subscriber statistics client-id by rule
user@host> show services subscriber statistics client-id 1
Aggregation-level Name/Id   Packets-in Packets-out Bytes-in Bytes-out
subscriber        1             5           5        1000    1000
dynamic rule      ptsp-rule     5           5        1000    1000

```

### Sample Output

```

show services subscriber statistics client-id by application
user@host> show services subscriber statistics client-id 1

```

Aggregation-level	Name/Id	Packets-in	Packets-out	Bytes-in	Bytes-out
subscriber	1	4358118	3630087	371167451	3301658453
application group	any	4358118	3631768	371167451	3304179953



# Service Sets Operational Mode Commands

Table 311 on page 1615 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot service sets. Commands are listed in alphabetical order.

**Table 311: Service Sets Operational Mode Commands**

Task	Command
Clear service sets statistics.	<code>clear services service-sets statistics packet-drops</code>
Display service sets CPU utilization.	<code>show services service-sets cpu-usage</code>
Display services sets memory utilization.	<code>show services service-sets memory-usage</code>
Display service sets statistics.	<code>show services service-sets statistics packet-drops</code>
Display services sets TCP maximum segment size (MSS) statistics.	<code>show services service-sets statistics tcp-mss</code>
Display service sets summary information.	<code>show services service-sets summary</code>



**NOTE:** Service sets are supported on the adaptive services interface on the following routers:

- J Series routers—`sp-pim/0/slot`
- M Series and T Series routers—`ms-fpc/pic/port` or `sp-fpc/pic/port`

Service sets are also supported on the redundant adaptive services interface (`rspnumber`) on M Series and T Series routers.



**NOTE:** For information about how to configure service sets, see the *Junos OS Services Interfaces Configuration Guide*.

## clear services service-sets statistics packet-drops

---

<b>Syntax</b>	clear services service-sets statistics packet-drops <interface <i>interface-name</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 7.4.
<b>Description</b>	Clear dropped-packet statistics for one adaptive services interface or for all adaptive services interfaces.
<b>Options</b>	none—Clear dropped-packet statistics for all configured adaptive services interfaces.  interface <i>interface-name</i> —(Optional) Clear dropped-packet statistics for the specified adaptive services interface. On M Series and T Series routers, the <i>interface-name</i> can be <i>ms-fpc/pic/port</i> , <i>sp-fpc/pic/port</i> or <i>rspnumber</i> . On J Series routers, the <i>interface-name</i> is <i>sp-pim/0/port</i> .
<b>Required Privilege Level</b>	network
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show services service-sets statistics packet-drops on page 1621</a></li></ul>
<b>List of Sample Output</b>	<a href="#">clear services service-sets statistics packet-drops on page 1616</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

<b>clear services</b>	user@host> clear services service-sets statistics packet-drops interface sp-5/0/0
<b>service-sets statistics</b>	Flow collector interface: cp-5/0/0
<b>packet-drops</b>	Interface state: Collecting flows
	Statistics cleared successfully



## show services service-sets cpu-usage

<b>Syntax</b>	show services service-sets cpu-usage <interface <i>interface-name</i> > <service-set <i>service-set-name</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Display service set CPU usage as a percentage.
<b>Options</b>	<p>none—Display CPU usage for all adaptive services interfaces and service sets.</p> <p>interface <i>interface-name</i>—(Optional) Display CPU usage for a particular interface. On M Series and T Series routers, the <i>interface-name</i> parameter can have the value <i>ms-fpc/pic/port</i>, <i>sp-fpc/pic/port</i>, or <i>rspnumber</i>. On J Series routers, <i>interface-name</i> is <i>sp-pim/0/port</i>.</p> <p>service-set <i>service-set-name</i>—(Optional) Display CPU usage for a particular service set. For the Layer 2 Tunneling Protocol (L2TP), you can use a tunnel group to represent a service set.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show services service-sets cpu-usage on page 1617
<b>Output Fields</b>	Table 312 on page 1617 lists the output fields for the <b>show services service-sets cpu-usage</b> command. Output fields are listed in the approximate order in which they appear.

**Table 312: show services service-sets cpu-usage Output Fields**

Field Name	Field Description
Interface	Name of an adaptive services interface.
Service set (system category)	Name of the CPU usage category: <ul style="list-style-type: none"> <li>• idp_recommended—Name of the service sets (displays all the service sets attached to the service PICs)</li> <li>• Idle</li> <li>• System</li> <li>• Receive</li> <li>• Transmit</li> </ul>
CPU utilization %	Percentage of the CPU resources being used.

## Sample Output

```

show services user@host> show services service-sets cpu-usage
service-sets cpu-usage
Interface      Service set (system category)      CPU utilization %
ms-4/1/0       idp_recommended                    18.20 %
ms-4/1/0       Idle                               44.69 %

```

ms-4/1/0	System	7.01 %
ms-4/1/0	Receive	15.10 %
ms-4/1/0	Transmit	15.00 %

## show services service-sets memory-usage

**Syntax** show services service-sets memory-usage  
 <interface *interface-name*>  
 <service-set *service-set-name*>  
 <zone>

**Release Information** Command introduced before Junos OS Release 7.4.

**Description** Display service set memory usage.

**Options** none—Display service set memory usage.

interface *interface-name*—(Optional) Display memory usage for a particular interface. On M Series and T Series routers, the *interface-name* can be *ms-fpc/pic/port*, *sp-fpc/pic/port*, or *rspnumber*. On J Series routers, the *interface-name* is *sp-pim/0/port*.



**NOTE:** This command is not supported on mp interfaces.

service-set *service-set-name*—(Optional) Display memory usage for a particular service set. For L2TP, you can use a tunnel group to represent a service set.

zone—(Optional) Display the memory usage zone of the adaptive services interface or of an individual service set.

**Required Privilege Level** view

**List of Sample Output** show services service-sets memory-usage on page 1620  
 show services service-sets memory-usage zone on page 1620

**Output Fields** Table 313 on page 1619 lists the output fields for the **show services service-sets memory-usage** command. Output fields are listed in the approximate order in which they appear.

**Table 313: show services service-sets memory-usage Output Fields**

Field Name	Field Description
Interface	Name of an adaptive services interface.
Service set	Name of a service set.
Bytes Used	Number of bytes of memory being used.

Table 313: show services service-sets memory-usage Output Fields (*continued*)

Field Name	Field Description
<b>Memory zone</b>	Memory zone in which the adaptive services interface is currently operating: <ul style="list-style-type: none"><li>• <b>Green</b>—All new flows are allowed.</li><li>• <b>Yellow</b>—Unused memory is reclaimed. All new flows are allowed.</li><li>• <b>Orange</b>—New flows are only allowed for service sets that are using less than their equal share of memory.</li><li>• <b>Red</b>—No new flows are allowed.</li></ul>

### Sample Output

```
show services user@host> show services service-sets memory-usage
service-sets Interface Service set Bytes Used
memory-usage sp-1/3/0 blue 14817036

show services user@host> show services service-sets memory-usage zone
service-sets Interface Memory zone
memory-usage zone sp-1/3/0 Green
```

## show services service-sets statistics packet-drops

<b>Syntax</b>	show services service-sets statistics packet-drops <interface <i>interface-name</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 7.4.
<b>Description</b>	Display the number of dropped packets for service sets exceeding CPU limits or memory limits.
<b>Options</b>	<p>none—Display the number of dropped service sets packets for all adaptive services interfaces.</p> <p>interface <i>interface-name</i>—(Optional) Display the number of dropped service sets packets for a particular interface. On M Series and T Series routers, <i>interface-name</i> can be <i>ms-fpc/pic/port</i>, <i>sp-fpc/pic/port</i>, or <i>rspnumber</i>. On J Series routers, <i>interface-name</i> is <i>sp-pim/0/port</i>.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>clear services flow-collector statistics on page 1342</li> </ul>
<b>List of Sample Output</b>	show services service-sets statistics packet-drops interface on page 1621
<b>Output Fields</b>	Table 314 on page 1621 lists the output fields for the <b>show services service-sets packet-drops</b> command. Output fields are listed in the approximate order in which they appear.

**Table 314: show services service-sets packet-drops Output Fields**

Field Name	Field Description
Interface	Name of an adaptive services interface.
Service set	Name of a service set.
CPU limit Drops	Number of packets dropped because the service set exceeded the average CPU limit.
Memory limit Drops	Number of packets dropped because the service set exceeded the memory limit.
Flow limit Drops	Number of packets dropped because the service set exceeded the flow limit.

## Sample Output

```

show services service-sets statistics packet-drops interface
user@host> show services service-sets statistics packet-drops interface sp-1/0/0

```

Interface	Service Set	Cpu limit Drops	Memory limit Drops	Flow limit Drops
sp-1/0/0	sset1	0	0	0

## show services service-sets statistics tcp-mss

<b>Syntax</b>	show services service-sets statistics tcp-mss <interface <i>interface-name</i> >
<b>Release Information</b>	Command introduced in Junos OS Release 9.5.
<b>Description</b>	(M Series and T Series routers only) Display TCP maximum segment size (MSS) statistics for service sets.
<b>Options</b>	none—Display service set TCP MSS information for all adaptive services interfaces.  interface <i>interface-name</i> —(Optional) Display TCP MSS statistics for a particular interface. The <i>interface-name</i> can be <i>ms-fpc/pic/port</i> , <i>sp-fpc/pic/port</i> , or <i>rsp number</i> .
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	show services service-sets statistics tcp-mss on page 1623
<b>Output Fields</b>	Table 315 on page 1623 lists the output fields for the <b>show services service-sets statistics tcp-mss</b> command. Output fields are listed in the approximate order in which they appear.

**Table 315: show services service-sets statistics tcp-mss Output Fields**

Field Name	Field Description
<b>Interface</b>	Name of the adaptive services interface.
<b>Service Set</b>	Name of the configured service set.
<b>SYN Received</b>	Number of TCP SYN packets received.
<b>SYN Modified</b>	Number of TCP SYN packets with the MSS value modified to match the MSS value specified in the TCP MSS configuration.

## Sample Output

```

show services user@host> show services service-sets statistics tcp-mss
service-sets statistics
tcp-mss      Interface  Service Set      SYN Received  SYN Modified
              sp-1/2/0      asq_ipsec_svc_0      500           220

```

## show services service-sets summary

<b>Syntax</b>	show services service-sets summary <interface <i>interface-name</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Display service set summary information.
<b>Options</b>	<p>none—Display service set summary information for all adaptive services interfaces.</p> <p>interface <i>interface-name</i>—(Optional) Display service set summary information for a particular interface. On M Series and T Series routers, <i>interface-name</i> can be <i>ms-fpc/pic/port</i>, <i>sp-fpc/pic/port</i>, or <i>rspnumber</i>. On J Series routers, <i>interface-name</i> is <i>sp-pim/O/port</i>.</p>
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<p>show services service-sets summary on page 1624</p> <p>show services service-sets summary interface on page 1625</p>
<b>Output Fields</b>	Table 316 on page 1624 lists the output fields for the <b>show services service-sets summary</b> command. Output fields are listed in the approximate order in which they appear.

**Table 316: show services service-sets summary Output Fields**

Field Name	Field Description
<b>Interface</b>	Name of an adaptive services interface.
<b>Service type</b>	Type of adaptive service, such as stateful firewall (SFW), Network Address Translation (NAT), Intrusion Detection Services (IDS), Layer 2 Tunneling Protocol (L2TP), Compressed Real-Time Transport Protocol (CRTP), or IP Security (IPsec).
<b>Service sets configured</b>	Total number of service sets configured on the PIC that use internal service set IDs and do not consume external service sets, including CRTP and L2TP.
<b>Bytes used</b>	Bytes used by a particular service, or all services.
<b>Policy bytes used</b>	Policy bytes used by a particular service, or all services.
<b>CPU utilization</b>	Percentage of the CPU resources being used.

## Sample Output

```

show services service-sets summary user@host> show services service-sets summary
Service sets
Interface configured Bytes used Policy bytes used CPU
utilization

```



sp-1/3/0	3	170 ( 0.00 %)	3116 ( 0.02 %)	0.00 %
rsp0	3	798 ( 0.00 %)	2772 ( 0.01 %)	0.00 %

```

show services user@host> show services service-sets summary interface sp-1/3/0
service-sets summary Interface: sp-1/3/0
interface
  Service type      Service sets      Bytes used      CPU
                  configured      utilization
  SFW/NAT/IDS       1                54 ( 0.00 %)    0.00 %
  L2TP               1                58 ( 0.00 %)    0.00 %
  CRTP               1                58 ( 0.00 %)    0.00 %
  System             0                920831 ( 0.44 %) 0.04 %
  Idle               0                0 ( 0.00 %)     99.95 %
  Total              3                921001 ( 0.44 %) 99.99 %

```



# Stateful Firewall Operational Mode Commands

Table 317 on page 1627 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot stateful firewall services. Commands are listed in alphabetical order.

**Table 317: Stateful Firewall Services Operational Mode Commands**

Task	Command
Clear stateful firewall flows.	<code>clear services stateful-firewall flows</code>
Clear stateful firewall Session Initiation Protocol (SIP) call information.	<code>clear services stateful-firewall sip-call</code>
Clear stateful firewall SIP register information.	<code>clear services stateful-firewall sip-register</code>
Clear stateful firewall statistics.	<code>clear services stateful-firewall statistics</code>
Display stateful firewall conversation information.	<code>show services stateful-firewall conversations</code>
Display stateful firewall flow information.	<code>show services stateful-firewall flows</code>
Display stateful firewall SIP call information.	<code>show services stateful-firewall sip-call</code>
Display stateful firewall SIP register information.	<code>show services stateful-firewall sip-register</code>
Display stateful firewall statistics.	<code>show services stateful-firewall statistics</code>
Display statistics information for the application protocol SIP.	<code>show services stateful-firewall statistics application-protocol sip</code>



**NOTE:** Stateful firewall services are supported on the adaptive services interface on the following routers:

- J Series routers—*sp-pim/0/slot*
- M Series and T Series routers—*ms-fpc/pic/port*, or *sp-fpc/pic/port*

Stateful firewall services are also supported on the redundant adaptive services interface (*rspnumber*) on M Series and T Series routers. For information about how to configure stateful firewall services, see the *Junos OS Services Interfaces Configuration Guide*.

## clear services stateful-firewall flows

<b>Syntax</b>	<pre>clear services stateful-firewall flows &lt;application-protocol <i>protocol</i>&gt; &lt;destination-port <i>destination-port</i>&gt; &lt;destination-prefix <i>destination-prefix</i>&gt; &lt;interface <i>interface-name</i>&gt; &lt;protocol <i>protocol</i>&gt; &lt;service-set <i>service-set</i>&gt; &lt;source-port <i>source-port</i>&gt; &lt;source-prefix <i>source-prefix</i>&gt;</pre>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Clear stateful firewall flows.
<b>Options</b>	<p>none—Clear all stateful firewall flows.</p> <p><i>destination-port destination-port</i>—(Optional) Clear stateful firewall flows for a particular destination port. The range of values is 0 to 65535.</p> <p><i>destination-prefix destination-prefix</i>—(Optional) Clear stateful firewall flows for a particular destination prefix.</p> <p><i>interface interface-name</i>—(Optional) Clear stateful firewall flows for a particular interface. On M Series and T Series routers, the <i>interface-name</i> can be <i>ms-fpc/pic/port</i> or <i>rspnumber</i>. On J Series routers, the <i>interface-name</i> is <i>ms-pim/0/port</i>.</p> <p><i>protocol</i>—(Optional) Clear stateful firewall flows for one of the following IP types:</p> <ul style="list-style-type: none"> <li>• <i>number</i>—Numeric protocol value from 0 to 255.</li> <li>• <i>ah</i>—IPsec Authentication Header protocol</li> <li>• <i>egp</i>—An exterior gateway protocol</li> <li>• <i>esp</i>—IPsec Encapsulating Security Payload protocol</li> <li>• <i>gre</i>—A generic routing encapsulation protocol</li> <li>• <i>icmp</i>—Internet Control Message Protocol</li> <li>• <i>igmp</i>—Internet Group Management Protocol</li> <li>• <i>ipip</i>—IP-over-IP Encapsulation Protocol</li> <li>• <i>ospf</i>—Open Shortest Path First protocol</li> <li>• <i>pim</i>—Protocol Independent Multicast protocol</li> <li>• <i>rsvp</i>—Resource Reservation Protocol</li> <li>• <i>sctp</i>—Stream Control Protocol</li> <li>• <i>tcp</i>—Transmission Control Protocol</li> <li>• <i>udp</i>—User Datagram Protocol</li> </ul>

`service-set service-set`—(Optional) Clear stateful firewall flows for a particular service set.

`source-port source-port`—(Optional) Clear stateful firewall flows for a particular source port. The range of values is from 0 through 65535.

`source-prefix source-prefix`—(Optional) Clear stateful firewall flows for a particular source prefix.

**Required Privilege Level** view

**Related Documentation**

- [show services stateful-firewall flows on page 1642](#)

**List of Sample Output** [clear services stateful-firewall flows on page 1630](#)

**Output Fields** Table 318 on page 1630 lists the output fields for the **clear services stateful-firewall flows** command. Output fields are listed in the approximate order in which they appear.

**Table 318: clear services stateful-firewall flows Output Fields**

Field Name	Field Description
<b>Interface</b>	Name of an adaptive services interface.
<b>Service set</b>	Name of the service set from which flows are being cleared.
<b>Conv removed</b>	Number of conversations removed.

## Sample Output

```

clear services stateful-firewall flows
user@host> clear services stateful-firewall flows
Interface  Service set  Conv removed
ms-0/3/0   svc_set_trust      0
ms-0/3/0   svc_set_untrust    0

```

## clear services stateful-firewall sip-call

<b>Syntax</b>	<pre>clear services stateful-firewall sip-call &lt;application-protocol <i>protocol</i>&gt; &lt;destination-port <i>destination-port</i>&gt; &lt;destination-prefix <i>destination-prefix</i>&gt; &lt;interface <i>interface-name</i>&gt; &lt;protocol <i>protocol</i>&gt; &lt;service-set <i>service-set</i>&gt; &lt;source-port <i>source-port</i>&gt; &lt;source-prefix <i>source-prefix</i>&gt;</pre>
<b>Release Information</b>	Command introduced in Junos OS Release 7.4.
<b>Description</b>	Clear Session Initiation Protocol (SIP) call information in stateful firewall flows.
<b>Options</b>	<p>none—Clear stateful firewall statistics for all interfaces and all service sets.</p> <p>application-protocol—(Optional) Clear information about one of the following application protocols:</p> <ul style="list-style-type: none"> <li>• <b>bootp</b>—(SIP only) Bootstrap protocol</li> <li>• <b>dce-rpc</b>—(SIP only) Distributed Computing Environment-Remote Procedure Call protocols</li> <li>• <b>dce-rpc-portmap</b>—(SIP only) Distributed Computing Environment-Remote Procedure Call protocols portmap service</li> <li>• <b>dns</b>—(SIP only) Domain Name System protocol</li> <li>• <b>exec</b>—(SIP only) Exec</li> <li>• <b>ftp</b>—(SIP only) File Transfer Protocol</li> <li>• <b>h323</b>—H.323 standards</li> <li>• <b>icmp</b>—Internet Control Message Protocol</li> <li>• <b>iiop</b>—Internet Inter-ORB Protocol</li> <li>• <b>login</b>—Login</li> <li>• <b>netbios</b>—NetBIOS</li> <li>• <b>netshow</b>—NetShow</li> <li>• <b>realaudio</b>—RealAudio</li> <li>• <b>rpc</b>—Remote Procedure Call protocol</li> <li>• <b>rpc-portmap</b>—Remote Procedure Call protocol portmap service</li> <li>• <b>rtsp</b>—Real-Time Streaming Protocol</li> <li>• <b>shell</b>—Shell</li> <li>• <b>sip</b>—Session Initiation Protocol</li> </ul>

- **snmp**—Simple Network Management Protocol
- **sqlnet**—SQLNet
- **tftp**—Trivial File Transfer Protocol
- **traceroute**—Traceroute
- **winframe**—WinFrame

destination-port *destination-port*—(Optional) Clear information for a particular destination port. The range of values is 0 to 65535.

destination-prefix *destination-prefix*—(Optional) Clear information for a particular destination prefix.

interface *interface-name*—(Optional) Clear information for a particular adaptive services interface. On M Series and T Series routers, the *interface-name* can be **sp-fpc/pic/port** or **rspnumber**. On J Series routers, the *interface-name* is **sp-pim/0/port**.

protocol—(Optional) Clear information about one of the following IP types:

- **ah**—IPsec Authentication Header protocol
- **egp**—An exterior gateway protocol
- **esp**—IPsec Encapsulating Security Payload protocol
- **gre**—A generic routing encapsulation protocol
- **icmp**—Internet Control Message Protocol
- **igmp**—Internet Group Management Protocol
- **ipip**—IP-within-IP Encapsulation Protocol
- **ipv6**—IPv6 within IP
- **ospf**—Open Shortest Path First protocol
- **pim**—Protocol Independent Multicast protocol
- **rsvp**—Resource Reservation Protocol
- **sctp**—Stream Control Protocol
- **tcp**—Transmission Control Protocol
- **udp**—User Datagram Protocol

service-set *service-set*—(Optional) Clear information for a particular service set.

source-port *source-port*—(Optional) Clear information for a particular source port. The range of values is 0 to 65535.

source-prefix *source-prefix*—(Optional) Clear information for a particular source prefix.

**Required Privilege Level**    view



- show services stateful-firewall sip-call on page 1647

clear services stateful-firewall sip-call on page 1633

Table 319 on page 1633 lists the output fields for the **clear services stateful-firewall sip-call** command. Output fields are listed in the approximate order in which they appear.

### Table 319: clear services stateful-firewall sip-call Output Fields

Field Name	Field Description
Interface	Name of an adaptive services interface.
Service set	Name of the service set from which flows are being cleared.
SIP calls removed	Number of SIP calls removed.

## Sample Output

```
user@host> clear services stateful-firewall sip-call
Interface      Service set      SIP calls removed
sp-0/3/0       test_sip_777    1
```

## clear services stateful-firewall sip-register

---

**Syntax**    clear services stateful-firewall sip-register  
              <application-protocol *protocol*>  
              <destination-port *destination-port*>  
              <destination-prefix *destination-prefix*>  
              <interface *interface-name*>  
              <protocol *protocol*>  
              <service-set *service-set*>  
              <source-port *source-port*>  
              <source-prefix *source-prefix*>

**Release Information**    Command introduced in Junos OS Release 7.4.

**Description**    Clear Session Initiation Protocol (SIP) register information in stateful firewall flows.

**Options**    application-protocol—(Optional) Clear information about one of the following application protocols:

- **bootp**—(SIP only) Bootstrap protocol
- **dce-rpc**—(SIP only) Distributed Computing Environment-Remote Procedure Call protocols
- **dce-rpc-portmap**—(SIP only) Distributed Computing Environment-Remote Procedure Call protocols portmap service
- **dns**—(SIP only) Domain Name System protocol
- **exec**—(SIP only) Exec
- **ftp**—(SIP only) File Transfer Protocol
- **h323**—H.323 standards
- **icmp**—Internet Control Message Protocol
- **iiop**—Internet Inter-ORB Protocol
- **login**—Login
- **netbios**—NetBIOS
- **netshow**—NetShow
- **realaudio**—RealAudio
- **rpc**—Remote Procedure Call protocol
- **rpc-portmap**—Remote Procedure Call protocol portmap service
- **rtsp**—Real-Time Streaming Protocol
- **shell**—Shell
- **sip**—Session Initiation Protocol
- **snmp**—Simple Network Management Protocol
- **sqlnet**—SQLNet

- **tftp**—Trivial File Transfer Protocol
- **traceroute**—Traceroute
- **winframe**—WinFrame

destination-port *destination-port*—(Optional) Clear information for a particular destination port. The range of values is 0 to 65535.

destination-prefix *destination-prefix*—(Optional) Clear information for a particular destination prefix.

interface *interface*—(Optional) Clear information about a particular interface. On M Series and T Series routers, the *interface-name* can be *sp-fpc/pic/port* or *rspnumber*. On the J Series routers, the *interface-name* is *sp-pim/0/port*.

protocol—(Optional) Clear information about one of the following IP types:

- **ah**—IPsec Authentication Header protocol
- **egp**—An exterior gateway protocol
- **esp**—IPsec Encapsulating Security Payload protocol
- **gre**—A generic routing encapsulation protocol
- **icmp**—Internet Control Message Protocol
- **igmp**—Internet Group Management Protocol
- **ipip**—IP-within-IP Encapsulation Protocol
- **ipv6**—IPv6 within IP
- **ospf**—Open Shortest Path First protocol
- **pim**—Protocol Independent Multicast protocol
- **rsvp**—Resource Reservation Protocol
- **sctp**—Stream Control Protocol
- **tcp**—Transmission Control Protocol
- **udp**—User Datagram Protocol

service-set *service-set*—(Optional) Clear information for a particular service set.

source-port *source-port*—(Optional) Clear information for a particular source port. The range of values is 0 through 65535.

source-prefix *source-prefix*—(Optional) Clear information for a particular source prefix.

**Required Privilege Level** view

**Related Documentation** • [show services stateful-firewall sip-register on page 1652](#)

**List of Sample Output**    **clear services stateful-firewall sip-register on page 1636**

**Output Fields**    Table 320 on page 1636 lists the output fields for the **clear services stateful-firewall sip-register** command. Output fields are listed in the approximate order in which they appear.

**Table 320: clear services stateful-firewall sip-register Output Fields**

Field Name	Field Description
Interface	Name of an adaptive services interface.
Service set	Name of the service set from which flows are being cleared.
SIP registration removed	Number of SIP registers removed.

### Sample Output

```
clear services stateful-firewall sip-register
user@host> clear services stateful-firewall sip-register
Interface      Service set      SIP registration removed
sp-0/3/0       test_sip_777    1
```

## clear services stateful-firewall statistics

<b>Syntax</b>	clear services stateful-firewall statistics <interface <i>interface-name</i> > <service-set <i>service-set</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Clear stateful firewall statistics.
<b>Options</b>	<p>none—Clear stateful firewall statistics for all interfaces and all service sets.</p> <p>interface <i>interface-name</i>—(Optional) Clear stateful firewall statistics for the specified interface. On M Series and T Series routers, the <i>interface-name</i> can be <i>ms-fpc/pic/port</i> or <i>rspnumber</i>. On J Series routers, the <i>interface-name</i> is <i>ms-pim/0/port</i>.</p> <p>service-set <i>service-set</i>—(Optional) Clear stateful firewall statistics for the specified service set.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">show services stateful-firewall statistics on page 1656</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">clear services stateful-firewall statistics on page 1637</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

```
clear services stateful-firewall statistics
user@host> clear services stateful-firewall statistics
```

## show services stateful-firewall conversations

---

**Syntax**    show services stateful-firewall conversations  
             <brief | extensive | terse>  
             <application-protocol *protocol*>  
             <destination-port *destination-port*>  
             <destination-prefix *destination-prefix*>  
             <interface *interface-name*>  
             <limit *number*>  
             <pgcp>  
             <protocol *protocol*>  
             <service-set *service-set*>  
             <source-port *source-port*>  
             <source-prefix *source-prefix*>

**Release Information**    Command introduced before Junos OS Release 7.4.  
                             **pgcp** option introduced in Junos OS Release 8.4.

**Description**            Display information about stateful firewall conversations.

**Options**                none—Display standard information about all stateful firewall conversations.

                             brief | extensive | terse—(Optional) Display the specified level of output.

                             application-protocol *protocol*—(Optional) Display information about one of the following application protocols:

- **bootp**—Bootstrap protocol
- **dce-rpc**—Distributed Computing Environment-Remote Procedure Call protocols
- **dce-rpc-portmap**—Distributed Computing Environment-Remote Procedure Call protocols portmap service
- **dns**—Domain Name System protocol
- **exec**—Exec
- **ftp**—File Transfer Protocol
- **h323**—H.323 standards
- **icmp**—Internet Control Message Protocol
- **iiop**—Internet Inter-ORB Protocol
- **login**—Login
- **netbios**—NetBIOS
- **netshow**—NetShow
- **realaudio**—RealAudio
- **rpc**—Remote Procedure Call protocol
- **rpc-portmap**—Remote Procedure Call protocol portmap service
- **rtsp**—Real-Time Streaming Protocol

- **shell**—Shell
- **sip**—Session Initiation Protocol
- **snmp**—Simple Network Management Protocol
- **sqlnet**—SQLNet
- **tftp**—Trivial File Transfer Protocol
- **traceroute**—Traceroute
- **winframe**—WinFrame

destination-port *destination-port*—(Optional) Display information for a particular destination port. The range of values is 0 to 65535.

destination-prefix *destination-prefix*—(Optional) Display information for a particular destination prefix.

interface *interface-name*—(Optional) Display information about a particular interface. On M Series and T Series routers, the *interface-name* can be *sp-fpc/pic/port* or *rspnumber*. On J Series routers, the *interface-name* is *sp-pim/0/port*.

limit *number*—(Optional) Maximum number of entries to display.

pgcp —(Optional) Display information about stateful firewall conversations for Packet Gateway Control Protocol (PGCP) flows.

protocol *protocol*—(Optional) Display information about one of the following IP types:

- **number**—Numeric protocol value from 0 to 255
- **ah**—IPsec Authentication Header protocol
- **egp**—An exterior gateway protocol
- **esp**—IPsec Encapsulating Security Payload protocol
- **gre**—A generic routing encapsulation protocol
- **icmp**—Internet Control Message Protocol
- **igmp**—Internet Group Management Protocol
- **ipip**—IP-within-IP Encapsulation Protocol
- **ospf**—Open Shortest Path First protocol
- **pim**—Protocol Independent Multicast protocol
- **rsvp**—Resource Reservation Protocol
- **sctp**—Stream Control Protocol
- **tcp**—Transmission Control Protocol
- **udp**—User Datagram Protocol

service-set *service-set*—(Optional) Display information for the specific service set.

source-port *source-port*—(Optional) Display information for a particular source port. The range of values is 0 to 65535.

source-prefix *source-prefix*—(Optional) Display information for a particular source prefix.

**Required Privilege Level** view

**List of Sample Output** **show services stateful-firewall conversations on page 1641**  
**show services stateful-firewall conversations destination-port on page 1641**

**Output Fields** Table 321 on page 1640 lists the output fields for the **show services stateful-firewall conversations** command. Output fields are listed in the approximate order in which they appear.

**Table 321: show services stateful-firewall conversations Output Fields**

Field Name	Field Description
<b>Interface</b>	Name of an adaptive services interface.
<b>Service set</b>	Name of a service set. Individual empty service sets are not displayed, but if no service set has any flows, a flow table header is printed for each service set.
<b>Conversation</b>	Information about a group of related flows. <ul style="list-style-type: none"> <li>• <b>ALG Protocol</b>—Application-level gateway protocol.</li> <li>• <b>Number of initiators</b>—Number of flows that initiated a session.</li> <li>• <b>Number of responders</b>—Number of flows that responded in a session.</li> </ul>
<b>Flow or Flow Prot</b>	Protocol used for this flow.
<b>Source</b>	Source prefix of the flow, in the format <i>source-prefix-port</i> .
<b>Destination</b>	Destination prefix of the flow.
<b>State</b>	Status of the flow: <ul style="list-style-type: none"> <li>• <b>Drop</b>—Drop all packets in the flow without response.</li> <li>• <b>Forward</b>—Forward the packet in the flow without looking at it.</li> <li>• <b>Reject</b>—Drop all packets in the flow with response.</li> <li>• <b>Watch</b>—Inspect packets in the flow.</li> </ul>
<b>Dir</b>	Direction of the flow: input (I) or output (O).
<b>Source NAT</b>	Original and translated source IPv4 or IPv6 addresses are displayed if Network Address Translation (NAT) is configured on this particular flow or conversation.
<b>Frm Count</b>	Number of frames in the flow.
<b>Destin NAT</b>	Original and translated destination IPv4 or IPv6 addresses are displayed if NAT is configured on this particular flow or conversation.



Table 321: show services stateful-firewall conversations Output Fields (*continued*)

Field Name	Field Description
Byte count	Number of bytes forwarded in the flow.
TCP established	Whether a TCP connection was established: <b>Yes</b> or <b>No</b> .
TCP window size	Negotiated TCP connection window size, in bytes.
TCP acknowledge	TCP acknowledgment sequence number.
TCP tickle	Whether TCP inquiry mode is on ( <b>enabled</b> or <b>disabled</b> ) and the time remaining to send the next inquiry, in seconds.
Master flow	Flow that initiated the conversation.
Timeout	Lifetime of the flow, in seconds.

## Sample Output

```

show services stateful-firewall conversations user@host> show services stateful-firewall conversations
Interface: sp-1/3/0, Service set: green
Conversation: ALG Protocol: any, Number of initiators: 1,
Number of responders: 1

Flow
Prot      Source                Dest                State      Dir      Frm count
TCP       10.58.255.50:33005->  10.58.255.178:23   Forward    I        13
    Source NAT  10.58.255.50:33005->  10.59.16.100:4000
    Destin NAT  10.58.255.178:23 ->  0.0.0.0:4000
Byte count:          918
TCP established, TCP window size: 65535, TCP acknowledge: 2502627025
TCP tickle enabled, 0 seconds,
Master flow, Timeout: 30 seconds
TCP       10.58.255.178:23 ->  10.59.16.100:4000 Forward    0        8

show services stateful-firewall conversations destination-port 21 user@host> show services stateful-firewall conversations destination-port 21
Interface: sp-0/3/0, Service set: svc_set_trust

Interface: sp-0/3/0, Service set: svc_set_untrust
Conversation: ALG protocol: ftp
Number of initiators: 1, Number of responders: 1
Flow
TCP       10.50.10.2:2143 ->  10.50.20.2:21      Watch     0        0
TCP       10.50.20.2:21 ->  10.50.10.2:2143    Watch     I        0
TCP       10.50.20.2:21 ->  10.50.10.2:2143    Watch     I        0

```

## show services stateful-firewall flows

**Syntax** show services stateful-firewall flows  
 <brief | extensive | summary | terse>  
 <application-protocol *protocol*>  
 <count>  
 <destination-port *destination-port*>  
 <destination-prefix *destination-prefix*>  
 <interface *interface-name*>  
 <limit *number*>  
 <protocol *protocol*>  
 <service-set *service-set*>  
 <source-port *source-port*>  
 <source-prefix *source-prefix*>

**Release Information** Command introduced before Junos OS Release 7.4.  
**pgcp** option introduced in Junos OS Release 8.4.  
**application-protocol** option introduced in Junos OS Release 10.4.

**Description** Display stateful firewall flow table entries. When the interface is used for software processing, the type of software concentrator (**DS-LITE** or **6rd**) is shown, and frame counts are provided.

**Options** none—Display standard information about all stateful firewall flows.

brief | extensive | summary | terse—(Optional) Display the specified level of output.

application-protocol *application-protocol*—(Optional) Display information about one of the following application-level gateway (ALG) protocol types:

- **bootp**—Bootstrap protocol
- **dce-rpc**—Distributed Computing Environment (DCE) remote procedure call (RPC) protocol



**NOTE:** Use this option to select Microsoft Remote Procedure Call (MSRPC).

- **dce-rpc-portmap**—Distributed Computing Environment (DCE) remote procedure call (RPC) portmap protocol
- **dns**—Domain Name Service protocol
- **exec**—Remote execution protocol
- **ftp**—File Transfer Protocol
- **h323**—H.323 protocol
- **icmp**—Internet Control Message Protocol
- **iioip**—Internet Inter-ORB Protocol

- **ip**—Internet protocol
- **netbios**—NetBIOS protocol
- **netshow**—Netshow protocol
- **pptp**—Point-to-Point Tunneling Protocol
- **realaudio**—RealAudio protocol
- **rpc**—Remote Procedure Call protocol



**NOTE:** Use this option to select Sun Microsystems Remote Procedure Call protocol (SunRPC).

- **rpc-portmap**—Remote Procedure Call portmap protocol
- **rtsp**—Real-Time Streaming Protocol
- **sip**—Session Initiation Protocol
- **snmp**—Simple Network Management Protocol
- **talk**—Talk protocol
- **tftp**—Trivial File Transfer Protocol
- **traceroute**—Traceroute
- **winframe**—WinFrame

**count**—(Optional) Display a count of the matching entries.

**destination-port** *destination-port*—(Optional) Display information for a particular destination port. The range of values is from 0 to 65535.

**destination-prefix** *destination-prefix*—(Optional) Display information for a particular destination prefix.

**interface** *interface-name*—(Optional) Display information about a particular interface. On M Series and T Series routers, *interface-name* can be **ms-fpc/pic/port** or **rspnumber**. On J Series routers, *interface-name* is **ms-pim/0/port**.

**limit** *number*—(Optional) Maximum number of entries to display.

**protocol** *protocol*—(Optional) Display information about one of the following IP types:

- **number**—Numeric protocol value from 0 to 255
- **ah**—IPsec Authentication Header protocol
- **egp**—An exterior gateway protocol
- **esp**—IPsec Encapsulating Security Payload protocol
- **gre**—A generic routing encapsulation protocol

- **icmp**—Internet Control Message Protocol
- **igmp**—Internet Group Management Protocol
- **ipip**—IP-within-IP Encapsulation Protocol
- **ospf**—Open Shortest Path First protocol
- **pim**—Protocol Independent Multicast protocol
- **rsvp**—Resource Reservation Protocol
- **sctp**—Stream Control Protocol
- **tcp**—Transmission Control Protocol
- **udp**—User Datagram Protocol

**service-set** *service-set*—(Optional) Display information for a particular service set.

**source-port** *source-port*—(Optional) Display information for a particular source port. The range of values is from 0 to 65535.

**source-prefix** *source-prefix*—(Optional) Display information for a particular source prefix.

**Required Privilege Level**

view

**Related Documentation**

- [clear services stateful-firewall flows on page 1629](#)

**List of Sample Output**

[show services stateful-firewall flows on page 1645](#)  
[show services stateful-firewall flows \(For Software Flows\) on page 1645](#)  
[show services stateful-firewall flows brief on page 1646](#)  
[show services stateful-firewall flows extensive on page 1646](#)  
[show services stateful-firewall flows count on page 1646](#)  
[show services stateful-firewall flows destination port on page 1646](#)  
[show services stateful-firewall flows source port on page 1646](#)  
[show services stateful-firewall flows \(Twice NAT\) on page 1646](#)

**Output Fields**

Table 322 on page 1644 lists the output fields for the **show services stateful-firewall flows** command. Output fields are listed in the approximate order in which they appear.

**Table 322: show services stateful-firewall flows Output Fields**

Field Name	Field Description
<b>Interface</b>	Name of the interface.
<b>Service set</b>	Name of a service set. Individual empty service sets are not displayed. If no service set has any flows, a flow table header is displayed for each service set.
<b>Flow Count</b>	Number of flows in a session.
<b>Flow or Flow Prot</b>	Protocol used for this flow.

Table 322: show services stateful-firewall flows Output Fields (*continued*)

Field Name	Field Description
Source	Source prefix of the flow in the format <i>source-prefix:port</i> . For ICMP flows, port information is not displayed.
Dest	Destination prefix of the flow. For ICMP flows, port information is not displayed.
State	Status of the flow: <ul style="list-style-type: none"> <li>• <b>Drop</b>—Drop all packets in the flow without response.</li> <li>• <b>Forward</b>—Forward the packet in the flow without looking at it.</li> <li>• <b>Reject</b>—Drop all packets in the flow with response.</li> <li>• <b>Watch</b>—Inspect packets in the flow.</li> </ul>
Dir	Direction of the flow: input (I) or output (O).
Frm count	Number of frames in the flow.

## Sample Output

**show services stateful-firewall flows**     user@host> **show services stateful-firewall flows**  
Interface: ms-1/3/0, Service set: green

```
Flow
Prot    Source                Dest                State    Dir    Frm count
TCP     10.58.255.178:23    -> 10.59.16.100:4000 Forward  O
TCP     10.58.255.50:33005-> 10.58.255.178:23 Forward  I      1
Source NAT 10.58.255.50:33005-> 10.59.16.100:4000
Destin NAT 10.58.255.178:23    -> 0.0.0.0:4000
```

**show services stateful-firewall flows**     When a service set includes software processing, the following output format is used for the software flows:

(For Software Flows)

```
user@host> show services stateful-firewall flows
Interface: sp-0/1/0, Service set: dslite-svc-set2
Flow
TCP     200.200.200.2:80    -> 44.44.44.1:1025 Forward  O      219942
NAT dest 44.44.44.1:1025    -> 20.20.1.4:1025
Software 2001::2        -> 1001::1
TCP     20.20.1.2:1025    -> 200.200.200.2:80 Forward  I      110244
NAT source 20.20.1.2:1025 -> 44.44.44.1:1024
Software 2001::2        -> 1001::1
TCP     200.200.200.2:80 -> 44.44.44.1:1024 Forward  O      219140
NAT dest 44.44.44.1:1024 -> 20.20.1.2:1025
Software 2001::2        -> 1001::1
DS-LITE 2001::2          -> 1001::1 Forward  I      988729
TCP     200.200.200.2:80 -> 44.44.44.1:1026 Forward  O      218906
NAT dest 44.44.44.1:1026 -> 20.20.1.3:1025
Software 2001::2        -> 1001::1
TCP     20.20.1.3:1025 -> 200.200.200.2:80 Forward  I      110303
NAT source 20.20.1.3:1025 -> 44.44.44.1:1026
Software 2001::2        -> 1001::1
TCP     20.20.1.4:1025 -> 200.200.200.2:80 Forward  I      110944
```

```

NAT source      20.20.1.4:1025  ->    44.44.44.1:1025
Software        2001::2         ->    1001::1

```

**show services stateful-firewall flows brief** The output for the **show services stateful-firewall flows brief** command is identical to that for the **show services stateful-firewall flows** command. For sample output, see **show services stateful-firewall flows**.

**show services stateful-firewall flows extensive**

```

user@host> show services stateful-firewall flows extensive
Interface: ms-0/3/0, Service set: ss_nat
Flow count
TCP      16.1.0.1:2330  ->    16.49.0.1:21      Forward  I
8
  NAT source      16.1.0.1:2330  ->    16.41.0.1:2330
  NAT dest       16.49.0.1:21   ->    16.99.0.1:21
  Byte count: 455, TCP established, TCP window size: 57344
  TCP acknowledge: 3251737524, TCP tickle enabled, tcp_tickle: 0
  Flow role: Master, Timeout: 720
TCP      16.99.0.1:21   ->    16.41.0.1:2330    Forward  0
5
  NAT source      16.99.0.1:21   ->    16.49.0.1:21
  NAT dest       16.41.0.1:2330  ->    16.1.0.1:2330
  Byte count: 480, TCP established, TCP window size: 57344
  TCP acknowledge: 463128048, TCP tickle enabled, tcp_tickle: 0
  Flow role: Responder, Timeout: 720

```

**show services stateful-firewall flows count**

```

user@host> show services stateful-firewall flows count
Interface      Service set      Flow Count
ms-1/3/0       green            2

```

**show services stateful-firewall flows destination port**

```

user@router> show services stateful-firewall flows destination-port 21
Interface: ms-0/3/0, Service set: svc_set_trust
Flow
Interface: ms-0/3/0, Service set: svc_set_untrust
Flow
TCP      10.50.10.2:2143  ->    10.50.20.2:21      Watch    0      Frm count 0

```

**show services stateful-firewall flows source port**

```

user@router> show services stateful-firewall flows source-port 2143
Interface: ms-0/3/0, Service set: svc_set_trust
Flow
Interface: ms-0/3/0, Service set: svc_set_untrust
Flow
TCP      10.50.10.2:2143  ->    10.50.20.2:21      Watch    0      Frm count 0

```

**show services stateful-firewall flows (Twice NAT)**

```

user@router> show services stateful-firewall flows
Flow
UDP      40.0.0.8:23439  ->    80.0.0.1:16485    Watch    I      Frm count 20
  NAT source      40.0.0.8:23439  ->    172.16.1.10:1028
  NAT dest       80.0.0.1:16485  ->    192.16.1.10:22415
  UDP      192.16.1.10:22415  ->    172.16.1.10:1028    Watch    0      Frm count 20
  NAT source      192.16.1.10:22415  ->    80.0.0.1:16485
  NAT dest       172.16.1.10:1028  ->    40.0.0.8:23439

```

## show services stateful-firewall sip-call

**Syntax** show services stateful-firewall sip-call  
 <brief | extensive | terse>  
 <application-protocol *protocol*>  
 <destination-port *destination-port*>  
 <destination-prefix *destination-prefix*>  
 <interface *interface-name*>  
 <limit *number*>  
 <protocol *protocol*>  
 <service-set *service-set*>  
 <source-port *source-port*>  
 <source-prefix *source-prefix*>

**Release Information** Command introduced in Junos OS Release 7.4.

**Description** Display stateful firewall Session Initiation Protocol (SIP) call information.

**Options** count—(Optional) Display a count of the matching entries.

brief—(Optional) Display brief SIP call information.

extensive—(Optional) Display detailed SIP call information.

terse—(Optional) Display terse SIP call information.

application-protocol—(Optional) Display information about one of the following application protocols:

- **bootp**—(SIP only) Bootstrap protocol
- **dce-rpc**—(SIP only) Distributed Computing Environment-Remote Procedure Call protocols
- **dce-rpc-portmap**—(SIP only) Distributed Computing Environment-Remote Procedure Call protocols portmap service
- **dns**—(SIP only) Domain Name System protocol
- **exec**—(SIP only) Exec
- **ftp**—(SIP only) File Transfer Protocol
- **h323**—H.323 standards
- **icmp**—Internet Control Message Protocol
- **iiop**—Internet Inter-ORB Protocol
- **login**—Login
- **netbios**—NetBIOS
- **netshow**—NetShow
- **realaudio**—RealAudio
- **rpc**—Remote Procedure Call protocol

- **rpc-portmap**—Remote Procedure Call protocol portmap service
- **rtsp**—Real-Time Streaming Protocol
- **shell**—Shell
- **sip**—Session Initiation Protocol
- **snmp**—Simple Network Management Protocol
- **sqlnet**—SQLNet
- **tftp**—Trivial File Transfer Protocol
- **traceroute**—Traceroute
- **winframe**—WinFrame

destination-port *destination-port*—(Optional) Display information for a particular destination port. The range of values is from 0 to 65535.

destination-prefix *destination-prefix*—(Optional) Display information for a particular destination prefix.

interface *interface-name*—(Optional) Display information about a particular adaptive services interface. On M Series and T Series routers, *interface-name* can be **sp-fpc/pic/port** or **rspnumber**. On J Series routers, *interface-name* is **sp-pim/0/port**.

limit *number*—(Optional) Maximum number of entries to display.

protocol—(Optional) Display information about one of the following IP types:

- **ah**—IPsec Authentication Header protocol
- **egp**—An exterior gateway protocol
- **esp**—IPsec Encapsulating Security Payload protocol
- **gre**—A generic routing encapsulation protocol
- **icmp**—Internet Control Message Protocol
- **igmp**—Internet Group Management Protocol
- **ipip**—IP-within-IP Encapsulation Protocol
- **ipv6**—IPv6 within IP
- **ospf**—Open Shortest Path First protocol
- **pim**—Protocol Independent Multicast protocol
- **rsvp**—Resource Reservation Protocol
- **sctp**—Stream Control Protocol
- **tcp**—Transmission Control Protocol
- **udp**—User Datagram Protocol

service-set *service-set*—(Optional) Display information for a particular service set.



*source-port source-port*—(Optional) Display information for a particular source port. The range of values is from 0 to 65535.

*source-prefix source-prefix*—(Optional) Display information for a particular source prefix.

**Required Privilege Level** view

**Related Documentation** • [clear services stateful-firewall sip-call on page 1631](#)

**List of Sample Output** [show services stateful-firewall sip-call extensive on page 1650](#)

**Output Fields** Table 323 on page 1649 lists the output fields for the **show services stateful-firewall sip-call** command. Output fields are listed in the approximate order in which they appear.

**Table 323: show services stateful-firewall sip-call Output Fields**

Field Name	Field Description
<i>Interface</i>	Name of an adaptive services interface.
<i>Service set</i>	Name of a service set.
<i>From</i>	Initiator address.
<i>To</i>	Responder address.
<i>Call ID</i>	SIP call identification string.
<i>Number of initiator flows</i>	Number of <b>control</b> , <b>contact</b> , or <b>media</b> initiator flows.
<i>Number of responder flows</i>	Number of <b>control</b> , <b>contact</b> , or <b>media</b> responder flows.
<i>protocol</i>	Protocol used for this flow.
<i>source-prefix</i>	Source prefix of the flow in the format <i>source-prefix : port</i> .
<i>destination-prefix</i>	Destination prefix of the flow.
<i>state</i>	Status of the flow: <ul style="list-style-type: none"> <li>• <b>Drop</b>—Drop all packets in the flow without a response.</li> <li>• <b>Forward</b>—Forward the packet in the flow without examining it.</li> <li>• <b>Reject</b>—Drop all packets in the flow with a response.</li> <li>• <b>Unknown</b>—Unknown status.</li> <li>• <b>Watch</b>—Inspect packets in the flow.</li> </ul>
<i>direction</i>	Direction of the flow: input (I), output (O), or unknown (U).

Table 323: show services stateful-firewall sip-call Output Fields (*continued*)

Field Name	Field Description
<i>frame-count</i>	Number of frames in the flow.
<b>Byte count</b>	Number of bytes forwarded in the flow.
<b>Flow role</b>	Role of the flow that is under evaluation: <b>Initiator</b> , <b>Master</b> , <b>Responder</b> , or <b>Unknown</b> .
<b>Timeout</b>	Lifetime of the flow, in seconds.

### Sample Output

**show services  
stateful-firewall  
sip-call extensive**

```

user@host> show services stateful-firewall sip-call extensive
Interface: sp-0/3/0, Service set: test_sip_777
From: : 6507771234@10.200.100.1:0;000ff73ac89900021bb231dc-3ef68435
To: : 4085551234@10.200.100.1:0;0011bb65c2a3000777bd0fc-5748b749
Call ID: : 000ff73a-c8990004-0741adac-3e027c7e@10.20.70.2
Number of control initiator flows: : 1, Number of control responder flows:
: 1
UDP      10.20.70.2:50354 -> 10.200.100.1:5060 Watch I
2
  Byte count: 1112
  Flow role: Master, Timeout: 30
UDP      10.200.100.1:5060 -> 10.20.170.111:50354 Watch 0
0
  Byte count: 0
  Flow role: Responder, Timeout: 30
UDP      0.0.0.0:0 -> 10.20.170.111:5060 Watch 0
7
  Byte count: 2749
  Flow role: Responder, Timeout: 30
Number of contact initiator flows: 1, Number of contact responder flows: 1
UDP      0.0.0.0:0 -> 10.20.140.11:5060 Watch I
1
  Byte count: 409
  Flow role: Master, Timeout: 30
UDP      10.20.140.11:31864 -> 10.20.170.111:18808 Forward 0
622
  Byte count: 124400
  Flow role: Master, Timeout: 30
UDP      0.0.0.0:0 -> 10.20.170.111:18809 Forward 0
0
  Byte count: 0
  Flow role: Initiator, Timeout: 30
Number of media initiator flows: 4, Number of media responder flows: 0
UDP      10.20.70.2:18808 -> 10.20.140.11:31864 Forward I
628
  Byte count: 125600
  Flow role: Initiator, Timeout: 30
UDP      0.0.0.0:0 -> 10.20.140.11:31865 Forward I
0
  Byte count: 0
  Flow role: Initiator, Timeout: 30

```

```
0          0.0.0.0:0    ->      0.0.0.0:0    Unknown  U
0
  Byte count: 0
  Flow role: Unknown, Timeout: 0
0          0.0.0.0:0    ->      0.0.0.0:0    Unknown  U
Interface: sp-0/3/0, Service set: test_sip_888
```

## show services stateful-firewall sip-register

---

**Syntax**    show services stateful-firewall sip-register  
             <brief | extensive | terse>  
             <application-protocol *protocol*>  
             <destination-port *destination-port*>  
             <destination-prefix *destination-prefix*>  
             <interface *interface-name*>  
             <limit *number*>  
             <protocol *protocol*>  
             <service-set *service-set*>  
             <source-port *source-port*>  
             <source-prefix *source-prefix*>

**Release Information**    Command introduced in Junos OS Release 7.4.

**Description**    Display stateful firewall Session Initiation Protocol (SIP) register information.

**Options**    count—(Optional) Display a count of the matching entries.

             brief—(Optional) Display brief SIP register information.

             extensive—(Optional) Display detailed SIP register information.

             terse—(Optional) Display terse SIP register information.

             application-protocol—(Optional) Display information about one of the following application protocols:

- **bootp**—(SIP only) Bootstrap protocol
- **dce-rpc**—(SIP only) Distributed Computing Environment-Remote Procedure Call protocols
- **dce-rpc-portmap**—(SIP only) Distributed Computing Environment-Remote Procedure Call protocols portmap service
- **dns**—(SIP only) Domain Name System protocol
- **exec**—(SIP only) Exec
- **ftp**—(SIP only) File Transfer Protocol
- **h323**—H.323 standards
- **icmp**—Internet Control Message Protocol
- **iiop**—Internet Inter-ORB Protocol
- **login**—Login
- **netbios**—NetBIOS
- **netshow**—NetShow
- **realaudio**—RealAudio
- **rpc**—Remote Procedure Call protocol

- **rpc-portmap**—Remote Procedure Call protocol portmap service
- **rtsp**—Real-Time Streaming Protocol
- **shell**—Shell
- **sip**—Session Initiation Protocol
- **snmp**—Simple Network Management Protocol
- **sqlnet**—SQLNet
- **tftp**—Trivial File Transfer Protocol
- **traceroute**—Traceroute
- **winframe**—WinFrame

destination-port *destination-port*—(Optional) Display information for a particular destination port.

destination-prefix *destination-prefix*—(Optional) Display information for a particular destination prefix. The range of values is from 0 to 65535.

interface *interface-name*—(Optional) Display information about a particular interface. On M Series and T Series routers, the *interface-name* can be *sp-fpc/pic/port* or *rspnumber*. On J Series routers, the *interface-name* is *sp-pim/0/port*.

limit *number*—(Optional) Maximum number of entries to display.

protocol—(Optional) Display information about one of the following IP types:

- **ah**—IPsec Authentication Header protocol
- **egp**—An exterior gateway protocol
- **esp**—IPsec Encapsulating Security Payload protocol
- **gre**—A generic routing encapsulation protocol
- **icmp**—Internet Control Message Protocol
- **igmp**—Internet Group Management Protocol
- **ipip**—IP-within-IP Encapsulation Protocol
- **ipv6**—IPv6 within IP
- **ospf**—Open Shortest Path First protocol
- **pim**—Protocol Independent Multicast protocol
- **rsvp**—Resource Reservation Protocol
- **sctp**—Stream Control Protocol
- **tcp**—Transmission Control Protocol
- **udp**—User Datagram Protocol

service-set *service-set*—(Optional) Display information for a particular service set.

source-port *source-port*—(Optional) Display information for a particular source port. The range of values is from 0 to 65535.

source-prefix *source-prefix*—(Optional) Display information for a particular source prefix.

**Required Privilege Level** view

**Related Documentation** • [clear services stateful-firewall sip-register on page 1634](#)

**List of Sample Output** [show services stateful-firewall sip-register extensive on page 1654](#)

**Output Fields** Table 324 on page 1654 lists the output fields for the **show services stateful-firewall sip-register** command. Output fields are listed in the approximate order in which they appear.

**Table 324: show services stateful-firewall sip-register Output Fields**

Field Name	Field Description
<b>Interface</b>	Name of an adaptive services interface.
<b>Service set</b>	Name of a service set.
<b>SIP Register</b>	Register information header.
<b>Protocol</b>	Protocol used for this flow.
<b>Registered IP</b>	Register IP address.
<b>Port</b>	Register port number.
<b>Expiration timeout</b>	Configured lifetime, in seconds.
<b>Timeout remaining</b>	Lifetime remaining, in seconds.
<b>From</b>	Initiator address.
<b>To</b>	Responder address.
<b>Call ID</b>	SIP call identification string.

## Sample Output

**show services  
stateful-firewall  
sip-register extensive**

```
user@host> show services stateful-firewall sip-register extensive
Interface: sp-0/3/0, Service set: test_sip_777
```

```
SIP Register: Protocol: UDP, Registered IP: 10.20.170.111, Port: 5060, Acked
Expiration timeout: 36000, Timeout remaining: 35544
From: : 6507771234@10.200.100.1:0;
To: : 6507771234@10.200.100.1:0;
Call ID: : 000ff73a-c8990002-23b1d942-2ba1f91f@10.20.70.2
```

Interface: sp-0/3/0, Service set: test\_sip\_888

SIP Register: Protocol: UDP, Registered IP: 10.20.170.112, Port: 5060, Acked  
Expiration timeout: 36000, Timeout remaining: 35549  
From: : 8881234@10.200.100.1:0;  
To: : 8881234@10.200.100.1:0;  
Call ID: : 00112096-81fc0002-23b38905-7cb41f62@10.20.71.2

## show services stateful-firewall statistics

<b>Syntax</b>	<pre>show services stateful-firewall statistics &lt;application-protocol <i>protocol</i>&gt; &lt;brief   detail   extensive   summary&gt; &lt;interface <i>interface-name</i>&gt; &lt;service-set <i>service-set</i>&gt;</pre>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4.
<b>Description</b>	Display stateful firewall statistics.
<b>Options</b>	<p>none—Display standard information about all stateful firewall statistics.</p> <p>brief   detail   extensive   summary—(Optional) Display the specified level of output.</p> <p>interface <i>interface-name</i>—(Optional) Display information about a particular interface. On M Series and T Series routers, the <i>interface-name</i> can be <i>ms-fpc/pic/port</i> or <i>rspnumber</i>. On J Series routers, the <i>interface-name</i> is <i>ms-pim/O/port</i>.</p> <p>service-set <i>service-set</i>—(Optional) Display information about a particular service set.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>clear services stateful-firewall statistics on page 1637</li> </ul>
<b>List of Sample Output</b>	show services stateful-firewall statistics extensive on page 1659
<b>Output Fields</b>	Table 325 on page 1656 lists the output fields for the <b>show services stateful-firewall statistics</b> command. Output fields are listed in the approximate order in which they appear.

**Table 325: show services stateful-firewall statistics Output Fields**

Field Name	Field Description
<b>Interface</b>	Name of an adaptive services interface.
<b>Service set</b>	Name of a service set.
<b>New flows</b>	Rule match counters for new flows: <ul style="list-style-type: none"> <li><b>Accept</b>—New flows accepted.</li> <li><b>Discard</b>—New flows discarded.</li> <li><b>Reject</b>—New flows rejected.</li> </ul>
<b>Existing flows</b>	Rule match counters for existing flows: <ul style="list-style-type: none"> <li><b>Accept</b>—Match existing forward or watch flow.</li> <li><b>Discard</b>—Match existing discard flow.</li> <li><b>Reject</b>—Match existing reject flow.</li> </ul>



Table 325: show services stateful-firewall statistics Output Fields (*continued*)

Field Name	Field Description
<b>Drops</b>	Drop counters: <ul style="list-style-type: none"> <li>• <b>TCP SYN defense</b>—Packets dropped by SYN defender.</li> <li>• <b>NAT ports exhausted</b>—Hide mode. The router has no available Network Address Translation (NAT) ports for a given address or pool.</li> </ul>
<b>Errors</b>	Total errors, categorized by protocol: <ul style="list-style-type: none"> <li>• <b>IP</b>—Total IP version 4 errors.</li> <li>• <b>TCP</b>—Total Transmission Control Protocol (TCP) errors.</li> <li>• <b>UDP</b>—Total User Datagram Protocol (UDP) errors.</li> <li>• <b>ICMP</b>—Total Internet Control Message Protocol (ICMP) errors.</li> <li>• <b>Non-IP</b>—Total non-IPv4 errors.</li> </ul>
<b>IP Errors</b>	IPv4 errors: <ul style="list-style-type: none"> <li>• <b>IP packet length inconsistencies</b>—IP packet length does not match the Layer 2 reported length.</li> <li>• <b>Minimum IP header length check failures</b>—Minimum IP header length is 20 bytes. The received packet contains less than 20 bytes.</li> <li>• <b>Reassembled packet exceeds maximum IP length</b>—After fragment reassembly, the reassembled IP packet length exceeds 65,535.</li> <li>• <b>Illegal source address 0</b>—Source address is not a valid address. Invalid addresses are, loopback, broadcast, multicast, and reserved addresses. Source address 0, however, is allowed to support BOOTP and the destination address 0xffffffff.</li> <li>• <b>Illegal destination address 0</b>—Destination address is not a valid address. The address is reserved.</li> <li>• <b>TTL zero errors</b>—Received packet had a time-to-live (TTL) value of 0.</li> <li>• <b>IP protocol number 0 or 255</b>—IP protocol is 0 or 255.</li> <li>• <b>Land attack</b>—IP source address is the same as the destination address.</li> <li>• <b>Smurf attack</b>—Echo request is sent to a directed broadcast address.</li> <li>• <b>Non-IP packets</b>—Packet did not conform to the IP standard.</li> <li>• <b>IP option</b>—Packet dropped because of a nonallowed IP option.</li> <li>• <b>Non-IPv4 packets</b>—Packet was not IPv4. (Only IPv4 is supported.)</li> <li>• <b>Bad checksum</b>—Packet had an invalid IP checksum.</li> <li>• <b>Illegal IP fragment length</b>—Illegal fragment length. All fragments (other than the last fragment) must have a length that is a multiple of 8 bytes.</li> <li>• <b>IP fragment overlap</b>—Fragments have overlapping fragment offsets.</li> <li>• <b>IP fragment reassembly timeout</b>—Some of the fragments for an IP packet were not received in time, and the reassembly handler dropped partial fragments.</li> </ul>

Table 325: show services stateful-firewall statistics Output Fields (*continued*)

Field Name	Field Description
TCP Errors	<p>TCP protocol errors:</p> <ul style="list-style-type: none"> <li>• <b>TCP header length inconsistencies</b>—Minimum TCP header length is 20 bytes, and the IP packet received does not contain at least 20 bytes.</li> <li>• <b>Source or destination port number is zero</b>—TCP source or destination port is zero.</li> <li>• <b>Illegal sequence number, flags combination</b>—Dropped because of TCP errors, such as an illegal sequence number, which causes an illogical combination of flags to be set.</li> <li>• <b>SYN attack (multiple SYN messages seen for the same flow)</b>—Multiple SYN packets received for the same flow are treated as a SYN attack. The packets might be retransmitted SYN packets and therefore valid, but a large number is cause for concern.</li> <li>• <b>First packet not SYN</b>—First packets for a connection are not SYN packets. These packets might originate from previous connections or from someone performing an ACK/FIN scan.</li> <li>• <b>TCP port scan (Handshake, RST seen from server for SYN)</b>—In the case of a SYN defender, if an RST (reset) packet is received instead of a SYN/ACK message, someone is probably trying to scan the server. This behavior can result in false alarms if the RST packet is not combined with an intrusion detection service (IDS).</li> <li>• <b>Bad SYN cookie response</b>—SYN cookie generates a SYN/ACK message for all incoming SYN packets. If the ACK received for the SYN/ACK message does not match, this counter is incremented.</li> </ul>
UDP Errors	<p>UDP protocol errors:</p> <ul style="list-style-type: none"> <li>• <b>IP data length less than minimum UDP header length (8 bytes)</b>—Minimum UDP header length is 8 bytes. The received IP packets contain less than 8 bytes.</li> <li>• <b>Source or destination port is zero</b>—UDP source or destination port is 0.</li> <li>• <b>UDP port scan (ICMP error seen for UDP flow)</b>—ICMP error is received for a UDP flow. This could be a genuine UDP flow, but it is counted as an error.</li> </ul>
ICMP Errors	<p>ICMP protocol errors:</p> <ul style="list-style-type: none"> <li>• <b>IP data length less than minimum ICMP header length (8 bytes)</b>—ICMP header length is 8 bytes. This counter is incremented when received IP packets contain less than 8 bytes.</li> <li>• <b>ICMP error length inconsistencies</b>—Minimum length of an ICMP error packet is 48 bytes, and the maximum length is 576 bytes. This counter is incremented when the received ICMP error falls outside this range.</li> <li>• <b>Ping duplicate sequence number</b>—Received ping packet has a duplicate sequence number.</li> <li>• <b>Ping mismatched sequence number</b>—Received ping packet has a mismatched sequence number.</li> </ul>

## Sample Output

```

show services stateful-firewall statistics extensive
user@host> show services stateful-firewall statistics extensive
Interface: ms-1/3/0
Service set: interface-svc-set
New flows:
  Accept: 907, Discard: 0, Reject: 0
Existing flows:
  Accept: 3535, Discard: 0, Reject: 0
Drops:
  IP option: 0, TCP SYN defense: 0
  NAT ports exhausted: 0
Errors:
  IP: 0, TCP: 0
  UDP: 0, ICMP: 0
  Non-IP packets: 0, ALG: 0
IP errors:
  IP packet length inconsistencies: 0
  Minimum IP header length check failures: 0
  Reassembled packet exceeds maximum IP length: 0
  Illegal source address: 0
  Illegal destination address: 0
  TTL zero errors: 0, IP protocol number 0 or 255: 0
  Land attack: 0, Smurf attack: 0
  Non IP packets: 0, IP option: 0
  Non-IPv4 packets: 0, Bad checksum: 0
  Illegal IP fragment length: 0
  IP fragment overlap: 0
  IP fragment reassembly timeout: 0
TCP errors:
  TCP header length inconsistencies: 0
  Source or destination port number is zero: 0
  Illegal sequence number, flags combination: 0
  SYN attack (multiple SYNs seen for the same flow): 0
  First packet not SYN: 0
  TCP port scan (Handshake, RST seen from server for SYN): 0
  Bad SYN cookie response: 0
UDP errors:
  IP data length less than minimum UDP header length (8 bytes): 0
  Source or destination port is zero: 0
  UDP port scan (ICMP error seen for UDP flow): 0
ICMP errors:
  IP data length less than minimum ICMP header length (8 bytes): 0
  ICMP error length inconsistencies: 0
  Ping duplicate sequence number: 0
  Ping mismatched sequence number: 0
ALG drops:
  BOOTP: 0, DCE-RPC: 0, DCE-RPC portmap: 0
  DNS: 0, Exec: 0, FTP: 0
  ICMP: 0
  Login: 0, Netbios: 0, Netshow: 0
  RPC: 0, RPC portmap: 0
  RTSP: 0, Shell: 0
  SNMP: 0, Sqlnet: 0, TFTP: 0
  Traceroute: 0

```

## show services stateful-firewall statistics application-protocol sip

<b>Syntax</b>	show services stateful-firewall application-protocol sip
<b>Release Information</b>	Command introduced in Junos OS Release 7.4.
<b>Description</b>	Display stateful firewall Session Initiation Protocol (SIP) statistics.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<b>show services stateful-firewall statistics application-protocol-sip</b> on page 1661
<b>Output Fields</b>	Table 326 on page 1660 lists the output fields for the <b>show services stateful-firewall statistics application-protocol-sip</b> command. Output fields are listed in the approximate order in which they appear.

**Table 326: show services stateful-firewall statistics application-protocol-sip Output Fields**

Field Name	Field Description
Interface	Name of an adaptive services interface.
Service set	Name of the service set flow.
ALG	Name of the application-layer gateway.
Active SIP call count	Number of active SIP calls.
Active SIP registration count	Number of active SIP registrations.
REGISTER	Number of new, invalid, and retransmitted register requests sent to the SIP registrar.
INVITE	Number of new, invalid, and retransmitted invite messages sent by user agent clients.
ReINVITE	Number of new, invalid, and retransmitted reinvite messages sent by user agent clients.
ACK	Number of new, invalid, and retransmitted ACK messages received (in response to a SIP Call Invite message).
BYE	Number of new, invalid, and retransmitted requests to terminate SIP dialogues.
CANCEL	Number of new, invalid, and retransmitted SIP request cancellations.
SUBSCRIBE	Number of new, invalid, and retransmitted SIP requests to subscribe for event notifications.
NOTIFY	Number of new, invalid, and retransmitted event notifications in SIP dialogues.

**Table 326: show services stateful-firewall statistics application-protocol-sip**  
**Output Fields (continued)**

Field Name	Field Description
<b>OPTIONS</b>	Number of new, invalid, and retransmitted requests to query SIP capabilities.
<b>INFO</b>	Number of new, invalid, and retransmitted requests carrying application-level information.
<b>UPDATE</b>	Number of new, invalid, and retransmitted SIP dialogue updates.
<b>REFER</b>	Number of new, invalid, and retransmitted requests to the recipient to contact a third party.
<b>Provisional responses</b>	Number of new, invalid, and retransmitted responses from the user agent server to indicate the progress of a SIP transaction.
<b>OK responses to INVITES</b>	OK responses sent from the user agent clients to user agent servers in response to Invite messages. The server can then return an ACK message.
<b>OK responses to non-INVITES</b>	OK responses to SIP messages other than an Invite message.
<b>Redirection responses</b>	Responses from the user agent server to a user agent client requesting the client to contact a different SIP uniform resource identifier (URI).
<b>Request failure responses</b>	Responses that indicate a definite failure from a particular server. The client must not retry the same request without modification after receiving this response.
<b>Server failure responses</b>	Responses that indicate a server failure.
<b>Global failure responses</b>	Responses that indicate a server has definitive information about a particular user, not just the particular instance indicated in the Request URI.
<b>Invalid responses</b>	Responses that are invalid.
<b>Response (all) retransmits</b>	Retransmissions of all responses.
<b>Parser</b>	Syntax errors, content errors, and unknown methods counted by the message parser.

## Sample Output

```

show services stateful-firewall statistics application-protocol-sip
user@host> show services stateful-firewall statistics application-protocol sip
Interface: sp-0/3/0
Service set: test_sip_777, ALG: SIP
Active SIP call count: 0, Active SIP registration count: 1

```

	New	Invalid	Retransmit
REGISTER	2		
INVITE	1		0
ReINVITE	1		
ACK	1	0	0
BYE	0	0	
CANCEL	0	0	

SUBSCRIBE	0	0
NOTIFY	0	0
OPTIONS	0	0
INFO	0	0
UPDATE	0	0
REFER	0	0

Provisional responses (18x): 1, OK responses to INVITEs: 2  
OK responses to non-INVITEs: 2, Redirection (3xx) responses: 0  
Request failure (4xx) responses: 0, Server failure (5xx) responses: 0  
Global failure (6xx) responses: 0, Invalid responses: 0  
Response (all) retransmits: 0  
Parser:  
Syntax errors: 0, Content errors: 0, Unknown methods: 0  
Service set: test\_sip\_888, ALG: SIP  
Active SIP call count: 0, Active SIP registration count: 1

	New	Invalid	Retransmit
REGISTER	2		
INVITE	0		0
ReINVITE	0		
ACK	0	0	0
BYE	0	0	
CANCEL	0	0	
SUBSCRIBE	0	0	
NOTIFY	0	0	
OPTIONS	0	0	
INFO	0	0	
UPDATE	0	0	
REFER	0	0	

Provisional responses (18x): 0, OK responses to INVITEs: 0  
OK responses to non-INVITEs: 2, Redirection (3xx) responses: 0  
Request failure (4xx) responses: 0, Server failure (5xx) responses: 0  
Global failure (6xx) responses: 0, Invalid responses: 0  
Response (all) retransmits: 0  
Parser:  
Syntax errors: 0, Content errors: 0, Unknown methods: 0

## PART 5

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